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NAAC 2020/ Metrics Level Deviations/Cr1-2 Date:- 12/01/2022

Criteria 1.1.3:	Average percentage of courses having focus on employability/ entrepreneurship/ skill development offered by the institution during the last five years
DVV Finding	Please provide 1. list of courses, name of the course, course code, activities/content with direct bearing on employability/ entrepreneurship/ skill development, year of introduction (during the last five years),in the letterhead of the college, attested by principal 2.scanned images of Syllabus copy of the courses highlighting the focus on employability/ entrepreneurship/ skill development along with their course outcomes, attested by principal 3.minutes of relevant academic Council/BOS meetings highlighting the name of courses having focus on employability/entrepreneurship/ skill development offered by the institution during the last five years attested by principal .4. please provide web link leading to the relevant information in the College web site.
Response/ Clarification	1) list of courses, name of the course, course code, activities/content with direct bearing on employability/ entrepreneurship/ skill development, year of introduction (during the last five years),in the letterhead of the college, attested by principal is attached**. (Appendix-I)** 2) Syllabus copy of the courses highlighting the focus on employability/ entrepreneurship/ skill development attested by principal is attached. **(Appendix-II)** 3) Mapping of the courses to employability / entrepreneurship / skill development **(Appendix-III)** 4) Minutes of relevant academic Council/BOS meetings highlighting the name of courses having focus on employability/entrepreneurship/ skill development offered by the institution during the last five years attested by principal is attached**. (Appendix-IV)**

IQAC Coordinator

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Criteria 1.1.3

APPENDIX-I

APPENDIX 1

LIST OF NEW COURSES INTRODUCED/ CONTENTS WITH DIRECT BEARING ON EMPLOYABILTY/ ENTREPRENEURSHIP/ SKILL DEVELOPMENT

EP : Employability
SD : Skill
EN : Entrepreneurship

1.2.1 NEW COURSES INTRODUCED AND

1.1.3 AVERAGE COURSES FOCUSSED ON EMPLOYABILITY/ENTREPRENEURSHIP/SKILL DEVELOPMENT

NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employability/ Entrepreneurship/ Skill Development
BSc	Botany	5201NA	CC 1	Microbiology and Phycology		SD - General aspects of Microbiology, economic importance of virus, bacteria, cyanobacteria
						SD, EN, EM - Identification and economic importance of different classes of Algae
			CC 2	Biomolecules and Cell Biology		SD - Biomolecules and Cell biology
			GE 1	Biodiversity		SD - general characters and Economic importance of microbes, algae, fungi, bryophyta, pteridophyta and gymnosperms
						SD, EN, EM - Role of algae and fungi in human walfare
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Mycology and Phytopathology		SD - General character of true fungi, allied fungi, ecomonic importance of lichen and mycorriza, phytopathology
						SD, EM, EN - Role of fungi in Biotechnolohy, food inductry, agriculture, medicine, mushroom cultivation
			CC 4	Archigoniates		SD - general charachets and economic importance of bryophytes, pteridophytes. gymnosperms and paleobotany
			GE 2	Plant Physiology and Metabolism		SD - Different physiological aspects and metabolic processes of plant life
			AECC 2	Environmental Science		SD
			CC 5	Anatomy of Angiosperms		SD - Internal plant structures, scopes of plant anatomy, adaptive and protective systems in plants
			CC 6	Economic Botany		SD, EM, EN - Morphology, extraction methods and economic uses of cereals, legumes, oil, sugar, spice, drug, rubber and timber yielding plants
			CC 7	Genetics		SD - Population and Evolutionary genetics
			SEC 1	English Communication		SD, EM
			CC 8	Molecular Biology	2015-16	SD - Culture of E. coli, Extraction and quantification of DNA and RNA
			CC 9	Ecology and Phytogeography		SD - Biotic and Abiotic factors and their interactions, Phytogeographic division of Odisha and India
			CC 10	Plant Systematics		SD, EM - study of vegetation and Floral characters, herbarium preparation, different systems of Classification, phylogeny of angiosperms
			SEC 2	Plant Diversity and Human Welfare		SD - Study of importance, loss and conservation of biodiversity
						SD, EM - Importance of forestry, their utilization and commercial aspects, plants in human welfare

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NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill Development
			CC 11	Reproductive Biology of Angiosperms		SD - Pollen wall structure, NPC system, palynology and scope, polyembryony and apomixis
			CC 12	Plant Physiology		SD - Different physiological aspects of plant life
			DSE 1	Plant Breeding		SD - Techniques related to plant breeding and crop improvement
			DSE 2	Biostatistics		SD - Methods related to sampling, data collection and analysis
			CC 13	Plant Metabolism		SD - Different metabolic processes of plant life
			CC 14	Plant Biotechnology		SD, EM, EN - Plant tissue culture methods and practices SD - PCR method for DNA amplification, Methods of gene transfer, recombinant DNA technology, role of transgenic in crop improvement, environmental remediation, human weifare
			DSE 3	Industrial and Environmental Microbiology		SD, EM, EN - Uses of microbes in industry and environment,
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			DSE I	Analytical Techniques in Plant sciences	2019-20	SD, EM - Structural and Functional Aspects of instruments and processes in plant science. Sampling, data collection and analysis
			DSE II	Natural Resource Management		SD, EM - Uses, management and conservation of different natural resources like land, water, biodiversity, forest, solar, wind
			DSEII	Horticultural Practices and Post-Harvest Technology		SD, EM, EN - Techniques related to cultivation, production and value addition of horticultural crops

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NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill Development
	Chemistry	5301NA	CC 1	Inorganic Chemistry I		
			CC 2	Physical Chemistry I		EM - Ionic Equillibria II
			GE 1	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons		
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Organic Chemistry I		
			CC 4	Physical Chemistry II		
			GE 2	Chemical Energetics, Equilibria & Functional Organic Chemistry I		
			AECC 2	Environmental Science		SD - Whhole Paper
			CC 5	Inorganic Chemistry II		EM - general Principles of Metallurgy, Acid - Bases, inorganic polymer
			CC 6	Organic Chemistry II		
			CC 7	Physical Chemistry III	2015-16	EM - Phase Equillibria
			SEC 1	English Communication		SD, EM - Whole Paper
			CC 8	Inorganic Chemistry III		EM - Bio-inorganic Chemistry
			CC 9	Organic Chemistry III		EM - Alkaloids and terpenes
			CC 10	Physical Chemistry IV		
			SEC 2	Pesticide Chemistry		SD, EM - Whole Paper
			CC 11	Organic Chemistry IV		
			CC 12	Physical Chemistry V		
			DSE 1	Polymer Chemistry		EM - Applications of polymers
			DSE 2	Green Chemistry		EN, EM - Examples and Future trends in Green Chemistry
			CC 13	Inorganic Chemistry IV		
			CC 14	Organic Chemistry V		EM - Pharmaceutical Compounds and dyes
			DSE 3	Indutrial Chemicals and Environment		EN, EM - Whole Paper
			DSE 4	Project		SD, EN, EM
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	Computer Science	6101NA	CC 1	Computer Organisation		SD,EM,EN- Variable, Data type, Operator, Control structure, Loops, Array, Pointers, Storage class and functions, Structure, Union and file management.
			CC 2	Programming Using C		SD,EN- Number system and logic gates, Signed and unsigned number, Flip-flops, Registers, Memory system.
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Programming Using C++		SD,EN,EM- Object oriented programming and its concepts, Classes and objects, Inheritance Function overloading, C++ streams and files.
			CC 4	Data Structure		SD,EM- Data structure and link list, Stack and queue, trees and its types, sorting and searching.

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			AECC 2	Environmental Science	2015-16	SD
			CC 5	Operating Systems		SD,EN,EM- Introduction to JAVA, data type, wrapper class, constuctor inheritence, Interface, Array and string, Exception handling.
			CC 6	DBMS		SD,EN,EM- Data base, ER model, EER model, Normalisation and functional, Relational data model, Transaction processing concepts.
			CC 7	Java Programming		SD,EM- Logics and proof, Sets and functions, Recurrence relation, Graphs, BFS, DFS, Modelling computation.
			SEC 1	English Communication		SD, EM, EN
			CC 8	Micro Processor		SD,EM- Operating system structure and services, process management, memory management strategies, storage management.
			CC 9	DAA		SD,EN,EM- Layers of OSI model, Signal conversion, Transmission media, Erroe detection and correction, IPV 4 and IPV 6 addressing.
			CC 10	Computer Networks		SD,EM- Video display devices, Raster scan systems, Graphics output primitives, Geometric transformations, clipping algorithm.
			SEC 2	Computer Graphics		SD,EM - Core concepts of computer graphics and programmes for solving graphics problems
			CC 11	Software Engineering		SD,EN,EM- Clients, servers and communications, CSS, Creating style sheet, JAVA script, PHP basics.
			CC 12	Internet Technology		SD, EM - Software development life cycle, software project management, requirement analysis and specifications, coding and test
			DSE 1	Artificial Inlelligent		SD,EM - Floating point representation and computer arithmetic, bisection method, secant method, Polynomial interpolation, Trapezoid rule, simpson rule
			DSE 2	Cloud Computing		SD,EM - Uniox operating system, User management and the file system, Shell introduction and Shell scripting, Unix control structures and utilities
			CC 13	Information Security		SD,EM- Aritificial intelligence, Intelligent aagents, Problem solving and searching techniques, knowledge representation Probabilistic reasoning
			CC 14	Android Programming		SD,EM - Divide and conquer Paradigm, recurrence relations, Searching and sorting, Greedy technique, dynamic programming, Graph algorithm
			DSE 3	Operation Research		SD,EM - Data scientist tool box, R programming, Getting and cleaning data, Exploratory data analysis
			DSE 4	Project		SD,EM-
			CC 7	Discrete Structure	2016-17-18	SD,EM- Logic and proof, basic structures, algebra counting and proof
			DSE 2	Microprocessor		SD,EM- Processor design, ARM architecture, ARM assembly language programming, ARM instruction set, Architectural support for high label languages, thumb instruction set
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper

NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill Development
			CC 2	Digital Logic	2019-20	SD,EM- Boolean function and binary arithmetic, combinationl circuits, synhronus and asynchronus sequential circuits, semiconductor memory system.
			GE 1	Computer Fundamentals		SD,EM - Bsics of computer, parts and function of compuer, emerging technology
			GE 3	Programming in Python		SD, EM - Principles of python language, simple programmes in python

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	Electronics	5801NA	CC 1	Basic Circuit Theory and Network Analysis		EN, EM - Basic circuit concepts
						SD,EM, EN - DC circuit Analysis, AC circuit analysis
						SD,EN - Network theorem
			CC 2	Mathematics Foundation for Electronics		SD,EM - Differential equation, sequence and series, Complex variable and functions
						SD,EM,EN - Matrices
			GE 1	Electronic Circuits and PCB Designs		
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Semiconductor Devices		SD,EM,EN - Basics of semiconductor, P.N jhunction Diode,
						EN,EM - Bipolar junction Diode, FET and Power devices
			CC 4	Applied Physics		SD,EM,EN - Mechanical properties of material, Thermal properties,Electric and magnetic properties
						SD,EM - Quantum physics
			GE 2	Digital System Design		SD - Classification of ICs, Examples of Linear and Digital ICs.
						SD - Block Diagram of CRO, Electron Gun, Deflection system and Time Base. Deflection Sensitivity
						EM - Basic Idea of Multiplexers, De-multiplexers, Decoders, Encoders.
						EM - Input/output Devices, Data storage(idea of RAM and ROM), Computer memory, Memory organization and addressing, Memory Interfacing, Memory Map
			AECC 2	Environmental Science		SD
			CC 5	Electronic Circuits		SD,EM,EN - Diode junction, Bipolar junction transistor, Feedback amplifier, MOSFET and power amplifier
			CC 6	Digital Electronics and VHDL		SD,EM,EN - Logic gate and Boolean Algebra
						SD,EM - Combinational circuit, Sequential circuit
			CC 7	C programming and Data Structure	2015-16	SD,EM,EN - C- programming language, Structure and looping of C- programming, Data structure, searching and sorting
			SEC 1	English Communication		
			CC 8	Operational Amplifiers and Applications		SD,EM,EN - Basic operational amplifier, OP-AMP circuit, signal generator
						EN,EM - Multi vibrator, and IC regulator, Signal conditioning circuits
			CC 9	Signals and Systems		SD,EM - Signal and systems, LTI system
						SD,EM,EN - Fourier series and fourier transform, Laplace TRANSFORM
			CC 10	Electronic Instrumentation		SD,EM,EN- Measurement instrument, Transducers and Sensors
						SD - Measurement of resisstance and impedance
						EN,EM - Oscilloscope
			SEC 2	Internet Technology & Java Programming		
			CC 11	Micro Processor and Micro Controllers		EN,EM - 8085 Microprocessor, Microcontroller, PIC16F887 microcontroller
			CC 12	Electromagnetism		SD,EM - Electrostatic field, Magnetostatics

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			CC 12	Electromagnetism		SD,EM,EN - Time varying field, Electromagnetic wave propagation
			DSE 1	Power Electronics		SD,EM,EN - Silicon controlled rectifier, IGBT , Diac and Triac, Electromechanical Machines
						SD,EN - Power inverter and chopper
			DSE 2	Digital Signal Processing		SD,EN - Discrete time system, z- transform
						EN,EM - Discrete fourier transform
						SD,EM - Digital filters
			CC 13	Communication Electronics		SD,EM,EN - Electronic communication, Amplitude modulation, PAM, PCM , Digital Carrier Modulation
			CC 14	Photonics		SD,EM,EN - Electromagnetic wave, Polarization, LED, LCD, LASER, Optical Fiber
			DSE 3	Computer Networks		SD,EM,EN - Data communication, Data link layer, Network layer, Transport and application layer
			DSE 4	Project		
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	ITM	7101NA	CC 1	Computer Organisation		SD,EN- Number system and logic gates, Signed and unsigned number, Flip-flops, Registers, Memory system.
			CC 2	Programming Using C		SD,EM,EN- Variable, Data type, Operator, Control structure, Loops, Array, Pointers, Storage class and functions, Structure, Union and file management.
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Data Structure		SD,EM - Basic structure of computers, Register transfers, Input/output organisation, pipelining
			CC 4	Operating Systems		SD,EM- Data structure and link list, Stack and queue, trees and its types, sorting and searching.
			AECC 2	Environmental Science		SD
			CC 5	DBMS		SD,EN,EM- Object oriented programming and its concepts, Classes and objects, Inheritance, Function overloading, C++ streams and files.
			CC 6	Software Engineering		SD,EN,EM- Data base, ER model, EER model, Normalisation and functional, Relational data model, Transaction processing concepts.
			CC 7	DAA		SD,EM- Nature of management, planning and ortganization ,staffing and controlling, strategic management
			SEC 1	English Communication		SD,EM
			CC 8	Oops using C++		SD,EM,EN -Introduction to JAVA, data type, Wraper class, Constructor inheritance,interface, array and string, exception handling
			CC 9	Artificial Intelligence	2015-16	SD,EM - Financial accounting, Voucher system, preparation of final accounts, computerized accounting

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			CC 10	Computer Networks		SD, EM - Operating system structure and services, process management, memory management strategies, storage management
			SEC 2	Computer Graphics		
			CC 11	Oops using Java		SD,EN,EM- Clients, servers and communications, CSS, Creating style sheet, JAVA script, PHP basics.
			CC 12	Internet working and TCP/IP		SD,EM - Software development life cycle, software project management, requirement analysis and specification, coding and testing
			DSE 1	Operation Research		SD,EM - Data scientist tool box, R programming, Getting and cleaning data, Exploratory data analysis
			DSE 2	MIS		SD,EM- Demand and supply, producer and optimal production choice, theory firm and market organization, factor market
			CC 13	Internet Technology		SD,EM- Cost accounting and financial accounting, cost volume profit analysis, budget and budgetary control, standard costing and variance analysis
			CC 14	Android Programming		SD,EN,EM- Layers of OSI model, Signal conversion, Transmission media, Erroe detection and correction, IPV 4 and IPV 6 addressing.
			DSE 3	Information Security		SD,EM- Financial management, capital budgeting, capital structues, preparation of cash and budgets
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	Mathematics	5601NA	CC 1	Calculus I		SD, EM
			CC 2	Algebra I		SD, EM
			GE 1	Calculus and Ordinary Differential Equation		SD
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Real Analysis		SD, EM
			CC 4	Differential Equation		SD, EM
			GE 2	Calculus and Ordinary Differential Equation		SD
			AECC 2	Environmental Science		SD
			CC 5	Theory of Real Functions		SD, EM
			CC 6	Group Theory		SD, EM
			CC 7	Partial Differential Equation and Systems of Ordinary Differential Equations		SD, EM
			GE 3	Linear Algebra, Abstract Algebra and Numerical Analysis		SD
			SEC 1	English Communication	2015-16	SD, EM
			CC 8	Numerical Methods		SD, EM
			CC 9	Riemann Integration and Series of Functions		SD, EM

NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employability/ Entrepreneurship/ Skill Development
			CC 10	Ring Theory and Linear Algebra I		SD, EM
			GE 4	Linear Algebra, Abstract Algebra and Numerical Analysis		SD
			SEC 2			
			CC 11	Multivariate Calculus		SD, EM
			CC 12	Probability and Statistics		SD, EM
			DSE 1	Programming in C++		SD, EM
			DSE 2	Discrete Mathematics		SD, EM
			CC 13	Metric Spaces and Complex Analysis		SD, EM
			CC 14	Linear Programming		SD, EM
			DSE 3	Ring Theory and Linear Algebra II		SD, EM
			DSE 4	Project		SD, EM
			SEC 2	Modern Office Management	2016-17-18	SD, EM
			SEC 2	Quantitative and Logical Thinking	2018-19	SD
			CC 9	Topology of Metric Spaces	2019-20	SD, EM
			DSE 3	Differential Geometry		SD, EM
	Physics	5701NA	CC 1	Mathematical Physics I		SD - Unit I - First order Differential Equation and integration factor, second order differential equation: Homogenous equations with constant coefficient,
						SD - Unit II -partial Derivatives, exact and inexact differentials. Integrating factor, constrained maximization using Lagrange multipliers,
						SD - Unit III - Orthogonal curvilinear coordinates , properties of dirac delta function.
						SD - Unit IV - Gauss' divergence theorem. Green's and Stokes Theorems and their applications
			CC 2	Mechanics		EM - Unit I - Moment of Inertia, Eulers Equations of Rigid Body motion
						EM - Unit II - Bending of beams, Single and double cantilever
						SD - Unit III - Keplers Laws of Planetary motion
						EM - Unit IV - Simple Harmonic Oscillations
			GE 1	Mechanics		EM - Unit I - Moment of Inertia, Eulers Equations of Rigid Body motion
						EM - Unit II - Bending of beams, Single and double cantilever
						SD - Unit III - Keplers Laws of Planetary motion
						EM - Unit IV - Simple Harmonic Oscillations
			AECC 1	MIL/ English/ Alternative English		SD, EM
						SD - Unit I - Laplace and Poisson's equations, The Uniqueness Theorem, Method of Images and its application to (1) Plane Infinite Sheet and (2) Sphere.
						SD - Unit II - Ampéres Circultal Law and its application to (1) Solenoid (2) Toroid

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			CC 3	Electricity and Magnetism		SD - Unit III - Magnetic Properties of Matter: Magnetization vector (M), Magnetic Intensity (H), Magnetic Susceptibility and permeability, Relation between B, H, M, Ferromagnetism, B-H curve and hysteresis
						SD - Unit IV - Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem, Maximum Power Transfer theorem
			CC 4	Waves and Optics		SD - Unit I - Application to thick Lens and thin Lens, Ramsden and Huygens eyepiece
						SD - Unit II - Superposition of two perpendicular Harmonic Oscillations : Graphical and Analytical Methods, Lissajous Figures (1:1 and 1:2) and their uses, Superposition of N harmonic waves
						SD - Unit III -Young's double slit experiment, Lloyds Mirror and Fresnels Bi-prism, Phase change on reflection: Stokes treatment, Interference in Thin Films
						SD - IV - Single slit, Circular aperture, Resolving Power of a telescope, Double slit, Multiple slits, Diffraction grating, Resolving power of grating
			GE 2	Thermal Physics and Statistical Mechanics		
			AECC 2	Environmental Science		SD - Whhole Paper
			CC 5	Mathematical Physics II		SD - Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients
						SD - Frobenius method and its applications to differential equations
						SD - Beta and Gamma Functions and relation between them
						SD - Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry
			CC 6	Thermal Physics		Carnots Theorem, Applications of Second Law of Thermodynamics
						Derivations and applications of Maxwell's relations, Maxwell's relations
						Maxwell-Boltzmann Law of Distribution of Velocities in an Ideal Gas and its Experimental Verification
						Joule- Thomson Porous Plug Experiment, Joule- Thomson Effect for Real and Van der Waal Gases, Temperature of Inversion, Joule-Thomson Cooling
			CC 7	Digital Systems and Applications		SD - Classification of ICs, Examples of Linear and Digital ICs.
						SD - Block Diagram of CRO, Electron Gun, Deflection system and Time Base, Deflection Sensitivity
						EM - Basic Idea of Multiplexers, De-multiplexers, Decoders, Encoders.

NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill Development
						EM - Input/output Devices, Data storage(idea of RAM and ROM). Computer memory, Memory organization and addressing, Memory Interfacing. Memory Map
			SEC 1	English Communication		SD, EM - Whole Paper
			CC 8	Mathematical Physics III	2015-16	SD - Laurent and Taylors expansion, Residues and Residue Theorem, Application in solving simple Definite Integrals.
						SD - Fourier Transforms: Fourier Integral theorem, Fourier Transform Examples Fourier Transform of trigonometric, Gaussian, finite wave train and other functions
						SD - Application of Fourier Transforms to differential equations: One dimensional Wave and Diffusion/Heat flow Equations
						SD - Application of Laplace Transforms to Differential Equations: Damped Harmonic Oscillator, Simple Electrical Circuits
			CC 9	Elements of Modern Physics		EM - Photoelectric effect
						SD - Heisenberg Uncertainty Principle, Uncertainty and complementarities.
						Characteristics of an Ideal and Practical OP-AMP (IC741), Application of Op-Amps
						SD - Radioactivity, stability of the nucleus, Law of radioactive decay, Mean life and Half life Alpha decay, Beta decay-energy released
			CC 10	Analog Systems and Applications		EM - Principle and structure of LEDS, (2) Photo diode(3) Solar Cell.
						SD - n-p-n and p-n-p transistors, Characterstics of CB, CE and CC Configurations
						SD - RC-coupled amplifier and it's frequency response
						EN, EM - Characteristics of an Ideal and Practical OP-AMP (IC741), Application of Op-Amps
			SEC 2	Renewable Energy Sources		
			CC 11	Quantum Mechanics and Applications		SD - Time dependent Schrodinger equation, Wave Packet, Fourier Transform and momemtum space Wave function
						SD - Hermitian Operators, Eigenvalues and Eigen functions of Hermitian Operator
						SD - Time Independent Schrodinger equation in one dimension (1d), 2d and 3d,Quantum mechanical scattering and tunnelling in one dimension across a step potential and rectangular potential barrier
						EM - Normal and Anomalous Zeeman Effect, Paschenback and Stark Effect
			CC 12	Solid State Physics		SD - Diffraction of X-rays by crystals, BraggLaw
						SD - Linear monoatomic and Diatomic Chains, Einstein and Debye theories of specific heat of solids, T 3 Law

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						EM - Ruby Laser and He-Ne Laser
						EM - Meissner effect, Type I and type II Superconductors
			DSE 1	Classical Dynamics		SD - Lagrangian and its Application to Simple, Compound and Double Pendulums, Single Particle in Space, At woods Machine, Dumbbell, Linear harmonic oscillator.
						SD - Hamiltions equations of motion, Motion of charged particles in external electric and magnetic fields, Applications to central force motion and coupled oscillators.
						SD - Lorentz transformations, Times-dilation, length contraction and Twin paradox,
						SD - Conservation of four momentum, Application to two body decay of an un stable particle
			DSE 2	Nuclear and Particle Physics		SD - Alpha decay: basics of alpha- decay processes, theory of alpha-emission, Gamow factor, Geiger Nuttall law
						SD - Semi empirical mass formula and significance of its various terms, conditions of nuclear stability
						EM - Van-de Graff generator (Tandem Accelerator), Linear accelerator, Cyclotron, Synchrotrons
						SD - Elementary ideas of quarks and gluons

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NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill [illegible]
			CC 13	Electromagnetic Theory		SD - Maxwell's equations, Displacement Current, Vector and Scalar Potentials, Gauge Transformations
						SD - Plane EM waves through vacuum and isotropic dielectric medium, application to propagation through ionosphere.
						SD - Boundary conditions at a plane interface between two media, Reflection and Refraction of plane waves at plane interface between two dielectric media
						SD - Quarter-Wave and Half- Wave Plates. Babinets Compensator and its Uses, Analysis of Polarized Light
			CC 14	Statistical Mechanics		SD - Elementary Concept of Ensemble, Micro canonical, Canonical and Grand Canonical ensemble, Phase Space
						SD - Gibbs Paradox, Sackur Tetrode equation
						SD - Bose Einstein distribution function and Fermi- Dirac distribution function
						SD - Properties of Thermal Radiation, Sahas Ionization Formula, Rayleigh Jeans Law, Ultra Violet catastrophe.
			DSE 3	Computational Physics		SD - Length scales in physics, Nanostructures: 1D, 2D and 3D nanostructures (nanodots, thin films, nanowires, nanorods)
						EN - Top down and bottoms up approach, Photo lithography Ball milling. Gas phase condensation
						SD, EM - X-Ray Diffraction, Optical Microscopy, Scanning Electron Microscopy, Transmission Electron Microscopy, Atomic Force Microscopy, Scanning Tunneling Microscopy
						EM - Quantum dots hetero structure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots , magmetic data storage
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	Zoology	5901NA	CC 1	Diversity and Evolution of Non-Chordata I		SD, EN, EM - Protista, Parazoa, Metazoa, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematohelminthes
			CC 2	Perspectives in Ecology		SD, EM - ecosystem and applied ecology, population.
			GE 1	Food, Neutrition and Health		SD, EM, EN - Community, Biometry
						SD, EN, EM - basic concept of food and nutrition, health, food hygine
			AECC 1	MIL/ English/ Alternative English		SD, EN - Nutritional Biochemistry
						SD, EM
			CC 3	Diversity and Evolution of Non-Chordata II		SD, EN - Coelomates and Annelids,
						SD, EN, EM - Mollusca, Echinodermata

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			CC 4	Life Sustaining Systems	2015-16	SD, EM - Physiology of digetion, respiration, renal physiology and blood, Physiology of heart
			GE 2	Human Physiology		SD, EM - Physiology of digetion, respiration,
			AECC 2	Environmental Science		SD, EM - renal physiology and blood, Physiology of Heart
			CC 5	Diversity and Distribution of Chordates		SD
			CC 6	Physiology, Controlling and Coordinating Systems		SD, EN, EM - Protochordates, origin of chordates, agnatha, pisces, reptilia, aves, mammals, zoogeography
			CC 7	Comparative anatomy of Vertebrates		SD, EM - Tissue and tissue system, Reproductive system
			SEC 1	English Communication		SD, EM, EN - muscle, nerves and endocrine system
			CC 8	Biochemistry of Metabolic Processes		SD, EM - Carbohydrates, lipids, proteins, enzymes
			CC 9	Cell Biology		SD, EM, EN - microbiology
			CC 10	Principles of Genetics		SD, EM - Whole paper
			SEC 2	Public Health and Hygine		SD, EM, EN - over view of metabolism, cabohydrate metabolism, renal physiology and blood, Physiology of Heart
			CC 11	Developmental Biology		SD, EM - over view of cells and plasma membrane, cytoskeleton and endomembrane systems, mitochondria and peroxisomes, nucleus, cell division and cell signaling
			CC 12	Molecular Biology		SD, EM - Mendelian genetics and linkage, Cossing over and chromosome mapping, Mutations, Sex determination and Extra chromosomal inheritance, Recombination in bacteria and viruses and trsansposable genetic elements
			DSE 1	Animal Behaviour		
			DSE 2	Economic Zoology		SD,EM,EN - Introduction to to developmental biology, gemetogenesis and fertilization, Early embryonic development, late embryonic develpoment, post embryonic development and importance of developmental biology
			CC 13	Immunology		SD,EM,EN - DNA replication, transcription, repair, translation, post transcriptional modification and processing of eukaryotic RNA, Gene regulation and regulatory RNA
						SD,EM,EN - Animal behaviour, patterns of behaviour, social and sexual behaviour
						SD,EM,EN - Bee- keeping and Bee economy, silk and silk production, Aquaculture I and II , Diary and polutry farming
						SD,EM - Innate and adaptive immunity, Antigens and Immunoglobulins, Major Histocompatibility, cytokines, complement system, Hypersensetivity and vaccines

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			CC 14	Evolutionary Biology		SD,EM - Theories, evidences of evolution and extension, process of evolutionary changes. Species concept and speciation, concept of origin and evolution of man
			DSE 3	Microbiology		SD,EM,EN - Applied microbiology in the fields of food, agriculture, industry and environment; viruses, identification of microbes

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			DSE 4	Project		
			SEC 2	Modern Office Management	2016-17-18	SD,EM - Whole paper
			GE 1	Animal Diversity (non-chordata), Physiology and Endocrinology	2016-17	
			GE 2	Animal Diversity (Proto-chordata - Cordata), Developmental biology and Immunology		
			SEC 2	Quantitative and Logical Thinking	2018-19	SD- Whole paper
			CC 2	Principles of Ecology	2019-20	
			CC 7	Fundamentals of Biochemistry & Microbiology		
BCom		8101NA	CC 1	Financial Accounting	2015-16	SD, EM, EN - Ficalcial accounting and its application
			CC 2	Business Law		SD, EM - Ligal aspect of different business situations
			GE 1	Micro Economics		SD,EM - Concepts of microeconomics and dealing with consumer behaviour, Product... cost behaviour of firms and supply side of firms
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Corporate Accounting		SD, EN - Techniques to prepare financial statements of companies along with accounting treatment of various situations
			CC 4	Corporate Laws		SD, EM - Ligal framework and ligal aspect of different situations of corporate sector
			GE 2	Macro Economics		SD,EM - Basic concepts, modern tools and policy frameworks of macroeconomics
			AECC 2	Environmental Science		SD
			CC 5	Human Resource Management		SD,EM - Techniques and principles to manage human resource of an organization
			CC 6	Income Tax Law and Practice		SD, EN, EM - Provisions and applications of income tax act
			CC 7	Management Principles and Applications		SD, EN, EM - Application of management principles in business organisations
			GE 3	Business Statistics		SD- Baic stastical tools used for managerial decission making
			SEC 1	E-Commerce		SD, EM - Mechanism conducting business transaction through electronic means
			CC 8	Cost and Management Accounting		SD, EM - Managing cost issues and check all cost control and taking managerial dicisions
			CC 9	Business Mathematics		SD - Basic concepts in areas of business calculus and financial mathematics
			CC 10	Computer Applications in Business		SD,EM - Computer skills and knowledge to be used in technology drive and business
			GE 4	Indian Economy Performance and Policies		SD- Identification of key performance indicators and policies of the economic environment of India

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			SEC 2	Enterpreneurship		SD,EN - Aspects of enterpreneurship
			CC 11	Principles of Marketing		SD,EM,EN - Concepts principles,tools and techniques of marketing
			CC 12	Fundamentals of Financial Marketing		SD, EM - Finance and practical management of long and short finance for real business hours
			DSE 1	Accounting and Finance/Banking and Insurance/Financial Marketing		SD,EN,EM - Knowledge of financial market and institutions, financial services in India, Bsics of banking Insurance
			DSE 2	Accounting and Finance/Banking and Insurance/Financial Marketing		SD,EN,EM - Knowledge of financial market and institutions, financial services in India, Bsics of banking Insurance,
			CC 13	Auditing and Corporate Governance		SD,EM - Principles and techniques of audit, current legal requirementand as per guidelines of different statutory authorities
			CC 14	Indirect Tax Law		SD, EN, EM - Principles and provisions of indirect tax
			DSE 3	Accounting and Finance/Banking and Insurance/Financial Marketing		SD,EN,EM - Knowledge of financial market and institutions, financial services in India, Bsics of banking Insurance,
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			CC 3	Cost Accounting		SD,EM - Baic conceots of cost accounting and methods involved in cost ascertainment
			CC 8	GST & Indirect Tax		SD, EN, EM - Principles and provisions of GST and indirect tax
			CC 9	Fundamentals of Data Management	2019-20	SD,EM - Database management system, preparation of presentation, spreadsheet and its business application
			CC 11	Computerized Accounting and efilling of Tax Returns		SD,EM,EN - E-filing of tax return, Designing computerized accounting systems and packages using generic software
			GE 2	macro & Indian Economics		SD,EM - Basic concepts, modern tools and policy frameworks of macroeconomics
						SD- Identification of key performance indicators and policies of the economic environment of India
BA	Economics	0301NA	CC 1	Introductory microeconomics		SD - Decsion making , working, economist, models, Budget constraint, equilibrium,interest rate and saving, cost types of cost shape of cost, Sr and LR cost, economies and diseconomies, VMP of labour , and labour demand, supply, leisure, labour supol and equilibrium in labour market, land, capital, linkage among other factors.
						EN - Market demand supply equiloibrium, Elasticity of demand , supply consumer surplus and producer surplus, production and cost in SR and LR , Profit maximixation and competitive firms, Supply curve and marginal cost.

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			CC 2	Mathematical methods for economics I		SD - Derivative and rate of change slope , continuity and differentiability application Total average and marginal , Elasticity of a function, crammere rule , inversion of matrix method of solving simultaneous equations,
						EN - Crammers rule and matrix inversion of solvinf equation
			GE 1	Indian economy I		SD Occupational structure , Causes of pop growth, policy, productivity green revolution and land reforms, Ag finance sources problems Ag marketing in India, IPR 1948,56,77,91 problems sickness of industries, Inequality in income distribution, causes.
						EM Occupational structure , Causes of pop growth, policy, productivity green revolution and land reforms, Ag finance
						EN - Ag finance sources problems Ag marketing in India, IPR 1948,56,77,91 problems sickness of industries, IT and Ict spread and policy services led growth
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Introductory macroeconomics		SD - Partial and general equilibrium GDP,NNP etc National Income identity in a simple two sector and four sector economy.
						SD,EM,EN Peesonal and disposable income real and nominal GDP circular flow in two three anf four sector Green accounting, theory of money, value of money, index number, income determination in the economy, consumption saving investment functions, 2- sector model, Aggregate demand and supply, fiscal multipliers.
			CC 4	Mathematical methods for economics II		SD- Second order derivative, curvature, voncsavity and convexity, points of inflexion differentials and derivatives optimum an dextreme values, convex set and conditions of first and second order, Lagrange multiplierbordered Hessian determinant.
						SD, EM,EN- Input output model, Leontief input output, 3 industry model,
			GE 2	Indian economy II		SD, EN - Problems of balance of payment, Causes and measures in BoP, foreign Trade Policy of India, WTO and India, purpose, effect of deficit financinh, India's fidcal policy objectives
						SD, EN - Globalization and its impact on indian economy, Foreign capital - need, components MNCs
						SD - Poverty, population growth and environment, environment policies
			AECC 2	Environmental Science		SD

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			CC 5	Microeconomics I		SD - Optimization and equillibrium, Budget constraint and sets, change in budget line, taxes, subsidy and retioning on budget set, marginal rate of substition, marginal utility and MRS, Implications of MRS conditiond, demand- normal and inferior goods =, income offer, Engel curve, ordinary goods and Giffen goods, Slutsky equation
						SD, EN - Interpreting change in consumer's surplus, producer's surplus, calculating gains and losses, Isoquant maps and the rates of technical substitution, production with one and two variable inputs, returns to scale, four simple production function, technical progress
						EN - Cost functions and properties, Long and short run cost curves
						EM, EN - Profit Maximization, MR Profitfunctions and properties
			CC 6	Macroeconomics I		SD EM- Propensities to consume and Fundamental Psychological law of consumptcion, Implications of Keynesian Cf. Inflation unemp;oyment trade off and Phillips curve, Rational adaptive expectations, Trade cycles, Hawtrey and Hayek,Keynes view on TC
						SD EN- Autonomous, induced residential and inventory investment, decsion to invest and MEC, Accelerator and MEI theories of investment,Liquidity trap,money multiplier, measures of money supply in India, IS LM curve interaction , dertermination of employment, output prces and investment, changes in IS LM and implications for equilibrium.
			CC 7	Statistical methods for economics		SD EM- Collection and presentation of data, measures of central tendency, dispersion, skewness, kurtosis
						SD EM EN- Karl Peareson, spearmans rank ccorelation coefficients, partial and multiple correlation, estimation of regression line and coefficients, standard error of estimate. Time series, Index numbers,Probability, theoretical and normal distribution.
			SEC 1	English communication		SD, EM, EN
			CC 8	Microeconomics II		SD EN- Market environment, profits and Producers surplus,industry equilibrium in short and long run meaning of zero profit.
						SD EM EN- Edgeworth box, trade, Pareto efficient allocation, Comparative advantage and pareto efficiency,
						EM EN- profit maximisation and output choice Monopoly, Price Discrimination
						EN- Qulaity Leadership
						SD- The payoff matrix of game, Naash equiolibrium, mixed strategies, Prisoners dilemma repeated game

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			CC 9	Macroeconomics II		EM EN- Functions of Financial markets, Banks, adverse selection and moral hazard, risk and supply of credit, The dtermination ofbanks Asset portfolio, Financial repression, global financial crisis and the policy response in India
						SD EM-Bop determination of foreign exchange rate, the PPP theory, fixed and flexible exchange rate, Mundell Flemming model, International financial markets
						SD EN-Harrod Domar model, Joan Robinson and the golden rule of capital accumulation, Solow model, Endogenous growth, Rudimentary A-K model. Underemployment equilibrium and wage price flexibility, fiscal and monetary policy, monetearist Vs Keynesian, Real business cycle models
						SD EM EN- The goals of Macroeconomic policy, the budget and automatic fiscal stabilizers, the doctrine of balanced budget, budget, revenue and fiscal deficits, fiscal policies and monetary policies
			CC 10	Public economics		EN- Public finance, Public good vs private good, Principle of Maximum social advantage, Markert failure,
						SD EN- Source of public revenus, taxation, impact and incidence, taxable capacity, reffects of taxation
						SD EM EN- Public buget, multiplier
						SD - debt burden, redemption
			SEC 2	Financial economics		SD- financial system, interest ratye policy , money and capital market, NBFI
			CC 11	Indian economy I		SD EM EN- Sectoral composition of NI, Savings, Investment and economic growth
						SD- Economic planning in India
						SD EM- Inequality-measures and trends, unemployment- nature
			CC 12	Development economics I		SD- PQLI, HDI, HPI, MDPI, GDI, measuring poverty inequality Lorenz curve and Kuznets inverted U hypothesis.
						SD EN-Schumpeterian theory, Rostows stages of economic growth , Solow model, Covergence with population growth and technical progress.
			DSE 1	Economic History of India 1857-1947		SD- unit 1 to 5
			DSE 2	Odisha economics		SD- unit 1 to 5
			CC 13	Indian economy II		EM EN- Agricultural strategy and Green revolution, Ag marketing, MRTP Act, FERA and FEMA, SSIs and their problems, Industrial sickness and finance
						EN- Foreign trade, Indias trasde policies, foreign capital, FDI, Aid and MNCs

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						SD EM- Harris Todaro Migration model
			CC 14	Development economics II		SD EN- Simple model of environment and economic activity, degradation and externalities, public goods, the free rider problem, Climate change, Saving , capital formation and economic development, foreign finance, investment and aid, export led growth, Terms of trade and economic growth
			DSE 3	International economics		SD EN EM- Unit 1 to 5
			DSE 4	Project		SD EM- entire work
			DSE 2	Research Methodology	2016-17-18	SD EM- Measurement scales, techniques, scaling important scaling technique, research proposal, Literature review, plasiarism, components of report writing
						SD EM EN- Criteria and qualities of good research, research as a career, research problem and design
			DSE 3	Agricultural Economics		SD- Schultzs hypothesis, Ag marketing and marketing systems.
						EN- Risk and uncertainty in Ag, Rural credit in India, WTO and India s trade in agricultural commodities
			SEC 2	Modern Office Management		SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	Education	0401NA	CC 1	Basics in education		SD - Philosphies of education and comparision between Indian and western philosophies of education
			CC 2	Education and society		EN - Education and society, agencies of education and equalization of educational Opportunities
						EM - Education , social change and modernization
			GE 1	Vision of education in India Issues and concerns		SD - Pre-school & elementary education
						EN- Secondary, Higher and Teacher Education
						EM - Administration and interpretation of Any Psychological test related to intelligence, emerging concerns
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Learner and learning processes		SD - connection between learning and Psychology, To study individual behaviour
			CC 4	Pedagogical skills		SD - Concepts of teching and learning and theories of teaching, preparation of rating scales/ check list
						EM- Principles and Maxims of teachings
						EN - Approches and methods of teachings
			GE 2	Assessment and evaluation techniques		SD - Assessment and evaluation in education, instructional learning objectives, characterstics of a good test
						EN - Tools and techniques of assessment and construction of test
			AECC 2	Environmental Science		SD
			CC 5	Technology and innovations in education		EN - educational technology, ICT in Education, Application of software and ICT assessment tools in education

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						EM - Connecting with the world
			CC 6	Pedagogy of school		SD - Methods and approaches for curriculum Transaction in school subjects
			CC 7	Statistics in education		SD - Educational statistics
						EN - Measures of central tendency and variability, co-relational statistics, Normal probability curveand divergence from normality
			GE 3	Contemporary Pedagogy		SD - Principles, Maxims, Approaches and Methods of teaching
			SEC 1	English communication		EN, EM - ICT tools and Techniques in Teaching
			CC 8	Curriculum development and educational guidance		SD, EM
					2015-16	SD - Concepts of counselling, organization guidance services, concept and types of curriculum
			CC 9	Educational assessment and evaluation		EM - Concept of guidance, educational guidance, curriculum development and organization
			CC 10	Introduction to educational research		SD - Assessment and evaluation in education, instructional learning objectives, characterstics of a good test
			GE 4	Early childhood care and education		EN - Tools and techniques of assessment and construction of test
			SEC 2	Contemporary Pedagogy		EN - Concepts and types of educational research, design of research and preparation of research proposed
			CC 11	History of Indian education		EM - Methods of research , writing research report
			CC 12	Comparative education		SD - learning skills to interact with children and techniques to gain knowledge tounderstand child psychology
			DSE 1	Information and communication technology in education		SD - Principles, Maxims, Approaches and Methods of teaching
			DSE 2	Special education		EN, EM - ICT tools and Techniques in Teaching
			CC 13	Educational adminstration and management		SD - Education during ancient and medieval period
			CC 14	Contemporary concerns in education		EN - education during pre and post independence period
						SD - Scope and factors of Comparative education, Comparing structure, curriculum and evaluation system of India with that of China, Japan, UK and USA
						EN - educational technology, ICT in Education, Application of software and ICT assessment tools in education
						EM - Connecting with the world
						EM - meaning, genesis and scope of special education
						EN - policies, framework, support and collaboration in special education
						SD- understanding the support needs of students with disability
						EM - Educational Management, aspect of Institutional Management
						EN - Leadership in education, total quality management
						SD - Pre-school & elementary education
						EN- Secondary, Higher and Teacher Education

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			CC 14	Contemporary concerns in education		EM - Administration and interpretation of Any Psychological test related to intelligence, emerging concerns
			DSE 3	Distance education		SD - Importance of distant education in present contest, Prospectives and Processes in Distant education
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			GE 1	Educational Philosophy	2019-20	SD - Philosphies of education and comparision between Indian and western philosophies of education
	English	0501NA	CC 1	British poetry and drama 14th -17th century		SD, EM
			CC 2	British poetry and drama 17th -18th century		SD, EM
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	British literature: 18th century		SD, EM
			CC 4	Indian writing in English		SD, EM
			AECC 2	Environmental Science		SD, EM
			CC 5	British romantic literature		SD, EM
			CC 6	British literature: 19th century		SD, EM
			CC 7	American literature		SD, EM
			SEC 1	English communication		SD, EM, EN
			CC 8	British literature early 20th century		SD, EM
			CC 9	European classical literature	2015-16	SD, EM
			CC 10	Women's writing		SD, EM
			SEC 2	Soft Skill / Translation and Principles of Translation		SD, EM
			CC 11	Modern European drama		SD, EM
			CC 12	Indian classical literature		SD, EM
			DSE 1	Literary theory		SD, EM
			DSE 2	Reading world literature		SD, EM
			CC 13	Post colonial literature		SD, EM
			CC 14	Popular literature		SD, EM
			DSE 3	Research Methodology		SD, EM
			DSE 4	Project		SD, EM
			SEC 2	Modern Office Management	2016-17-18	SD, EM
			SEC 2	Quantitative and Logical Thinking	2018-19	SD
			CC 3	British Prose 18th Century	2019-20	SD, EM
			DSE 3	Partition Literature		SD, EM

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	History	0801NA	CC 1	Histoty of India I		SD, EM, EN - Pre-historic cultute and food production, ancient Indian History, Harappan civilization and cultures in trasition
			CC 2	Social formations and cultural patterns of the ancient world		SD, EM - Neolithic culture, Bronze age civilization, ancient Greece
			GE 1	Making of contemporary India		SD, EM
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Histoty of India II		SD, EM - Economy and society, Changing political formations, early medieval India, religion, culture, Philosophy and sociey
			CC 4	Social formations and cultural patterns of the Medieval world		SD, EM, EN - Polity and Economy in ancient Rome and Europe, Religion and culture in Medieval Europe, Societies in Central Islamic Land
			GE 2	Making of contemporary India		SD, EM, EN - Colonialism, Nationalism, Perspectives on development and underdevelopment, social and ecological movements, Modernity and Cultural transformation
			AECC 2	Environmental Science		SD
			CC 5	History of india III		SD, EM, EN - Political Structures of Medieval India, Agrarian Structure and Social Change Trade and Commerce, Religious and Cultural developments
			CC 6	Rise of modern west I		SD, EN, EM - Transition from Feudalism to Capitalism, Early Colonial Expansion, Renaissance and Reformation, economic development of 16th century
			CC 7	History of india IV		SD, EM, EN - Political structure of Sultanate, Emergence of regional identities, Economy, religion, society and culture
			GE 3	Issues in contemporary world		SD, EM, EN - Colonialism, Nationalism, Perspectives on development and underdevelopment, social and ecological movements, Modernity and Cultural transformation
			SEC 1	English communication		SD, EM, EN
			CC 8	Rise of modern west II	2015-16	SD, EM, EN -English Revolution and Europian Pilitics, Rise of modern science, Mercantilism and Europian Economy, American Revolution
			CC 9	History of India V		SD, EM - Mughal rule, Rural society, economy, Political and religious idea
			CC 10	History of India VI		SD, EM - Mughal Political culture, painting, architecture, religion, patterm of regional politics, trade and commerce
			GE 4	Issues in contemporary world		SD, EM, EN - Colonialism, Nationalism, Perspectives on development and underdevelopment, social and ecological movements, Modernity and Cultural transformation
			SEC 2	Historical Theories and Methods		
			CC 11	History of modern Europe I		SD, EM, EN - French revolution and its European repercussions, Restoration and revolutions, capitalist industrialization and socio-economic transformation, Nationalism and the formation of states

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			CC 12	History of India VII		SD,EM,EN - Expansion and consolidation of colonial power, colonial state and ideology, economy and society,Popular resistance
			DSE 1	History of the United States of America I		SD, EM, EN - Making of the republic and evolution of American democracy,early capitalism,Agrarian south and civil war.
			DSE 2	History and culture of Odisha		SD,EN,EM- Socio-political life of early and medieval Odisha, Religion, Art, Literature, Political and Economic Structure in early and medieval Odisha, Colonialism in Odisha in Socio-Cultural changes.
			CC 13	History of India VIII		SD,EM- Cultural changes, Social and religious reform movements, Nationalism, Gandhian Nationalism, Communalism and partition and emergency of a new state.
			CC 14	History modern Europe II		SD,EN,EM- Liberal democracy, working class movement, socialism, crisis of fudalism in Russia, Imperialism war and crisis, Cultural transformation, Intellectual Development.
			DSE 3	History of the United States of America II		SD,EN,EM- Reconstuctions, Resistance and reform, US imperialism.
			DSE 4	Project		SD
			CC 10	Historical Theories and Methods		SD,EM,EN- Meaning and scope of history, Tradition of historical writing, Methods, History as interdisciplinary practice.
			GE 1 & 2	History and culture of Odisha		SD,EN,EM- Socio-political life of early and medieval Odisha, Religion, Art, Literature, Political and Economic Structure in early and medieval Odisha, Colonialism in Odisha in Socio-Cultural changes.
			GE 3 & 4	Freedom Movements in India		SD,EN,EM- Emergency of national movement, Role of Gandhi and non-violence, Independence and partition.
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			DSE 1	History and culture of Odisha I	2019-20	SD,EN,EM- Historical geography, Marathas, Gangas, Sailodbhavas, Bhaumakaras, Somavamsis, Suryavansis, Gajapatis, Social and cultural life in early and medieval Odisha.
			DSE 2	History and Culture of Odisha III		SD,EN,EM- Afgan Conquest, Mughal Rule, Maratha rule, British occupation and colonial adminstration, Resistance movement, Famine of 1866, Formation of separate province of Odisha.
	Odia	1101NA	CC 1	Odisha ra sanskrutika itihasa o odia sahitya		
			CC 2	Sahitya tatwa o sahitya paribhasha		
			GE 1	Sarjanseela kala		
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	katha sahitya adhyayana		
			CC 4	Natak o ekankika adhyayana		
			GE 2	Sahitya adhyana		
			AECC 2	Environmental Science		SD
			CC 5	Odia kabya kabita adhyayana		
			CC 6	Gadya sahitya adhyayana		

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NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employability/ Entrepreneurship
			CC 7	Odia bhasa o byabaharika byakarana	2015-16	SD, EM - Accurate Writing skills
			SEC 1	English communication		SD, EM, EN
			CC 8	Sahitya likhanakala		
			CC 9	Odia bhasara computerica byabahara		
			CC 10	Odia loka sahitya		
			SEC 2	Odia bhasa O byabaharika Byakarana		
			CC 11	Odia sahitya ra etihasa		
			CC 12	sastriya odia bhasa ra officica prayoga		
			DSE 1	Odia kabya kabita adhyayana		
			DSE 2	Sahitya likhanakala		SD - Prose, Poem, Drama and story writing skills
			CC 13	Odia sahitya adhyayana: prabandha o gadya sahitya		
			CC 14	Odia bhasa ra prayoga		SD, EM - Offcial writing skills, Literature and Printing Media, Writing skills of Novel
			DSE 3	Natak o ekankika adhyayana		
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			GE 1	Gana Madhyama, Betara Kala o Bigyanpana Kala	2019-20	SD, EM - adversitisement and Media language skills
			CC 5	Bhasha ra Sangyan o Swarupa		
			CC 6	Odia Bhasha ra Swarupa		
			CC 10	Odia Kabita Prachina ru Adhunika		
			CC 11	Odia Nataka o Ekankika		
			DSE 2	Odia Sishu Sahitya o Bighyanabhitika Sahitya		
			DSE 3	Odia Padya Sahitya		
	Philosophy	1301NA	CC 1	General Philosophy		SD, EM, EN - Problem of knowledge and morality
			CC 2	Symbolic logic and logic of scientific inquiry		SD, EM, EN - Symbolic logic
			GE 1	Systems of Indian philosophy		
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Systems of Indian philosophy		
			CC 4	Philosophy of language		SD, EM, EN - Linguistic analysis
			GE 2	Study of major religions of the world		
			AECC 2	Environmental Science		SD
			CC 5	Contemporary Indian philosophy		
			CC 6	Modern European philosophy		SD, EN, EM - Kant's Critical Thinking
			CC 7	Study of a western classsics: Rene Descartes Meditation on first philosophy		SD, EM, EN - Sceptical doubt

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			SEC 1	English Communication	2015-16	SD, EM, EN
			CC 8	Study of the Bhagavadgita		SD, EM, EN - Yoga
			CC 9	Traditional etheics and applied ethics		SD, EM, EN - Standards of Morality
			CC 10	Study of major religions of the world		
			SEC 2	Critical Thinking		
			CC 11	Social and political philosophy		SD, EM, EN - Social Skills
			CC 12	Study of an Indian classic: The ISA Upanisad		
			DSE 1	Philosophy of logic		
			DSE 2	philosophy of mind		
			CC 13	Gandhian study		SD, EM - non-violence, Sarvodaya
			CC 14	Philosophy of feminism		
			DSE 3	Philosophy of technology		
			DSE 4	Project		
			CC 2	Logic and scientific Methods	2016-17-18	SD, EM, EN - Study of logical and Scientific method
			CC 7	History of Greek Philosophy		
			DSE 2	Philosophy of Religion		
			GE 1	Symbolic Logic		SD, EN, EM - Study of logical and scientific method
			GE 2	Indian Philosophy		
			SEC 2	Modern Office Management		SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
	Political Science	1401NA	CC 1	Understanding Political Theory		SD- Understanding politics, political theory, Feminist perspective of politics EM- Understanding Democracy through political participation and representation, practices through the reflections on the ideas related to dermocracy
			CC 2	Constitutional Givernment and Democracy in India		SD- Philosophy of the constitution, analysis of the organs of the government EM-Knowledge on institutions in the local self government,
			GE 1	Feminism Theory and Practice		SD- Gender equality, Patriarchy and feminism, Womens struggle in post independent India EM- Womens work and labour,
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Political theory concept and debates		SD, EM - concepts and debates of Political theory.
			CC 4	Political Process in India		SD, EM - Political parties and Party system, Determinants of the voting behaviour, regional aspirations, religion, caste and politics, affirmative action policies, changing nature of inter-state
			GE 2	Gandhi and the contemporary world		SD - Gandhi on modern civilization, ethics of development, Gandhian theory, Gandhian Legacy, Gandhi and the idea of political
			AECC 2	Environmental Science		SD

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			CC 5	Introduction to comparative government and Politics		SD - Concenpts and approaches of comparative politics, Historical context of modern government: capitalism, socialism, colonialism and decolonization
			CC 6	Prospective on public administration		SD - Classical, non -classical and contemporary administrative theories, feminism and ecological conservation
						EM - Public administration, approaches in public administration, public policies
			CC 7	Prospective on international Relations and world history		SD - International relations, theoretical perspective, major political developments from 20th century
			GE 3	Governance Issues and Challenges		EM -Good governance, democratic decentralization
						EN - Sustainable development and governance
			SEC 1	English Communication	2015-16	SD, EM, EN
			CC 8	Political Processes and Institutions In Comparative Perspective		SD - Political culture, New Institutionalism, Electoral system, party system, Nation and state
						EM - democratization, federalism
			CC 9	Public Policy and Administration in India		SD - Public policy, decentralization, budget, citizen and administration interface
						EM - Social welfare administration, MNREGA
			CC 10	Global Politics		SD - concepts and perspectives of Globalization, contemporary global issues, Global shifts in power and governance
			GE 4	United Nations and Global Conflicts		SD, EM - The United Nations, major conflicts since the Second World War
			SEC 2	Legislative Practices and Procedures		SD, EN, EM - Powers and functions of people representative at different tiers of government, Supporting the legislative process and committees, budget document, media management and communication
			CC 11	Classical Political Philosophy		SD - Classical political philosophies of Plato, Aristotle and Machiavelli, possessive individualism Hobbes, locke
			CC 12	Indian Political Thought I		SD - Traditional Indian Political Thoughts of Brahmanic, Shramanic, Islamic and Syncretic Ved Vyasa, Manu, Kautilya, Aggannasutta, Barani, Abul Fazal and Kabir
			DSE 1	Human Rights in a comparative perspective		SD - Theory and institutionization of Human Rights, Issues, Structural Violence
			DSE 2	Development Process and social Movements in Contemporary India		SD, EM, EN -Development process since independence, Industrial development strategy and its impact on the social structure, Agrarian development strategy and its impact on the social structure, Social movements
			CC 13	Modern Political Philosophy		SD - Modern Political Philosophies: Romantics, Liberal Socialist and Rifical's
			CC 14	Indian Political thought II		SD - Modern political thoughts of Rammohan Roy, Pandit Ramabai, Vivekananda, Gandhi, Ambedkar, Tagore, Iqbal, Savarkar, Nehru and Lohia
			DSE 3	India'sforein Policy from a post colonian to an aspiring global power, India's relations with other countries, negotiating style and strategies		SD - India'sforein Policy from a post colonian to an aspiring global power, India's relations with other countries, negotiating style and strategies
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper

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			CC 13	Contemporary Political Philosophy	2019-20	SD - Political philosophies of Lenin, Mao Zedong, Antonio Gramsci, John Rawls

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NAME OF THE PROGRAM	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employbility/ Entrepreneurship/ Skill De[illegible]
	Psychology	1501NA	CC 1	Introductory psychology		SD - R.L. by method of limits, D. L. by method of constant stimuli
			CC 2	Basic developmental processes		SD - Locus of Control, Assessment of emotional intelligence
			GE 1	Introductory psychology		SD - R.L. by method of limits, D. L. by method of constant stimuli
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Basic psychological processes		SD - Learning Curve, Serial position effect
			CC 4	Processes of human empowerment		SD - Raven's standard progressive matrices, Assesssment of personality type
			GE 2	Basic psychological processes		SD - Learning Curve, Serial position effect
			AECC 2	Environmental Science		SD
			CC 5	Psycological statistics		SD - Drawing frequency distribution, polygon, histogram, Ogive measures of central tendency, measures of variability, product movement, rank, order, correlation, chi-square, hypothesis testing, t-test, Mann Whitney test, ANOVA, Kruskal Wallis H test, Reporting of statistical result by using descriptive statistics, familiarity with a software package of statistics
			CC 6	Social psychology		SD - Assessment of ethical values, attitude towards women
			CC 7	Environmental psychology		SD - Environmental Assessment and literacy
			GE 3	Psychological statistics		SD - Drawing frequency distribution, polygon, histogram, Ogive measures of central tendency, measures of variability, product movement, rank, order, correlation, chi-square, hypothesis testing, t-test, Mann Whitney test, ANOVA, Kruskal Wallis H test, Reporting of statistical result by using descriptive statistics, familiarity with a software package of statistics
			SEC 1	English Communication	2015-16	SD, EM, EM -
			CC 8	Psychopathology		SD - Assessment of anxity (HARS), depression (BDI)
			CC 9	Educational psychology		SD - Assessment of academic behaviour and stress
			CC 10	Psychological assessment		SD - Assessment of empathy and sense of humor
			GE 4	Psychopathology		SD - Assessment of anxity (HARS), depression (BDI)
			SEC 2	Industrial Psychology		SD -
			CC 11	Orgasnizational behaviour		SD - Assessment of leadership style and conflict handling
			CC 12	Health psychology		SD - Assessment of sleep quality and coping strategies
			DSE 1	Psychological research and measurement		SD - Assessment of personality - MMPI, Rorschach, WAT, TAT, Thematic apperception test word association test
			DSE 2	Psychology and social issues		SD - Assessment of quality of life and community integration

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			CC 13	Counseling psychology		SD - Counceling process, relationship, interview, techniques of councelling - psycodynamic, humanistic, cognitive, rational-emotive approach, transcation analysis, behavioral approach and modification, working in councelling relationship, transparence, counter transparence, termination of councelling, student councelling, family and marriage councelling, alcohol and drug abuse councelling, councelling the person with suicidal tendency, victims of harashment and violence, assessment of maroital relationship, case reporting
			CC 14	Positive psycology		SD - Assessment of happiness and spiritual intelligence
			DSE 3	Contemporary applied psychology		SD - Community service, helping and rehabilitation, relation between human behaviour and economic development, information technology, population and gender issues
			DSE 4	Project		SD
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			DSE 3	Psychology of Disability	2019-20	SD - Assessment of attitude towards person with disability and knowlwdge about disability policy
	Sanskrit	1701NA	CC 1	Moral Teachings and Basics of Sanskrit Literature		SD, EN, EM - Hitopdesa, Yaksaprasna of Mahabharat, Sabdarupa,Dhaturupa
			CC 2	Drama and History of Sanskrit Literature I		SD, EN, EM - Abhijnanasakuntalam, History of Sanskrit Literature-I, Ramayan and Mahabharat, Puranas, sanskrit drama
			GE 1	Moral Teachings and Basics of Sanskrit Literature		SD, EN, EM - Hitopdesa, Yaksaprasna of Mahabharat, Sabdarupa,Dhaturupa
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Drama II Dramaturgy		SD, EN, EM - Sahityadarpan,Abhijnanasakuntalam
			CC 4	An Introduction to the techniques of Panninian Grammar		SD, EN, EM- Vocabulary relevant to sanskrit Grammer and arrangement of Paninian grammer, Chanda
			GE 2	Poetry and History of Sanskrit Literature II		SD, EN, EM - Meghadutam, Gitikavya,Khandakavya, Kathasahitya
			AECC 2	Environmental Science		SD
			CC 5	Poetry and History of Sanskrit Literature II		SD, EN, EM - Meghadutam, Gitikavya,Khandakavya, Kathasahitya
			CC 6	meta Rules of Panninian Grammar, Poetics and Figures od Speech		SD, EN, EM - Sahityadarpan, Alamkaras, Paribhasaprakaranam of siddhantakaumudi
			CC 7	Case & Case endings in Panninian Grammar and translation I		SD, EN, EM - Karaka- Vibhakti I-IV , Translation
			GE 3	Case & Case endings in Panninian Grammar and translation I		SD, EN, EM - Karaka- Vibhakti I-IV , Translation
			SEC 1	English Communication	2015-16	SD, EN, EM -
			CC 8	Inscriptions, Upanishad and Bhagavadgita		SD, EN, EM- Shrimad- bhagavad- gita, Inscription, Kathopnishad

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			CC 9	Case & Case endings in Panninian Grammar and translation II		SD, EN, EM- Karak- Bibhakti V-VII, Translation II, Amarkosa
			CC 10	Prose and Prose writing		SD, EN, EM - Essay in sanskrit, Expansion of idea in sanskrit, Sukanasopadesa, Dasakumaracaritam
			GE 4	Case & Case endings in Panninian Grammar		SD, EN, EM
			SEC 2	Karmakanda		SD, EN, EM
			CC 11	Ornate Poetry in Sanskrit and History of sanskrit Literature III		SD, EN, EM- Sisupalabadham, Kiratarjuniyam, Mahakavya
			CC 12	Veda, Vedic Grammar and History of Vedic Literature		SD, EN, EM - Vedic grammer, History of vedic literature, Vaidika suktas
			DSE 1	The Science of Vastu & Vrksya		SD, EN, EM- Vastuvidya
			DSE 2	Sociopolitical Thought		SD, EN, EM- Yajavalkyasmti, Manusmti
			CC 13	Arthasastra, Dharmasastra and Ayurveda		SD, EN, EM- Arthasastra, Manusmruti, Ayurveda
			CC 14	Technical Literature in sanskrit		SD, EN, EM- Jyotihsara - ratnavali, Vasturatnakara
			DSE 3	Ethical Literature in Sanskrit		SD, EN, EM - Caakyaniti, Nitisatakaof bhartrhari
			DSE 4	Project		SD
			GE 1	Grammar, History of Sanskrit Literature, Drama and Prose	2016-17-18	SD, EN, EM
			SEC 2	Modern Office Management		SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
			CC 8	Upanishad, Ramayan and Bhagavadgita		SD, EN, EM- Shrimad- bhagavad- gita, Inscription, Kathopnishad, Ramayan
			CC 13	Ayurveda & Vtksayaurveda		SD, EN, EM- Carakasmhita- Sutrasthana, Dhirgham jivitiyadhyaya, Vrkasayurvedadhyaya of Brhatsamhita
			DSE 3	Translation, Editing & writing Skills		SD, EN, EM- Anubadkala, Precises writing, proof correction and transliteration, Eassy

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	Sociology	1801NA	CC 1	Introduction to Sociology		SD EN EM- Society and community associations and institutions, Stratification theories, Functional weberian, Marxian, Elite theory, Pareto, C.Wright Mills
			CC 2	Indian Society		SD - Composition of Indian society, Historical moorings, Hindu social organisation, marriage and family in India, Caste system in India, Social change in Modern India
			GE 1	Introduction to Sociology		SD EN EM- Society and community associations and institutions, Stratification theories, Functional weberian, Marxian, Elite theory, Pareto, C.Wright Mills.
			AECC 1	MIL/ English/ Alternative English		SD, EM
			CC 3	Sociological Thought		SD-Thoughts of August Comte, Spencer, Kasrl Marx , Durkheim, Max Weber
			CC 4	Social Change and Development		SD - Theories and factors of social change, economic growth and social development, capitalist, socialist and Gandhian models of development.
			GE 2	Indian Society		SD Composition of Indian society, Historical moorings, Hindu social organisation, marriage and family in India, Caste system in India, Social change in Modern India
			AECC 2	Environmental Science		SD eco
			CC 5	Research Methodology		SD, EM- Measurement scales, techniques, scaling important scaling technique, research proposal, Literature review, plasiarism, components of report writing
						SD EM EN- Criteria and qualities of good research, research as a career, research problem and design
			CC 6	Gender and Society		SD- Socialconstruction of gender, Feminism, Gender and development, Status of Women in India-challenges and issues affecting women in India.
			CC 7	Rural Sociology		SD EN EM- Rural social structure and problems, Rural development programmes
			GE 3	Social Change and Development	2015-2016	SD Theories and factors of social change, economic growth and social development, capitalist, socialist and Gandhian models of development.
			SEC 1	English Communication		SD EM EN
			CC 8	Sociology fo Globalisation		SD- Globalisation and its impact on Indian society
			CC 9	Marriage, Family anf Kinship		SD - Marriage family , kinship and clan.
			CC 10	Social Disorganisation and Deviance		SD, EM- Merton, Durkheim, ecological theories of delinquent subculture, differential association and opportunity theory.Atrocities against women, crimes and punishment
			GE 4	Gender and Society		SD- Socialconstruction of gender, Feminism, Gender and development, Status of Women in India-challenges and issues affecting women in India.
			SEC 2	Sociology and Social Institution		SD- Family, marriage, Kinship, Religion, education, economy.
			CC 11	Sociology of Environment		SD- Interavction between society and environment, environmental issues and repurcussions,movements.
			CC 12	Movements		SD- Social religious, peasasnt , backward class and women movements in India
			DSE 1	pioneers of Indian Sociology		SD - Eminent Indian sociologists and their intellectual contribution to understanding of Indian Society.
			DSE 2	Sociology of Social Institution		SD Basic institutions for the vital functioning of the societhy their variations in structure and functioning across time societies.
			CC 13	urban sociology		SD EM- Process of urbanisation, urban problems and the responses developed to arrest them.

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NAME OF THE PROGRAMME	NAME OF THE COURSE	[illegible]	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on (EM) Employability Entrepreneurship (EN) Skill Development (SD)
			CC 14	Population Studies		SD population growth and measures introduced to control it.
			DSE 3	Political Sociology		SD- Power authority and influence that guide and govern the political forces. Political participation and political institutions.
			DSE 4	Project		SD EM whole paper
			SEC 2	Modern Office Management	2016-17-18	SD, EM - Whole Paper
			SEC 2	Quantitative and Logical Thinking	2018-19	SD - Whole Paper
MSW	MSW		SWFC 1	History Philosophy, Ethics and Theories in Social Work		SD, EM - Whole Paper
			SWFC 2	Social Science Concepts - 1		SD, EM - Whole Paper
			SWFC 3	Social Science Concepts - 2		SD, EM - Whole Paper
			SWFC 4	Social Science Concepts - 3		SD, EM - Whole Paper
			SWFC 5	Social Science Concepts - 4		SD, EM - Whole Paper
			SWCP 1	Working with Individuals		SD, EM - Whole Paper
			SWCP 2	Working with Groups		SD, EM - Whole Paper
			SWCP 3	Working with Communities		SD, EM - Whole Paper
			SWCP 4	A Human Rights Approach to Social Work Practice		SD, EM - Whole Paper
			SWCP 5	Social Welfare Administration		SD, EM - Whole Paper
			SWCP 6	Social Work Research and Statistics		SD, EM - Whole Paper
			SWCP 8	Child Protection and Child Rights		SD, EM - Whole Paper
			SWCP 9	Social Work With Women		SD, EM - Whole Paper
			SWCP 10	Ethnic Sensitive Social Work Practices in India		SD, EM - Whole Paper
			SWCP 11	Rights of Persons with Disabilities and their Rehabilitation		SD, EM - Whole Paper
			SWCP 12	Community Health and Social Workers		SD, EM - Whole Paper
			SWCP 13	Social Management		SD, EM - Whole Paper
			SWEP 1	Social Work in Schools		SD, EM - Whole Paper
			SWEP 2	Working with women		SD, EM - Whole Paper
			SWEP 3	Working with Alcoholics and Substance Abusers		SD, EM - Whole Paper
			SWEP 4	Correctional Social Work		SD, EM - Whole Paper
			SWEP 5	Counselling in Social Work		SD, EM - Whole Paper
			SWEP 6	Social Work with Elderly		SD, EM - Whole Paper
			SWCP 15	Development Theories and Strategies		SD, EM - Whole Paper
			SWCP 16	Social Work Practice in Rural Area		SD, EM - Whole Paper
			SWCP 17	Social work Practice in Urban Areas		SD, EM - Whole Paper
			SWCP 18	Social Policy Planning and Implementation		SD, EM - Whole Paper
			SWCP 19	Development Communication		SD, EM - Whole Paper
			SWCP 20	Sustainable Agriculture		SD, EM - Whole Paper
			SWCP 21	Dissertation		SD, EM - Whole Paper
			SWEP 7	Entrepreneurship		SD, EM - Whole Paper
			SWEP 8	NGO Management		SD, EM - Whole Paper
			SWEP 9	Project Management		SD, EM - Whole Paper
			SWEP 10	Climate Change, Disaster Management and Rehabilitation		SD, EM - Whole Paper
			SWEP 11	People Centred Advocacy		SD, EM - Whole Paper

[illegible]	NAME OF THE COURSE	COURSE CODE	Course Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on (EM) Skill Development (SD)	Employability Entrepreneurship (EN)
MCOM	MCOM		MCC 101	Management Concepts and Practices		SD, EM, EN - Whole Paper	
			MCC 102	Statistics for Management		SD, EM, EN - Whole Paper	
			MCC 103	Corporate Financial Accounting		SD, EM, EN - Whole Paper	
			MCC 104	Financial Management		SD, EM, EN - Whole Paper	
			MCC 105	Accounting for Managerial Decision Making		SD, EM, EN - Whole Paper	
			MCC 106	Insurance Management		SD, EM, EN - Whole Paper	
			MCC 201	Business Environment		SD, EM, EN - Whole Paper	
			MCC 202	Organisation Behaviour		SD, EM, EN - Whole Paper	
			MCC 203	Marketing Management		SD, EM, EN - Whole Paper	
			MCC 204	Managerial Economics		SD, EM, EN - Whole Paper	
			MCC 205	Small Bussiness management and Project Apprisal		SD, EM, EN - Whole Paper	
			MCC 206	Social Survey and Research Methodology		SD, EM, EN - Whole Paper	
			MCC 301	Project Report		SD, EM, EN - Whole Paper	
			MCC 302	Strategic Management		SD, EM, EN - Whole Paper	
			MCC 303	Financial Institutions and Markets		SD, EM, EN - Whole Paper	
			MCC 304	Economic Analysis for Decision Making		SD, EM, EN - Whole Paper	
			MCE 305	Bussiness communication and soft Skills		SD, EM, EN - Whole Paper	
			MCE 306	Entrepreneurship Development		SD, EM, EN - Whole Paper	
			MCF 307	Management of Personal Finances		SD, EM, EN - Whole Paper	
			MCF 308	Capital Market Finances		SD, EM, EN - Whole Paper	
			MCEA 309	Advanced Accounting		SD, EM, EN - Whole Paper	
			MCEA 310	Corporate Tax Planning		SD, EM, EN - Whole Paper	
			MCEB 311	Advanced Auditing		SD, EM, EN - Whole Paper	
			MCEB 312	Merchant Banking and Financial Services		SD, EM, EN - Whole Paper	
			MCEB 313	International Finance		SD, EM, EN - Whole Paper	
			MCEB 314	Security Analysis		SD, EM, EN - Whole Paper	
			MCEB 315	Service Marketing		SD, EM, EN - Whole Paper	
			MCEC 316	Retail Management		SD, EM, EN - Whole Paper	
			MCEC 317	Customer Relationship Management		SD, EM, EN - Whole Paper	
			MCED 318	International Business		SD, EM, EN - Whole Paper	
			MCED 319	International Finance		SD, EM, EN - Whole Paper	
			MCED 320	Project Risk Management		SD, EM, EN - Whole Paper	
			MCED 321	Entrepreneurship in MSMEs		SD, EM, EN - Whole Paper	
			MCED 322	Project Appraisal and Implementation		SD, EM, EN - Whole Paper	
			MCED 323	Accounting and Finance for small Entrepreneurs		SD, EM, EN - Whole Paper	
			MCC 401	Corporate Governance and Business Ethics		SD, EM, EN - Whole Paper	
			MCC 402	Management of Finalcial Institutions		SD, EM, EN - Whole Paper	
			MCE 403	IT and Business Application		SD, EM, EN - Whole Paper	
			MCE 404	Corporate Ligal Framework		SD, EM, EN - Whole Paper	
			MCE 405	Corporate Restructuring		SD, EM, EN - Whole Paper	
			MCE 406	Wealth Management		SD, EM, EN - Whole Paper	

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			MCE 407	Agri-Business		SD, EM, EN - Whole Paper
			MCEA 408	Financial Inclusion		SD, EM, EN - Whole Paper
			MCEA 409	International Accounting		SD, EM, EN - Whole Paper
			MCEA 410	Accounting Standards and Corporate Reporting		SD, EM, EN - Whole Paper
			MCEA 411	Accounting for NPOs		SD, EM, EN - Whole Paper
			MCEB 412	Portfolio Management		SD, EM, EN - Whole Paper
			MCEB 413	Risk Management & Derivatives		SD, EM, EN - Whole Paper
			MCEB 414	Financial Regulatory Framework		SD, EM, EN - Whole Paper
			MCEC 415	Product Planning and Sales Force Management		SD, EM, EN - Whole Paper
			MCEC 416	International Marketing		SD, EM, EN - Whole Paper
			MCEC 417	Product and Brand Management		SD, EM, EN - Whole Paper
			MCED 418	International Accounting		SD, EM, EN - Whole Paper
			MCED 419	International Marketing		SD, EM, EN - Whole Paper
			MCED 420	International Financial Services		SD, EM, EN - Whole Paper
			MCED 421	Entrepreneurship : Innovation and Strategy		SD, EM, EN - Whole Paper
			MCED 422	Statistics for Business Decision Making		SD, EM, EN - Whole Paper
			MCED 423	Entrepreneurship & Information Technology		SD, EM, EN - Whole Paper
				Management of Personal Finances		SD, EM, EN - Whole Paper
				Capital Market Instruments		SD, EM, EN - Whole Paper
				Financial Inclusions		SD, EM, EN - Whole Paper
				Accounting for small Business organizations		SD, EM, EN - Whole Paper
				Personal Taxation and Planning		SD, EM, EN - Whole Paper
				Mutual Fund And Portfolio Management		SD, EM, EN - Whole Paper
				Financial Derivatives and risk Management		SD, EM, EN - Whole Paper
				Advanced Auditing		SD, EM, EN - Whole Paper
				Sales & Sales Force Management		SD, EM, EN - Whole Paper
MA ODIA	MA ODIA		1.1	Purana o Prachina Kabhya Kabita		
			1.2	Adhunika Kabhya Kabita		
			1.3	Katha Sahitya		
			1.4	Gadya Sahitya		
			2.1	Bhasa Bigyana		
			2.2	Odia Sahitya ra Itihasha		
			2.3	Odia Natya Sahitya		
			2.4	Tulanatmaka Sahitya Samikhya Tatwa, Anubada Sahitya		SD - Anubada Tatwa, Anubada ra Prayoga
			3.1	Bhasa Tatwa 1		SD
			3.2	Bhasa Tatwa 2		SD
			3.3	Ranga mancha o Natya Tatwa		
			3.4	Nataka o Natyakara		
			3.5	Adhunika Kabya Kabita		
			3.6	Adhunika Gadya Sahitya		

NAME OF THE PROGRAMME	NAME OF THE COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employability Entrepreneurship (EN) Skill Development (SD)
MCOM	MCOM		MCC 101	Management Concepts and Practices		SD, EM, EN - Whole Paper
			MCC 102	Statistics for Management		SD, EM, EN - Whole Paper
			MCC 103	Corporate Financial Accounting		SD, EM, EN - Whole Paper
			MCC 104	Financial Management		SD, EM, EN - Whole Paper
			MCC 105	Accounting for Managerial Decision Making		SD, EM, EN - Whole Paper
			MCC 106	Insurance Management		SD, EM, EN - Whole Paper
			MCC 201	Business Environment		SD, EM, EN - Whole Paper
			MCC 202	Organisation Behaviour		SD, EM, EN - Whole Paper
			MCC 203	Marketing Management		SD, EM, EN - Whole Paper
			MCC 204	Managerial Economics		SD, EM, EN - Whole Paper
			MCC 205	Small Bussiness management and Project Apprisal		SD, EM, EN - Whole Paper
			MCC 206	Social Survey and Research Methodology		SD, EM, EN - Whole Paper
			MCC 301	Project Report		SD, EM, EN - Whole Paper
			MCC 302	Strategic Management		SD, EM, EN - Whole Paper
			MCC 303	Financial Institutions and Markets		SD, EM, EN - Whole Paper
			MCC 304	Economic Analysis for Decision Making		SD, EM, EN - Whole Paper
			MCE 305	Bussiness communication and soft Skills		SD, EM, EN - Whole Paper
			MCE 306	Entrepreneurship Development		SD, EM, EN - Whole Paper
			MCF 307	Management of Personal Finances		SD, EM, EN - Whole Paper
			MCF 308	Capital Market Finances		SD, EM, EN - Whole Paper
			MCEA 309	Advanced Accounting		SD, EM, EN - Whole Paper
			MCEA 310	Corporate Tax Planning		SD, EM, EN - Whole Paper
			MCEB 311	Advanced Auditing		SD, EM, EN - Whole Paper
			MCEB 312	Merchant Banking and Financial Services		SD, EM, EN - Whole Paper
			MCEB 313	International Finance		SD, EM, EN - Whole Paper
			MCEB 314	Security Analysis		SD, EM, EN - Whole Paper
			MCEB 315	Service Marketing		SD, EM, EN - Whole Paper
			MCEC 316	Retail Management		SD, EM, EN - Whole Paper
			MCEC 317	Customer Relationship Management		SD, EM, EN - Whole Paper
			MCED 318	International Business		SD, EM, EN - Whole Paper
			MCED 319	International Finance		SD, EM, EN - Whole Paper
			MCED 320	Project Risk Management		SD, EM, EN - Whole Paper
			MCED 321	Entrepreneurship in MSMEs		SD, EM, EN - Whole Paper
			MCED 322	Project Appraisal and Implementation		SD, EM, EN - Whole Paper
			MCED 323	Accounting and Finance for small Entrepreneurs		SD, EM, EN - Whole Paper
			MCC 401	Corporate Governance and Business Ethics		SD, EM, EN - Whole Paper
			MCC 402	Management of Finalcial Institutions		SD, EM, EN - Whole Paper
			MCE 403	IT and Business Application		SD, EM, EN - Whole Paper
			MCE 404	Corporate Ligal Framework		SD, EM, EN - Whole Paper
			MCE 405	Corporate Restructuring		SD, EM, EN - Whole Paper
			MCE 406	Wealth Management		SD, EM, EN - Whole Paper

NAME OF THE PROGRAM	NAME OF COURSE	COURSE CODE	Paper Code	NAME OF THE NEW COURSES INTRODUCED	YEAR OF INTRODUCTION	Content with direct bearing on Employability, Entrepreneurship, (EN) (EM) Skill Development (SD)
			3.7	Odisha ra Dharma Dhara		
			3.8	Odishare Vaishnava Dharma		
			4.1	Loka Sahitya		
			4.2	Gabeshana Padhati		SD, EM
			4.3	Gabeshana Nibandha Prastuti o Moukhika Parikhya		SD, EM
			4.4	Grantha Sampadana o Alochana		SD
				Creative Writing (Poetry, Short Story)		SD, EM
				Performing Arts (Drama)		SD, EM
				Computer Application		SD, EM, EN

Cr-1 Coordinator

IQAC Coordinator

Principal

PRINCIPAL
NAYAGARH [illegible] COLLEGE
NAYAGARH

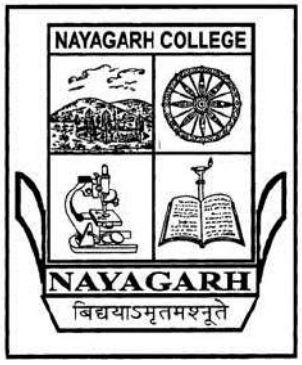
Criteria 1.1.3

APPENDIX-II

ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ବିଭାଗ

Nayagarh Autonomous College

Nayagarh



ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ବିଭାଗ

ଏମ୍.ଏ. ପାଠ୍ୟକ୍ରମ

Nayagarh Autonomous College, Nayagarh

ଏମ୍.ଏ. ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମ (2019-2020)

(ନିୟମିତ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପାଇଁ)

For Regular Students

Two years of Four Semester Course Design Syllabus for choice based credit system

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

COURSE STRUCTURE

01. Group- A Papers	:	CORE PAPERS (Compulsory Papers)	8 to 10
02. Group- B	:	Core Elective Papers (Special Papers)	4 to 6 Papers

03. Group – C : Allied Elective Courses. 4 to 6 Papers

(Open to students of all the Department as well as of allied disciplines)

04. Group- D : Free Elective in 3rd Semester 2to 6 Papers

(The student may purse such a course in his own Department or in other Department)

05. Group- E : Audit Papers: (No Credit Points)

Total Papers	:	18
Total Marks	:	1800
Total Credit Points	:	72

(Each paper: 4 Credits 4×18=72)

INSTRUCTION :

Each Paper	:	100 Marks
• Internal Assessment	:	100 Marks
• Semester Examination	:	70 Marks
Total	:	100 marks

FIRST SEMESTER

Group-"A"

Paper Code	CORE PAPERS-Compulsory Papers Course Name (Core Papers)	Marks	Cr
1.1	ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟ କବିତା	100	4
1.2	ଆଧୁନିକ କାବ୍ୟ କବିତା	100	4
1.3	କଥା ସାହିତ୍ୟ	100	4
1.4	ଗଦ୍ୟ ସାହିତ୍ୟ	100	4
	Total credit 4 x 4=16 Total Marks 100 x 400=400		

SECOND SEMESTER

Group-"A"

Paper Code	Core Paper-Compulsory Papers Course Course Name (Core Paper)	Marks	Cr
2.1	ଭାଷା ବିଜ୍ଞାନ	100	4
22.	ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ	100	4
2.3	ଓଡ଼ିଆ ନାଟ୍ୟ ସାହିତ୍ୟ	100	4
2.4	ତୁଳନାତ୍ମକ ସାହିତ୍ୟ ସମୀକ୍ଷାତତ୍ତ୍ୱ, ଅନୁବାଦ ସାହିତ୍ୟ	100	4
	Total credit: 4 x 4 = 16 Total Marks 100 × 4 = 400		

THIRD SEMESTAR

Group- “B & C”

Paper Code	Core Elective- Special Paper Course Name(Core Elective)		Mark	Cr
3.1	ଭାଷାତତ୍ତ୍ୱ- ୧		100	4
3.2	ଭାଷାତତ୍ତ୍ୱ- ୨		100	4
3.3	ରଙ୍ଗମଞ୍ଚ ଓ ନାଟ୍ୟତତ୍ତ୍ୱ	*(D)	100	4
3.4	ନାଟକ ଓ ନାଟ୍ୟକାର	*(D)	100	4
3.5	ଆଧୁନିକ କାବ୍ୟ କବିତା	*(D)	100	4
3.6	ଆଧୁନିକ ଗଦ୍ୟ ସାହିତ୍ୟ	*(D)	100	4
3.7	ଓଡ଼ିଶାର ଧର୍ମଧାରା	*(D)	100	4
3.8	ଓଡ଼ିଶାରେ ବୈଷ୍ଣବଧର୍ମ	*(D)	100	4

Any Six to be opted by the students.

Total credit : 4 x 6 = 24 Total Mark 100 x 6 = 400

*D : Free Elective Papers

FOURTH SEMESTER

Group-"A & B"

Paper Code	Course Name (Core Papers)		Marks	Cr
4.1	ଲୋକ ସାହିତ୍ୟ	(*D) Core Course	100	4
4.2	ଗବେଷଣା ପଦ୍ଧତି		100	4
4.3	ଗବେଷଣା ନିବନ୍ଧ ପ୍ରସ୍ତୁତି ଓ ମୌଖିକ ପରୀକ୍ଷା		200	8
4.4	ଗ୍ରନ୍ଥ ସଂପାଦନା ଓ ଆଲୋଚନା	Elective Core (Any one)		

Credit= 4x2=08 Total Credit-16

Credit 8x1-08 Total Marks 400

*D: FREE ELECTIVE PAPERS

GROUP - E

Audit Course (No Credit)

1. Creative Writing (Poetry, Short Story)
2. Performing Arts (Drama)
3. Computer Application

DETAILED SYLLABUS

ସର୍ବଶେଷ ପାଠ୍ୟକ୍ରମ

1ST SEMESTER Group - A (Cort Course)

COURSE CODE - 1.1

ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟ କବିତା

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୨୦

ୟୁନିଟ୍ – ୧ ସାରଳା ମହାଭାରତ - ସ୍ୱର୍ଗାରୋହଣ ପର୍ବ ।

ୟୁନିଟ୍ – ୨ ଭାଗବତ - ଜଗନ୍ନାଥ ଦାସ – ରାସପଞ୍ଚାଧ୍ୟାୟ

ୟୁନିଟ୍ – ୩ ଲାବଣ୍ୟବତୀ – ଉପେନ୍ଦ୍ର ଭଞ୍ଜ – ୧, ୫, ୨୨ ଛାନ୍ଦ

ୟୁନିଟ୍ – ୪ ପ୍ରାଚୀନ କବିତା (ପ୍ରାଚୀନ-ମଧ୍ୟକାଳୀନ କବିତା . ସଂ. ଡ଼ ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ - ପ୍ରାଚୀ ସାହିତ୍ୟ ପ୍ରତିଷ୍ଠାନ)

(କେଶବ କୋଇଲି, ଗ୍ରୀଷ୍ମବର୍ଣ୍ଣନା, ଘେନାଇ ଆମ୍ଭେ ଯେତେ କହିଲୁରେ, ରସମାନସ ରଧ୍ୱକେଶ, ସ୍ମୃତି ଚିନ୍ତାମଣି (୧୫ଶ ବୋଲି)

ୟୁନିଟ୍ – ୫ ପ୍ରାଚୀନ ଓଡ଼ିଆ କବିତାର ସ୍ୱରୂପ

(ଚଉତିଶା, କୋଇଲି, ଭଜନ, ଜଣାଣ, ଚମ୍ପୂ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 1.2

ଆଧୁନିକ କାବ୍ୟ କବିତା

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ମହାଯାତ୍ରା - ରାଧାନାଥ ରାୟ ।

ୟୁନିଟ୍ --୨ ଉତ୍କଳିକା (ପ୍ରଥମ ୪ଟି କବିତା) – ରାଧାମୋହନ ଗଡନାୟକ

ୟୁନିଟ୍ – ୩ ଆଧୁନିକ ଓଡ଼ିଆ କବିତା - ସଂ. ପ୍ରଫେସର ସଂଘମିତ୍ରା ମିଶ୍ର

(ଆଶା, ପିତୃପକ୍ଷତର୍ପଣ, ଧରାବତରଣ, ଜହ୍ନରାତି, ଉଚ୍ଛୋଶ୍ରବା)

ୟୁନିଟ୍ – ୪ ଆଧୁନିକ କାବ୍ୟ କବିତାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

(କାବ୍ୟ, ମହାକାବ୍ୟ, ଗାଥାକବିତା, ଗୀତିକବିତା)

ୟୁନିଟ୍ – ୫ ବିଦ୍ରତାତ୍ମକ, ଶୋକଗୀତିକା, ଚତୁର୍ଦ୍ଦଶପାଦୀ କବିତା, ସମ୍ବୋଧନ ଗୀତିକା

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

‘କ’ ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକକୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ =୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

Γx୩=୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ସଂକଳ୍ପ । ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨= ୧୦

COURSE CODE - 1.3

କଥା ସାହିତ୍ୟ

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ - ୧ ରୁଦ୍ର ସୁଧାନିଧି - ନାରାୟଣାନନ୍ଦ ଅବଧୂତ ସ୍ୱାମୀ – ରୁଦ୍ର ସୁଧାନିଧିର ଜନ୍ମ ପର୍ଯ୍ୟନ୍ତ

ୟୁନିଟ୍ - - ୨ ଭୀମାଭୂୟାଁ - ଗୋପାଳବଲ୍ଲଭ ଦାସ

ୟୁନିଟ୍ – ୩ ଦକ୍ଷିଣାବର୍ତ୍ତ – ଶାନ୍ତନୁ କୁମାର ଆଚାର୍ଯ୍ୟ

ୟୁନିଟ୍ – ୪ ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି

ୟୁନିଟ୍ –୫ ହାତ, ଡାକମୁନସୀ, ନିଜସଞ୍ଜି, ମୋକ୍ଷ, ଲକ୍ଷ୍ମୀର ଅଭିଶାର

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨× ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 1.4

ଗଦ୍ୟ ସାହିତ୍ୟ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଜୀବନପଥେ - ରମାଦେବୀ (ପ୍ରଥମ ୨୦ଟି ଅଧ୍ୟୟ)

ୟୁନିଟ୍ – ୨ ଆମେରିକା ଅନୁଭୂତି - ଗୋଲୋକ ବିହାରୀ ଧଳ

ୟୁନିଟ୍ – ୩ ଆମ ଓଡ଼ିଶାର ଗର୍ବ ଓ ଗୌରବ- ସଂ. ପଠାଣି ପଟ୍ଟନାୟକ (ପ୍ରଥମ ୫ଟି ଅଧ୍ୟାୟ)

ୟୁନିଟ୍ – ୪ ପ୍ରବନ୍ଧ କତିପୟ - ସ. ଡ଼. ବିଷ୍ଣୁପ୍ରିୟା ଓତା- କିତାବ ମହଲ

(ଓଡ଼ିଆ ଜାତୀୟତା, ସୌନ୍ଦର୍ଯ୍ୟ ଓ ପ୍ରେମ, ଆର୍ଯ୍ୟଜୀବନ, କ୍ଷମା, ଭାରତୀୟ ନାରୀର ଆଦର୍ଶ)

ୟୁନିଟ୍ – ୫ ପ୍ରବନ୍ଧ, ଜୀବନୀ, ଆତ୍ମଜୀବନୀ ଓ ଭ୍ରମଣ କାହାଣୀର ତତ୍ତ୍ୱ ।

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨x୩=୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

‘ଗ’ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫x ୨ = ୧୦

2ND SEMESTER

Group - A (Core Course)

COURSE CODE - 2.1

ଭାଷା ବିଜ୍ଞାନ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଭାଷାର ସଂଜ୍ଞା, ପ୍ରକାରଭେଦ, ଉତ୍ପତ୍ତି ସଂପର୍କୀୟ ମତବାଦ

ୟୁନିଟ୍ – ୨ ବାଗ୍‌ଯନ୍ତ୍ର ଓ ତା’ର ବିଭିନ୍ନ ଅଂଶର ପରିଚୟ, ବାଦ୍ୟଯନ୍ତ୍ରର ଭୂମିକା

ୟୁନିଟ୍ – ୩ ଅର୍ଥ ପରିବର୍ତ୍ତନ ଓ ଧ୍ୱନି ପରିବର୍ତ୍ତନର ବିଭିନ୍ନ କାରଣ ଓ ଦିଗ

ୟୁନିଟ୍ – ୪ ଇଣ୍ଡୋ-ୟୁରୋପୀୟ ଭାଷା ପରିବାର, ଭାରତୀୟ ଆର୍ଯ୍ୟ ଭାଷାଗୋଷ୍ଠୀ, ଓଡ଼ିଆ ଭାଷାର କ୍ରମବିକାଶ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ଭାଷା ଉପରେ ବିଭିନ୍ନ ଭାଷାର ପ୍ରଭାବ (ଇଂରାଜୀ, ଯାବନିକ, ଦ୍ରାବିଡ଼)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

‘କ’ ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮
× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 2.2

ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ପ୍ରାକ୍ ସାରଳା ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୨ ସାରଳା ଓ ପଞ୍ଚସଖା ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୩ ରୀତି ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୪ ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୫ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ (ଗଳ୍ପ, ଉପନ୍ୟାସ, ନାଟକ,କବିତା)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨
× ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 2.3

ଓଡ଼ିଆ ନାଟ୍ୟ ସାହିତ୍ୟ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ କାଞ୍ଚିକାବେରୀ - ରାମଶଙ୍କର ରାୟ

ୟୁନିଟ୍ – ୨ ଭାତ - କାଳୀଚରଣ ପଟ୍ଟନାୟକ

ୟୁନିଟ୍ – ୩ ଅରଣ୍ୟ ଫସଲ – ମନୋରଞ୍ଜନ ଦାସ

ୟୁନିଟ୍ – ୪ ଶୋଣିତ ସ୍ୱାକ୍ଷର - ବିଜୟ କୁମାର ଶତପଥୀ

ୟୁନିଟ୍ – ୫ ଏକାଙ୍କିକା - ସଂ, ନାରାୟଣ ସାହୁ

(ଲେଭେଲ କ୍ରସିଙ୍ଗ, ପ୍ରବେଶ ପ୍ରସ୍ଥାନ, ସଂଧ ଆସରର ଭୂତ, ଦୁଃସମୟ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 2.4

ତୁଳନାତ୍ମକ ସାହିତ୍ୟ, ସମୀକ୍ଷାତତ୍ତ୍ୱ ଅନୁବାଦ ସାହିତ୍ୟ

ସଂଖ୍ୟାସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପରିସର

ୟୁନିଟ୍ – ୨ ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ଉପଯୋଗିତା ଓ ବିଚାରଧାରା

ୟୁନିଟ୍ – ୩ ସମୀକ୍ଷାତତ୍ତ୍ୱ (ରସବାଦୀ, ଜାତିବାଦୀ, ନନ୍ଦନତାତ୍ତ୍ୱିକ, ଶୈଳୀତାତ୍ତ୍ୱୀକ)

ୟୁନିଟ୍ – ୪ ଅନୁବାଦ ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)

ୟୁନିଟ୍ – ୫ ଅନୁବାଦର ପ୍ରୟୋଗ

(ଅନୁବାଦର ବର୍ଣ୍ଣବିଭା – ସଂ. ପ୍ରଶରତଚନ୍ଦ୍ର ରଥ)

ତୁହିପରା, ତପସ୍ୱିନୀ, To the Cuckoo Geetanjali)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ।

ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮ x ୩= ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

3RD SEMESTER

(Group - B & C)

CORE ELECTIVE (SPECIAL PAPERS) (ANY SIX)

COURSE CODE - 3.1 (Any Six)

ଭାଷାତତ୍ତ୍ୱ - ୧ (linguistics – 1)

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଭାଷା ଓ ଭାଷାତତ୍ତ୍ୱ ସଂପର୍କୀୟ ଆଲୋଚନା, ଭାଷାତତ୍ତ୍ୱ ଅଧ୍ୟୟନର ବିଭିନ୍ନ ଦିଗ (ଐତିହାସିକ, କାଳାନୁକ୍ରମିକ, ବର୍ଣ୍ଣନାତ୍ମକ ଓ ତୁଳନାତ୍ମକ)

ୟୁନିଟ୍ – ୨ ଭାଷିକ ଧ୍ୱନି ମାନଙ୍କର, ପ୍ରେରଣ ଓ ଗ୍ରହଣ ପ୍ରକ୍ରିୟା, ବାକ୍ୟଯନ୍ତ୍ରର ବିଭିନ୍ନ ଅଂଶର ପରିଚୟ ଓ କାର୍ଯ୍ୟକାରିତା

ୟୁନିଟ୍ – ୩ ଓଡ଼ିଆ ଭାଷିକ ଧ୍ୱନିମାନଙ୍କର ବର୍ଗୀକରଣ, ଇଂରାଜୀ ଧ୍ୱନିମାନଙ୍କର ପରିଚୟ ଓ ବିଭାଗୀକରଣ

ୟୁନିଟ୍ – ୪ ଫୋନିମ୍ ର ସଂଜ୍ଞା ଓ ପ୍ରକାରଭେଦ, ଓଡ଼ିଆ ଧ୍ୱନି ଗ୍ରାମଗୁଡ଼ିକର ପରିଚୟ

ୟୁନିଟ୍ – ୫ ଆର୍ନ୍ତଜାତୀୟ ଧ୍ୱନ୍ୟାତ୍ମକ ଲିପିର ପରିଚୟ ଓ ଧ୍ୱନ୍ୟାତ୍ମକ ପ୍ରତିଲିଖନ

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । । ୧୨
× ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮
× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫
× ୨ = ୧୦

COURSE CODE - 3.2

ଭାଷାତତ୍ତ୍ୱ - 2

linguistics – 2

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଧ୍ୱନିନିୟମ (ଗ୍ରୀମସ୍, ବର୍ଷାର, ରାୟ) ଶବ୍ଦ ବିଜ୍ଞାନ ଓ ରୂପବିଜ୍ଞାନ

ୟୁନିଟ୍ – ୨ ଭାଷାର ଅର୍ଥତାତ୍ତ୍ୱିକ ବିଚାର, ଭାଷାର ବାକ୍ୟାତାତ୍ତ୍ୱିକ ବିଚାର

ୟୁନିଟ୍ – ୩ ଭାଷିକ ଧ୍ୱନିର ଦୈର୍ଘ୍ୟ, ବଳାଘାତ, ସ୍ୱରଲହର

ୟୁନିଟ୍ – ୪ ଶୈଳୀ ବିଜ୍ଞାନ ଓ ତାହାର ବିଭିନ୍ନ ଦିଗ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ଭାଷା ବିଜ୍ଞାନ ଚର୍ଚ୍ଚାର ପରଂପରା

ଭାଷା ବିଜ୍ଞାନୀ (ପାଣିନୀ, ଗୋପୀନାଥ ନନ୍ଦଶର୍ମା, ଗୋଲୋକ

ବିହାରୀ ଧଳ, ଜନବିମ୍ସ, ଗ୍ରୀୟର ସନ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨=୧୦

COURSE CODE - 3.3

ରଙ୍ଗମଞ୍ଚ ଓ ନାଟ୍ୟତତ୍ତ୍ୱ

Stage and Dramaturgy

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ନାଟକର ଉତ୍ପତ୍ତି, ପ୍ରକାର ଭେଦ ଓ ଗଠନକୌଶଳ, ପ୍ରାଚ୍ୟପାଶ୍ଚାତ୍ୟ ନାଟ୍ୟତତ୍ତ୍ୱ

ୟୁନିଟ୍ – ୨ ରଙ୍ଗମଞ୍ଚର ପ୍ରକାରଭେଦ, ମଞ୍ଚକଳାର ବୈଶିଷ୍ଟ୍ୟ

(ବେଶ ରଚନା, ସାଜସଜ୍ଜା, ଆଲୋକ ସଂପାତ, ବିଭିନ୍ନ ପ୍ରକାର ଅଭିନୟ)

ୟୁନିଟ୍ – ୩ ଲୋକନାଟ୍ୟ ପରଂପରା (ଲୀଳା, ଦଣ୍ଡନାଟ, କଣ୍ଢେଇନାଟ,ଧନୁଯାତ୍ରା)

ୟୁନିଟ୍ – ୪ ବିଭିନ୍ନ ନାଟ୍ୟଧାରା (ପ୍ରତୀକବାଦୀ, ଅସ୍ତିତ୍ୱବାଦୀ, ବାସ୍ତବବାଦୀ, ଅଭିବ୍ୟକ୍ତିବାଦୀ)

ୟୁନିଟ୍ – ୫ ଏକାଙ୍କିକା ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ଗଠନରୀତି)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x୨ = ୧୦

COURSE CODE - 3.4

ନାଟକ ଓ ନାଟ୍ୟକାର

Drama & Dramatist

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ବିକାଶଧାରା

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ଜଗନ୍ମୋହନ ଲାଲା, ରାମଶଙ୍କର ରାୟ, ଅଶ୍ୱିନୀ କୁମାର ଘୋଷ, କାଳୀଚରଣ ପଟ୍ଟନାୟକ)

ୟୁନିଟ୍ – ୩ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ବିକାଶଧାରା

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ମନୋରଂଜନ ଦାସ, ବିଜୟ ମିଶ୍ର, ଗୋପାଳ ଛୋଟରାୟ, ରାମଚନ୍ଦ୍ର ମିଶ୍ର)

ୟୁନିଟ୍ – ୫ ସାଂପ୍ରତିକ ନାଟକର ଗତି ଓ ପ୍ରକୃତି

(ମୁକ୍ତ ଧାରାର ନାଟକ, ମିଥ୍ ଧର୍ମୀନାଟକ, ନାଟକରେ ଲୋକ ଉପାଦାନ, ଛୋଟ ନାଟକ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨= ୧୦

COURSE CODE - 3.5

ଆଧୁନିକ କାବ୍ୟ କବିତା

Modern Odia Poetry

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଆଧୁନିକ ଓଡ଼ିଆ କାବ୍ୟଧାରା (ରାଧାନାଥଙ୍କଠାରୁ ସ୍ୱାଧୀନତା ପର୍ଯ୍ୟନ୍ତ)

(ରୋମାଣ୍ଟିକ୍ କାବ୍ୟଧାରା, ଜାତୀୟତାବାଦୀ ଚିନ୍ତାଧାରା, ମାନବବାଦୀ ଓ ପ୍ରଗତିବାଦୀ କାବ୍ୟଚେତନା)

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ଗୋପବଂଧୁ, ନୀଳକଣ୍ଠ, କାଳିନ୍ଦୀ ଚରଣ, ବୈକୁଣ୍ଠନାଥ)

ୟୁନିଟ୍ – ୩ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତାରେ ପ୍ରୟୋଗ ଓ ପରୀକ୍ଷାର ସ୍ୱର

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ସଚ୍ଚିଦାନନ୍ଦ, ବେଣୁଧର, ଗୁରୁପ୍ରସାଦ, ଭାନୁଜୀ)

ୟୁନିଟ୍ – ୫ ବିଶେଷ ଅଧ୍ୟୟନ (ରମାକାନ୍ତ, ସୀତାକାନ୍ତ, ସୌଭାଗ୍ୟ, ଦୀପକ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ, ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 3.6

ଆଧୁନିକ ଗଦ୍ୟ ସାହିତ୍ୟ

Modern Odia Prose

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ରମ୍ୟରଚନା, ଜୀବନୀ, ଆତ୍ମଜୀବନୀ, ଭ୍ରମଣକାହାଣୀ, ଗଳ୍ପ ଓ ଉପନ୍ୟାସର ତତ୍ତ୍ୱ

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ବିଶ୍ୱନାଥ କର, ନୀଳକଣ୍ଠ ଦାସ, ଗୋପାଳ ପ୍ରହରାଜ, ଗୋବିନ୍ଦ ତ୍ରିପାଠୀ)

ୟୁନିଟ୍ – ୩ ବିଶେଷ ଅଧ୍ୟୟନ (ଗାଳ୍ପିକ ଫକୀରମୋହନ, କାଳିନ୍ଦୀ ଚରଣ, ଔପନ୍ୟାସିକ ଗୋପୀନାଥ ମହାନ୍ତି, ଶାନ୍ତନୁ କୁମାର ଆଶ୍ଚର୍ଯ୍ୟ)

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ବିବେକୀ, ଭାଗବତ ଟୁଙ୍ଗୀରେ ସଂଧ୍ୟା (୧୩),କଳାଶକ୍ତି, ପୃଷ୍ଠପୁରରେ ବର୍ଷାବରଣ)

ୟୁନିଟ୍ – ୫ ବିଶେଷ ଅଧ୍ୟୟନ (ଛ' ମାଣ ଆଠ ଗୁଣ୍ଠ, ଅନ୍ଧଦିଗନ୍ତ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 3.7

CORE ELECTIVE

ଓଡ଼ିଶାର ଧର୍ମଧାରା

Religious Trends in Odisha

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଓଡ଼ିଶାରେ ବିଭିନ୍ନ ଧର୍ମଧାରାର ଉନ୍ମେଷ ଓ ବିକାଶ

ୟୁନିଟ୍ – ୨ ବୌଦ୍ଧ ଓ ଶାକ୍ତ ଦର୍ଶନ, ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

ୟୁନିଟ୍ – ୩ ନାଥଧର୍ମ ଦର୍ଶନ ଓ ଓଡ଼ିଆ ନାଥ ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୪ ଶୈବ ଧର୍ମ ଦର୍ଶନ ଓ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

ୟୁନିଟ୍ – ୫ ମହିମା ଓ ବ୍ରାହ୍ମଦର୍ଶନ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨× ୩ =୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 3.8

CORE ELECTIVE

ଓଡ଼ିଶାର ବୈଷ୍ଣବଧର୍ମ

Vaishnavism in Odisha

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ମୁଖ୍ୟ ବୈଷ୍ଣବ ସଂପ୍ରଦାୟ (ରାମାନୁଜ, ନିମ୍ବାର୍କ, ବଲ୍ଲଭାରାର୍ଯ୍ୟ, ମାଧ୍ୱାଚର୍ଯ୍ୟ)

ୟୁନିଟ୍ – ୨ ବିବିଧ ଧର୍ମର ତତ୍ତ୍ୱ (ଜ୍ଞାନମିଶ୍ରା ଭକ୍ତି, ଶୂନ୍ୟତତ୍ତ୍ୱ, ପିଣ୍ଡ ବ୍ରହ୍ମାଣ୍ଡ ତତ୍ତ୍ୱ,ରାଧାକୃଷ୍ଣ ତତ୍ତ୍ୱ)

ୟୁନିଟ୍ – ୩ ଶୁଦ୍ଧଭକ୍ତି ଧର୍ମର ପୃଷ୍ଠଭୂମି ଉଦ୍ଭବ ଓ ବିକାଶ

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଆୟନ (ରାଧାତତ୍ତ୍ୱ, ଗୋପୀତତ୍ତ୍ୱ, ସତତ୍ତ୍ୱ, ରାସତତ୍ତ୍ୱ)

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଜ୍ଞାନମିଶ୍ରା ଓ ଶୁଦ୍ଧାଭକ୍ତିର ପ୍ରତିଫଳନ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

COURSE CODE - 3.9

Shree Jagannath Cult

ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତିର ପୃଷ୍ଠଭୂମି ଓ ବିକାଶଧାରା

ୟୁନିଟ୍ – ୨ ବିଭିନ୍ନ ସଂସ୍କୃତି ସହିତ ଜଗନ୍ନାଥ ସଂସ୍କୃତିର ସଂପର୍କ (ବୌଦ୍ଧ, ଜୈନ)

ୟୁନିଟ୍ – ୩ ଓଡ଼ିଶାର ବୈଷ୍ଣବ ସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ୟୁନିଟ୍ – ୪ ଓଡ଼ିଶାର ଆଦିବାସୀ ସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଶାର ଲୋକସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮ × ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ।

୫x୨= ୧୦

COURSE CODE - 3.10

CORE ELECTIVE

ଶ୍ରୀଜଗନ୍ନାଥ ସାହିତ୍ୟ

Shree Jagannath Literature

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଓଡ଼ିଶାର ଲୋକସାହିତ୍ୟ ଓ କିମ୍ବଦନ୍ତୀରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୨ ଓଡ଼ିଆ ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟକବିତାରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୩ ମଧ୍ୟକାଳୀନ ଓ ଆଧୁନିକ କାବ୍ୟକବିତାରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୪ ଓଡ଼ିଆ ଗଳ୍ପ ଉପନ୍ୟାସରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ନାଟକ ଓ ପ୍ରବନ୍ଧରେ ଶ୍ରୀଜଗନ୍ନାଥ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫× ୨ = ୧୦

(Any Six to be opted by the students)

Total credit 4 x 6 = 24, **Total Marks 100 x 6 = 600**

4TH SEMESTER

CORE COURSE

COURSE CODE - 4.1

ଲୋକସାହିତ୍ୟ (Folk Literature)

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଲୋକସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ଅଧ୍ୟୟନ ବିଭିନ୍ନ ଦିଗ

ୟୁନିଟ୍ – ୨ ଲୋକଗୀତ ଓ ଲୋକଗଳ୍ପର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

ୟୁନିଟ୍ – ୩ ଲୋକନାଟକର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

ୟୁନିଟ୍ – ୪ ଲୋକତତ୍ତ୍ୱର ବିଭିନ୍ନ ଉପାଦାନ (ମୋଟିଫ, ଟାଇପସ୍, ମରପେଠାଲଜି)

ୟୁନିଟ୍ – ୫ ଲୋକସାହିତ୍ୟର ବ୍ୟାବହାରିକ ଦିଗ (ରୂଢି, ପ୍ରବାଦ ପ୍ରବଚନ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮x ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୫ x ୨=୧୦

4th SEMESTAR

CORE COURSE

COURSE CODE - 4.2

ଗବେଷଣା ପଦ୍ଧତି

Research Methodology

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଗବେଷଣାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ

ୟୁନିଟ୍ – ୨ ସାହିତ୍ୟ ଗବେଷଣାର ଐତିହ୍ୟ ଓ ସାଂପ୍ରତିକଧାରା

ୟୁନିଟ୍ – ୩ ଗବେଷଣାର ବିଭିନ୍ନ ଦିଗ ଓ ପର୍ଯ୍ୟାୟ

ୟୁନିଟ୍ – ୪ ତଥ୍ୟ ସଂଗ୍ରହର ବିଭିନ୍ନ ଭତ୍ସ

ୟୁନିଟ୍ – ୫ ଗବେଷଣାର ବିଭିନ୍ନ ଅଙ୍ଗ (କ୍ଷେତ୍ର ପରିକଳ୍ପନା, ତଥ୍ୟ ସଂଗ୍ରହ ପଦ୍ଧତି, ନଥିପତ୍ର ପର୍ଯ୍ୟବେକ୍ଷଣ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ ଟିର ଉତ୍ତର ଅବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

COURSE CODE - 4.3

DISSERTATION

CORE ELECTIVE

ଗବେଷଣା ନିବନ୍ଧ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା : ୧୦୦

ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି (ପ୍ରାୟୋଗିକ, ସମାଲୋଚନାଧର୍ମୀ ସନ୍ଦର୍ଭ ରଚନା) ପ୍ରତ୍ୟେକ ପରୀକ୍ଷାର୍ଥୀ ଅନ୍ୟୂନ ୮୦ ପୃଷ୍ଠାର ଏକ ସମାଲୋଚନାଧର୍ମୀ ସନ୍ଦର୍ଭ ପ୍ରସ୍ତୁତ କରି ପରୀକ୍ଷା ଆରମ୍ଭ ପୂର୍ବରୁ ବିଭାଗମୁଖ୍ୟଙ୍କ ନିକଟରେ ଦାଖଲ କରିବାକୁ ହେବ । ଏହି ସାହିତ୍ୟ କୃତିଗୁଡ଼ିକର ବିଷୟ ତଥା ଶୀର୍ଷକ ବିଭାଗ ଦ୍ୱାରା ଅନୁମୋଦିତ ହେବା ଆବଶ୍ୟକ ।

COURSE CODE - 4.4

(Seminar Presentation with Viva)

ପାଠଚକ୍ର ଉପସ୍ଥାପନ ଓ ମୌଖ ପରୀକ୍ଷା

ପୂର୍ଣସଂଖ୍ୟା : ୧୦୦

୧. ପରୀକ୍ଷା ଆରମ୍ଭର ଯଥେଷ୍ଟ ପୂର୍ବରୁ ପରୀକ୍ଷାର୍ଥୀ ବିଭାଗଦ୍ୱାରା ଅନୁମୋଦିତ ପ୍ରବନ୍ଧ ପ୍ରକଳ୍ପ ସମ୍ବନ୍ଧୀୟ ପ୍ରସ୍ତୁତି କରିବେ ।
(୫୦)

୨. ପ୍ରସ୍ତୁତ ପ୍ରକଳ୍ପ ସମ୍ପର୍କରେ ଏକ ମୌଖିକ ପରୀକ୍ଷା କରାଯିବ।
(୫୦)

କିମ୍ବା

ଗ୍ରନ୍ଥ ସଂପାଦନା ଓ ସମାଲୋଚନା

(Editing & Textual Criticism) **(100 + 100)**

Course Code 4.3 : Editing **(100)**

Course Code 4.4 : Textual Criticism **(100)**

Group - E

Audit Course (No Credit)

1. Creative Writing (Poetry, Short story)

କବିତା ଓ ଗଳ୍ପର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ଶୈଳୀ, ଭାଷା, ପ୍ରାୟୋଗିତ ଆଲୋଚନା

2. Performing Arts (Drama)

ନାଟକର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ବିଭିନ୍ନ ପ୍ରକାର ଅଭିନୟ

ମେକଅପ୍, ସାଜସଜ୍ଜା, ରିହରସଲ, ପ୍ରାୟୋଗିକ ଆଲୋଚନା

3. Computer Application

Computer Software, Hardware, System Software, Application Software, CPU, Memory RAM, ROM, Input & Output Device, Floppy Disk, Hard Disk, CD, Mouse, Keyboard etc.

MASTER OF COMMERCE

M. COM.

(Master Degree Course under CBCS)

For the Admission Batch : 2019-20

NAYAGARH AUTONOMOUS COLLEGE,

NAYAGARH-752 069

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

MASTER OF COMMERCE (Choice Based Credit System)

DEPARTMENT OF COMMERCE, NAYAGARH AUTONOMOUS COLLEGE, NAYAGARH,
AFFILIATED TO UTKAL UNIVERSITY

Semester-I

Code	Course Name	Marks	Credit	Category
MCC-101	Management Concepts and Practices	100	4	A
MCC-102	Statistics for Management	100	4	A
MCC-103	Corporate Financial Accounting	100	4	A
MCC-104	Financial Management	100	4	A
MCC-105	Accounting for Managerial Decision Making	100	4	A
MCC-106	Risk and Insurance Management	100	4	A
Total		**600**	**24**	

Semester-II

Code	Course Name	Marks	Credit	Category
MCC-201	Business Environment	100	4	A
MCC-202	Organization Behavior	100	4	A
MCC-203	Marketing Management	100	4	A
MCC-204	Managerial Economics	100	4	A
MCC-205	Small Business Management	100	4	A
MCC-206	Social Survey and Research Methodology	100	4	A/C/D
Total		**600**	**24**	

Category: A- Core, C- Open to Allied subjects, D- Open to All

Semester-III

Code	Course Name	Marks	Credit	Category
MCC-301	Project Report (Report -100, Presentation and Vive voce -100)	200	8	A
MCC-302	Strategic Management	100	4	A
MCC-303	Financial Institutions and Markets	100	4	A
MCC-304	Economic Analysis for Decision Making	100	4	A
	Any ONE group from the following			
	(A)Accounting			
MCEA-309	Advanced Accounting	100	4	B/C
MCEA-310	Corporate Tax	100	4	B/C
MCEA-311	planning	100	4	B/C
	Advanced Auditing			
	(B)Finance			
MCEB-312	Merchant Banking & Financial	100	4	B/C
MCEB-313	Services International Finance	100	4	B/C
MCEB-314	Security Analysis	100	4	B/C
	(C)Marketing			
MCEC-315	Services marketing	100	4	B/C
MCEC-316	Retail Management	100	4	B/C
MCEC-317	Customer Relationship Management	100	4	B/C
	(D)International Business			
MCED-318	International Business	100	4	B/C
MCED-319	International Finance	100	4	B/C
MCED-320	Global Risk Management	100	4	B/C
	(E) Entrepreneurship			
MCEE-321	Entrepreneurship in MSMEs	100	4	B/C
MCEE-322	Project Appraisal & Implementation Accounting & Finance for small Entrepreneurs	100	4	B/C
MCEE-323		100	4	B/C

Category: A- Core, B- Elective, C-Open to Allied Subjects, D-Open to All

Semester-IV

Code	Course Name	Marks	Credit	Category
MCC-401	Corporate Governance & Business Ethics	100	4	A
MCC-402	Management of Financial Institutions	100	4	A
	Any ONE group from the following			
	(A)Accounting			
MCEA-409	International Accounting	100	4	B/C
MCEA-410	Accounting Standards & Corporate Reporting	100	4	B/C
MCEA-411	Accounting for NPOs	100	4	B/C
	(B)Finance			
MCEB-412	Portfolio Management	100	4	B/C
MCEB-413	Risk Management & Derivatives	100	4	B/C
MCEB-414	Financial Regulations	100	4	B/C
	(C)Marketing			
MCEC-415	Product Planning & Sales Force Mgt.	100	4	B/C
MCEC-416	International Marketing	100	4	B/C
MCEC-417	Product & Brand Management	100	4	B/C
	(D)International Business			
MCED-418	International Accounting	100	4	B/C
MCED-419	International Marketing	100	4	B/C
MCED-420	International Financial Services	100	4	B/C
	(E) Entrepreneurship			
MCEE-421	Entrepreneurship : Innovation & Strategy	100	4	B/C
MCEE-422	Statistics for Business Decision Making	100	4	B/C
MCEE-423	Entrepreneurship & Information Technology	100	4	B/C

Category: A- Core, B- Elective, C-Open to Allied Subjects, D-Open to All

Audit Courses

i) Management of Personal Finances

ii) Capital Market Instruments

iii) Financial Inclusion

iv) Accounting for small Business organizations

v) Personal Taxation & Planning

(Credit will be assigned if the student opts to go through the examination process. But it will not be considered for CGPA) (Cumulative Grade Points Average)

Evaluation: End Term: 70 Marks

Unit Test and Quiz: 20 Marks, Assignment and Presentation: 10 Marks

Project Report: Thesis: 100 marks, Presentation & Viva-Voce: 100 marks

Minimum Total Marks= 2500

Minimum Credit Points: Core 76 + Elective 24 = 100

FIRST SEMESTER

MCC - 101. MANAGEMENT CONCEPTS AND PRACRTICES (Credit – 4)

Objective

To familiarize the students with the developments of management principles and practices.

Course Inputs

UNIT-I **Basic Concepts of Management:** Management in Antiquity, Historical development of management thought- Classical, Neo-Classical and Modern Schools, Tasks of a professional manager, Managerial roles.

UNIT-II Planning: Nature and significance, developing planning premises, planning exercises and limitations,

Decision Making: Types of decision, decision making process, models, techniques and conditions, creativity exercises.

UNIT-III Organizational Design: Organization structure-mechanistic and organic, Products Functional, and Project and Matrix structure, Centralization versus Decentralization of Authority, Informal Organization, and Organization Effectiveness.

UNIT-IV Management of Human Resources: Manpower planning, Job Analysis, Recruitment & Selection, Training and Development, Performance Appraisal

UNIT-V Management Control: Process, Tools and Techniques, Behavioral Implication of Control, Management in a Global Environment Case Study.

References:

1. Rabbins, “Management”, Pearsons Education, New Delhi.
2. Koontz & Weihrich, “Essentials of Management “-McGraw Hill
3. Gibson JL etal: Organisations, Behaviour, Structure and Process-McGraw Hill
4. Rao & Narayana ; Principle & Practice of Management – Konark Publishing
5. Stoner & Freeman : Management-PHI
6. Prasad L.M. : Principles & Practice of Management – Sultan Chand.
7. Prasad Manmohan,” Management : Concepts and Practices, Himalayan.
8. Terry, George R,” Principles of Management”, Richard D Irwin.

MCC - 102. STATISTICS FOR MANAGEMENT (Credit – 4)

Objective

The objective of this course is to make the students learn the application of statistical tools and techniques for decision making.

Course Inputs

UNIT-I Partial Correlation, Multiple Correlation, Multiple Regression, Interpolation & Extrapolation.

UNIT-II Probability Theory: Probability- classical, relative and subjective probability; Addition and multiplication probability models; Conditional probability and Baye's theorem.

Probability Distributions: Binomial, Poisson and normal distributions: Heir characteristics and applications.

UNIT-III Statistical Decision Theory: Decision Environment; Expected profit under uncertainty and assigning probabilities; Utility Theory; Decision Tree analysis.

Sampling: Sampling and Sampling (probability and non-probability) methods; Sampling and non-sampling errors; Law of large numbers and central limit Theorem; Sampling distributions and their characteristics.

UNIT-IV Statistical Estimation and Testing: Point and interval estimation of population mean, proportion and variance; Statistical testing-hypotheses and errors; sample size; Large and small sampling tests- Z tests, T tests and F tests.

UNIT-V **Non Parametric Tests:** Chi-square tests; Sign tests; Wilcoxon Signed – Rank tests;

Statistical Quality Control: Causes of variations in quality characteristics; Quality control chart- purpose and logic; Constructing a control chart- computing the control limits (X and R charts); Process under control and out of control; Control charts for attributes- fraction defectives and number of defects; Acceptance sampling.

References:

1. Levin, Richards I, and David S Rubin: Statistics of Management, Pearson Education, Delhi.
2. Lawrence B. Morse: Statistics for Business & Economics. Harper Collins, NY.
3. Watsnam Terry J. and Keith Parramor: Quantitative Methods in Finance, International Thompson Business Press.
4. Hien, L.W: Quantitative Approach to Managerial Decisions, Pearson Education, Delhi.
5. Gupta, S.P.; Statistical Methods, Sultian Chand, Delhi.
6. Sharma, Anand; Quantitative Techniques for Decision Making, Himalaya Publishing House.
7. Arora P.H., Sumeet etc.; Comprehensive Statistical Methods, S. Chand.
8. Anderson, Sweener, Williams, Statistics for Business and Economics, Thompson.
9. Agarwal, D.R.; Quantitative Methods, Urinda Publication.

10. Heinz Kohler: Statistics for Business & Economics, Harper Collins, New Delhi.
11. Hooda, R.P: Statistics for Business and Economics, Macmillan, New Delhi.

MCC - 103 CORPORATE FINANCIAL ACCOUNTING (Credit – 4)

Objective

The objective of this course is to expose students to advanced accounting issues and practices such as maintenance of company accounts, valuation of goodwill and shares, and handling accounting adjustments.

Course Inputs

UNIT-I **Final Accounts and Financial Statements of Companies:** Corporate problems with special reference to published Accounts.

UNIT-II **Valuation of Goodwill and Shares:** Funds Flow and cash flow statements.

UNIT-III **Accounting Issues:** Relating to Amalgamation, absorption, and reconstruction of companies both external and internal.

UNIT-IV **Accounts:** Relating to liquidation of companies. Investment Accounts. Lease Accounting.

UNIT-V **Human Resource Accounting:** Meaning, Approaches & Assumptions, Methods of human Resource Accounting.

References:

1. Beams, F.A.: Advanced Accounting, Pearson Education, New Delhi.
2. Dearden, J. and S. K Bhattacharya: Accounting for Management, Vikas, New Delhi.
3. Engler, C., L.A. Bemstein. And K.R L Lambet: Advanced Accounting, lrwin, Chicago.
4. Fischer, P.M., W.J Taylor and J.A Leer: Advanced Accounting, South-Western, Ohio.
5. Gupta, R.L: Advanced Financial Accounting, S. Chand & Co., New Delhi.
6. Horngreen," Introduction to Financial Accounting:, Pearson Education, New Delhi.
7. Keiso D.E. and J.J Weygandt: Intermediate Acounting, John Wiely and Sons, NY.
8. Maheshwaari, S.N: Advanced Accountancy- Vol. II, Vikas Publishing House, New Delhi.
9. Monga, J.R: Advanced Financial Accounting, Mayoor Paperbacks, Noida.
10. Tulsian, P.C.: Financial Accounting, Pearson Education, New Delhi.
11. Neigs, R.F: Financial Accounting, Tata McGraw Hill, New Delhi.
12. Shukla, M.C. and T.S. Grewal: Advanced Accountancy, Sultan Chand & Co., New Delhi.
13. Warren, C.S. and P.E Fess: Principles of Financial and Managerial Accounting, South-Western, Ohio.

MCC - 104 FINANCIAL MANAGEMENT (Credit – 4)

Objective

The objective of this course is to enable the students to understand the fundamentals of financial management in the context of a corporate entity. It attempts to acquaint them with different dimensions of financial management with a focus on the application of the relevant tools and techniques of financial decision-making aimed at shareholder's wealth maximization.

Course Inputs

UNIT-I **Introduction:** Nature and Scope of Financial Management; Financial Goals-Conflict of interest between the stakeholders; Functions of Financial Manager, Changing Financial Environment, Emerging Challenges faced by the Finance Manager.

UNIT-II Financing Decisions: Sources of Long term Capital-Equity, Dept., Term Loan, Preference share, Hybrid Securities, Internal Funds-Innovative sources of Domestic and Foreign Capital-Issues relating Financing Decisions.

UNIT-III Leverage and Capital Structure Analysis: Analysis of Operating Leverage and Financial Leverage- Combined Financial and Operating Leverage Concept of Capital Structure- Determinants – Theories of Capital Structure- Relevance and Irrelevance- Capital Structure Decision and Shareholder's Value Maximization.

UNIT-IV Long Term Investment Analysis: Investment Idea Generation-Tools and Techniques of investment analysis-Risk Analysis in Capital Investment Decisions

Dividend Decisions: Issues in Dividend Decisions-Models and Theories of Dividend- Forms of Dividend-Corporate Dividend Behavior.

UNIT-V Short Term Asset Management: Strategic Planning and Estimation of Short Term Funding Needs-Financing Sources-Computation of Cost of Short Term Fund.

Management of Cash, Inventory and Receivables.

References:

1. Bhattacharya,H.,"WorkingCapitalManagement:StrateglesandTechniques".Pear son Education, Delhi.
2. Brealey, Richard A and Steward C.Myers: Corporate Finance, McGraw Hill., Int.ED, New York.
3. Chanda, Prasanna:Financial Management, Tata Mc Graw Hill, Delhi,
4. Pandey, I.M: Finanncial Management, Vikas Publishing House, Delhi.
5. Van Home, J.C.and J.M.Wachowicz Jr.: Fundamentals of Financial Management, Pearson Education, New Delhi.
6. Van Home, James C, "Financial Management and Policy" Pearson Education, New Delhi.
7. Pinches, George E:Essentials of Financial Management; Harper and Row, New York.
8. Khan MY, Jain PK:Financial Management; Tata Mc Graw Hill, New Delhi.
9. Archer, Stephen H., Choate G Marc, R.George; Financial Management; John Wiley, NY.
10. Block, Stanley B.Geoffrey A Hilt; Foundations of Financial Management; Richard D. Irwin, Homewood,lllinois.

MCC - 105 ACCOUNTING FOR MANAGERIAL DECISION MAKING
(Credit – 4)

Objective

The objective of this course is to acquaint students with the accounting concepts, tools and techniques for managerial decisions.

Course Inputs

UNIT I **Accounting Information and Managerial Decision Making:** Financial accounting; Accountant's Position, role, and responsibilities.

Analysis Financial Statements: Horizontal and Vertical Analysis, Ratio analysis.

UNIT II Marginal Costing and Break-even Analysis: Concept of marginal cost; Marginal costing and absorption costing; cost- volume-profit analysis; Break-even analysis; Decisions regarding sales-mix, make or buy decisions and discontinuation of a product line etc.

UNIT III Budgeting : Features of a budget; Essentials of budgeting; Types of Budgets- functional, master budgets, etc; Fixed and flexible budget; Budgetary control; Zero-base budgeting; Performance budgeting.

UNIT IV **Standard Costing and Variance Analysis:** Standard costing as a control technique; setting of standards and their revision; Variance analysis- meaning and importance, kinds of variance and their uses- materials, labour, overhead and sales variance; Disposal of variances.

Accounting Plan and Responsibility Centres: Meaning and significance of responsibility accounting; Responsibility centers – cost centre, profit centre and investment centre; Objective and determinants of responsibility centers.

UNIT V Activity-based costing; Reporting to Management; Balanced Score Card

References:

1. Homgren Charies T. George Foster and Srikanta M. Dattar: Cost Accounting: A Manegerial Emphasis, Pearson.
2. Banerjee, B.Cost Accounting. PHI
3. Jawahar Lal, Cost Accounting, Tata McGraw
4. Homgren, C.T.Gary L.Sundem and William O. Stratton: Introduction to Management Accounting, Pearson
5. Khan, M.Y., and Jain, P.K., Cost Accounting, Tata McGraw
6. Maheswari, S.N., Principles of Cost Accounting, Sultan Chand
7. Lall, B.M., and I.C, jain; Cost Accounting Principles and Practice, PHI
8. Pandey, I.M, Management Accounting, Vani
9. Kaplan, Management Accounting , PHI.
10. Kishore, R.M., Cost and Management Accounting, Taxman
11. Druty, C., Management and Cost Accounting. Thomsom.
12. Shukla, Grewal & Gupta, Cost Accounting, S. Chand.

MCC - 106 **INSURANCE MANAGEMENT** **(Credit – 4)**

Objective

The course aims at developing necessary skills for applying the principles of financial analysis to management of funds by commercial banks and the insurance sector.

Course Inputs

UNIT I **Basic Concepts of Risk Management and Insurance**: Meaning of risk,Basiccategories of risk, methods of dealing with risk; Meaning and objective of risk management; Concepts and features of Insurance; Types of insurance contract and fundamental principles of Insurance; Cost benefit of Insurance to the society.

UNIT II **Insurance regulatory Act, 1999 and Insurance Market;** IRDA Act. 1999, Meaning, Objectives, Duties, Powers and Functions of Authority, Globalization of Indian Insurance, Privatization and Challenges before the Insurance Industry, Need for Reforms and Reforms Strategy.

UNIT III Life Insurance: Definition, Features and Principles of Life Insurance, Procedure for taking a policy, policy conditions, Premium Plans, Calculation of Premium. Settlement of Claims.

UNIT IV Fire and Marine Insurance: Principles, Policy conditions, Types of policies, of fire & Marine Insurance, Clauses and factors of Marine Insurance, Settlement of claims (Both Fire and Marine Insurance).

UNIT V Re-Insurance and Investment: General Features, Common terms, Features and Objects, Rights and Liabilities of Re-Insurance, Principles of Re-Insurance, Methods.

Investment: Investment Principles, Types, Legal and Social aspect of Investment, Policies of Insurance Companies.

References:

1. Arif, “Theory and Practice of Insurance” Educational Book House.
2. Sharma R.S., “Insurance Principles and Practice” Vora, Delhi.
3. Greene and Trieschemann, “Risk Insurance”, south Western Publishing Co.
4. Grieder and Beadies, “Principles of Insurance”
5. Mishra M.N. “Insurance priniciples & Parctice”, S.Chand.
6. Palande, Shah & etc “Insurance in India” changing policies & Emerging Opportunities, Response Books.
7. Study Material of Insurance Institute of India, Bombay.
8. Ganguly Anand “Insurance Act”, New Age International Publication.
9. Insurance Law Manual, Taxman, Delhi.
10. Holyake, “Insurance Management”, AITBS Publication.
11. Darfman, Introduction to Risk Management and Insurance.

SECOND SEMESTER

MCC - 201 BUSINESS ENVIRONMENT (Credit – 4)

Objective

The Course develops ability to understand and scan business environment analysis opportunity and take decisions under uncertainty.

Course Inputs

UNIT I **Theoretical Framework of Business Environment:** Concept, Significance and Nature of business environment; Elements of environment; Techniques of environmental scanning and monitoring. Global environment and its rationale merits and demerits.

UNIT II Economic Environment of Business : Significance and elements of economic environment; Economic systems and business environment; Economic Planning in India; Government Policies- Industrial Policy, Fiscal Policy, Monetary Policy, Public Sector and Economic Development.

UNIT III Political and Legal Environment of Business: Critical elements of political environment; Government and Business; Changing dimensions of legal environment in India.

Socio-Cultural Environment: Critical elements of socio-cultural environment; Social Institution and systems; Social values and attitudes; Indian business system; Social responsibility of business; Consumerism in India.

UNIT IV International and Technological Environment: Multinational Corporations; Foreign Collaborations and India business; International economic Institutions – WTO, World Bank, IMF and their importance to India; Foreign Trade Policies; TRIPS, TRIMS, Anti-dumping. Dispute Settlement.

UNIT V Economic Reforms: - Need for economic reforms, Main features of reforms, structural changes, Deregulation, privatization and globalization impact of reforms, Human faces of reforms, Future trends of reforms, **MNCs**- Definition, advantages, disadvantages, Control over **MNCs.**

OPTIONAL: Trade Block & Business Centres

EEC, NAFTA, ASEAN, SFTA, SAARC

References:

1. Adhikary, M; Economic Environment of Business, Sultan Chand & Sons, New Delhi
2. Ahluwalia, I.J: Industrial Growth in India, Oxford University Press, Delhi.
3. Alagh, Yoginder K: Indian Development Planning and Policy, Vikas Pub. New Delhi
4. Aswathappa, K: Legal Environment of Business, Himalaya Publication, Delhi
5. Chakravarty, S: Development Planning, Oxford University Press, Delhi.
6. Ghosh, Blswanath: Economic Environment of Business, Vikas Pub. New Delhi.
7. Govt. of India: Economis Survey, Various Issues.
8. Raj Agrawal and Parag Diwan, Business Environment; Excel Books, New Delhi.
9. Ramaswamy, V.S. and Nama Kumari; Strategic Planning for Corporate Success, Macmillan New Delhi
10. Sengupta. N.K: Government and Business in India, Vikas Publication, New Delhi.
11. Daniels “International Business, Environment and Operations”, Pearson Education, Delhi.

MCC - 202 ORGANISATION BEHAVIOUR (Credit – 4)

Objective

The objective of this course is to help students understand the conceptual framework of Interpersonal and organizational Behaviour.

Course Inputs

UNIT I **Organisational Behaviour:** Organisational behavior-concept and significance; Relationship between management and organizational behavior; Attitudes; Perception; Learning; Personality.

UNIT II Group Dynamics and Team Development: Interpersonal and Group Behaviour, Group dynamics-definition and importance, types of groups, group formation, group development, group composition, group performance factors; Group decision making merits and demerits.

Motivation: Process of motivation; Theories of motivation – Need hierarchy theory, theory X and theory Y, two factor theory,Alderfer's ERG theory, McClelland's learned need theory, Victor Vroom's expectancy theory, Stacy Adams equity theory.

UNIT III Leadership: Concept; Leadership styies; Theories- Trail theory, Behavioural theory, Fiedler's contingency theory; Hersey and Blanchard's situational theory; Managerial grid; Likert's four sy7stems of leadership.

UNIT IV Interpersonal and Organisational Communication: Concept of two-way communication; Communication process; Barriers to effective communication; Types of organizational communication; Improving communication; Transactional analysis in communication. Stress Management.

UNIT V Organisational Conflict: Dynamics and management; Sources, patterns, levels, and types of conflict; Traditional and modem approaches to conflict; Functional and dysfunctional organizational conflicts; Resolution of conflict.

References:

1. Robbins, Stephen P. and Mary Coulter; Management, Pearson Education, Delhi.
2. Grifin, Ricky W; Organisational Behaviour, Houghton Mifflin Co. Boston.
3. Robbins, Stephen P: Organisatinal Behaviour, Pearson Education, Delhi.
4. Hellreigel, Don, John W. Slocum, JR., and Richard W. Woodman: Organisational Behaviour; South Western College Publishing,Ohio. Utillsing Human Resources, Prentice Hall, New Delhi.
5. Hersey, Paul, Kanneth H. Blanched and Dewey E.Johnson; Management of Organisational Behaviour; Utilisaing Human Resources, Prentice Hall, New Delhi.
6. Ivancevich; John and Michael T. Matheson: Organisational Behaviour and Management, Business Publication Inc. Texas.
7. Koontz, Harold, Cyrill O'Donnell and Heinz Weihrich; Essentials of Management. Tata McGraw=Hill, New Delhi.
8. Luthans, Fred; Organizational Behaviour, McGraw-Hill, New York.
9. Newstrom, John W, and Keith Davis; OrganiZational Behaviour; Human Behaviour at work, Tata McGraw-Hill, New Delhi.

MCC - 203 MARKETING MANAGEMENT (Credit – 4)

Objective

The objective of this course is to facilitate understanding of the conceptual framework of marketing and ita applications in decicion making under various environmental constraints.

UNIT I **Basics of Marketing:** Meaning, Importance, Scope of Marketing; Marketing elements and Strategies, Marketing Environment; Marketing and Economic Development Process; Marketing Organisation.

UNIT II Marketing Management and Studying Consumers Behaviour; Marketing Management Process:- Planning & Market Segmentation, Marketing Research & Marketing Information System; Consumers Behaviour and Marketing Strategies.
Buyer's Decision process and consumer Behaviours

UNIT III Production Management & Pricing Strategies: Meaning and importance of product decision, Product Classification, Product Life Cycle (PLC) and marketing Strategies; Branding & Packaging; Pricing objectives, factors of pricing methods, and pricing policies and Strategies

UNIT IV Promotion & Placement Strategies: Meaning and importance of Communication and Promotion, elements of communication, tools of promotion, Objectives and Strategies of Promotion; Meaning and importance of Distribution. Physical Distribution System, Wholesaling and Retailing practices in India.

UNIT V Marketing in Indian Practice: Rural & Agricultural Marketing; International Marketing; Cyber Marketing; Co-operative Marketing; Green Marketing, Services Marketing

Reference:

1. Etzel, M.J, Marketing-Concepts and Cases, Tata McGraw Hill, New Delhi.
2. Keegan: Global Marketing Management, Pearsons, New Delhi.
3. Kotler Philip and Armstrong Gary; Principles of Marketing, Pearsons, New Delhi, 2006
4. Kotler, P.: Marketing Management, Pearsons, New Delhi.
5. Kumar: Marketing & Branding,Pearsons, New Delhi.
6. Majumdar, Ramanuj : Product Management in India, Prentice : fall, New Delhi
7. Mathur; Stragic Marketing Management, McMillan.
8. Motr : Marketing of Higher Technology Products and Innovations, Pearsons, New Delhi
9. Perreault, W.D. and Mc Carthy, E.J: Basic Marketing, Tata McGraw Hill, 2007. New Delhi
10. Ramaswamy, Namkumari : Marketing Management, McMillan, New Delhi.
11. Ramaswamy, Namkumari : Marketing Management, McMillan, Calcutta.
12. Saxena, R: Case Studies in Marketing, The Indian Context. PH, New Delhi.
13. Srinivasan: Case Studies in Marketing, Prentice Hall of India, New Delhi.
14. Stanton, William: Fundamental of Marketing; Tata Mc Graw Hill Publication, New Delhi.
15. Mc Carthy; Marketing Management, Tata-Mc Graw Hill, New Delhi
16. Karunakaran K – Marketing Management, Himalaya Publishing House, New Delhi.

MCC - 204 MANAGERIAL ECONOMICS (Credit – 4)

Objective

This course develops managerial perspective to economic fundamentals as aids to decision making under given environment.

Course Inputs

UNIT I Fundamental Concepts & Principles: Introduction to Managerial Economics; Scope and Subject matter. Basic Concepts and Techniques, Nature of Managerial and Economic Problems, Nature of Economic Analysis, Rote and responsibility of managerial economic; Implicit and explicit costs.

UNIT II The Theory of Firm: The circular flow of Economic Activity. The nature of the firm. Objectives of the firm, Maximising versus satisfying, the concept of economic profit, theories of profit- Accounting and economic interpretation of profit. Policies on profit maximization, Profits for control.

UNIT III Demand Analysis: The demand schedule and demand curve. The demand function. Price elasticity of demand. Interpretation of elasticity of demand. Income and crose elasticities of demand, business and economic forecasting. Method of forecasting: Expert opinion. Market experiments, Surveys.

UNIT IV Theory of Production. The production function. One variable input production function – Empirical estimation and managerial uses. Two- veriable input production function , Isoquants – Characteristies. Features and managerial use. Formulation of a Cobb- Douglas production function.

UNIT V The Theory of Cost: Cost Concepts- meaning and managerial use. Cost function – cost curves – Empirical estimation of a short – run cost function. Cost Reduction and Control.

References:

1. Craig Peterson. H.Cris Lewis, W.:Managerial Economics, Pearson Education, Delhi.
2. Mehta P.L.Managerial Economics Analysis, Problems and cases, sultan Chand and Sons.
3. Mukherjee Sampat: Business and Managerial Economics. New Central Book Agency, Calcutta.
4. Baumol W. J., : Economic Theory and Operations Analysis, Prentice Hall of India LTD.
5. Johnson J; Economic Methods, New York, McGraw Hill.
6. Reddy, P.N. & Appannaiah, H.R., Essential Managerial Economics. Himalaya Publishing House.
7. Joal Dean: managerial Economics, PHI, New Delhi.
8. Case , “Priniciples of Economics”, Pearson Education, Delhi.

MCC - 205 SMALL BUSINESS MANGEMENT & PROJECT APPRAISAL
(Credit – 4)

Objective

The objective of the present course is to sensitize the student about then role of SME sector in the economic development of the country. The present course also include discussion on various functions of a small scale units including tools and techniques of project preparation and appraisal.

Course Inputs

UNIT I **SME** ; Enterprise Evolution & Function; Definition of SSI Unit and SSI units Entrepreneur, Scope and Objective of SSI Units, Advantages & shortcomings of Small Industries, Small Industry and economic development, Developing Entrepreneurial Skill.

UNIT II Project Management: Project and Project Management, Project Identification, Project Formulation, Project Selection, Project implementation, Techno-Economic feasibility analysis, Social-cost-benefit analysis, Project Report.

UNIT III Small Industry Support system: Needs and important of support system, NSIC, SIDO, SSIB, SISI, DIC, SIDBI, Comercial Banks, Venture Capital, Lease Financing.

UNIT IV Management Process in Small Business and Legal Francewark: Planning Process, Organising, Leading and Motivating, Management of Time. The Factories Act, The Empoyees Provident Fund Act, Industrial Dispute Act, Payment of Wages Act, Workmen's compensating Act.

UNIT V Global Competition: Global Competitiveness, Strategies for SSis; Sickness in Small Scale Industries- Sympotoms, Reasons and Remedies; Future Growth Potential for SSIs.

References:

1. Dollinger, "Entrepreneurship-strategies and Resources", Pearson Education, Delhi.
2. Khamka, S.S "Entrepreneurship Development" S.Chand & Co
3. Cantillon, Richard "Entrepreneurship and Economic development" The Free Press, New York.
4. Gupta , C.B. and Khamka S.S. "Entrepreneurship and Small Business Management", S chand & Sons, Delhi.
5. Gupta C.B, & Srinivasan N.P."Entrepreneurship Development", S. Chand & Sons, Delhi.
6. Desal Vasant; "Dynamic of Entreprenial Development and Management, Himalaya Publishing House
7. Deshpande, M.U,; "Entrepreneurship of small Scale Indusstries", Deep & Deep Publication New Delhi.
8. Shrama, R.A. : "Entreprenial Change in Indian History", staling Publisher, New Delhi.

MCC - 206 SOCIAL SURVEY & RESEARCH METHODOLOGY (Credit–4)

Objective

The Objective of this course is to acquaint students the concepts Social Survey and Research. They will also be provided inputs research methods, research methodology, process of research the process of research the process of report writing.

Course Inputs

UNIT I **Research:** Meaning and Objectives, Type of Research, Role of research in functional areas; Accounting, Finance, Marketing, HR etc. Research Methods, Research Methodology Research Process.

UNIT II **Defining Research Problems:** Setting Objectives, Formulating Hypothesis, Research Design, Sample Design.

UNIT III **Social Survey:** Collection of Primary and secondary data, Design of questionnaire.

UNIT IV Data Processing: Classification, Tabulation, Editing, Analysis and interpretation of data, Uni-variate, Bi-variate and Multi-variate Analysis.

UNIT V **Report Writing:** Calegories of report, parts of a report, presentation of a report.

References:

1. Young. P.V.Sehrid, C.F.Scientific Social Survey and Research
2. Seltiz Claire, et: Research Methods in Social Relation, Hold, Tinchart & Willton, New York.
3. Good and Halt, Methods in Social Research, McGraw Hill.
4. Kothari, C.R. Research Methodology Techniques, Wishwa Prakashan, New Delhi.
5. Cooper and Schindler, Business Research Methods, MsGraw Hill.
6. Wilkinsor & Bhandarkar, Methodology of Research in Social Sciences, Himalaya.
7. Paneerselvan R. Research Methodology, PHI.
8. Bajpal SR, research Methodology in Social Science.

THIRD SEMESTER

MCC - 301 PROJECT REPORT (Credit -8)

Objective : The objective of this is to make a survey and prepare a report on current issues.

MCC - 302 STRATEGIC MANAGEMENT (Credit - 4)

Objective

The objective of this course is to enhance decision making abilities of students in situation of uncertainty in a dynamic business environment.

UNIT I **Concept of Strategy:** Defining strategy, levels at which strategy operates; Approaches to strategic decision making; Mission and purpose, objectives and goals; strategic business unit (SBU); Functional level strategies.

Environmental Analysis and Diagnosis: Concept of environment and its components; Environment scanning and appraisal; organizational appraisal; Strategic advantage analysis and diagnosis: SWOT analysis.

UNIT II Strategy Formulation and Choice of Alternatives: Strategies-stability, growth, modernization, diversification, integration; Merger, take-over and joint strategic, Turnaround, divestment and liquidation strategies; Factors affecting strategic choice; Generic competitive strategies-cost leadership, differentiation focus, value chain analysis, bench marking service blue printing.

UNIT III Functional Strategic : Marketing, Production/Operations and R & D plans policies.
Personnel and Financial plans policies.

UNIT IV Strategy Implementation: Inter-relationship between formulation and implementation; Issues in strategy implementation, Resource allocation.

Strategy and Structure: Structural considerations, structures for strategies Organisational design and change.

UNIT V Strategy Evaluation: Overview of strategic evaluation; Strategic control; Techniques of strategic evaluation and control, Problem in management and evaluation, Global issues in Strategic Management.

References:

1. David, “Strategic Management”, Pearson Education, New Delhi.
2. Bhattachary, S.K. and N.Venkataramin; managing Business Enterprises; Strategies structures and systems, Vikas Publishing House, New Delhi.
3. Budhiraja. S.B. and M.B. Athreya: Cases in strategic Management, Tata McGraw Hill, New Delhi.
4. Christensen, C.Roland, Kenneth R. Andrews, Joseph L. Bower, Rochard G. Hamermesh, Michael E. Porter; Business Policy; Text and cases, Richard D. Irwin, Inc, Homewood.
5. Coulter, Mary K: Strategic Management in Action, Prentice Hall New Jersey.
6. David, Fred R: Strategic Management, Prentice Hall, New Jersey.
7. Glueck, William F. and Lawrence R. Jauch: Business Policy and Strategic Management, McGraw Hill, International Edition.
8. H.Igor, Ansoff: Implanting Strategic Management, Prentice Hall, New Jorsey.

9. Kazml, Azhar: Business Policy and Strategic Management, Tata McGraw Hill, Delhi.
10. Srinivasan : Strategic Management – The India Context-PHI.

MCC - 303 FINANCIAL INSTITUTIONS AND MARKETS (Credit - 4)

Objective

This course aims at providing students with an understanding of the structure, organization and working of financial markets and Institutions in India.

Course Inputs

UNIT I **Nature of Financial System:** Its function Components of Financial System, Evolution of India financial system-Measuring the efficiency of India financial system-Innovations in India Financial System.

Types of Financial Markets: Money Market and Capital Market. Role, Players, Instruments, Constituents and recent development Review of the Securities Market in India; Role of SEBI.

UNIT II Commercial Banking in India: Structure, and Functions., Balance-sheet Analysis,, Risk exposures, Basel Norms, Diversifications in Commercial Banking functions, Role of Commercial Banks in the Money Market, Bank Marketing. A SWOT Analysis of Indian Commercial Banks.
Rural Banking and Micro Finance: Problem and Prospects.

UNIT III Development Financial Institutions: Structure- Role and Objective- Promotional Functions – Emerging Problems & Development Banks- Strategic Options – Concept of Universal Banking.

Insurance Sector: Nature of Insurance Organization, Types of Insurance Products – Basics of Insurance Contracts – Insurance Sector Reforms- Problems of Market Structure – Risk Management and Insurance- Role of IRDA- Emerging Scenario.

UNIT IV Non-Banking Financial Companies: Concept and role in Financial Market- Regulation and Roles of leasing. Hire Purchase and Housing Finance Companies- Venture Capital Companies.
Mutual Funds: Concept, Features and different types of Mutual Funds. Regulation of Mutual Funds- Marketing of Mutual Funds- Problems and Prospects. Latest Scenario of Mutual Funds Industries.

UNIT V **Merchant Banking:** Concept, function- SEBI guidelines.
Depository System: Objectives, participants and operating mechanism.
Derivative Markets: Basic features of SWAPs, options, Forwards and Future Market.
Foreign investments: Role in economy, Trends, Implications and problems.

Reference:

1. Avdhant: Investment and Securities Markets in India, Himalaya Publication, Delhi.
2. Bhole, L.M. : Financial Markets and institutions, Tata McGraw Hill, Delhi.
3. Ghosh, D.Banking Policy in India, Allied Publication, Delhi.
4. Khan, M.Y: India Financial System, Tata McGraw Hill, Delhi.
5. Varshney, P.n:India Financial System, Sultan Chand & Sons, New Delhi.
6. Srvastava R.M:Management of Indian Financial institution, Himalaya Publishing House, Mumbai.

7. Verma JC: Guide to Mutual Funds and Investment Portfolio, Bharat Publishing House, New Delhi.
8. Gorden and Natarajan,"Financial Markets and Services". Himalayan Publishing House, N.Delhi.
9. Benton, E Gup,'Financial Intermediations; An introduction', Response books.

MCC - 304 ECONOMIC ANALYSIS FOR DECISION MAKING (Credit - 4)

Objective

This course develops managerial perspective to economic fundamentals as aids to decision making under given environment.

Course Inputs

UNIT I Pricing Theory: Market structure and competitive Behaviour, Perfect Competition – Imperfect completion; monopoly, monopolistic competition and Oligopoly Pricing decisions under various market structure.

UNIT II Pricing Policies and Practices: Cost plus pricing. Skimming price and penetration price. Pricing products of lasting distinctiveness pricing products of perishable distinctiveness pricing standard products when competitor's and few, Pricing and practice.

UNIT III Product Diversification: Meaning and Scope. Product Life Cycle. Opportunity for multiple products. Specification product addition criteria. Policy on dropping old products.

UNIT IV Economic Environment: The Macro-Economic Scenario in India, Problems of Growth, Business Cycles: Cause and consequences – Measures to curb them. Balance of Payment problems. New Trade policy, WTO-critical evaluation and short coming.

UNIT V Economic Reforms: Need for economic reforms, Main features of reforms. Structural changes. Deregulation, Privatization and globalization, Impact of reforms-Human face of reforms. Future of economic reforms.

References:

1. Cralg Peterson, H.Cris Lewis, W.:Managerial Economics, Pearson Education, Delhi.
2. Joel Dean: Managerial Economics. PHI.
3. Agarwal A.N.:Indian Economy problems of Development and Planning, New AGE International Pvt. Ltd., New Delhi.
4. Gupta G.S.:Macro Economic Theory and Application, Tata McGraw Hill publishing Company Ltd. New Delhi.
5. McGulgn J.R.and Charies Moyer, Managerial Economics. The Drycon Press, Hinadale
6. Michael Edgament:Macro Economics Theory and Policy, PHI ltd.
7. Ghosh Alok:Indian Economy, S.Chand & Co.
8. Greene,"Econometric Analysis", Pearson Education, Delhi.
9. Sydsaeter "Mathematics for Economis Analys". Pearson Education, Delhi.

MCE - 305 BUSINESS COMMUNICATION AND SOFT SKILL (Credit - 4)

Objectives

The objectives of the paper is to enable students to:

- Appreciate the importance and need of soft skills in personal and personal life
- build a repertoire of functional vocabulary and to move from the lexical level to the syntactic level
- summon words, phrases relevant to the immediate communication tasks in class as well as office
- comprehend the concept of communication
- learn the four basic communication skills – Listening, Speaking, Reading and Writing

Course Inputs:

UNIT – I Recap of language skills – vocabulary, phrase, clause, sentence.

UNIT - II Fluency Building – word match, reading aloud, recognition of attributes, parts of speech in Listening and reading, listening – reading comprehension.

UNIT –III Principles of Communication – Communication as coding and decoding – signs and symbols – verbal and non –verbal symbols – Language AND communication; language VS communication – media/channels for communication

Individual Communication – Self advertising – Over stating and under stating – Overcoming shyness – Writing curriculum vitae, Statement of Purpose – Talking about oneself; interview.

UNIT- IV Types of Communication- functional, situational, verbal and non-verbal, interpersonal, group, interactive, public, mass line, dyadic – with illustrations

Intermediary Communication – Overcoming mental blocks, prejudices and hotspots of the addressee – telephone, teleconferencing, and web chat – greeting, introducing –memos, reports, minutes, business correspondence.

UNIT - V LSRW in Communication – Listening – Active vs Passive (Talk less, listen more); Speaking - Speech vs Enunication (mind your tone); Reading –Focus on the structure not on the theme alone; Writing – Precise, not only précis writing

Social Communication – Etiquette in LSRW – polite yet assertive, tackling questions, seeking permission, expressing gratitude – gender fair language – discourse and transactional analysis – empathy.

References :

1. Dignen, Flinders and Sweeney. English 365. Cambridge University Press
2. Goleman, Daniel. 1998. Working with Emotional Intelligence. Bantam Books. New York
3. Hall and Shepheard. The Anti-Grammar Grammar Book: Discovery Activities for Grammar Teaching. Longman
4. Hewings, Martin. 1999. Advanced English Grammar: A Self-Study Reference and Practice Book for South Asian Students. Reprint 2003. Cambridge University Press. New Delhi
5. Jayakaran. 2000. Everyone's Guide to Effective Writing. 2 M Publishing International, Chennai.
6. Jones, Leo and Richard Alexander. 2003. New International Business English. Cambridge University Press
7. Lewis, Norman. 1991. Word Power Made Easy. Pocket Books

8. Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw- Hill. New Delhi
9. Sasikumar.V and P.V. Dhamija. 1993. Spoken English: A Self-Learning Guide to Conversation Practice. 34th Reprint. Tata McGraw-Hill. New Delhi
10. Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York
11. Windshuttle, Keith and Elizabeth Elliot.1999. Writing, Researching and Communicating: Communication Skills for the Information Age. 3rd Reprint. Tata McGraw-Hill. Australia

MCE - 306 ENTREPRENEURSHIP DEVELOPMENT(Credit - 4)

Course Inputs

UNIT –I **Problems in Entrepreneurship Development:** Dot com entrepreneurship, role of Govt. in entrepreneurship Development - R & D, Science technology & Entrepreneurship development.

UNIT –II **Specialized institutions involved in entrepreneurship Development** Business incubation & venture capitalists, Entrepreneurship development efforts in India-Issues & cases

UNIT –III **Change in concept of entrepreneurship:** Entrepreneurship within organization, corporate strategy**,** Entrepreneurship.

UNIT –IV **Business idea search:** Project identification, project design, Network analysis, Business model PERT, Critical path method, Creativity & Innovation, Meaning & importance & role in developing a new business

UNIT – V **Issues in project management:** Project direction, co-ordination & control, project cost**,** Evaluations & cost control, Interface with industrial sickness, Project monitoring & MIS.

References:

1. S.S. Nadkarni-Developing new Entrepreneurs, EDII, Ahmadabad.
2. N.P.Singh- Entrepreneurs v/s Entrepreneurship Asian society for ED.
3. Desai Vasant –Dynamics of Entrepreneurial development & management, HPH.
4. Khairka S.S. Entrepreneurial Development , S.Chand & Co, New Delhi.
5. Moharana Drant Desai- Entrepreneurship Development, RBSA Publishers, Jaipur.
6. Paul Jose,Kumar N.Paul T.M. Entrepreneurship Development, HPH, New Delhi.
7. Saini J.S. Rathore B.S. Entrepreneurship Theory & Practice.

MCF - 307 MANAGEMENT OF PERSONAL FINANCES (Credit - 3)

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT -II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNIT-III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT- IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT - V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

1. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
2. Financial Education By Reserve Bank of India - rbi.org
3. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
4. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
5. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

MCF - 308 CAPITAL MARKET INSTRUMENTS (Credit - 3)

Objective

To equip the students with an opportunity to understand the role of Capital Market Instruments like Stock, Bond etc.

Course Inputs

UNIT -I Origin, Nature and Role of Capital Markets-Globalization of Capital Markets, Capital Markets in India- Stock Exchange.

UNIT –I I Financial Instruments : Definition & Meaning, Classification of Financial Assets & Liabilities , Share Warrants or Options, Hedging Instruments.

UNIT- III Stocks, Bonds, Debentures – Convertible Debentures, ADR, GDR, ETFs, Units of Mutual Funds.

Unit-IV Derivatives – Basic Features : Role of Derivative Markets, Forward and Futures, Commodity Futures, Stock Futures and Index Futures

Unit-V Options, Stock Options and Index Options, Swaps, Currency Swaps and Interest rate Swaps.\

References :

1. Financial Institutions and Markets – Bhole L. M.- TMH
2. Financial Markets – M. Y. Khan
3. Financial Derivatives – Dr. G. Kotreshwar

MCEA - 309 ADVANCED ACCOUNTING (Credit - 4)

Objective

The objective of the course is to expose the students to advanced company account as well as specialized accounts for different types of organization.

Course Inputs

UNIT I **Holding Company Accounting:** Meaning, Definitions and requirement, Philosophy of consolidation; Minority Interest, Cost Control, Revaluation of Assets and Liabilities, Bonus shares & Dividends, Consolidation of P/L Account and Balance Sheet.

UNIT II Double Account System: Meaning, definition and distinction between single and double account system, Final accounts under double account system, Revenue account, net revenue account, capital account & General Balance Sheet, Electricity Supply Act.

UNIT III Banking Company Accounts: Different systems of Posting, Different statutory books to be maintained. P & L account and p & L appropriation account & balance sheet as per Banking Regulation Act 1949.

UNIT IV Insurance Company Accounts: Life Insurance Companies & the statutory books to be maintained. Statutory provisions in preparing the revenue account, valuation balance sheet and balance sheet. Marine & Fire Insurance Accounts.

UNIT V Government Accounts: Commercial Accounts and Government Accounts, Accounting methods & financial statements, Basic principles of government accounts in India, classification of government accounts in India, Accounting for fire & marine insurance claims & losses construction contracts.

References:

1. Advanced Accounting – Vol. II,III & IV R.L.Gupta & M.Radhswamy (S.Chand)
2. Advanced Accounting – Arunanandan & Raman (Himalaya)
3. Advanced Accounting – Maheswari & Maheswari (Vikash)
4. Practice in Accountancy – Basu and Das (Rabindra Library)
5. Fundamentals of Advanced Accounts-Vol. II- Francis Xavier (TMH)
6. Advanced Accounting – Vol II, Hanif & Mukherjee (Tata McGraw Hill)

MCEA - 310 CORPORATE TAX PLANNING (Credit - 4)

Objective

To provide a conceptual idea about the various provisions of the Income Tax Act. Related to the corporate sector and study the implications of these provisions on the tax planning of the companies.

Course Inputs

UNIT I Corporate Tax in India, Assessment of Corporate Assesse- Head wise

UNIT II MAT, TDS, Advance Payment Tax, Self assessment, Tax Planning as Residential Status, Basis of Tax Planning, Tax avoidance, Tax Management and Tax evasion

UNIT III Tax Planning with reference to: Depreciation, Capital gain, House Property, Amalgamation

UNIT IV Tax planning for setting up new undertaking: Basis of Location, Basis of nature of Business

UNIT V Tax Provisions of Merger and Demerger, Transfer Pricing, Double Taxation, Provision for GST in India (if any).

References:

1. R.N.Lakhotia and Subash Lakhotia," Tax planning for non-resident Indians", Vision books (P) ltd.
2. R.N.Lakhotia, "Corporate Tax Planning", "Vision books (P) ltd.
3. Singhania, V.K.Direct Taxes: Law and Practic, Taxman's Publication, Delhi.
4. Bhagabati Prasad,"Direct Tax Laws & Practices".

MCEB - 311 Advanced Auditing (Credit - 4)

Objectives

To gain expert knowledge of current audit practices and procedure and apply them in auditing engagements.

Course Inputs

UNIT-I **Audit Strategy, Planning and programming :** Planning the flow of audit work, drafting of reports, audit strategy planning, programme and importance of supervision, review of audit reports and working papers, control of quality of audit work.

UNIT-II **Documentation and Internal Control,** Audit Working Papers , Audit Files, Permanent and Current Audit Files, Ownership and Custody of Working Papers, Elements of Internal Control, Evaluation of Internal Control System, Internal Control Questionnaires, Internal Check List, Test of Control, Concept of Internal Audit.

UNIT- III **Audit of Impersonal Hedger:** Capital Expenditures, Deferred Revenue Expenditure, Revenue Expenditure, Outstanding Expenses and Incomes, Repairs and Renewals, Distinction Between Reserves and Provisions, Implications of Change on the Basis of Accounting.

UNIT - IV **Audit Reports** ; Qualification , Notes on Accounts, Distinction Between Notes and Qualifications, Detailed Observations by the Statutory Auditor to the Management vis-avis Obligations of reporting to members, Special Reports on offer Documents.

UNIT-V **Government Audit :** Constitutional Framework in India, Comptroller and Auditor General of India (Duties, Power and Conditions of Service) Act1971, Audit Procedures adopted by CAG; Audit of public Sector Undertakings- Audit of Commercial Accounts, Auditor of Government Companies, Audit report of CAG on Accounts of Union or State or Central Govt.

References –

1) Saxena R. G.- Principles and Practice of Auditing, Himalaya Publishing House
2) Gupta Kamal – Contemporary Auditing – Tata McGraw Books
3) Emite Woset et al – Advanced Auditoring and Investigation-McDonald & Evans, UK
4) Emile Woolf – Auditoring Today- Prentice Hall

MCEB - 312 Merchant Banking and Financial Services(Credit - 4)

Objective

To know conceptual, functional, and regulatory aspects of India Capital Market and Merchant Banking activities.

Course Inputs

UNIT I **Indian Financial System & Financial Services**: Introduction to Indian Financial system and Securities Market, Market Structure; Market Participants; Financial Instruments; Regulations.

UNIT II Capital Market Operations: New Issues Market and Development,Growth of Stock Market operations in India; Organization and Functioning of Regional Stock Exchange, National Stock Exchange and OTCEI; Trading and Settlement mechanism.

UNIT III Growth of Merchant Banking in India & Issue Management; Meaning, nature, role and functions, regulations; Project Appraisal and Management; Pre-issue and Post-issue management.

UNIT IV Marketing of Financial Services: Depository Services, Credit Rating, Housing Finance, Credit Cards, Mutual Fund.

UNIT V Assets Financial Services: Leasing and Hire Purchase; Factoring, Forfating and Bills Discounding.

References:

1. Fabozi. F.J.,"Capital Market", prentice Hall of India, New Delhi.
2. Femando, A.C., "Indian Financial System", Pearson education, New Delhi.
3. Mishkin, Eakins., Financial Markets & Institutions", Pearson", Pearson education, New Delhi.
4. Fabozl. F.J.,"Foundations of Financial Markets and Institutions".pearson education, New Delhi.
5. Khan, M.Y., "Indian Financial System", TataMc-Graw Hills, New Delhi.
6. Srivastava, R.M., and Nigam, D. "management of Indian Financial institutions", Himalayan Publishing House, New Delhi.
7. Pathak, "Indian Financial System", Pearson education, New Delhi.
8. Desai, "Merchant Banking", Himalayan Publishing House, New Delhi
9. Abdhani, V.,"Marketing of Financial Service", Himalayan Publishing House, New Delhi.
10. Machraju,"Merchant Banking and Financial Services," Willey Eastern Publication, New Delhi.
11. Indian Institute of Bankers, "Merchant Banking", Mac millan, New Delhi,
12. Ravichandran K. – Merchant Banking- Financial Services – Himalaya Publishing House, New Delhi.

MCEB - 313 **INTERNATIONAL FINANCE** **(Credit - 4)**

Objective

To provide a theoretical and practical understanding of the issues involved in international finance from the perspective of a company engaged in international trading.

Course Inputs

UNIT I **Forex Market:** Structure, Exchange Rates, Player, Types of transactions – Risks in Forex Market – problem of market Imperfection and MNC's – International Monetary System – The concept of Balance of Payment – Challenges in International Finance.

UNIT II Types of Forex Market: Spot and Forward. Currency options and currency futures – Hedging with currency options and futures, International parity relationship.

UNIT III Management of Forex Exposure: Transaction Exposure, Operating/Economic Exposure, Accounting/Transaction exposure.

UNIT IV International Financial Market: Equity Market, Bond Market, International Financing Decisions – Cost of capital, Debt vs. Equity Decisions.

UNIT V Financing International Trade: Letter of Credit, Bill of Lading, Govt. Programmes to Finance International trade – Counter trade – Forms of counter trade.

References:

1. IAN.H.Glddy "Global Financial Markets" (AITBS Publishers and Distributors (1997) New Delhi).
2. P.G. Apte "International Financial Management" (Tata McGraw Hill, New Delhi, 1995).
3. Solink B.H."International Investment" (Addisonnwesley publishing Co. Rending Mass).
4. Rajaram S."Forex Guide to Traders and Bankers" (R.Rajaram Madras).
5. Alan, C.Shapiro,"Multinational Financial Management" IAllyn and Bacon Inc,Boston).
6. Jain, Peyrand & Yadav" International Financial Management" (McMillan India Ltd.)

MCEB - 314 **SECURITY ANALYSIS** **(Credit - 4)**

Course Inputs

Unit-I **Meaning and Definition of Investments, Security Portfolios, Returns and Risks –** Risk Elements, Measurement of Risk, Capital Assets Pricing Model, Arbitrage Pricing Theory.

Unit-II **Security Pricing –** Factors Influencing Valuation, Constant Growth Model, Capitalisation of Dividends, Security Pricing Models, Dividend Discounting Methods, P/E Ratio Model and Graham's Approach, Valuation of Securities in India.

Unit-III **Trading in Securities :** -Meaning and Characteristics of Options, Types of owth and Advantage of Derivative Markets – Speculation & hedging.

Futures Trading – Futures and Options, Index Futures, Valuation of Index Futures, Arbitrage Trading & Hedging- derivative trading in Securities.

Unit-IV **Analysis of Securities : -** Fundamentals Analysis, Technical Analysis and Efficient Market Theory.

Unit-V **Portfolio Management:-** What is a Portfolio, Risk and Return in Portfolio Theory, Risk Return analysis- Return on Portfolio, Risk on a Portfolio, Expected Returns, Concept of Alpha, Beta, Correlation Coefficient, Regression Equation- Basics of Portfolio Analysis in India- Markowitz Model, Modern Portfolio Theory- Portfolio Management in Mutual Funds.

References-

1. Avadhani V.A. "Securities Analysis & Portfolio Management", Himalaya Publishing House, Mumbai.
2. Singhi Preeti, "Investment Management", Himalaya Publishing House, Mumbai.
3. Sudhindra Bhat, "Securities Analysis & Portfolio Management", Excel Books, Mumbai.
4. Prasanna Chandra, "Investment Analysis and Portfolio Management", Tata McGraw Hill, India.
5. Fischer Jordan, "Securities Analysis & Portfolio Management", Pearson
6. Avadhani V.A. "Investment Management", Himalaya Publishing House, .

MCEC - 315 SERVICES MARKETING (Credit - 4)

Objective

The objective of this paper is to get the students conceptually clarified and getting them being acquainted with applications of the marketing concepts and strategies to services.

Course Inputs

UNIT I **Introduction to Services:** Meaning, definition, features and classification of services, Products Vs. Services; Service Sectors and Economic development, Evolution & Growth of Service sector in India; Services Marketing Elements; Services Marketing Triangle;

UNIT II Services Marketing Planning: GAP Model; Services Marketing Management Process,Service Marketing Research; Service Marketing Planning, Market Segmentation (STP) and positioning; Consumer Behavior, Customer Expectations, and Perception; Managing Demand of Services; Service Encounter Management; Strategic Services Marketing and development Service Competitive Advantage (SCA).

UNIT III Services Marketing Strategies: Gap Model and Service Quality Management; Service Expectations and Service Product Planning, Blue Printing and Interactive Marketing; Pricing of Services; Customer Education and Promotion of Services; Service Location and Placement of Services; Internal and External Marketing.

UNIT IV Customer Relationship Management: Managing People, Process and Physical Evidence; Basics of Customer Relationship Management-Understanding Customers expectations, Perceptions and Building Customers Relationship. Services Recovery and Managing Customer Waiting lines and Reservations..

UNIT V Marketing of Services in India: Financial services, Tourism Services, Education and Professional Services, Health services and I.T. & Communication services.

References:

1. Lovelock, C., “Services Marketing, Pearson Education Inc, New Delhi,
2. Zethimal, V.A., and Bitner, M.J., “Services Marketing “. Tata MacGraw Hill, New Delhi.
3. Shajahan, S., “Services Marketing”, Himalayan Publishing House, New Delhi.
4. Rao, R., “Services Marketing”, Pearson Education Inc, New Delhi.
5. Jha, S.M., “Services Marketing”, Himalayan Publishing House, New Delhi.
6. Shanker, Ravi. “Services Marketing “, Excell Book, New Delhi.
7. Apte,G., “Services Marketing”, Oxfoed Publication, New Delhi.
8. Dyche, Jill., “The CRM Hand Book”, Pearson Education Inc, New Delhi.
9. Mukharjee, Kaushik., “Customer Relationship Management”, PHI Publication, New Delhi.
10. Balaji, B., “Services Marketing and Management”, S.Chand & Company Ltd, New Delhi.
11. Mohamed, H.P., “CUSTOMER RELATIONSHIP MANAGEMENT”, Vikas Publishing House, New Delhi.
12. Jha, S.M., “SOCIAL MARKETING”, Himalayan Publishing House, New Delhi.

MCEC - 316 **RETAIL MANAGEMENT** **(Credit - 4)**

Objective

The objective of this course is to facilitate understanding of the conceptual framework of retail management and its applications in decision making under various environmental constraints.

Course Inputs:

UNIT I **Introduction:** Basic on Retailing; Meaning, Importance, Recent Trends Types, Opportunities, Ret. MgF. Decision Process; Retail Organizations; Retail Customers; Retailing in India; Retail Philosophies & Theories, Retailing; Marketing (Gilbert Book); Retail Marketing – Mi (II)

UNIT II Retailing Management Decisions: Retail Market Segmentation and Location Study, Understanding, Retail Customers Buying Behaviors; Retail Marketing; Strategy, Retail Locations and Site Selection; Financial Strategy; Management of Services and Quality in retailing.

UNIT III Product and Pricing Strategies Management IN Retailing: Product and Merchandise Management, Buying Systems, Buying Merchandise Pricing Strategies.

UNIT IV Retail Promotion: Store Management, Relationship Marketing: Atmosphere and Retail Stores Management; Organization- Miq; Store Layout and Management International Retailing; Customer Servicing Retail Customers; Retail Operations; Consumerism and Ethics in Retailing.

UNIT V Supply Chin Management: Introduction, Demand Management, Operation Management, Procure Management, Logistic Management. Information Technology, Performance measurement & Control; Information System and Supply Chain Management; Retail Management Information Systems; Application of IT in Retail Marketing; Challenges, Solutions, Operations, Planning, Designing; Understanding and Improving S.Chains and Supply Chain Processes; Internal Integration Managing Information Flows within the Organizations; Financial Impact of SCM; Customers/Supplier Integration and New Product Day;
Introduction and Basics of Supply Chain: Meaning Supply Chain Performance and Scope, Designing the Supply Chain Network Sourcing, Transporting and Technology in Supply Chain.

References:

1. Chitan Bajaj, Rajnish Tal, Nidhi Srivastava: Retail Management.
2. Michael Levy, Barton A Weitz, Tata Mc Graw Hill.
3. Swapna Pradhan, Tata Mc Graw Hill; Retail Management.
4. Barry Burman, J.E.Evans, Pearson: Retail Management.
5. David Gilbert, Pearson; Retail Management.
6. David A. Taylor, Pearson: Supply Chain.
7. Rahul V.Altekar, PHI: Supply Chain Management Sunil Chopra, Peter Meinal:
8. R.B.Handfield, E.L.Nichols: Supply Chain Redesign
9. Sunil Chopra, Peter Meinal: Supply Chain Management
10. J.R.Ogdon, D.T.Ogden, Biztantra Pub: Integrted Retail Management.

MCEC - 317 CUSTOMER RELATIONSHIP MANAGEMENT (Credit - 4)

Course Inputs

UNIT -I Introduction to marketing, Customer Services and Customer Relationship Management :- Basics of CRM; Customer Values & Customer Satisfaction; CRM & Sales Cycle : Cost of Acquiring Customer; CRM in Marketing; CRM & Customer Services; The of CRM; Building CRM; Types of CRM

UNIT-II Management of CRM :-CRM Objectives, Planning Strategy & Building Blocks; Tools of CRM; CRM Success; CRM Business Plan; CRM Functionality;; Technological Requirements; CRM Process; CRM Complementation.

UNIT-III CRM Implementation:- Safeguarding CRM Failure, Pre-Implementation & Implementation ; CRM Development Team ; CRM Saboteaurs ; CRM Roadblocks ; CRM Challenges.

UNIT-IV E-CRM : Basic , Benefits, Praceolure, CRM in Internet, Factors in e-CRM; Analytical CRM; CRM in e-Business ; Integration of CRM with ERP System, with Data Warehouse, With call Centres; Sales Force Automation.

UNIT-V CRM in Practice – Manufacturing Banking Insurance, Airlines, Hotels, Telecom, SMB Segment, HRM in CRM.

References:-

1. Anton Dr. Jone, Kalia Dr. Shalini Petouh off- Natalie l. “CRM: The Bottamline to Optimizing your ROI”, Pearson Publication, New Delhi.
1. Mukherjee Kaushik, CRM- A Strategic Approach, PHI, New Delhi, 2007.
2. Dyche, Jill The CRM Handbook – “A Business Guide to CRM”. Pearson Publication, New Delhi.
3. Mohamed, H. P. and Sagadevon, A.,”CRM – A step by step Approach”. Vikash Publication, New Delhi.
4. Bhat, Govind K. “CRM”, Himalayan Publishing House, New Delhi.

MCED - 318 INTERNATIONAL BUSINESS (Credit - 4)

Objective

The objective of the course is to help students understand the conceptual framework of international business and thereof make financial decisions.

Course Inputs

UNIT I **Nature of International Business:** Relevance of International Business, Process of Internationalization, Collaborative Strategies, Strategies For International Business. Barriers to trade- Tariff and Non-Tariff, Triad and International Business.

UNIT II International Environment: Economic Environment: Economic System, Structure, FDI, Fee Trade, Competition, Privatization, Deregulation, Cultural Environment, Political & Legal Environment.

UNIT III Export Import Strategies: Export Challenges, Choice of Entry Mode, Factors Favoring Export, Stages of Export, Pitfalls, Selection of market, Export intermediaries, Key Export Documents, Import Strategies, Import documentation, Third Party intermediaries- Direct selling. Direct Exporting, Indirect selling, Export management and Trading companies.

UNIT VI International Trade Theories: comparative Cost Theory, Theories of Specialisation. Theory of Country size, Factor Proportion Theory, Product Life Cycle Theory, Country similarities Theory.

UNIT V Financing of Foreign Trade and Institutional infrastructure: Financing of Operation, Management of Foreign Exchange Risk, Settlement of International Transaction, Uses of Bills of Exchange, Forfaiting, Letter of Credit & Settlement, Factoring, IMF, World Bank, UNCTAD.

References:

1. International Business- Daniels, Radebaugh & Sullivan, Pearson Education
2. International Business- Rugman & Hodgetts, Pearson Education
3. International Business- Bennett, Pearson
4. International Business Environment- Cherunijam, Himalaya
5. International business- Sharan
6. Justin, P., International Businaess, PHI
7. Cherunillum, International Business, PHI.

MCED – 319 INTERNATIONAL FINANCE (Credit - 4)

Objective

To provide a theoretical and practical understanding of the issues involved in international from the prospective of a company engaged in international trading.

Course Inputs

UNIT I **Forex Market:** structure, Exchange Rates, Player, Types of Transactions –Risks in Forex Market –Problem Of Market imperfection and MNC's –International Monetary System; The concept of Balance of Payment –Challenges in International Finance.

UNIT II Types of Forex Market: Spot and Forward. Currency options and Currency Futures –Hedging With currency options and futures, International parity relationship.

UNIT III **Management Of Forex Exposure:** Transaction Exposure, Operating /Economic Exposure ,Accounting/Transaction Exposure.

UNIT IV International Financial Market: Equity Market, Bond Market, International Financing Decisions-Cost of Capital, Debt vs Equity Decisions.

UNIT V Financing International Trade: Letter of Credit, Bill of Lading, Govt. Programmes to Finance International trade-Counter trade-Forms of counter trade.

References:

1. Apte ,p g: International Financial Management, Tata McGraw Hill, New Delhi.
2. Buckley, Adrian: Multinational Finance , Prentice Hall, New Delhi.
3. Eitman D.K and A.I Stonehill, Eitman, Multinational Business Cash Finance, Addition Wesley New York.
4. Sharan V., International Financial Management PHI, New Delhi.
5. Clark, E., International Finance, Thomspon.
6. Henning C.N.,W Piggot and W.H. scolt; International financial Management , McGraw Hill, International Edition.
7. Levi, Maurice D; International Finance, McGraw Hill, International Edition.
8. Rodriqufe R.M. and E.E. Carter: International Financial management, Prentice Hall, International Edition.
9. Shaprio Alan C: Multinational Financial Management, Prentice Hall, New Delhi.
10. Yadav S., P.K.Jain and Max P., foreign Exchange Markets, Macmillan, New Delhi.
11. Zeneff D. and J Zwick: International Financial Management, Prentice Hall, International Edition.
12. O, Connor DJ, Bueso At: International Dimensions of Financial Management; Macmillan, New Delhi.
13. Plibeam Keith: International Finance: MacMillan Press, Hong Kong.
14. Melvin "International Money and Finance "Pearson, New Delhi.

MCED – 320 **PROJECT RISK MANAGEMENT** **(Credit - 4)**

Course Inputs

UNIT-I **Introduction :-** Corporate Growth Strategies and Types of Projects, Major features of the manufacturing and source projects, Importance of project risk management, Project risk management process, Planning project risk management , Importance.

UNIT – II Identifying Project Scope Risk :- Sources of Scope Risk, Risk levels, Assessment tools, Documenting the risk.

Identifying Project Schedule Risk :- Sources of schedule risk, Estimating activity duration, Activity sequencing, Documenting the schedule risk.

UNIT-III Identifying Project Resource Risk :- Source of resource risk, Resource planning outsourcing, Cost estimation and budgeting, Documenting the project resource risk.

Managing the Project Constraints & Documenting Risk :- Analysing constraints, Managing opportunities, Scope medication, Resource modification, Assessing options & updating plans, Seeking missing risks.

UNIT-IV Quantifying and Analysing Activity Risk:- Quantitative and qualitative risk analysis, Risk probability, Risk impact, Qualitative & quantitative risk assessment.

Managing Activity Risk :- Cause analysis, Categories of risk, Risk avoidance, Risk mitigation and risk transfer , Implementing Preventive ideas, Contingency planning and risk acceptance.

UNIT – V Quantifying and Analysing Project Risk :- Project level risk, Aggregating risk response, Questionnaire & surveys, Analysis of scale, Project appraisal.

Managing Project Risk :- Project documention, Project start up & project implementation, Specification of change management.

Monitoring & Controlling Risky Project-

Reference:

1. Patel M. Bhavesh " Project Management" Vikash Publishing
2. Kendrick Tom "Identifying & Managing Project Risk", PHI
3. Koster Kathrin " Interantional Project Management" Sage Publication.
4. Bary Bentor "Project Management and Leadership Skill", The Fair mound Press.
5. Daniel Brandon " Project Performance Measurement" John Wiley & Sons
6. Capels Thomas M. "Financially Focussed Project Management", J. Ross.
7. Kevin R. Callahan " Essentials of Strategic Project Management" John Wiley & Sons
8. Chapman Chris et. El. " managing Project Risk & Uncertainly" John Wiley & Sons.
9. Cleland David " Project Management: Strategic Design & Implementation". TMH
10. Cooper Dale F et. el. " Project risk Management Guidelines : Managing risk in large Projects & Complex Procurements" John Wiley & Sons.

MCED – 321 **ENTREPRENEURSHIP IN MSMEs (Credit - 4)**

Objective : The purpose of this paper is to prepare a ground where the students view Entrepreneurship as a desirable and feasible career option. In particular the paper seeks to build the necessary competencies and motivation for a career in Entrepreneurship.

Course Inputs :

UNIT- I Entrepreneurship-Enterprise: Conceptual Issues, Entrepreneurship vs. Management, Roles and functions of in relation to the enterprise and in relation to the economy, Entrepreneurship is an interactive process between the individual and the environment, Small business as seedbed of Entrepreneurship. The teachers should emphasize to students the desirability as well as feasibility of a career in Entrepreneurship in the Indian scenario, Entrepreneurs competencies, Entrepreneur motivation, performance and rewards, The teachers may make use of Entrepreneurship Development Institute of India's Inventory of Entrepreneur Competencies and National Institute of Entrepreneurship and Small Business Developments training kit for arousing Entrepreneur motivation and capacity and capability building.

UNIT- II Opportunity scouting and idea generation : Role of creativity and innovation and business research. Sources of business ideas, Entrepreneur opportunities in contemporary business environment, for example opportunities in net-work marketing, franchising, business process outsourcing in the early 21 century, The students be advised to visit various product/service franchises, BPO concerns and meet up/down links in the net-work marketing.

UNIT- III The process of setting up a small business ; Preliminary screening and aspects of the detailed study of the feasibility of the business idea and financing/ non-financing support agencies to familiarize themselves with the policies/programs and procedures and the available schemes, Preparation of project report and Report on Experiential Learning of successful and unsuccessful entrepreneurs, The students may be advised to develop a structured instrument for conducting surveys of the various aspects of entrepreneur/enterprise, They may also be advised to prepare a comprehensive business plan. The desirability and feasibility of liaison with relevant funding and non-funding agencies may also be explored.

UNIT – IV Management roles and functions in a small Business: Designing and re-designing business process, location, layout, operations planning and control. Basic awareness on the issues impinging on quality, productivity and environment, Managing business growth, The pros and cons of alternative growth options: internal expansion, acquisitions and mergers, integration and diversification, Crisis in Business growth.

UNIT – V Issues in small business marketing : The concept and application of product life cycle, advertising and publicity, sales and distribution management, The idea of consortium marketing, competitive

bidding/tender marketing, negotiating with principal customers, The contemporary perspectives on Infrastructure Development, Product and Procurement Reservation, Marketing Assistance, Subsidies and other Fiscal and Monetary Incentives. National state level and grass- root level financial and non-financial institutions in support of small business development.

References

1. Brandt, Steven C., The 10 Commandments for Building a Growth Company, Third Edition, Macmillan Business Books, Delhi, 1977
2. Bhide, Amar V., The Origin and Evolution of New Business, Oxford University Press, New York, 2000.
3. Dollinger M.J., 'Entrepreneurship strategies and Resources', 3rd edition, Pearson Education, New Delhi 2006.
4. Desai, Vasant Dr. (2004) Management of small scale enterprises New Delhi: Himalaya Publishing House,
5. Taneja, Gupta, Entrepreneur Development New Venture Creation,: 2nd ed.

MCED – 322 PROJECT APPRAISAL & IMPLEMENTATION (Credit - 4)

Objective

The objective of the course is to acquaint the students with the concepts, tools and techniques as well as the methods of project planning and use as the strategy in the financial management.

Course Inputs

UNIT I **Project:** Meaning, Lifecycle, Types of project, Scope of project, Pre- investment studies. Feasibility studies and reports, project report and its contents.

UNIT II Project Appraisal and Evaluation: Material appraisal, technical appraisal, Manpower appraisal, Marketing appraisal, Financial appraisal, Preparation of appraisal reports, techniques of methodology of appraisal.

UNIT III Estimation of Cost of Project: Financing and financial closure, Estimation of profitability and techniques of evaluation.

UNIT IV Administrative Approval: Project organization, Administration, engagement of consultants, preparation of technical specifications and contract finalization.

UNIT V Project Implementation: Scheduling and monitoring and Contract, Post emplitia Audit and evaluation, Capitalisation of Amount of price.

References:

1. Narendra Singh: Project Management & Contract
2. Vasant Desai: Project Management
3. Bhavesh Patel : Project Management
4. Feasibility Studies, IDBI Manuals for the Preparation of Industrial Project.

MCED – 323 ACCOUNTING & FINANCE FOR SMALL ENTREPRENEURS
(Credit - 4)

UNIT – I	Principles of double-entry book-keeping: journal entries, cash- book, pass book,and Bank Reconciliation Statement, ledger accounts, trail balance, Preparation of final accounts: Trading and Profit and Loss Account; Balance-sheet. Brief introduction to Single-Entry system of record keeping.
UNIT- II	Financial statement analysis techniques – Ratio analysis and Inventory Valuation and estimation.
UNIT - III	Funds flow statement & Cash flow statement analysis, Sources of long term finance.
UNIT- IV	Meaning, scope, aims and objectives of financial management;finance function;Sources of risk/venture such as leasing and factoring.capital, fixed capital, working capital and a basic awareness of financial services
UNIT- V	Capital budgeting- concepts, risk analysis of capital investments, cost of capital. Capital Structure: Planning & Theories; Marginal Costing & Profit Planning; Cost volume profit Analysis.

References:

1. Maheshwari, S.N. (2001). Management Accounting and Financial Control.*Sultan Chand and Sons*, New Delhi.
2. Bhattacharya, S.K. and Dearden, J. (1996). Accounting for Management: Texts and Cases. *Vikas Publishing*, New Delhi.
3. **Bhattacharya** (2003). **Financial Accounting for Business Managers**.*Prentice Hall of India*, New Delhi.
4. **Pandey, I.M.** (2003).**Finance: A Management Guide for Managing Company Funds and Profits**.*Prentice Hall of India*, New Delhi.

FOURTH SEMESTER

MCC - 401 CORPORATE GOVERNANCE & BUSINESS ETHICS (Credit- 4)

Objective

The objective of the paper is to provide a theoretical understanding of the issues involved in corporate governance and business ethics from the perspective of a company manager engaged in welfare of the stakeholders.

Course Inputs

UNIT I **Corporate Governance (CG):** Meaning, Historical Perspective, Issues In CG, Theoretical basis of CG, CG Mechanism, CG Systems, Good CG.

UNIT II **Landmarks in the emergence of CG:** CG Committees, World Bank on CG, OECD Principles, Sarbanes- Oxley Act, 2002, Indian Committees and Guidelines, CII Initiatives.

UNIT III Agents & Institutions in CG: Rights & Privileges of Shareholders, Investors Problems & Protection, CG & other Stakeholders, Role of Regulators & Government.

UNIT IV Business Ethics: Importance & Need for Business Ethics, Unethical Behavior & Issues, Corporate Governance Ethics, Ethics in Global Business.

UNIT V **Ethics and CSR:** Importance & Scope of CSR, Social Responsibility & Indian Corporations, Environmental Concerns, Ethics in the Business Decisions.

Reference:

1. A.C.Femado – Corporate Governance, Pearson Education
2. L. P.Hartman – Business Ethics, Tata McGraw-Hill
3. B.H Agalgatti & S. Krishna – Business Ethics, Niraj

MCC - 402 MANAGEMENT OF FINANCIAL INSTITUTIONS (Credit - 4)

Objective

The objective of the present course is to provide a comprehensive knowledge to the students about the role of financial institutions in the economy and the way these institutions, specially the commercial banks manage the asset and liabilities side of the balance sheet.

Course Inputs

UNIT- I Introduction: Financial Intermediaries and their Economic functions, Efficiency and stability of the financial institutions – Role of financial regulation Measuring the efficiency of Financial intermediaries Challenges before the financial institutions

UNIT-II Management of Capital and Liabilities: Risk based Capital Standards _ Composition of bank capital – Basel norms. Bank Liabilities – Composition – Funding costs and Banking risk.

UNIT -III Management of Loans and Investments: Loan Management – Principles of sound bank lending – Credit analysis and pricing of Commercial loan, Management of Non-performing Assets.

UNIT I-V Management of Income and Liquidity: Income determination – Structure of Income and Expenditure – Allocation of Income – Determining factors of Income allocation.

UNIT- V Liquidity; Sources of liquidity – Asset vs. liability liquidity – Estimation liquidity needs and liquidity management theories – Management of Primary reserve Secondary reserve – Problems of liquidity management.

References:

1. Srivastava R.M and Nigam Divya “Management of India Financial Institution” Himalaya Publishing House>
2. Altman, Edward “Handbook of Financial Markets and Institutions “ Wiley New York
3. Fabozzi, Frank J & Franco M.G” Financial Markets and Institutions” Prentice Hall
4. Read, Edward W”Commercial Bank Management” Harper and Row New York
5. Robicheck A.A Coleman A.B and Hempal G.H “Management of Financial Institutions – Notes and Cases” Dryden Press
6. Grosse H.D “Management policies of Commercial Banks” Prentice Hall Inc
7. Roland, Robinson “Financial Institutions” Richard D Irwin Inc Homewood Illinois
8. Bradley, S.P and Dnignt B.C “Management of Bank Portfolio” John Wiley and Sons Inc
9. Cooper S.K & fraser D.R “The Financial Market Place” Adison – Wisley Publishing Company
10. Levison Marc “Guide to Financial Markets” The Economists
11. Rose and fraser “ financial Institutions “ Business Publication Inc
12. Jadhav Narendra “Challenges to Indian Banking : Competition. Globalisation and Financial Markets “ Mc Millan India

MCE - 403 IT & BUSINESS APPLICATION (Credit - 4)

Objective

The objective of this course is to provide an understanding of computers, computer operating system, and application of relevant software in managerial decision making.

Course Inputs

UNIT I **Computer Hardware & Software:** Computer system as Information processing system, Computer System, different types of computer systems, hardware options – CPU, input devices, output devices, storage devices, communication devices, configuration of hardware devices and their applications. Memory, Software, Different types software, Programming Languages.

UNIT II Modern Information Technology: Basic idea of Local Area Networks (LAN) and Wide Area Networks (WAN), E-mail, Internet technologies, access devices, concept of a World Wide Web and internet browsing. Multimedia.

UNIT III Introduction to Operating System: What is Operating System? Functions of Operating system, Types of Operating System. Windows, Word Processing : Introduction and working with Ms-WORD in Ms- Office, Word basic commands, Formatting-text and documents, Sorting and Tables, Working with graphics, Introduction to mail- merge.

UNIT IV Spread Sheets: Working with EXCEL- formatting, function, chart features, working with graphics in Excel, Using worksheets as database in accounting, marketing, finance and personal areas.

Presentation with Power Point: Power-Point basics, creating presentations the easy way, working with graphics in Power Point, Show time, sound effects and animation effects.

UNIT V **Introduction to Accounting Packages:** Company Creation, Group and Ledger Creation, Voucher Entry, Maintenance of accounting books and final accounts, financial reports generation, Practical Knowledge on Tally.

References:

1. Diennes, shells S: Microsoft Office, Professional for windows 95, Instance reference, BPB Publication, Delhi
2. Mansfield, Ron: The Compact guide to Microsoft office, BPB Publication , Delhi.

MCE - 404 CORPORATE LEGAL FRAMEWORK (Credit - 4)

Objective

The objective of this course is to familiarize students with the relevant provisions of various laws influencing business.

Course Inputs

UNIT -I **Indian Contract Act,** Negotiable Instruments Act, Indian Stamp Act

UNIT -II **Workmen Compensation Act** ,Consumer Protection Act, Patent Act.

UNIT- III Indian Competition Act 2002,**,** Sick Industries Companies Act.

UNIT -IV **FEMA – 2000,** Exim-Policies. Information Technology Act,

UNIT -V Indian Companies (Amendment) Act, Trademark Act. , Copy Right Act.

References:

1. Avadhani V. A: SEBI Guidelines and Listing of Companies, Himalaya Publishing House, Delhi
2. Indian Contract Act, 1872.
3. SEBI Act 1992, Nabhi Publication, Delhi.
4. Securities (Contract and Regulation) Act, 1956.
5. Taxman's Company Act, (Latest), V.S.Datey.
6. Taxman's Masters Guide to Companies Act, 1998
7. Taxman's Mercantile Law, (Latest).
8. The Companies Act, 1956.
9. The Negotiable Instruments Act, 1881.
10. Singh, Avtar, Law Relating to Monopol;ies, Restrictive and Unfair Trade Practices, Eastern Book' Co.
11. Bhandari ML: Guide to Company Law Procedure- Vols I, II and III; Jain Book Agency, New Delhi.
12. Ramalya A; Guide to Companies Act; Wadhwa Publishing, Nagpur.

MCE - 405 CORPORATE RESTRUCTURING (Credit - 4)

UNIT - I Concept, Types and motives behind corporate restructuring, Economic Rationale behind Major types of Mergers, Merger Theories. Evaluating the Success of Mergers and Acquisitions. Recent Trends and Challenges In corporate restructuring.

UNIT - II Strategic Approach to Value Creation-Competitive Strategy Vrs Diversification Strategy-Value Creation in Horizontal mergers, vertical Mergers, and Conglomerate Acquisitions-Value creation in Consolidating Fragmented Industries.

UNIT- III Deal Structuring, Valuation Financing M & A-Due Diligence, Selection of Target Company- Methods of Valuation-Paying for Acquisition-Accounting and Taxation Issues in M & A.

Unit: - IV Forms of Restructuring and Divestiture-Spin-offs, Split-ups, Target Stocks, Equity Carve-outs, Going Private and Leverage Buy Outs, Joint Ventures and Alliances, Share Repurchase, Cross Border Acquisitions.

UNIT- V Regulating Takeover Bids, -Bid Strategies and Tactics, Defenses against Takeovers, Post Acquisition Integration, Risks Associated with Mergers and Acquisitions.

REFERENCES-

1. **Jha Nisikanta** "Mergers, Acquisitions and Corporate Restructuring" Himalayan Publishing House.
2. **Weston. J.Fred & Weaver Samuel "**Mergers and Acquisitions" Tata McGraw Hill.
3. **Boeh Kevin & Beamish Paul** "Mergers and Acquisitions- Text and Cases" Sage South Asia Edition.
4. **Sudarsanam Sudi** "Creating Value from Mergers and Acquisitions- The Challengers" Pearson Education.
5. **Weston J Fred, Siu Juan & Johnson Brian** "Takeovers, Restructuring and Corporate Governance" Pearson Education.
6. **Chandrasekhar Krishnamurthy & Viswanath S.R** "Mergers, Acquisitions and Corporate Restructuring "Response Business Books.
7. **Weston J Fred, Chung S Kwang & Hoag. E Susan** "Mergers, Restructuring and Corporate Control" Prentice Hall of India.
8. **Das Bhagaban, & Rakshit** "Corporate Restructuring" Himalayan Publishing House.
9. **Sundarsanam. P. S.** "The essence of Mergers and Acquisitions" Prentice Hall of India.
10. **Shiva Ramu. S** "Corporate Growth Through Mergers and Acquisitions" Response Books.

MCE - 406 WEALTH MANAGEMENT (Credit - 4)

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT-II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNIT- III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT- IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT -V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

1. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
2. Financial Education By Reserve Bank of India - rbi.org
3. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
4. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
5. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

MCE - 407 AGRI- BUSINESS (Credit - 4)

UNIT- I **Agricultural Business Practices:-** Characteristics of Agriculture Business- Nature of Indian, Agriculture – Government policies related to agricultural Business- Problems and prospects of Agricultural Business –Agricultural Taxation policy.

UNIT- II **Agricultural products and Farms Services:-**Nature and disposal of Agricultural by-products-Farm waste cost of recycling of farm waste.

UNIT- III **Allied agricultural business :-** Dairy Poultry – Bio – Manures, etc WTO and its impact on agri-business Practices.

UNIT- IV **HRM in Agri Business Management :-**

a) Development of Human Resource through Agricultural Training

b) Importance of Human Resource in Agricultural

c) H. R. M. development program for Agribusiness

UNIT-V **Emerging Trends In ABM** :-

a) Agro Tourism

b) Organic Farming

c) Contract Farming

d) Herbal Farming

REFERENCES-

1. Principles of Business Orgnisation Acharya Govekar A.R. Sheth and Co
2. Principles of Practice of Marketing Mamoria, Joshi Kitab Mahal
3. Regulated Markets W. R. Natu
4. Marketing Co-Operative Way G.S. Kamat Maharastra state Co-op Union
5. Future Trading and Control Ram Desai
6. Bombay Money Market H.T.Y.B.A Parekh
7. Commodity Marketing and P.L. Gadgil Shubhada Sarswat,Distributive Trade Pune

MCEA - 408 FINANCIAL INCLUSION (Credit - 4)

UNIT –I Financial Inclusion and Economic Development, Savings, Investment and Capital Formation

UNIT – II Dimensions of Financial Inclusions: Micro-credit, Micro- saving and Micro-insurance

UNIT – III Financial Inclusion and Financial Literacy: Awareness Campaign by Government

UNIT – IV Financial Regulatory and Financial Inclusion: Government Directives, RBI Directives

UNIT – V Commercial Banks and Financial Inclusions: Branch Expansions, Technology and Schemes

References

1 Financial Education By Reserve Bank of India - rbi.org

2 Personal Finance Columns in the Economic Times, the Business Lines and Financial Express Daily News Papers.

3. Information Bulletin of Post Offices, Banks, Mutual Funds, Insurance Companies.

4. Internal Sources: BSE, NSE, SEBI, RBI, IRDA, MFI etc.

MCEA - 409 INTERNATIONAL ACCOUNTING (Credit - 4)

Objective

To acquaint the students regarding the international dimensions of accounting, foreign currency translation, transactional reporting and efforts at harmonization.

Course Inputs

UNIT I International Dimensions of Accounting: Meaning, Importance & Scope of International Accounting, Internationalization of the Accounting in Select Countries.

UNIT II Foreign Currency Transalation: The Need for translation, Transaction of Foreign Currency, Financial Statement- Forward Exchange Contracts.

UNIT III International Dimensions of Financial Reporting: Transactional Reporting, Reporting Practices, Consolidation of Financial statements.

UNIT IV Harmonization of Accounting Practices: The Need for Harmonisation, Methods of achieving Harmonisation, Impediiments to Harmonisation, The Harmonisation Process at work; Regional and Global Harmonisation, International accounting standards, Indian accounting standards.

UNIT V Analysis of Foreign Financial Statement: Techniques of Financial Statement Analysis, Analysing global financial statements. Evaluation of Performance.

References:

1. Shirin Rathore; “International Accounting “ PHI
2. A.K. Basu; “International Accounting Harmonisation” University of Calcutta.
3. B.Banerjee; “Contemporary Issues in Accounting Research “ IAA Research Foundation.
4. Meigs & Meigs ; “Accounting : The Basis for Business Decisions” McGraw Hills.
5. Belverd e, Needles Jr. “ Financial Accounting”. Pub. Houghton & Middlin.

MCEA – 410 ACCOUNTING STANDARDS AND CORPORATE REPORTING
(Credit - 4)

Objective

To provide an understanding of the accounting standards of ASB and IASB, and to study the corporate reporting practices in India.

Course Inputs

UNIT I **Accounting Standards:** Meaning and Importance, Historical development, Need for harmonization and standardization. Accounting Standards in India: Objectives, Process of Standard Setting**.**
IASB & IFRS: International Accounting Standards.

UNIT II **Brief idea:** About first fifteen accounting standards developed by ASB. (Special emphasis on AS- 1, 2, 3, 6, 10 and 14)

UNIT III **Brief idea:** About other Accounting Standards, Developed by ASB. (Special emphasis on AS- 17, 18, 20, 25 and 28)

UNIT IV **Corporate Disclosure:** Statutory and Non-Statutory, Modern Trends in Corporate disclosure.

UNIT V **Project Work in Accountancy/ Case Studies**

References:

1. N. Das gupta: Accounting Standards: Indian International, Sultan Chand
2. L.S.Porwal: Accounting Theory, Tata McGraw
3. S. Rathore: International Accounting, Tata McGraw
4. E.R.Brown Lee II, K.R.Ferris & M.E.Haskins: Corporate Financial Reporting, Irwin
5. D.S.Rowat: Students' Guide to Accounting Standards, Taxman
6. A.K.Basu (University of Calcutta): International Accounting Harmonisation.
7. Jawahar Lal: Corporate Financial Reporting, Taxman.

MCEA – 411 ACCOUNTING FOR NPOs (Credit - 4)

Course Inputs

UNIT- I Accounting Language & Information System: Generally Accepted Accounting Principles (GAAP), Methods of Accounting; Cash & Accrual.

UNIT- II Books of Accounts: Cash Book & Bank Account, Bank Reconciliation Statement.

UNIT – III Types of Assets: Depreciation, Grants & Donations, Expenditures.

UNIT - IV Final Accounts: Receipt & Payments A/C, Income & Expenditure A/c, Balance Sheet

UNIT - V Financial Statement Analysis & Reporting, Audit Reports

References:

1. Finance & Legal Handbook for NPOs – CA Manoj Fogla, FMSF, 2012.
2. Financial Accounting – Prof. Jawaharlal –Himalaya Publishing House P Ltd
3. 2-Shankarnarayana-Financial Accounting.(Cengage Learning)
4. 3-Bruns-Financial Reporting and Management Accounting(Cengage Learning)
5. 4-Stice-Financial Accounting reporting and analysis.(Cengage Learning)

MCEB - 412 PORTFOLIO MANAGEMENT (Credit - 4)

Objective

The objective of this course is to help students understand various in security analysis & portfolio management.

Course Inputs

UNIT I **Investments:** Nature and scope of investment analysis, element of investment, avenues of investment.

Security Markets: Primary and secondary market; Primary market- role functions and methods of selling securities in primary market.

Secondary Market: Role, importance, type of brokers, trading mechanism, listing of securities in stock exchange, Depository-role and need.

UNIT II **Fundamental Analysis:** Trends, indicators, indices and moving averages applied in technical analysis.

Technical Analysis: Trends, indicators, indices and moving averages applied in technical analysis.

UNIT III **Efficient Market Hypothesis:** Weak, semi-strong and strong market and its testing techniques.

UNIT IV **Portfolio Analysis:** Estimating rate of return and standard deviation of portfolio. Effect of combining the securities; Markowitz Risk-return optimization; single Index Module or Market Module; Portfolio total risk, portfolio market risk simple Sharpe's optimization solution.

UNIT V **Capital Market Theory:** Capital market line, Security market line, risk free lending and borrowings; factor Models; Arbitrage pricing theory, two factor and multi factor models.

Portfolio Performance Evaluation: Measure of return, risk adjusted measures of return, market timing, evaluation criteria and procedures.

References:

1. Amling; fundamentals of Investment Analysis, Pearson Education, Delhi
2. Bhalls: Investment Analysis, S.Chand & Co. Delhi.
3. Chandratre K.R.: Capital Issue, SEBI & Listing, Bharat Publishing House, New Delhi.
4. Clark James Fransis, Investment – analysis and management, McGraw Hill, International Edition.
5. Donal e. fisher and Ronal J. Jorden: Security Analysi and Portfolio management. PH. New Delhi.
6. Fabozzi Frank J: investment Management, Pearson Education, Delhi
7. Gupta L.C: Stock Exchange Trading in India; Society for Capital Market Research and Development, Delhi .
8. Machi Raju, H.R: Merchant banking; Wiely eastern Ltd., New Delhi
9. Machi Raju, H.R.; Working of Stock Exchanges in India; Wiley eastern Ltd., New Delhi.
10. Sharpe Willam F., Gordon J Alexander and J.V.Bailly: Investments, Pearson Education, Delhi
11. Sharpe William F: Portfolio Theory and Capital Markets; McGraw Hill, NY.

MCEB - 413 RISK MANGMENT & DERIVATIVES (Credit - 4)

Objective

This course will familiarize the students in the application of various tools and techniques of financial risk management.

Course Inputs

UNIT I **Risk:** Definition, types of Risk, Process of Risk Management, The tools of risk Management.
Derivatives: Definition and Evolution of derivatives, Derivatives Markets, Types of Derivatives, Derivatives in India.

UNIT II Futures Market: Functions of futures market, Speculation and hedging, Price spread and hedging, futures and price stabilization, tests of efficiency, Financial futures as a mechanism of risk transference, spot and futures prices.

UNIT III Financial Futures: Interest Rate futures, Currency Futures, (Foreign Exchange) Stock index futures and Financial Futures in India. Risk Management with Futures, Cost of Carry Model, Index Arbitrage, Purchasing Power Parity Theorem.

UNIT IV Options: Terminology and methodology of trading, Types of Options, Option pricing, Swaps, types of Swaps, Swap Valuation, and other derivatives, Speculation with options, Risk management with options & futures.

UNIT V Regulatory Framework of Futures & Derivatives: Regulatory bodies in Major international Markets, Regulatory framework in India, regulatory instruments and needs, Accounting for derivative transactions.

References:

1. John C.Hill : Options, Futures & other derivatives, Pearsons.
2. T.V. Somanathan, Derivatives, Tata McGraw Hill.
3. Redhead, Financial Derivatives, Prentice Hall.
4. Lasys Walter, Lexinton, Speculation, Hedge and Commodity Price Forecasting.
5. Miller, H., Financial Innovation and Markets.
6. Hill J. and T. Schneelesis, Risk reduction and Potential of Financial Futures.

MCEB - 414 FINANCIAL REGULATORY FRAMEWORK (Credit - 4)

Course Inputs

UNIT –I Banking Regulation Act, 1949:- Provisions relating to: Definition (Sec -5) Functions of banking companies (Sec -6), Restrictions on business of banking companies (Sec -8, 19 and 20) ,Powers of the RBI (Sec -21, 35 and 36 to 36 AD), Winding up of a banking company (Part III and III-A of the Act), Applicability of the act to cooperative banks (Sec- 56).

UNIT-II The Reserve Bank of India Act, 1934 :-Provisions relating Incorporation, Capital management and Business (Sec 3 to 19),Central Banking functions ((Sec -20 to 45):Regulatory and Supervisory, Collection and furnishing of credit information (45 A to 45 G) Penalties, (Sec 58 B to 58 -G), Changing role of the RBI.

UNIT- III Securities & Exchange Board of India (SEBI):- SEBI Act 1992 – Powers & Functions – Collectives, Investment scheme - Registration of intermediaries-Finance, Accounts & Audit of SEBI-Penalties for failure default, Inside trading & Non-disclosure of Acquisition of shares & Takeovers- securities Appellate Tribunals

UNIT – IV Insurance Regulatory and Development Authority (IRDA), IRDA Act, 1999, Establishment and incorporation of authority and duties, powers and functions of authority

UNIT- V Pension Fund Regulatory and Development Authority Act, 2003(PFRDA)
Forward Market Commission in India (FMC)

References

1. Tannan's 'Banking', Law and Practice in India Banking
2. P.N. Varshney, Banking: Law and Practice
3. Justin Paul and Padmalatha Suresh: Management of Banking and FinancialServices
4. All relevant and recent Bare Acts
5. Indian Institute of Bankers: Laws and Practices relating to banking
6. All journals published by Indian Institute of Banking and Finance
7. Reserve Bank of India functions and working (latest edn.) R.B.I.
8. Monetary Economics for India, Dr. Narendra Jadhav
9. Central Banking for emerging market economies, A. Vasudevan
10. Monetary and financial sector reforms in India : A central banker's perspective, Dr. Y.V. Reddy
11. Indian economy : Essays on money and finance, Dr. C. Rangarajan.
12. Annual Report on Trend and Progress of Banking in India. Reserve Bank of India Bulletin

MCEC - 415 PRODUCT PLANNING AND SALES FORCE MANAGEMNT
(Credit - 4)

Objective

The objective of the course is to acquaint the students with the concepts, tools and techniques as well as the methods of project planning and use as the strategy in the financial management.

Course Inputs

UNIT I **Project:** Meaning, Lifecycle, Types of project, Scope of project, Pre- investment studies. Feasibility studies and reports, project report and its contents.

UNIT II Project Appraisal and Evaluation: Material appraisal, technical appraisal, Manpower appraisal, Marketing appraisal, Financial appraisal, Preparation of appraisal reports, techniques of methodology of appraisal.

UNIT III Estimation of Cost of Project: Financing and financial closure, Estimation of profitability and techniques of evaluation.

UNIT IV Administrative Approval: Project organization, Administration, engagement of consultants, preparation of technical specifications and contract finalization.

UNIT V **Project Implementation:** Scheduling and monitoring and Contract, Post emplitia Audit and evaluation, Capitalisation of Amount of price.

References:

1. Narendra Singh: Project Management & Contract
2. Vasant Desai: Project Management
3. Bhavesh Patel : Project Management
4. Feasibility Studies, IDBI Manuals for the Preparation of Industrial Project.

MCEC – 416 INTERNATIONAL MARKETING (Credit - 4)

Objective

The objective of this course is to expose students to the conceptual framework of international marketing management.

Course Inputs

UNIT I **Introduction to International Marketing:** Nature significance; Scope of international marketing; International market orientation framework and EPRG Model. International market entry strategies: Export entry and Non-export entry modes, Bases of International Marketing **International Marketing Environment:** International Marketing Environment; External environment-geographical, demographic, economic, socio-cultural, political and legal environment; Impact of environment on international marketing decisions.

UNIT II **Foreign Marketing Selection:** Global market segmentation; Selection of Export markets; International positioning **International Marketing Planning,** Organising and Control: Issues in international marketing planning; International marketing information system; Organising and controlling; International marketing operations.

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Product Decisions: Product planning for global markets; New product development; Management of international brands; Packing and labeling; Provision of sales related services.

UNIT III Pricing Decisions: Objectives, Factors, Methods and Strategies of Pricing; Financing and Methods of Payment.

Promotion Decisions: Promotional practices in international Marketing, personal selling, sales promotion and public relations, Promotion and Marketing Communication

UNIT IV Distribution Channels and Logistics: Functions and types of channels; Channel selection decisions; Selection of foreign distributors/agents and managing relations with them; International logistics decisions, Organization of International Marketing Activities, Supply Chain Management (SCM)

UNIT V Emerging Issues and Developments in International Marketing: Ethical and social issues; international marketing of services; Information technology and international marketing; Impact of globalization; WTO andDevelopment of International Marketing.

References:

1. Czinkota, M.R: International Marketing, Dryden Press, Boston.
2. Fayerweather, John: John: International Marketing, Prentice Hall, New Delhi.
3. Jain, S.C: International Marketing, CBS Publications, New Delhi.
4. Keegan, Warren J.; Global Marketing Management, Prentice Hall, New Delhi.
5. Onkvisit, Sak and John J. Shaw: International Marketing: Analysisand Strategy, Prentice Hall, New Delhi.
6. Paliwoda, S.J (ed): International Marketing Reader, Routledge, Lodon.
7. Pallwoda, Stanley J.: The Essence of International Marketing, Prentice Hall, New Delhi
8. Sarathy, R and V Terpatra: International Marketing, Dryden Press. Boston.
9. Vasudeva P.K., International Marketing: Excel Books, New Delhi.
10. Gerald Albaum and Edwin Duerr- International Marketing and Export Management, Pearsons

Publication
New delhi

MCEC – 417 PRODUCT AND BRAND MANAGEMENT (Credit - 4)

UNIT- I Basics of Product : Meaning, Importance, product Classification, Product –mix, Product Strategy, Product Planning, Product Life Cycle and Marketing, marketing Environment, product and Brand Management, Product Market Strategies for Leaders/Challenges,

UNIT – II New Product Development, Product Positioning Strategies, Packaging Management, Creative Spark, Concept Testing and Test Marketing.

UNIT- III Issues & Concept of Branding :- Meaning, Significance, Function, Creating a Brand, Brand Building, Branding Decision, Anatomy of Brands, Types of Brands, Re-branding, Logo-Changes, Brand Re-launch, Repositioning, Brand Culture, Brand Rituals, Brand and Consumer Psychology,

UNIT- IV Brand Building, Brand Equity, Brand Extension, Global Brands, Brand Placement , Product and Brand Failures, Consumer Protection, Marketing Organisations, Leveraging Plants, Brand Personality, Brand Extensions, Service brands;

UNIT – V Positioning :- Perceptual space and Positioning, Positioning relating to Product Class, Consumer Segmentation, Perceptual Mapping, Brand Benefits and Attributes, Positioning S, Advertising and Positioning Brand, Celebrity Endorsement

References :-

1) Chunawalla, S. A., " Product Management", Himalaya Publishing House, New Delhi.
2) Rao, K. Venugopal, " Product and Brand Management- Text and Cases", Himalaya Publishing House, New Delhi
3) Sengupta, Subrato : "Brand Positioning", Tata Mc Graw Hill Publishing House, New Delhi.
4) Gupta S. L. , "Brand Management- Text & Cases", Himalaya Publishing, New Delhi.
5) Chunawalla, S. A., "Compendium of Brand Management", Himalaya Publishing House, New Delhi

MCED - 418 INTERNATIONAL ACCOUNTING (Credit - 4)

Objective

To acquaint the students regarding the international dimensions of accounting, foreign currency translation, transactional reporting and efforts at harmonization.

Course Inputs

UNIT I **International Dimensions of Accounting:** Meaning, Importance & Scope of International Accounting, Internationalization of the Accounting Profession, Accounting Profession in Select Countries.

UNIT II Foreign Currency Translation: The Need for transalation, Transaction of Foreign Currency, Financial Statements- Forward Exchange Contracts.

UNIT III International Dimensions of Financial Reporting: Transactional Reporting, Reporting Practices, Consolidation of Financial statements.

UNIT IV Harmonization of Accounting Practices: The Need for Harmonisation, Methods of achieving Harmonisation, Impediments to Harmonisation, The Harmonisation Process at work: Regional and Global Harmonisation, International accounting standards, Indian accounting standards.

UNIT V Analysis of Foreign Financial Statements: Techniques of Financial Statement Analysis, Analysing global financial statements. Evaluation of Performance.

Reference:

1. Shirin Rathore; “International Accounting” PHI
2. A.K.Basu; “International Accounting Harmonisation” University of Calcutta.
3. B.Banerjeee; “Contemporary Issues in Accounting Research” IAA Research Foundation.
4. Meigs & maigs; “Accounting: The Basis for Business Decisions” McGraw Hills.
5. Belverd Needles Jr, “Financial Accounting”. Pub. Houghton & Mifflin.

MCED - 419 **INTERNATIONAL MARKETING** **(Credit - 4)**

Objective

The objective of this course is to expose students to the conceptual framework of international marketing management.

Course Inputs

UNIT I **Introduction to International Marketing:** Nature significance; Scope of international marketing; International marketing orientation framework; International market entry strategies.

International Marketing Environment: International Marketing Environment; External environment-geographical, demographic, economic, socio-cultural, political and legal environment; Impact of environment on international marketing decisions.

UNIT II Foreign Market Selection: Global market segmentation; Selection of foreign markets; International positioning.
Product Decisions: Product planning for global markets; New product development; Management of international brands; Packing and labeling; Provision of sales related services.

UNIT III Pricing Decisions: environment Influences on pricing decisions; International pricing policies and strategies.
Promotion Decisions: Promotional practices in international Marketing, personal selling, sales promotion and public relations.

UNIT IV Distribution Channels and Logistics: Functions and types of channels; Channel selection decisions; Selection of foreign distributors/agents and managing relations with them; International logistics decisions.
International Marketing Planning, Organising and Control: Issues in international marketing planning; International marketing information system; Organising and controlling; International marketing operations.

UNIT V Emerging Issues and developments in international marketing: Ethical and social issues; international marketing of services; Information technology and International marketing; Impact of globalization; WTO;

References:

1. Czinkota, M.R; International Marketing, Dryden Press, Boston.
2. Fayerweather, John: International Marketing, Prentice Hall, New Delhi.
3. Jain, S.C: International Marketing, CBS Publications, New Delhi.
4. Keegan, Warren J: Global Management, Prentice Hall, New Delhi.
5. Onkvisit, Sak and John J.Shaw: International Marketing: Analysisand Strategy, Prentice Hall, New Delhi.
6. Paliwoda, S.J (ED) : International Marketing, Reader, Routledge, London.
7. Paliwoda, Stanley J.: The Essence of International Marketing, Prentice Hall, New Delhi.
8. Sarathy, R and V terpstra: International Marketing, Dryden Press, Boston.
9. Vsudeva P.K., International Marketing: Excel Books, New Delhi

MCED - 420 INTERNATIONAL FINANCIAL SERVICES (Credit - 4)

Objectives

- To introduce the field of international financial services to the students and provide an in depth knowledge on various financial services
- To provide an understanding of global financial environment operations of business.

UNIT - 1 Evolution of International Financial Services – its impact on Indian Financial System – Formal Financial System and Informal Financial System – International Financial Institutions –Banking Companies and Non Banking Companies – Classification of Non Banking Companies

– Classification of Activities of Non Banking Finance Companies- Fund Based Activities – Fee Based Activities – concepts, growth, current issues and trends of fee Based and Fund Based activities.

UNIT - II Introduction, Definition, Concept, Players involved in International Securitisation and its Processes, structure, Difference between Pass Through Certificate and Pass Through Securities, International Instruments of Securitisation, Developments and hurdles in Securitisation with recent trends

UNIT - III International Credit Rating and Agencies: Introduction – Concept of Credit Rating – Meaning of Credit rating – Definition, Scope – need and Importance of credit rating in developing countries – Types of credit rating –Kinds of instruments, Credit rating symbols – Credit Rating advantages and disadvantages and the reliability on its rating.

Credit rating agencies in India (CRISIL, CARE, ICRA and Fitch India) vis–a-vis Global rating agencies– Process of Credit Rating and Methodology credit rating agencies – services rendered by credit rating agencies – Solicited rating and unsolicited rating – Equity assessments us Equity grading – rating, Methodology for Financial services, Manufacturing companies, Banks and financial companies, Mutual funds, Insurance companies and IPO grading – Registration and Regulation of Credit rating agencies

UNIT - IV Overview of Global Depository Systems vs. Key features of Depository system in India – depository – legal framework – Eligibility criteria to become a global depository- Agreement between Depository and Issuers – Rights and Obligation of Depositories- Records maintained by Depository – Services of and functions of Global Depositories.

UNIT - V Core International Financial Services- Account opening- Types of Accounts – Types of Application Forms- Dematerialisation Process – Rematerialisation Process. Trading and Settlement –Off-Market Trade,

– Market Settlement-Dematerilisation of Shares

Special Services -Pledge and Hypothecation-Procedure for pledge/Hypothecation-procedure of confirmation of creation of Pledge/Hypothecations by Pledge-Closure of a Pledge/Hypothecation by Pledgor-Invocation of Pledge by Pledge Stock lending and Borrowing – Corporate actions

References:

1. Agarwala&Agarwala, Bulls Bears 7 the Mouse, Macmillan
2. Apte, P.G., International Financial Management, Tata McGraw Hill, 2006.
3. B. L. Mathur, Changing Profile of Financial Services, Bookman Associates
4. Dr. J. C. Verma, Credit Rating, Bharat Publication
5. Eitman, David K., Stonehill, Arthur, Moffet, Michael H., Multinational Business Finance, Pearson Education, 2007
6. I. M. Pandey, Venture Capital – The Indian Experience, Prentice Hall India
7. J. C. Verma, Venture Capital Financing in India, Response Books
8. J. K. Dietrich, Financial Services and Financial Institutions, Prentice Hall India
9. Journal of Financial Services

10. Journal of Investing
11. Journal of Structure Finance
12. Khan M.Y. Financial Services, Tata Mc Graw Hill

MCED - 421 ENTREPRENEURSHIP : INNOVATION AND STRATEGY
(Credit - 4)

UNIT - I Entrepreneurial Growth: Economic & Non-economic Factors, Government Policy and Actions, Entrepreneurial Development Programmes, Youth Entrepreneurship and Women Entrepreneurship.

UNIT- II Innovation: Innovative Project Identification and Selection, Project Formulation, Entrepreneur and Innovation.

UNIT- III Support : Innovative Financing, New sources of finance, Lease Financing and Hire Purchase , Institutional Support and Taxation Benefits , Outsourcing.

UNIT- IV Management : Production and Operations Management, Working Capital Management, Total Quality Management, Creative Destruction for Value Addition.

UNIT- V Strategy : Growth Strategies in Small Business, Marketing Strategies, Sickness in Small Business, Small Enterprises in International Business, E-Commerce.

References :-

1. Nanda, S. K., Lenka T. K., (Ed) Entrepreneurship : Innovations and Strategy, Himalaya Publishers.
2. Khanka, S. S., Entrepreneurial Development, S. Chand

MCED - 422 STATISTICS FOR BUSINESS DECISION MAKING (Credit - 4)

Objective :

This course shall acquaint the students with the concepts and techniques used in Statistics and enable them to apply this knowledge in business decision- making.

UNIT -I Statistics; Characteristics, functions, limitations and scope; statistics in business management; Data collection and presentation, frequency distribution and analysis

UNIT- II **Measure of central tendency and dispersion,** correlation and regression.

UNIT- III **Basic concepts of Probability** and probability distribution binomial poisson and normal

UNIT – IV **Probability and non-probability sampling,** samplinfg distribution of means and proportions, estimation.

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UNIT – V **Hypothesis testing** of means and proportions for large and small Samples.

References:

1. **Pillai R S N and Bagavathi**, Statistics, S Chand and Co., New Delhi
2. **Sharma J K**, Business Statistics, Pearson Education
3. **Gupta S P**, Statistics, S Chand & Company, New Delhi
4. **Hooda R P**, Statistics for Business and Economic, Macmillan.

MCED - 423 ENTREPRENEURSHIP & INFORMATION TECHNOLOGY
(Credit - 4)

Objective

The objective of this course is to provide an understanding of computers, computer operating system, and application of relevant software in managerial decision making.

Course Inputs

UNIT I **Computer Hardware & Software:** Computer system as Information processing system, Computer System, different types of computer systems, hardware options – CPU, input devices, output devices, storage devices, communication devices, configuration of hardware devices and their applications. Memory, Software, Different types software, Programming Languages.

UNIT II Modern Information Technology: Basic idea of Local Area Networks (LAN) and Wide Area Networks (WAN), E-mail, Internet technologies, access devices, concept of a World Wide Web and internet browsing. Multimedia.

UNIT III Introduction to Operating System: What is Operating System? Functions of Operating system, Types of Operating System. Windows, Word Processing : Introduction and working with Ms-WORD in Ms- Office, Word basic commands, Formatting-text and documents, Sorting and Tables, Working with graphics, Introduction to mail- merge.

UNIT IV Spread Sheets: Working with EXCEL- formatting, function, chart features, working with graphics in Excel, Using worksheets as database in accounting, marketing, finance and personal areas.
Presentation with Power Point: Power-Point basics, creating presentations the easy way, working with graphics in Power Point, Show time, sound effects and animation effects.

UNIT V **Introduction to Accounting Packages:** Company Creation, Group and Ledger Creation, Voucher Entry, Maintenance of accounting books and final accounts, financial reports generation, Practical Knowledge on Tally.

References:

1. Diennes, shells S: Microsoft Office, Professional for windows 95, Instance reference, BPB Publication, Delhi
2. Mansfield, Ron: The Compact guide to Microsoft office, BPB Publication ,Delhi.

Audit Courses

Management of Personal Finances

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT-II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNITt-III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT-IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT-V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

5. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
6. Financial Education By Reserve Bank of India - rbi.org
7. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
8. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
9. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

CAPITAL MARKET INSTRUMENTS

Objective

To equip the students with an opportunity to understand the role of Capital Market Instruments like Stock, Bond etc.

Course Inputs

UNIT-I **Origin, Nature and Role of Capital Markets**-Globalization of Capital Markets, Capital Markets in India- Stock Exchange.

UNIT-II Financial Instruments : Definition & Meaning, Classification of Financial Assets & Liabilities , Share Warrants or Options, Hedging Instruments.

UNITt-III Stocks, Bonds, Debentures – Convertible Debentures, ADR, GDR, ETFs, Units of Mutual Funds.

UNIT-IV Derivatives – Basic Features : Role of Derivative Markets, Forward and Futures, Commodity Futures, Stock Futures and Index Futures

UNIT-V **Options, Stock Options and Index Options**, Swaps, Currency Swaps and Interest rate Swaps.\

References :

1. Financial Institutions and Markets – Bhole L. M.- TMH
2. Financial Markets – M. Y. Khan
3. Financial Derivatives – Dr. G. Kotreshwar

FINANCIAL INCLUSION

UNIT –I Financial Inclusion and Economic Development, Savings, Investment and Capital Formation

UNIT – II Dimensions of Financial Inclusions: Micro-credit, Micro-saving and Micro-insurance

UNIT – III Financial Inclusion and Financial Literacy: Awareness Campaign by Government

UNIT – IV Financial Regulatory and Financial Inclusion: Government Directives, RBI Directives

UNIT – V Commercial Banks and Financial Inclusions: Branch Expansions, Technology and Schemes

References

1. Financial Education By Reserve Bank of India - rbi.org
2. Personal Finance Columns in the Economic Times, the Business Lines and Financial Express Daily News Papers.
3. Information Bulletin of Post Offices, Banks, Mutual Funds, Insurance Companies.
4. Internal Sources: BSE, NSE, SEBI, RBI, IRDA, MFI etc

Accounting for small Business organizations

Course Inputs

UNIT- I Accounting Language & Information System Generally Accepted Accounting Principles (GAAP), Methods of Accounting; Cash & Accrual.

UNIT- II Books of Accounts : Cash Book & Bank Account, Bank Reconciliation Statement.

UNIT – III Types of Assets, Depreciation, Grants & Donations, Expenditures.

UNIT - IV Final Accounts : Receipt & Payments A/C, Income & Expenditure A/c, Balance Sheet

UNIT - V Financial Statement Analysis & Reporting, Audit Reports

References :

1. Finance & Legal Handbook for NPOs – CA Manoj Fogla, FMSF, 2012.
2. Financial Accounting – Prof. Jawaharlal –Himalaya Publishing House P Ltd
3. 2-Shankarnarayana-Financial Accounting.(Cengage Learning)
4. 3-Bruns-Financial Reporting and Management Accounting(Cengage Learning)
5. 4-Stice-Financial Accounting reporting and analysis.(Cengage Learning)

PERSONAL TAXATION & PLANNING

UNIT – I Basic Concept : Assessee, Person, Income, Connotation of income, Taxable income, tax free income, Gross total income, Assessment year, Previous year, Residential status of assesse, Basis of Charge of Income Tax.

UNIT- II Income from Salary: Income from salary- basis of charge, place of charge, component of salary, partially taxable salary, pension, gratuity, retrenchment, voluntary retirement compensation, PF, profit lieu of salary, fully exempted, salary payment,

UNIT- III Income from house property and Business or Profession: Chargeable income, deemed owner, co-owner, fair rent, annual rent. Standard rent, calculation of annual value, and net annual value for rented and self-coupled houses, deductions.
Computation of Business Profits, Concept of Deemed Profits, Deductions, Valuation of Stock, Treatment of Depreciation

UNIT-IV Income from Capital Gain and Other Sources: Transfer of Capital Assets, Cost of Acquisition, STCG, LTCG, Deemed Capital Gain, Exempted Capital Gains,

UNIT – V Computation of Tax Liability and Planning: Aggregation of Income, Deduction to be made in Computing Total Income, Set-off and Carry Forward of Losses, surcharge, Difference between exemption, deduction and rebate, Tax Evasion and Tax Avoidance, Methods of Tax Planning.

Reference Book:

1. *Gaur and Narang- Income Tax Laws and Practice- Kalyani Publishers.*
2. *Singhania- Direct Laws and Practice- Taxman's Publication, New Delhi.*
3. BhagabatiPrasad,"Direct Tax Laws & Practices".

(Credit will be assigned if the student opts to go through the examination process. But it will not be considered for CGPA (Choice Based Credit System)

Evaluation: End Term: 70 Marks

Unit Test and Quiz: 20 Marks, Assignment and Presentation: 10 Marks

Project Report: Thesis: 100 marks, Presentation & Viva-Voce: 100 marks

Minimum Total Marks= 2500

Minimum Credit Points: Core 68 + Elective 28 = 96

Mutual Fund And Portfolio Management

Objective

The objective of the course is to impart conceptual knowledge and skills relating to mutual fund and portfolio Management.

Course Input

Unit-I Portfolio : Risk & Return, Measurement & Analysis , Non –satiation and risk aversion, diversification, borrowing and lending, utility theory and indifference curves, choice of portfolio and efficient set theorem.

Unit-II Portfolio Analysis : Market Optimization, Sharpe's Optimization, Significance of Beta in the Portfolio, Investment Objectives, Process and Policies.

Unit-III CAPM : Factor Models, APT, Construction of Portfolio, Investment Strategy, Execution, Assets Pricing, Revision and Measures of Return and Performance

Unit-IV Managed Portfolio ; Investment timing, Performance Measurement and Evaluation (different techniques), Foreign Portfolio Investment in India : Issues, Trends, Policies and Techniques.

Unit-V Mutual Funds : Concepts, Origin, Types, Regulation and Operations, Risk Factors, Performance Evaluation.

References :

1. SK,. Barua, V. Raghunathan ans J. R. Varma : Portfolio Management, TMC
2. Elton. Edwin J. and M. J. Gruser : Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.
3. Graham, Benjamin & Davia L. Dodd : Security Analysis, M. Graw Hill
4. V. K. Bhalla : Investment Management, S. Chand, New Delhi
5. Fischer, Donald E. Jordan : Security Analysis Portfolio Management.
6. S. francis, Jack Clarice ; Portfolio Analysis
7. Sharpe, Alexander, Belly : Investment , Prentice Hall of India.
8. Russel J. Fuller, Farrel, Jr. Modern Investment and Security Analysis. Tata McGraw Hill
9. Lee Chang. F. Joseph : Security Analysis & Portfolio Management
10. M. Y. Khan : Indian Financial System, McGraw Hill.
11. Resort A. Strang : Portfolio Construction and Protection.

Financial Derivatives and risk Management

Objective

The Course will familiarize the students in the application of various tools and techniques of Financial Risk Management.

Course Input

Unit-I Risk : Definition, Types of risk, Process of risk Management, The Tools of Risk Management.

Derivatives : Definition and Evolution of Derivatives, Derivatives Markets, Types of Derivatives, Derivatives Market in India

Unit-II Futures Market : functions of Futures Market ,Speculation and hedging, Price, Spread and hedging, futures and price stabilization, Tests of Efficiency, Financial futures as a mechanism of risk transference, Spot and future Prices.

Unit- III Financial Futures : Interest Rate Futures , Currency Futures(Foreign Exchange) Stock Index Futures and Financial Futures in India, Risk Management with Futures, Cost of Carry Model, Index Arbitrage, Purchasing Power Parity Theorem.

Unit-IVOptions : Terminology and Methodology of Trading, Types of Options, Option Pricing, Swaps, Types of Swaps, Swap Valuation, and other Derivatives, Speculation with Options, Risk Management with options & Futures.

Unit- V Regulatory Framework of Futures & Derivatives ; Regulatory bodies in Major International Markets, Regulatory framework in India, Regulatory Instruments and needs, Accounting for Derivative Transactions.

References :

1. John C. Hull : Options, Futures & Other Derivatives, Pearsons
2. T. V. Somanathan : Derivatives, Tata mc Graw Hill
3. Redhead : Financial Derivatives, Prentice Hall
4. Lasys Walter, Lexinton : Speculation, Hedg & Commodity Price Forecasting.
5. Hill J. and t. Schneelesis ; Risk Reduction, Potential of Fina ncial Futures.
6. Jarrow and Rudd. Lrwin ; Optional Pricing, Homewood, Irwin.
7. Dubofsky and Miller, derivatives : Valuation and Risk Management, Oxford University Press, New York.
8. Watsham. T., Futures and Options in Risk Management, Thompson, Asia
9. Wilmott. P., The Theory and Practice of Financial Engineering, John Wily and Sons, England.
10. Gupta. S. L., Financial Derivatives, PHI
11. Kumar, Financial Derivatives, PHI
12. Cox, J. and Rubinstein M. " Options Market" PHI
13. Tucker, A. L.: "Financial Futures, Options and Swaps" , West Publishing Co, St paul Minn.

Advanced Auditing

1.Auditing concepts Basic Principles governing an audit- Relationship of auditing with other disciplines -Audit Programme-Vouching, -Verification and Valuation.

2 Auditing and Assurance Standards

Overview-Standard setting process-Role of International Auditing and Assurance Standard Board and Auditing and Assurance Standard Board in India.

3 Risk Assessments and Internal Control

Evaluation of internal control procedures; techniques including Questionnaire; flowchart; internal audit and external audit, coordination between two.

4 Audits of Limited Companies

Preliminaries to the audit of limited company-Audit of share capital Transactions, Debentures and other transactions-Audit report with special Reference to CARO 2003 *Profit and divisible profit-Dividends- Investigation under Companies Act, 1956.

5 Audit Committee and Corporate Governance

Corporate Governance: Introduction-Verification of Compliance of Corporate Governance.

Audit Committee: Constitution-Powers of Audit Committee-CEO/CFO Certification to Board-Report on Corporate Governance.

Recommended Books:

1) Spicer and Peglar : Practical Auditing
2) Kamal Gupta: Contemporary Auditing
3) R.C. Saxena : Auditing (Himalaya)
4) Basu : Auditing
5) Jagadish Prasad: Auditing: Principles
6) M.D.Paula : The Principles of Auditing
7) B.N. Tondon: A Handbook of Practical Auditing
8) The Institute of Accountants of India : Auditing assurance Standards

Sales & Sales Force Management

Unit-I Introduction to Sales Management: Meaning, Nature, Importance and Scope of Sales Management, Role of Sales in, Sales Process and Personal Selling; Selling & Sales Management; Sales Strategic Ethics in Sales Management.

Unit-II Sales Techniques and Selling Skills : Direct Marketing and Relationship Selling; Sales Channels and Industrial, Commercial, Public Authority Selling; Selling for resale and selling Services ; Sales Promotion, Public Relations, Sales Strategic ; Personal Selling Theories.

Unit-III Sales Force Management: Job analysis, Recruitment Selection; Training; Compensation and Motivation; Monitoring and Performance Evaluation; Salesmanship and sales Promotions.

Unit-IV Sales Planning: Job of Sales Manager; Sales Planning, Sales Organizations and Compensation, Sales Quota and Sales Forecasting; Territory Management.

Unit-V Sales Control – Monitoring & Performance Evaluation; Sales Control & Cost Analysis; Controlling the Sales Efforts through Sales Budgeting, Sales Quota, Sales Territories; Institutional Sales Management.

References:-

1. Spiro, R. L. Stunton , W.J. , Rich, G. A., " Management of Sales Force", Tat McGraw Hill, new Delhi.
2. David Jobbes, and Geoff Lancaster, "Selling and Sales Management, Pearson Publications, New Delhi.
3. Chunawalla, S. A. "Sales Management", Himalaya Publishing House, Mumbai.
4. Keskar, Anil and Abhayankar, Suresh, "Sales Management and Personal Selling". Himalaya Publishing House.
5. A. Keskar, and S. Abhankar, "Sales Management and personal Selling", Himalaya Publishing House, New Delhi.
6. Khan Martin, "Sales & Distribution Management", Excel Books.
7. Gupta S. L. "Sales & Distribution Management", Excel Books.
8. Tanner Jeff, Honeycutt, Earl De, Erffmeyer, Robert C.,"Sales Management", Pearson Publications, New Delhi.
9. Still, Richard R., Edward Cunoliff W., Norman Govani A. P., "Sales Management: Decision Strategy and Cases", Pearson Publication: New Delhi.

BUSINESS LANGUAGE AND COMMUNICATION SKILLS

Websites

www.tatamcgrawhill.com/digital_solutions/monippally
www.dictionary.cambridge.org

www.wordsmith.org

UTKAL UNIVERSITY COURSES OF STUDIES, REGULATIONS & SYLLABUS FOR THE MASTER OF ARTS IN SOCIAL WORK (2019 - 2020)

Nayagarh Autonomous College
Nayagarh

COLOUR SCHEME OF MAPPING THE SYLLABI FOR ENTREPRENEURSHIP, EMPLOYABILITY AND SKILL DEVELOPMENT

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

UTKAL UNIVERSITY REGULATION
For the
M.A. in SOCIAL WORK (MSW) EXAMINATIONS
(Semester Scheme)

REGULATIONS

1. Introduction:

1.1. The two year post graduate degree course leading to the Master of Arts in Social Work (MSW) of Utkal University shall be spread over a period of two academic years. Each academic year comprises of two semesters namely the Odd and Even Semester.

1.2. A candidate for the Master of Social Work shall be required to pass the following

examinations.

- End Semester Examination – I
- End Semester Examination – II
- End Semester Examination – III
- End Semester Examination – IV
- Internal Assessment for Fieldwork in semesters I – IV
- External Examination for Fieldwork in semesters I – IV
- Internal Assessment for Dissertation in semester IV
- External Examination for Dissertation in semester IV

1.3. A candidate shall be eligible to appear for the oncoming semester courses subsequent to the first semester University examinations respectively irrespective of declaration of the results in the previous semester but.

1.4. Candidate who fails in the odd semester examinations shall be eligible to appear for the examination in which s/he has failed in the next odd semester and vice versa.

1.5. Students who have failed in a semester or are desirous to improve their performance will be allowed a single chance in the subsequent semester examination of the following year. Thus in no case the course completion will go beyond three years.

1.6. A candidate for the Master of Arts in Social Work Examination shall be required to enroll himself / herself under these conditions as a student in one of the colleges affiliated to this University.

2. Admission Criteria:

2.1. Any person who has passed the Under Graduate Degree in any subject with a minimum of 50% marks (General candidates) and 45% marks (SC/ST/OBC candidates) from an examination conducted by a recognized University is eligible to be admitted to the 1st Semester of this course. Students from SC/ST/OBC background have to apply with valid caste certificate.

3. Duration:

3.1 Odd semester shall be from July to December (I and III Semesters).

3.2 Even semester shall be from January to June (II and IV).

3.3 There shall be not less than 90 working days for each semester. This excludes the days for the conduct of University end semester examinations and other holidays.

3.4 A student would be required to complete the course within a maximum of three (Ref. 1.5 above) academic years from the date of admission.

4. Course:

Each course is well designed under lectures / tutorials / fieldwork / seminar / assignments / report writing so that it achieves the goals of effective teaching and learning needs of the students.

5. Contents in the Courses of Study:

5.1 The Master of Social Work programme of study consists of a number of contents. The term 'course' is applied to indicate a logical part of the subject matter of the programme and is invariably equivalent to the subject matter of a 'Paper' in the conventional sense. The following are the various categories of courses suggested for the Master of Social Work programme.

5.2 There are six Foundation papers.

5.3 Core compulsory papers comprise of twenty two courses. These are compulsory for all students.

5.4 There are eleven elective courses spread over two semesters III and IV. Out of the given electives student can choose any two of his or her interest for study in the respective semester.

6. Attendance:

Students must have 75% of attendance in each theory paper and 100% attendance in fieldwork and in related assignments. This is mandatory for appearing in the examination.

7. Examinations:

7.1 There shall be examinations at the end of each semester.

7.2 Examination for odd semesters shall be conducted in the month of November – December.

7.3 Examination for the even semesters shall be held in the month of May – June.

7.4 A candidate who does not pass the examination in any of the papers shall be permitted to appear in such failed papers in the subsequent examination to be held either in November – December or May – June as the case may be.

8. Pass Marks and Classification of Successful Candidates

8.1 Aggregate marks for passing the examination of the Degree of Master of Arts is Social Work (MSW) shall be the sum total of the aggregate of all the four semester Examinations taken together.

8.2.1 Divisions will be awarded on the basis of Utkal University Regulations for the M.A. Examination.

8.2.2 A candidate to be considered as Pass has to secure a minimum of 50% marks in the Field Work. Each of the field-work components namely Observation Visits, Concurrent Field Work in Community and Agency settings, Rural Camp and Block Placement has to be compulsorily completed to be considered as Pass.

8.3.a If a candidate is marked absent in a sitting(s) of an examination, such a candidate shall have to reappear in that paper (s) of the course in order to be considered as having completed the course.

.b If a candidate does not complete the requisite field-work days in a semester and does not appear for Field Work evaluation, Field Work Seminar and Viva Voce then he/she will be considered as not having completed the course and thereby ineligible to receive the M.A. degree.

8.3.b A candidate failing to secure a minimum of 30% in any Compulsory and a minimum of 50% in the Practical (Field Work - Ist, IInd & IIIrd & IVth) either in the First, Second, Third or Final examination of this University may be allowed to appear in those papers in not more than one chance (examination) immediately following that examination for which he/she was registered, in order to clear the back paper(s) on the payment of prescribed fees.

COURSE STRUCTURE UNDER THE SEMESTER SYSTEM – MSW

Semester – I

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
01	SWFC – 01	Foundations of Social Work: History, Philosophy, Ethics, and Theories in Social Work	4	60	100
02	SWFC – 02	Social Science Concepts I: social structure, social institutions and social change	4	60	100
03	SWFC – 03	Social Science Concepts II: Political Judicial and Economic System,	4	60	100
04	SWFC – 04	Social Science Concepts III: Poverty, Inequality and Social Exclusion	4	60	100
05	SWFC – 05	Social Science Concepts IV: Psychological Concepts, Human Behavior and Relationships	4	60	100
06	SWFC – 06	Orientation Visit Group Lab Concurrent Field Work	8	120	200
TOTAL			28	420	700

Semester – II

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
07	SWCP - 01	Working with Individuals	2	30	50
08	SWCP - 02	Working with Groups	2	30	50
09	SWCP - 03	Working with Communities	4	60	100
10	SWCP - 04	A Human Rights Approach to Social Work Practice	4	60	100
11	SWCP - 05	Social Welfare Administration	4	60	100
12	SWCP - 06	Social Work Research and Statistics	4	60	100
13	SWCP - 07	Concurrent Field Work + Rural Camp	8	120	200
TOTAL			28	420	700

Semester – III

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
14	SWCP - 08	Child Protection and Child Rights	4	60	100
15	SWCP - 09	Social Work with Women: Issues of gender and development	4	60	100
16	SWCP - 10	Ethnic Sensitive Social Work Practice in India	4	60	100
17	SWCP - 11	Rights of persons with Disabilities and their Rehabilitation.	4	60	100
18	SWCP - 12	Community Health and Social Workers	4	60	100
19	SWCP - 13	Social Management	4	60	100
20	SWCP - 14	Concurrent Field Work	8	140	200
21	SWEP – 01 SWEP – 02 SWEP – 03 SWEP - 04 SWEP - 05 SWEP - 06 (Any One)	School Social Work Working with Women Working with Alcoholics and Substance Abusers Correctional Social Work Counseling in Social Work Social Work with the Elderly	2	30	50
TOTAL			34	530	850

Semester – IV

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
22	SWCP - 15	Development Theories and Strategies: Issues Challenges and Responses	4	60	100
23	SWCP - 16	Social Work Practice in Rural Areas	4	60	100
24	SWCP - 17	Social Work Practice in Urban Areas: Migration, Unorganized Labour and Livelihoods	4	60	100
25	SWCP - 18	Social Policy, Planning and Implementation	4	60	100
26	SWCP - 19	Development Communication	4	60	100
27	SWCP - 20	Sustainable Agriculture	4	60	100
28	SWCP - 21	Dissertation: Research Project	4	70	100
29	SWCP - 22	Concurrent Field Work + Block Placement	2	340	100
30	SWEP - 07 SWEP - 08 SWEP - 09 SWEP – 10 SWEP – 11 (Any One)	Entrepreneurship Development NGO Management Project Management Disaster Management People Centred Advocacy.	2	30	50
TOTAL			34	740	850

Examination Question Paper Pattern:

There shall be three types of questions – Essay / Descriptive, Short Answer & Objective.

Distribution of Marks for courses carrying 100 Marks:

Five Essay type questions carrying 12 Marks each

(Out of a choice of seven) (Answer in 700 – 1000 Words) 5 x 12 Marks = 60 Marks

Four short type questions carrying 6 Marks each

(Out of a choice of six) (Answer in 150 – 200 Words) 4 x 6 Marks = 24 Marks

Eight objective type questions carrying 2 Marks each

(Out of a choice of ten) (Answer in one or two sentences) 8 x 2 Marks = 16 Marks

Social Work Practice (Fieldwork):

Fieldwork is an integral component of the course of Master of Social Work. A student shall have to undertake his/her fieldwork for 20 hours in every week in the semester. Students shall do the fieldwork under the guidance of a faculty supervisor. Fieldwork is mandatory for all students of social work.

Field Work Schedule:

Sl. No.	Semester	Field Practicum Component	Duration	Credits
1	SWFC - 06 MSW(I)	1. Observation Visit	10 Organizations	2
		2. Concurrent Fieldwork (Community Placement)	20 hrs/week (16 hrs in the field + 4 hrs report writing)	6
2	SWCP- 07	1. Concurrent Fieldwork (Community Placemen)	20 hrs/week (16 hrs in the field +	6

	MSW (II)		4hrs report writing).	
		2. Rural Camp	10 days	2
3	SWCP- 14 MSW (III)	1. Concurrent Fieldwork (Agency Placement)	20 hrs/week (16 hrs in the field + 4hrs report writing).	8
4	SWCP- 22 MSW (IV)	1. Concurrent Fieldwork (Agency Placement)	20 hrs/week (16hrs in the field + 4 hrs report writing).	2
		2. Block Placement	One Month before the end of the semester	2

Evaluation of Fieldwork: Regulation of Fieldwork:

At the end of each semester, the Chairman of the Board of studies shall call for the submission of the Field Work Attendance Record of the students, Field Work Report files of the students, the Fortnightly Reports on the students and the Self Evaluation Report of the students. This is to facilitate the external examiners to mark the performance.

Fieldwork carries 200 marks in Semester1, 2&3 and 100 marks in Semester 4. It is divided into internal and external.

The internal evaluation carries 50% marks and it shall be evaluated by the Faculty Supervisor on the basis of field-work records, practical fieldwork and reports.

The external carry 50% marks and it shall be evaluated by the external examiners on the basis of fieldwork seminar and practical knowledge gained by the student. The external examiner shall be any person authorized by the Chairman of the Board of studies for Social Work of Utkal University.

The minimum pass mark in the fieldwork shall be 50% in both the internal and the external examinations taken together in each semester. Both these marks together will comprise the university mark for field-work.

Field Work Assessment: [SL. No. 1 and 2 will be evaluated internally. Sl. No.3, 4 & 5 will be evaluated by an external examiner appointed by the Utkal University]

Sl. No.	Criteria for Assessment	Weightage In %
1	Field Work Reports	25%
2	Fortnightly Reports by Faculty	25%
3	Self-Evaluation Report by student	25%
4	Field Work Seminar	15%
5	Viva Voce	10%
	Total	**100%**

Evaluation of the Dissertation:

Students to practice Social Work Research Methodology shall submit a Dissertation in any area of their interest by working on a research project under the supervision of a faculty supervisor.

Total marks assigned for project work shall be 100. This total mark is distributed equally among internal and external evaluations. The internal marks of 50 and external marks of 50 shall be calculated in the basis of the Objective, Methodology, Analysis, Findings, Presentation and Viva-Voce. It is mandatory that it be the original work of the student.

HARD CASE RULE

The Hard Case Rule mentioned on the item No.5.2.4 (I,II,&III) in the correction ship No-1222 of Utkal University as amendments to the Regulation governing 2 Years Degree Course (Master of Arts, Science, Commerce Examinations) effective for the students admitted to such courses during the Academic 2002-2003 and 2003-2004,

shall be applicable to all the Compulsory and theory papers of Ist, IInd Year Examinations while computing the Final result of Master of Social Work Examinations. In case of any new regulation added to the Hard Case Rule by the University for 2 year Degree Course (Master of Arts, Science, Commerce Examinations) shall be applicable to the 2 years Degree Course of Master of Social Work.

REGULATION FOR FIELD-WORK

Introduction:

The student of the M.A in Social Work through field work practice is supposed to be committed to the people and social institutions in which they are placed. They are expected to serve individuals, families and communities through effective practice guided by qualified field-work supervisors (with MSW degrees) and by the social- work faculty in each college affiliated to this university.

Goals of Field Work:

1. To critically assess their own roles in field-work by conducting themselves ethically and professionally and by utilizing supervision & self-reflection.
2. To develop knowledge, skills and values required to engage in quality practice with individuals, families, groups, organizations and communities.
3. To demonstrate their ability to engage practically in problem solving as change agents in a variety of settings.
4. To demonstrate knowledge and ability to apply social theories and theories of human behavior and conceptual frameworks to assess, intervene and evaluate social work practice in the individuals, families and groups.
5. To recognize and understand various forms of discrimination and oppression as they apply to members of diverse groups and communities and advocate for social and economic justice for individuals, families, groups and communities.

Semester – I:

Observation Visits: 10 social work / welfare agencies have to be compulsorily visited. In each observation visit to an agency of community organization the student must be exposed to different field Situations. This observation visit will provide an opportunity to have an exposure and orientation to the services being offered by various Organisations/ Social institutions/ Agencies and open communities such as slums / rural settings as a response to community member's needs.

Understanding the Community: To understand the dynamics of the communities specifically the slum and the rural setting. This would imply comprehending the Socio-Cultural dynamics, economic and health status, being familiar with the problems of the communities, their causes, and observing how the people respond to such situations.

Semester – II:

Work with Individuals: Students shall be placed in slums or villages. They need to identify any issue affecting an individual and apply the principles and process of social case work. Similarly two separate case work should be done. The report should reflect learning derived from these two case work.

Work with Groups: Students shall be placed in slums or villages. They need to identify groups, study them well and carefully identify dysfunction if any in them and apply the principles and process of social group work.

Students may also start new groups such as Self Help Groups, children groups, Youth Clubs, integrated groups for person with disabilities, widows groups, senior citizens, adolescent girls group, study groups and etc. The purpose of this group formation is to learn group interaction, goal setting and group dynamics. The students should demonstrate principles and processes of group work. The reports should reflect on the learning derived out of it.

Community Organisation: Students shall be placed in a slum or village in a team of 4. Students shall be trained to demonstrate the skills and process of community organization. Each team shall identify a community issue along with the participation of the people and organize a programme that aims at resolving the community issue. The purpose of this fieldwork is to ensure students learning on community organization through demonstration and also for the students to learn to work in a team.

Rural Camp: All students shall compulsorily participate in a rural camp. This camp provides ample opportunity to learn about the community through experiences of living with them. It is to be a continuous 10 days camp and students and teachers are expected to stay in the rural area for all the10 days continuously.

Semester – III:

Understanding Formation and Management of Social Welfare Agencies: Each student shall be linked with an agency promoting social welfare. These agencies may be either Governmental or Non-Governmental or Privately managed Corporate houses. Reports of students should reflect on their learning related to the above mentioned areas. Daily Report, Consolidated fieldwork report should be submitted by every student individually. Students will work under a Faculty Supervisor and Agency Supervisor.

- To provide an opportunity to work with social welfare agencies.
- To understand the agency as an organization, its structure, functions, activities sources of funding and management.

Semester – IV:

Students shall be directed to learn about the formation, legal formalities, taxation related formalities, project formulation, resources mobilization techniques, project management, Documentation, POSDCORB, Evaluation, Need Analysis, Problem Tree Analysis, Logical Frame Analysis and so on.

- To develop an understanding of the problem and opportunities in an organisational setting.
- To develop an understanding of the problems and opportunities of the organisation and the methods they adopt to respond to their environment.

Block Placement (On the Job Training): The students of Social Work will be assigned an agency. This agency setting should be located anywhere within or out of the State. Students will work in the agency and obtain on the job training experience. This training lasts for a continuous 25 days prior to the semester examination. It is compulsory for all.

Course Title: HISTORY, PHILOSOPHY, ETHICS AND THEORIES IN SOCIAL WORK

Course Code: SWFC – 01

Level: MSW (I)

Objectives:

- To understand the historical development of the philosophy of Social Work and its emergence as a profession.
- To understand the ethical and value base of Social Work.
- To bring clarity to the basic concepts of Social Work.
- To briefly introduce Social Theory relevant to Social Work practice.

Unit I: History and Evolution of Social Work Practice

History of Social Welfare in the West (UK and USA): The Elizabethan Poor Law (1601), Charity Organisation Society (1869) Settlement House Movement, The Poor Law Commission of (1905), Beveridge Report (1941); The development of Social Work as a profession; Development of the definition of Social Work; (From Charity to Human Rights and Social Justice); History of Social Work education in India: YMCA School of Social Work Lucknow, TISS Mumbai, Delhi School of Social Work

New Delhi; Voluntary Social Work in India.

Unit II: Philosophy of Social Work and Social Work Ethics

The Traditional religious doctrine of Charity; Scientific Naturalism; Liberalism; Scientific Charity; The ideological base of the Welfare state. (with specific reference to the Indian Constitution); Gandhian ideals in Social Work Practice in India; Ambedkar's ideals in Social Work Practice in India; Professional Code of Ethics: IFSW and IASSW code of Ethics; The meta-ethical dimension of Social Work Ethics; Ethical Dilemmas in specific contexts.

Unit III: Basic Concepts in Social Work

Social Work: Concepts, Definitions, Objectives & Functions, and Methods; Contributions of Social Sciences to Social Work; Traditional Social Work and

Radical Social Work; Social Service and Social Welfare Service; Social Welfare and Social Security; Social Reform and Social Justice ; Human Rights and Human Development; Social Inclusion & Empowerment; Social Change and Social Development; Social Action and Social Movements

Unit IV: Theories relevant to Social Work Practice

Social Welfare Theory: Emile Durkheim, Herbert Spencer and Max Weber; Social Justice Theory: Distributive and Retributive Justice, Rawls Theory of Justice, Nozick's Theory of Social Justice; Radical and Marxist perspective in Social Work: L. Althusser; Anti-discriminatory and Anti-oppressive Perspective; Communication Theory: J. Habermas, Erving Goffman; Critial Theory: J. Adorno; Structure Theory: Anthony Giddens & P. Bourdieu; The Ecological Perspective; The Generalist Perspective.

Reading List:

- Beilharz, Peter (Ed) (1991): Social Theory: A Guide to Central Thinkers.
- Elliot, Anthony (Ed) (2010): The Routledge Companion to Social Theory.
- Payne, Malcolm(1997), Modern Social Work Theory and Social Work Practice.
- Mulally, Robut P. (1993), structural Social Work: Ideology, Theory and Practice.
- Reamer, G.G.(2013), Social Work Values and Ethics.
- Hugman, Richard and Smith, David(Ed)(19950 Ethical Issues in Social Work.
- Tnattner, Walter I. (1998) From Poor law to Welfare State: A History of Social Welfare in America.
- Reisch, Michael (2002), The Road not Taken: A History of Radical Social Work in the United States.
- Zastow, C(2009) Introduction to Social Work and Social Welfare: Empowering People.
- Pierson, John( ), Understanding Social Work: History and Context.
- Hering.S and Waaldijk (Eds); History of Social Work in Europe(1900-1960)
- Basanquet, Helen Dendy, Social Work in London, 1869-1912; A History of the Charity Organization Society.
- Queen, S.A, Social Work in the Light of History.

Course Title: SOCIAL SCIENCE CONCEPTS - I: SOCIAL STRUCTURE, SOCIAL INSTITUTIONS AND SOCIAL CHANGE

Course Code: SWFC – 02

Level: MSW (I)

Objectives:

- This introductory course seeks to familiarize the students with Sociology as a social science and the basic concepts necessary in understanding the social and cultural processes. It is organized in such a way that even students without previous exposure to sociology could acquire an interest in the subject and follow it. Understand the role of individual in the society and importance of various social Institutions and their impact. Get a scientific insight about the social structure, stratification and issues related to caste & class. Develop clarity about social issues and challenges in the social work field.

Unit – I: Basic Concepts

- Sociological Concepts: Society, Community, Association and Institution, social organisation.
- Social Group: Meaning, Types: Primary, Secondary, In-group - Out-group, formal and informal group, pressure group and reference group.
- Tradition: Little Tradition and Great Tradition, Parochialisation and Universalization.

Unit - II: Social structure and culture

- Concept of Social Structure and function.
- Social stratification: varna, caste, class, occupation, tribe and gender.
- Social Interaction and Social Processes: Associative and Dissociative Social Processes
- Culture: definition and types, norms & values, patterns of culture, culture and personality.

Unit - III: Social institutions and Socialisation

- Marriage and Family: Characteristics, types and functions, Rules of Marriage.

- Kinship: Meaning, Definition, Types, Functions.
- Social Process: Socialisation, Acculturation, Enculturation, Assimilation Resocialisation, Anticipatory, Adult socialisation and agency of socialisation.
- Status and Role: Multiple Roles, Role Set, Status Set, Role Conflict.

Unit – IV: Social change and Mobility

- Concepts, processes and theories of social change,
- Meaning and nature of Social change,
- Factors of social change: Sanskritisation, Westernisation, Modernisation, Orthogenetic and Heterogenetic factors of social change; Social Mobility: Horizontal & Vertical,

Reading List:

- Abrahim Francis, Contemporary Sociology, Oxford University Press, 2006.
- Ahuja Ram, Indian Social System, Rawat Publication, Jaipur,1993
- Ahuja Ram, Social Problems in India, Rawat Publication, Jaipur,1997
- Ahuja Ram, Society in India, Rawat Publication, New Delhi,2010
- Kuppuswamy, Social Change in India, 1998
- Beteille, Andre, *Sociology: Essays on Approaches and Method*, New Delhi: OUP, 2002
- Bose, N.K. 1967, Culture and Society in India, Bombay: Asia Publishing House.
- Bottomore, T.B.: Sociology: A Guide to Problems and Literature, Blackie and Sons, Bombay, 1986.
- Desai,A.R.(Ed), *Rural Sociology in India,* Popular Praakshan, 2008
- Dube S C, *Indian Society*. New Delhi: NBT 1995
- Dube, S.C. 1995, Indian Village (London : Routledge)
- Dumont L, *Homo Hierarchicus : The Caste System and its Implications*, Chicago University Press, 1970
- Gupta Dipankar (ed). *Social Stratification*, New Delhi: Oxford University Press,. 1991

- Jodhka, S.S. (ed), *Village Society,* New Delhu: Orient BlackSwan, 2012
- Karve, Irawati, 1961 : Hindu Society : An Interpretation(Poona : Deccan-College)
- Kothari, Rajni, *Caste in Indian Politics in Manoranjan Mohanty* (ed.) Class, Caste, Gender: Readings in Indian Government and Politics, New Delhi, Sage. 2004
- Maclver & Page, Society, Introductory Analysis, MacMillan, Delhi, 2001.
- Madan & Majumdar, An Introduction to Social anthropology, Mayur, 1999.
- Madan, Vandana. *Village in India*, India: OUP, 2003.
- Mandelbaum David,G, *Society in India,* Popular Prakashan, 2008
- Mukherjee Ramakrishna, *Sociology of Indian Sociology,* Allied Publishers, 1979
- Satish Deshpande, *"Contemporary India A Sociological View"*, Viking Publishers, New Delhi, 2003.
- Singer Milton, B, *When a Great Tradition Modernises. An Anthrapologicl Approach to Indian Civilization,* Praeger Publishers, 1972
- Srinivas, M.N, *Caste and its New Avatar,* Penguin, 1996
- Srinivas, M.N. 1963: Social Change in Modern India (California, Berkeley: University of California Press).
- Srinivas, M.N. *Caste in Modern India and Other Essays,* Bombay Asia Publishing House, 1962
- Uberoi, Petricia, *Family Kinship and marriage in India*, OUP, 2005

Course Title: SOCIAL SCIENCE CONCEPTS II: POLITICAL JUDICIAL AND ECONOMIC SYSTEM

Course Code: SWFC - 03

Level: MSW (I)

Objectives:

1. To impart knowledge about the political institutions that regulate people's life and promote their interests.
2. To Understand the basic economic concepts, principles, theories & its application in social work profession.
3. To Understand and analyze economic problems on social work perspective.

Unit - I: System of Governance

- Indian Constitution: Objective(Preamble) Characteristic Features and Amendment Process, Fundamental Rights, Fundamental Duties and Directive Principles of State Policy.
- Indian Political System: Parliamentary Democracy, Federalism and Issue of State Autonomy, Coalition Government and Role of Bureaucracy in Administration.
- India- A Welfare State: Social Policy and Social Legislation, Increasing Partnership between Government Agencies and Private Voluntary Organization.
- Judiciary: Judicial Review, Judicial activism and P.I.L.

Unit – II: Social structure and Democratic Process

- Features of Indian Democracy: Multiparty System, Role of National Partie,s Regional Parties and Pressure Groups.
- Grassroots Democracy: Panchayati Raj System and Empowerment
- Issues Concerning Religion, Language, Caste, Problem of Gender, Illiteracy and Reservation.
- Institutions: Bureaucracy, National Planning, Election and Participation.
- Socio-Political Movements: Peasant Movement, Trade Union Movement, Tribal Movement, Women's Movement, and Dalit Movement

Unit – III: Development Economic

- Development Economics: Meaning Nature and Significance, Contemporary Development, Problems: Poverty and Inequality.

  Economic Systems: Capitalism, Socialism, Mixed Economy – Definitions, Features, Advantages and Disadvantages.
- Rural and Urban economy: Nature and structure of rural economy; rural financial structure-formal and informal; Regional Rural Banks Policy and Planning concerning development of rural area.

  Urban economic growth: State and local policies; and urban poverty-policy responses.

Unit – IV: Indian Economy and Financial Institutions

- Indian economy: Nature and Characteristics

  Inflation and Over population: Meaning, magnitude, causes and consequences; Programmes for alleviation of poverty and unemployment.

- Economic Planning and Reforms: Rationale, Features and Objectives; Globalization, Privatization and Liberalization and their impact on Agriculture and Marginalized sections of India.

  Meaning and concept of Free trade, Special Economic Zone and its impact on Indian social concerns.

- Financial Institutions: National and International Financial Institutions and their Role in Social Welfare- World Bank, International Monetary Fund (IMF), Reserve Bank of India (RBI), World Economic Forum, NABARD, Commercial Banks; Role of Non Bank Financial Institutions; and National and International Funding agency for social development.

Reading List:

- Kashyap Subhash(ed), 1993, Perspective on the Constitution, Shipra Publication, Delhi.
- Basu D. D., 1992, Introduction to the Constitution of India, Prentice Hall of Indi Pct. Ltd., New Delhi.
- Kaushik Sushila, 1993, Women and Panchayati Raj, Har Anand publication, New Delhi.
- Kulkarni P.D, Social Policy and Social Development in India.
- Reed Elaw, Social Welfare Administration.
- ND Kumble, Ashish, Deprived Castes and Their Struggle for quality, Publishing House, New Delhi.
- Murthy(ED),Planning for Change- Council for Social Development , Aspects of Social Development.
- Setty Krishna, K.R. Chaitanya, Fundamental Rights and Socio Economic Justice in the Constitution, Publishing House, Allahabad.
- Singh M.P. and Roy Himanshu, Indian Political System, Structures, Policies, Development, 1995, Jnanada Prakashan (P & D), New Delhi.
- Misra & Puri : Advanced economic theory
- Mitchell A Seligson & John T Passé Smith, Development & Underdevelopment- The political economy of global inequality
- Agarwal A.N., Indian economy- Problems of development & planning
- A Vaidyanathan : India's economic reforms & development
- Patel Surendra J: Indian economy towards the 21st century

- Lekhi R.K.: The Economics of Development and Planning
- Dhar P.K.: Indian Economy: Its Growing Dimensions
- Datt Rudra & KPM Sundharam: (2004), Indian Economics Theory: S, Chand & Co New Delhi.
- K.G Karmakar, Rural Credit And Self Help Groups: Microfinance Needs and Concepts in India: Sage publication.
- Thakur S.N., (1988): Economic theory of profile of Indian Economy: Deep & Deep Publication, New Delhi.

Course Title: SOCIAL SCIENCE CONCEPTS III: POVERTY, INEQUALITY AND SOCIAL EXCLUSION

Course Code: SWFC – 04

Level: MSW (I)

Objectives:

- To develop clarity and understanding on the various perspectives about the concept of poverty, Inequality and social exclusion.
- To discuss policy interventions that aim to reduce poverty, inequality and exclusion.

Unit – I: Understanding Poverty

- Concept of Poverty, Different types of poverty: relative, absolute, material and social; culture of poverty, theories of poverty; Deprivation.
- Poverty Measurement: Indicators of poverty, PQLI, HDI, Poverty lines.
- Anti-poverty programmes in India.

Unit – II: Understanding Inequality

- Equality, inequality, capability, post-industrial structuralism, norm of structural exclusion, inequality and globalization;
- Bases of inequality in India: religion, caste, ethnicity, gender, disability, merit, region, language, culture, migrants.
- Diversity & Inequality: Socio-cultural and geological analysis

Unit – III: Understanding Social Exclusion

- Definitions and Concepts, Evolution of the concept of Social Exclusion; Dimensions of Social Exclusion, Theories of Social Exclusion;
- Social Exclusion and the role of: Religion, Race, Caste, Ethnicity; Gender; and Disability.
- Relationship of Social Exclusion and Discrimination

UNIT – IV:

- Social policy response to combat Poverty. Inequality and Social Exclusion in India.
- The role of social work in addressing issues of poverty, inequality and social exclusion.

Reading List:

- Sen, Amartya 2000 Social Exclusion: Concept, Application and Scrutiny. Social Development Papers NO.1. Asian Development Bank.
- Sen, Amartya "Poverty as Capability Deprivation," chapter 4 in Development as Freedom, OUP, 2000.
- Sullivan, Elizabeth 2002 Social Exclusion, Social Identity and Social Capital: Reuniting the Global, the Local and the Personal. De Montfort University, UK.
- Silver, Hilary and S.M. Miller 2003 Social Exclusion: The European Approach to Social Disadvantage. Indicators.2.2: 1-17.
- Haan, Arjan de 2001 Social Exclusion: Enriching the Understanding of Deprivation. Institute of Development Studies and Poverty Research Unit, University of Sussex. Sussex. UK
- O'Brien, D, Joanna Wilkes, Arjan de Haan, Simon Maxwell Poverty and Social Exclusion in North and South. Institute of Development Studies and Poverty Research Unit, University of Sussex. Sussex. UK.
- Kabeer, Naila 2006 Social Exclusion and the MDGs. The Challenge of 'Durable Inequalities' in the Asian Context. Institute of Development Studies and Overseas Development Studies Institute.
- Beall, Jo 2002 Globalization and Social Exclusion in Cities: Framing the Debate with Lessons from Africa and Asia. Development Studies Institute, LSEP, London.
- Chebolu, Radha Mohan 2007 Corporate Quotas: The Myth Action'. Pravartak. 2:2: 159-165.
- Saith, Ruhi 2001 Social Exclusion: The Concept and Application to Developing Countries. QEH Working Paper Series -72.
- Loury, G.C 2000 Social Exclusion and Ethnic Groups: The Challenge to Economics. Annual World Bank Conference on Development Economics 1999. The International Bank for Reconstruction and Development! The World Bank.

- Jenkins, Robert 2006 Social Exclusion of Scheduled Caste Children from Primary Education in India; UNICEF India. New Delhi.
- Sen, Amartya 1992 Inequality Re-examined, New Delhi Oxford University Press. Byrne,David 1999 Social Exclusion. Buckingham: Open University Press.

Course Title: SOCIAL SCIENCE CONCEPTS IV: PSYCHOLOGICAL CONCEPTS, HUMAN BEHAVIOUR AND RELATIONSHIPS

Course Code: SWFC – 05

Level: MSW (I)

Objectives:

- To understand the concept of human behavior
- To understand the basic concepts and factors of human behavior
- To understand the relevance of psychology in social work
- To understand the concept of personality and its application in social work education

UNIT – I: Nature and Scope of Psychology

Meaning and definition of psychology – Schools of psychology: Structural, Functional and Behaviourist, Importance of psychology in social work practice, Factors influencing Human Behaviour-Heredity, Enviournment and Self

UNIT – II: Human growth and development

Human growth and development: Meaning and principles; Social, Emotional, Cognitive and Physical Stages in Life Span approach from Conception to Old Age: characteristics, needs, tasks and problems at each stage.

UNIT – III: Personality

Meaning of personality, Theories of personality: Trait and Type theories; important concepts of the contributions of Freud, Jung, Adler, Maslow and Ericson: factors influencing personality Development Psychological Processes in Behaviour: Perception, Emotion, Motivation, Attitude; Processes of Adjustment: Concept and Factors; Coping Mechanism, Defence Mechanism

UNIT – IV: Theories of Human Development

Psychoanalytic theory: Psycho-sexual theory by Freud, Psycho-social theory by Erickson.

Behavioural theory: Classical conditioning by I P Pavlor, Operant.

Humanistic theory: Abrahm Maslow and Carl Rogers, Alfred Adler. Cognitive theory: Jean Piaget's theory

Reading List:

Davidoff.L.L.: Introduction to Psychology, Aucklan; McGraw Hill Inc:1881

Morgan, C.T.& King, R.A:Introduction to psychology New York.

Weix;J.R& Schopler J: McGraw Hill;7th Ed.,1986.

Munn,N.A.:psychology-The fundamentals of human Behaviour;Londan;

Hurlock E. B: Developmental psychology, New Delhi, Tata Mcgraw Hill 5th Ed.1971

Rayner,Eric: Human Development,Londan;George Allen and Unwin,1978.

Sareswathi T.S,Dutta R:Development psychology in India, Delhi;Sage publications, 1987.

Kuppusamy B: An Introduction to social Psychology; Bombay; Media Promoters and pub.Pvt.Ltd.,1980.

Coleman, J.C: Abnormal Psychology and Modern Life

Fair-weather George W.: Social Psychology Treating in Mental Illness, Sydney, Jhon Wiley and Sons

Course Title: WORKING WITH INDIVIDUALS

Course Code: SWCP – 01

Level: MSW (II)

Objectives:

- To develop theoretical knowledge and understanding about working with individuals
- To critically examine the application of social case work method in human

personality and development.

Unit - I: Basics of Case Work

Social Case Work: nature, assumptions, values and principles. Components of social case work: person, place, problem & process. History of social case work.

Unit – II: Client Worker Relationship

Need and importance of Relationship: nature and ways to establish. Psychoanalytical theory. Ego - functions and defense mechanisms. Concept of Human needs, stress, social role and adaptation

Unit – III: Process of Case Work

Process of social case work- study, assessment, goal formation, planning, treatment, evaluation, termination. Techniques of social case work: interviewing, support, encouragement, clarification, correcting perception, reality orientation; resource mobilization, home visit, interpretation, topical shift, logical reasoning, crisis intervention, burnout. Transference and Counter-Transference and its use in case work. Supportive techniques. Referral: its use in social case work. Recording: types and format.

Unit – IV: Models of Case Work

Models of social case Work practice: Problem solving, Psycho- social, Task oriented. Rational Emotive Therapy in social case work. Discussion on role of case worker from the records in school, family and marriage settings. Presentations and discussions on cases and practical questions.

Readings List:

Banarjee, G.R. TISS Series 23. Papers on Social Work: An Indian Perspective; Tata Institute of Social Sciences, Mumbai. TISS(Series 23).

Batra, Sushma & Marlin Taber, 1996. Social strains of Globalization in India, Mittal Publication, New Delhi.

Biestek, F.P. 1970. The Case Work Relationship: London: Unwin University Books, Impression.

Bogo, Mario, 2006-07. Social Work Practice: Concepts, Processes and Interviewing. Columbia University Press-2006. Indian Reprint by Rawat Publication : New Delhi,2007.

Friedlander, W.A. 1964. Concepts and Methods of Social “Work, New Delhi: Prentice Hall of India Pvt. Ltd.

Fisher, J, 1978. Effective Case Work Practice: An Effective Approach, New York McGraw Hill Book Co.

Florence, H., 1964. Case Work: A Psycho social therapy, Random House, New York.

Farard, M.L. & N.K. Hunnybun, 1962 The Case Work's use of relationship London, Tavistock. Pub.

Goldstein, H., 1970. Social Work Practice: A Unitary Approach, Carolina: Univ. of S. Carolina Press.

Grace, Methew, 1992. Introduction to School Case Work, Tata Institute of Social Sciences, Mumbai.

Hamilton, G., 1946. Principles of Social Case recording, New York: Columbia University Press.

Himilton, Gordon, 1959. Theory & Practice of Social Case Work, New York: Columbia University Press, VI Ed.

Husband. E.(ed) New Developments in Social Case Work Reading in Social Work, Vol. III, London: Georque Allen & unwin Ltd.

Mishra, P.D., 1985. Samajik Vijyaktik Sewa Karya (Hindi) Uttar Pradesh Hindi Sansthan, Lucknow.

Perlman, 1957 Social Case Work-A Problem solving Process, Chicago: The University of Chicago Press, V Impression.

Pathak, S.H. 1966. Records in Social Case Work, Delhi School of Social Work, Delhi.

Pinkus, Helen, 1971. Case Records for Teaching Purposes, Faculty as social Work, M.S. University, Baroda.

Roberts R.W. Nee, R.H. 1972 Theories of Social Case Work, the Uni. Of Chicago

Press, Chicago, London.

Reid, W.K. & Anne W. Shyne, 1969 Brief and Extended Case Work: New York:

Columbia Uni. Press.

Scott Briar and Henry Miller, 1971 Problems and issues in social Case Work: Columbia University Press, New York.

Timmis, N., 1964. Social Case Work: Principles and Practice, London; Rout ledge and Kegan Paul.

Timmis, N., 1972. Recording in Social Work, London, Rout ledge & Kegan Paul.

Terner, F (Ed) 1974. Social Work Treatment, New York: The Free Press.

Upadhyay, R.K. 1991. Samajik Vijyaktik Karya (Hindi) Haryana Sahitaya Academy, Chandigarh.

Upadhyay, R.K. 1993. Indian Philosophical Concepts in Clinical Social work, Kurukshetra Press, Kurukshetra.

Upadhyay, R.K. 2003. Social Case Work, Rawat publications, New Delhi, Jaipur.

Course Title: WORKING WITH GROUPS

Course Code: SWCP – 02

Level: MSW (II)

Objectives:

- To understand theoretical knowledge of social group work.
- To understand group work as an instrument of change/development in individual in groups.
- To understand the relevance of group work in different settings.

Unit – I: Social Group Work:

Definition, objectives and scope - Models of Social Group Work- Historical Development of Group Work, Principles of Group Work, Values, Significance, Limitation of social group work practice in India.

Social Groups and Development: Definition, Characteristics, Types of Groups and Functions of a Group - Basic Human Needs met by Groups at Different Stages of Group Development - Group Process : Bond, Acceptance, Isolation, Rejection, Sub- Group Formation, Withdrawal, Behaviour Contagion, Conflict and Control.

Unit – II: Approaches to the Practices of Group Work:

Group Therapy, Group Psychotherapy, Use of Home Visits and Collateral Contacts. Leadership: Concepts, Definition, Characteristics, Functions, Qualities of Leader, Types and Theories of Leadership, Training for Leadership - Sociometry and Sociogram - Group Work Supervision: Meaning, Purpose and Functions. Skills of social group worker.

Unit – III: Group Work Programme Planning:

Meaning and Definition of Programme, Principles and Process of Programme Planning and the place of Agency in Programme Planning - Programme Laboratory: Values and Techniques (Games, Singing, Dancing, Dramatics, Street play, Puppetry, Group Discussions, Excursion, Psychodrama, Socio drama, Role play, and Brain Storming); Rural Camp: Planning, Organizing, Executing, Evaluating and Reporting.

Unit – IV: Group Work Recording:

Meaning, Purpose, Principles, types of group work recording; Steps and Criteria for Good Group Work. Application of Group Work Methods in Different Settings: Community Settings, Medical and Psychiatric Settings, De-Addiction Centres, Correctional Institutions, Schools, Industries, Physically Handicapped and Aged Homes.

Reading List:

Alissi, A.S.1990 Perspectives on Social Group Work Practice: A Book of Readings, New York, The Free Press.

Balgopal, P.R. and Vassil. Groups in social Work- An Ecological Perspective, New York, Macmillan Publishing Co. Inc.

Bhatt, P.M.1970 Records of Group Work Practice in India, faculty of Social Work, M.S. University, Baroda.

Brandler S & Roman CP 1999 Group work, Skills and Strategies for Effective

Interventions, New York. The Haworth Press.

Brandler S & Roman CP 1991. Group work, Skills and Strategies for Effective

Interventions, New York. The Haworth Press.

Garland, J.A.(Ed) 1992. Group Work Reaching Out: People, Places and Power, New York, The Haworth Press.

Garwin, C 1987. Contemporary Group Work, New York Prentice- Hall Inc.

Golpelwar, Banmala, 2007 social Group Work, Indian Institute of Youth welfare, Nagpur.

Kemp, C.G. 1970. Perspectives on the Group Process, Boston: Houghton Mifflin C.

Klein, A.F.1970. Social Work Through Group Process,: School of Social Welfare-Albany: State University of New York.

Konopka, G 1963. Social Group Work: A Helping Process, Englewood Cliff, NJ Prentice Hall, Inc.

Kurland, R & Salmon, R 1998. Teaching a Methods Course in Social Work with

Groups Alexandria: Council on Social Work Education.

Middleman, R, R 1968. The Non- Verbal Methods in Working with Groups.

Northen, H 1969. Social Work with Groups, New York: Columbia University Press.

Pepell, C.P & Rothman B. Social Work with Groups, New York: The Haworth Press.

Sundel, M,Glasser, P sari, Individual change Through Small R., Vinter, 1985 Groups. The Free Press.

Samuel, T. Gladhing 1999. Group Work: A Counseling Specility, Simon& Schaster, NJ Printice Hall Inc.

Siddiqui H.Y.2005. Group Work, theories and Practice, Rawat Publication New Delhi.

Toseland RW 1998. An introduction to Group Work Prectice, New York Macmillan Publication Co.

Trecker, Harleigh B 1990. Social Group Work: Principles and Practice, New York: Association Press.

Wilson, G. Ryland, G 1949. Social Group Work Practice, Boston: Houghton Miffin, Co

Course Title: WORKING WITH COMMUNITIES

Course Code: SWCP– 03

Level: MSW (II)

Objectives:

- To provide theoretical and conceptual understanding of community organization as a method in social work.
- To practice and critically examine the steps and process of community organization in various community setting.

Unit – I: Community and Community Organisation

Community: Concept, characteristics, types and functions. Understanding of community organisation practice: Definition, values, ethics and principles; Historical development of community organisation practice; Community organization as a method of social work intervention; Role and skills of Community Organizer

Unit – II: Models and Strategies of Community Organization

Models and Strategies of Community Organization - Locality Development Model - Social Planning Model - Social Action Model - Select methods of public interest mobilization, litigation, protests and demonstrations, Dealing with authorities, Public Relations, Planning, Monitoring and Evaluation - Roles in different models attributes and attitude.

Unit – III: Community Organization Practice in the Context of Various Settings

Health, Education, Residential institutions, Livelihood and work, Natural resource management, Sustainable development, Working with tribal and Dalit populations, in rural and urban communities, Displaced population and rehabilitation, Community organization in disaster preparedness and response, Peace building and national integration .

Unit – IV: Social Action

Social work and social action, History of social action in India, Radical or emancipatory social work; Rights based approach, Different forms of protest, various contributions to the theory of social action (Lees, Saul Alinsky, Paulo Friere, Mahatma Gandhi's (Sarvodaya and Siddique) Strategies for social action from various social movements.

Reading List:

- Gangrade, K. D. 1971. Community Organization in India, Mumbai;Parkashan, 1971.
- Karamer, R.M. & Spech,H. Reading in Community Organization Practice-Hall Inc. Englewood Cliffs, 1983.
- Murphy C. G.: Community Organization Practice, Boston; Houghton Miffin Co. Ross, 1954
- Patil, S.H. Community Dominance & Political Modernization; Mittal Publication; New Delhi; 2002.
- Rashmi Dewas & R. Community Participation & Empowerment in Primary Education; Mittal Publication New Delhi; 2003.
- Sengupta, P.K.; Community Organization Process in India, Kiran Publishers, 1976.
- Selgen, S. Empowerment & Social Development Issues in Community Participation; Mittal Publication: New Delhi; 2005.
- Speech, H & Karmer: R.M; 1969 Reading in Community; Englewood Cliffs: Prentice Hall.
- Surya Rao: Under Development with community initiative retrospect & prospect: mittal Publication: New Delhi, 2000.

- Zastrow Charles: 1978. Introduction to social Welfare Institution Social Problems, services & Current Issues (Social work Community Practices Part-3 Chapter-10) Ontario: The Dorsey Press.
- Butcher H. 2007: Critical community Practice.
- Kothari M 2006: Development and Social Action, Rawat Publication, New Delhi.
- Grundy M : Community Work, Rawat Publication, New Delhi,
- Siddiqui. H.V., Social Action in India.

Course Title: A HUMAN RIGHTS APPROACH TO SOCIAL WORK PRACTICE

Course Code: SWCP – 04

Level: MSW (II)

Objectives:

- To understand Human Rights and engage in critical self-reflection and correction for professional development.
- To recognize the extent to which a culture's structures and values may oppress, marginalize, exclude and enhance power and privilege.
- To engage in processes that advance social and economic justice.
- To critically analyse how the intersection of Human Rights Values with Social Work influences practice

UNIT I: **Introduction to Human Rights**

- Historical evolution and normative framework of the Universal Human Rights System: The UN Charter, Universal Declaration of Human Rights, the ICCPR and ICESCR.
- The generations of Rights
- UN vs National perspectives: Issues of cultural relativism: Rights and. Duties, Rights of Indigenous Peoples and Rights of the Scheduled Tribes, Racial discrimination and Caste based discrimination, Right to Self-determination.

UNIT II: **Human Rights in the Indian Constitution: Interpretation and Application**

- The Preamble, the Fundamental Rights and the Directive Principles of State Policy;
- Special provisions for vulnerable groups: Scheduled Castes, Scheduled Tribes, Women, Religious, cultural and linguistic minorities.

- Role of the Judiciary in responding to Human Rights issues in India: The case of Niyamgiri, Reservations to OBCs, Women's issues, etc
- Role of the National Commissions on: Human Rights, Women, Scheduled Castes, Scheduled Tribes, Minorities, Backward Classes.
- Role of Human Rights NGOs.

UNIT III: Monitoring Human Rights

- Who monitors human Rights?: Social Work Professionals, Medical Professionals, the Police, Lawyers and Judges;
- How to monitor? : prisons, trials, hospitals, cemeteries, vulnerable groups;
- How to investigate? : practical steps on gathering evidence;
- How to report? : How to write a report, How to take a statement, How to collate evidence;
- Commissions of Enquiry; the NHRC
- International and National Reporting and Complaints Procedure.

UNIT IV: Human Rights in Social Work Practice

- The elements of the Human Rights approach and its value to Social Work: Respecting principles of Equality and non-Discrimination; incorporating the Gender perspective.
- The Right to Development: Application to International Agencies and NGOs; ensuring participation of service users; accountability of service providers and empowerment of all stakeholders.
- Applying Human Rights approach to Advocacy in the context of Social Work: Legislation; funds to respond to identified social needs; follow-up; public campaigns; networking.

Reading List:

- Youth for Human Rights (2010). What are human rights? http://www.youthforhumanrights.org/what-are-human-rights.html
- Ife, J. (2001). Local and global practice: Relocating social work as a human rights profession in the new global order. European Journal of Social Work, 4(1), 5-15.

- United Nations. (1948). The Universal Declaration of Human Rights. Retrieved from http://www.un.org/en/documents/udhr/
- United Nations. (1994). Human rights and social work: A manual for schools of social work
  - and the social work profession. Geneva: United Nations Centre for Human Rights.
- Ife, J. (2012). Human Rights and Social Work: Towards Rights based Practice, CUP: London.
- Reichert, E. (2011). Social Work and human Rights: A Foundation for policy and practice, Columbia University Press.
- Lundy, Colleen (2011). Social Work, Social Justice and Human Rights: A Structural Approach to Practice. University of Toronto Press.
- Mullaly, Bob. () Challenging Oppression and Confronting Privilege, OUP.
- Wronka, Joseph. M. () Human Rights and Social Justice: Social Action and Service for the Helping and Health Professions, Sage publications.
- Hokenstad, Healy, M. and Segal, Uma A (2013). Learning to Teach, Teaching to Learn.

Course Title: SOCIAL WELFARE ADMINISTRATION

Course Code: SWCP – 05

Level: MSW (II)

Objectives:

- To have conceptual clarity about social welfare Administration.
- To understand the principles, structure and functioning of the social welfare Administration system in India.
- To understand the role of voluntary agencies/NGOs in social welfare administration.

Unit – I: Concept: Administration

- Evolution, Meaning Nature, Bureaucratic Human Relations, Philosophy of Social

Welfare Administration, Distinction between Welfare Administration and Public Administration.

- Structure of Social Welfare Administration in India: Departmental Administration in the Government of India; Ministry of Social Justice and Empowerment; Ministry of Women & child Development; Ministry of Rural Development; etc.

Unit – II: Principles and Techniques

- Planning: meaning and process.
- Organizing: Meaning, types of organizational structure, Delegation and Decentralization, Personnel Policy of the organization.
- Staffing: Recruitment and selection process, Terms and conditions of service Probation, confirmation, promotion, Human Relations in Social Welfare Agencies,
- Budgeting: Formulation, controlling mechanism, Problems of budgeting in welfare agencies.
- Commitment of Personnel.

Unit – III: Voluntary Agencies/NGOs

- Voluntary agencies/NGOs in Social Welfare: mandate, role and functioning.
- Administrative structure of voluntary Agencies/NGOs: General Body, Board of Management / Executive Committee, Directors, Secretary Policy formulation, Fund raising, public relations, challenges.
- Voluntary Organizations in the Welfare Section: Helpage India, Child Relief and you, Spastic Society of Northern India, etc.

Unit – IV: Institutions of Social Welfare

- Structure & functions of Central Social Welfare Board.
- State Social Welfare Advisory Board.
- Rehabilitation Council of India
- National Commission for Scheduled Tribes, National Commission for Scheduled Castes, National Commission for Ministries, etc.
- National Institute of Social Defense.

- National Institute of Public Cooperation & Child Development (NIPCCED) etc.
- Welfare Schemes of the various departments of the government of Odisha and the Department for SC,ST, OBC and Minorities Development.

Reading List:

- Choudhry Paul, Social Welfare Administration
- Sharma Urmila & Sharma S K: Public Administration, Atlantic Publishers and Distributors New Delhi.
- Arora Ramesh K. and Goyal rajni, 1995, Indian Public Administration Institutions and Issues: Viswa Prakashan, New Delhi.
- Ramachandran Padma, 1996, Public Administration in India: National Book Trust New Delhi.

Course Title: SOCIAL WORK RESEARCH AND STATISTICS

Course Code: SWCP-06

Level: MSW (II)

Objectives:

- To develop understanding about the components involved in the social work research methodology.
- To improve the ability to link between practice, research, theory and their role in enriching one another.
- To make students understand the importance of statistical tools and techniques and help them to arrive at better research conclusion.

Methods of Social Work Research

Unit-I

Social Work Research: Meaning and Objective. Ethical, Political and cultural context of Social Work research. Social Work research fields: professional practices research, contextual research, system research, trend research, community based participatory research. Qualitative vs. Quantitative research. Research process:

Feasibility issues influencing the research process. Research problems, questions, variables and hypotheses: Conceptualisation and operationalization. Critiquing knowledge bases and reviewing the literature.

Unit-II

Research Design: Matching design to purpose. Designs for evaluating policies, programs & practices: Single Subject Design, Case studies, Survey design, Experimental and Quasi experimental design. Finding research subjects: Sampling: Probability and non probability sampling. Sources of data and data collection techniques: Observation, Interview, Questionnaire, Focus Group Discussion, Brain storming, Delphi method and Projective techniques. Writing research abstract and research report: components of research report.

Methods of Data Analysis

Unit-III

Qualitative Analysis: Thematic analysis, Content analysis, Triangulation, *Phenomenology*, **and** *Hermeneutical Analysis.* Quantitative Analysis: Choosing and Understanding Statistical Tests: Levels of Measurement, Descriptive Statistics-Measures of Central Tendency: Mean Median and Mode, Measures of Dispersion: Standard deviation and variances.

Unit-IV

Inferential Statistics and Hypothesis Testing: Correlation and regression analysis, hypothesis testing and test of significance. Bi-variate Statistics: t-tests, ANOVA and Chi Square. Introduction to SPSS for analyzing quantified data. Critical Reflections in Data Analysis: looking for anomalies, discussing findings, analyzing limitations and biases of the study and considering future directions for research.

Reading List:

Anderson, J. Durston H. S & Pooram (1992) Thesis and Assignment Writing; Wiley Eastern Ltd, New Delhi.

Baper, L.T. (1998) Doing Social Research, McGraw Hill, Singapore.

Bryman, Alan & Duncan Cramer (1990) Qualitative data analysis for Social Scientists, Rutledge, London.

Denzin, K Norman & Lincoln, S Yuonna., **(**1998), Collecting and Interpreting Qualitative Materials, Sage publications, New Delhi.

Denzin, K Norman & Lincoln, S Yuonna.(2000), Hand book of qualitative research, Sage publications, Thousand Oaks.

Gupta, S. P (1992) Elementary Statistical methods sultan chand & sons, New Delhi.

Goode & Hatt (1981) Methods in Social Research, McGraw Hill, New Delhi.

Laldas, D.K (2000) Practice of Social Research, Rawat, Jaipur.

Nachmias & Nachmias (1981) Research methods in the Social Sciences; St. Martin"s press, New York.

Richard, G.., et al, (2003) Scaling Procedure –issues and applications, Sage, Thousand Oaks.

Rubin & Bobbie (1993) Research Methods for Social Work, Brooks/Cole publishing Company, California.

Fundamentals of Research Methodology and Statistics by Y. K Singh , New Age International

C.R.Kothari, Research Methodology.

Mukarji Nath Ravindra, Social Research and Statistics, Vivek Prakashan, Delhi.

Kapoor B.K. & Gupta, S.C., Fundamental of Statistics, S. Chand Publication, New Delhi.

Ramchandran, P. Social Work Research And Statistics, Bombay : Allied Publishers

Gupta, S.P, Statistical Methods, Sultan Chand & Sons

Swain A.K.P.C, A First Course in Statistics With Applications, Kalyani Publishers

Patri, D., Statistical Methods, Kalyani Publishers

Bhatnagar, O.P. Reserach Methods And Measurements In Behavioral And Social Sciences, New Delhi, Agri Cole Publishing Academy

Dwivedi R.S. Research Methods in Behavioral Sciences. Delhi, Macmillan

D'cruz, Jones, Social Work Research

Ahuja Ram, Research Methods

SPSS for Social Scientists By Robert L. Miller, Ciaran Action, Deirdie A. Fullerton And John Maltby.

The SPSS Book: A Student Guide To The Statistical Package For The Social Sciences By Matthew J Zagumny

SPSS For Windows Step-By-Step: A Simple Guide And Reference By Paul Mallery And Darren George

Discovering Statistics Using SPSS by Andy Field

Drake, Brett, and Melissa Jonson-Reid. 2007*. Social work research methods: From conceptualization to dissemination.* Boston: Allyn and Bacon.

Grinnell, Richard M., and Yvonne A. Unrau, eds. 2007. *Social work research and evaluation: Quantitative and qualitative approaches.* 8th ed. New York: Oxford Univ. Press.

Rubin, Allen, and Earl R. Babbie. 2007. *Essential research methods for social work.* Belmont, CA: Thomson Brooks Cole.

Rubin, Allen, and Earl R. Babbie. *Research Methods for Social Work*. 6th ed. Belmont, CA: Thomson Brooks Cole, 2008.

Light, R. J., and D. B. Pillemar. 1984. *Summing up: The science of reviewing research.* Cambridge, MA: Harvard Univ. Press.

Course Title: CHILD PROTECTION AND CHILD RIGHTS

Course Code: SWCP – 08

Level: MSW (III)

Objectives:

- To understand the situation of children in India
- To understand the national & international efforts for child welfare
- To know the child related laws.
- To know the programmes & services for child welfare
- To understand & acquire the skills for working with children

Unit – I: Child Rights

Concept of Child Welfare and Child Rights; Demographic profile of the child in India, UN convention on the Rights of the Child, National Policy for Children(1974), National Policy on Education(1986), National Nutrition Policy (1993), National Charter for Children (2004), National Plan of Action for Children (2005) Changing trends in child welfare and protection services.

Unit - II: Problems of the Child and the response of Social Work

Social Work with: Street children, destitute, delinquent, abandoned, orphaned, child with disabilities, sexually abused child, child labour, child trafficking, children affected by natural calamity, HIV/AIDS affected and infected children, child prostitute, children in

poverty, the girl child, truant children, runaway children.

Health Problems: Causes of infant mortality and morbidity; Common childhood diseases; Development delay; Child Nutrition; Nutritional problems: PEM, Micro- nutrient deficiencies disorders, Mineral and vitamin deficiencies, Nutritional guidelines on infant and young child feeding.

Unit – III: Legal Provisions for child protection

The Constitution of India: Articles 14,15,15 (3),19 910 9a0, 21,21 (a),23,24,39(e),39(f); The Indian Penal Code, 1860: Feticide (Section 315 and 316), Infanticide (section 315), Abatement of Suicide (section 305), Exposure and Abandonment (section 317), kidnapping and Abduction (section 360 to 369),Procurement of Minor Girls (section 366-A), Selling of girls for Prostitution (section 372,373), Rape (Section 376), Unnatural sex(section 377); The Pre-natal diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994; The Juvenile Justice (Care and Protection of Children) Act, 2000; The Immoral Traffic (Prevention) Act, 1956; Child Labour (Prohibition and Regulation) Act, 1986; The Prohibition of child Marriage Act, 2006; The Commission for the Protection of child Rights Act, 2005; Protection of Children Against Sexual Offences Act,2012.

Unit - IV: Social work practice with children

Child guidance clinics; School social work; Child counselling; Life skills training; Child help lines; Adoption services; International and national NGOs working with children: UNICEF, CARE, CRY, SOS-Children's Villages.

Reading List:

- Banerjee, B. G. (1987) Child Development and Socialisation, New Delhi : Deep & Deep Publication
- Baroocha, Pramila Pandit (1999) Hand book on Child, New Delhi : Concept Publishing Com.
- Bhalla, M. M. (1985) Studies in Child Care, Delhi : Published by NIPCCD
- Bhangana. Vinita (20050 Adoption in India.
- Chaturvedi, T. N. (1979) Administration for Child Welfare, Admin, New Delhi : Indian Institute of Pub.
- Choudhari, D. Paul (1980) Child Welfare / Development, Delhi : Atma Ram & Sons.
- Deshprabhu, Rashmi (2001) Child Development & Nutrition Management, Jaipur : Book Enclave
- Ghathia, Joseph (1999) Child Prostitution in India, New Delhi : Concept Publishing Company
- Hugh, Jolly (1981) Diseases of Children, Oxford, London, Edinburgh : The English Language book society and Blackwell Scientific Publications

- Hurlock, Elizabeth B. (1968) Child Development, New Delhi : Tata McGraw Hill Pub; Com; Ltd.
- Rani, Asha (1986) Children in Different situations in India- A Review, TISSS.
- UNICEF, State of Worlds Children Annual Report
- Venkatesan S.(2004) Children with Developmental Disabilities.

Course TITLE: SOCIAL WORK WITH WOMEN: ISSUES OF GENDER AND DEVELOPMENT

Course Code: SWCP – 09

Level: MSW (III)

Objectives

- Develop an ability among students to analyze the position of women in rural and tribal society and the role of the social worker thereof.
- To develop an understanding of problems specific to women.
- To be introduced to legislative protection of women.
- To understand the concept of gender in various areas of social work practice.

UNIT-I: Construction of Gender

- Socio-Cultural Concepts: Gender, Sex, Patriarchy, Masculinity and Feminism.
- Women and Society: Status of Women in Indian society (Urban, Rural, Tribal and Dalits):
- Role of Women in Socio- Economic life: Family, Marriage, Religion, Caste, Tribe, Economy, Health and Education, Environment , Women and Media

UNIT-II: Issues and Challenges of Women in India and Odisha

- Problems of Women: Dowry, Domestic Violence, Crime against Women, Immoral Trafficking, Prostitution etc.
- Maternal Health Issues: Maternal Morbidity, Maternal Mortality, Infant Mortality, Female foeticide, Women's reproductive health and rights; and Changing concepts of Motherhood: Surrogate motherhood; Family Planning: Objectives and methods.
- Community based mental health programmes with a focus on mental health needs of women.

UNIT-III: State and Women

- Social Legislation for Women : Property Rights Act under the Hindu Succession Act,1956(Sect 6,14,15,16), Property Rights of Muslim Law, Dowry Prohibition Act,1961, Family Courts 1984, The Pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex Selection) Act 1994, The

Protection of Women from Domestic Violence Act,2005, The Indecent Representation of Women(Prohibition)Act, 1986

- Social Policies regarding Women: National Health Policy, National Education Policies,
- Provisions, Schemes and Programmes for women empowerment.

UNIT-IV: Women's Development and Social Work

- Concept of engendering Social Work and the role of the Social Worker.
- Applications of Social Work methods for Women empowerment and Development.
- Political Empowerment of Women: Participation of Women in National Movements; Women in National and Regional politics, Panchayati Raj Institutions and Urban Local bodies.

Reading List:

- Brook E and Davis, Ann (1985) Women, The family and Social Work, London.
- Samanta, R.K (2005) Empowering Rural Women and Issues, Opportunities and Approaches, B.R world of books
- Saxena,S(2005) Crimes against Women and Protective laws, Deep and Deep Publications, Pvt.Ltd. New-Delhi
- Paul chowdhry, D Women welafarae and Development(A Source Book) Inter-India Publication, New-Delhi 1991
- Agarwal Sushila, Status of Women, Print well Publisher, New-delhi.
- Bodra Gomati, Empowerment of Tribal Women
- Baig, Tara Ali Women In India, Ministry of information and Broadcasting, Govt. Of India Publication Division, New Delhi
- Agrawal Bina, Gender And Legal Rights in Landed Property in India, Kali for Women.
- Bhargars V. Durvar, Mental Health from a Gender Perspective, Sage publication.
- Gore,M.S: Urbanisation & family Change, popular Prkashan, Bombay, 1986.
- Agarwal, R.K. Hindu Law-central Law Agency, Allahabad.
- Adhikari, A.K and Pramanik: Gender inequality and Women's empowerment, Abhijeet Publication,2006
- Sikligar, P.C:Empowerment of Tribal Women, Jaipur Mangal Deep Publications,2006.

Course Title: ETHNIC SENSITIVE SOCIAL WORK PRACTICE IN INDIA

Course Code: SWCP - 10

Level: MSW (III)

Objectives:

- To tune Social Work Practice to the values and dispositions related to the social background of the client and the behavior of the larger social system, to work towards social justice and human liberation.

UNIT – I: What is Ethnic Sensitive Practice (ESP) in Social Work?

- Definition, conceptual formulation and perspectives on ethnic sensitive practice.
- Assumptions and principles for ethnic-sensitive practice.
- The layers of understanding in ethnic sensitive practice.
- Ethnic sensitive practice with displaced populations, migrants, families, communities, students, etc.

UNIT – II: The Ethnic Scenario in India

- The Schedule Tribes (ST), particularly vulnerable tribal groups (PVTGs) and Denotified Tribes: Demographic profile, their education, health, employment and economic status.
- The Scheduled Castes (SC) and other Backward Castes (OBC): Demographic profile, their education, health, employment and economic status.
- An analysis of the caste system, and the practice of untouchability.
- Ethnic based discrimination in India with respect to public services, government schemes and employment programmes etc.
- An analysis of industrialization, urbanization, liberalization, privatization, globalization, development projects and their impact on STs and SCs land alienation, loss of forest rights, displacement, socio-cultural loss, poverty and impoverishment, indebtedness, psychological issues.

UNIT – III: Constitutional Safeguards Legal Provisions and Policies

- The Preamble, The Directive principles of state policy ensuring social safeguards: Articles 17,23,24,25,(2)(b); Economic safeguards: Articles 46, 23, 24, 244, 275(I), fifth schedule, sixth schedule; Education and cultural safeguards: Articles 15 (4), 29 (i), 350 A; Political safeguards: Articles 164 (I), 330, 332, 334, 371 A, 371 B, 371 C, 371 C, 371 F, 371 G, 371 H. Service Safeguards; Article 16 (4), 16(4a), 335, 320 (4); To ensure these safeguards Articles 338 and 338A provide for two statutory commissions: The National commission for Scheduled Castes and the National Commission for Scheduled Tribes.
- Protective Legistations: The Protection of Civil Rights (PCR) Act 1955; The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities): POA Act, 1989; The Orissa Scheduled Areas Transfer of immovable property (by ST) Regulation (1956); The Orissa Land Reforms Act (1960)
- Schemes of the Ministry of social justice and empowerment; Scheduled Caste Sub Plan (SCSP) and Schedule Tribe Sub Plan (STSP) introduced since the sixth Five Year Plan.

UNIT – IV: Strategies for Social Workers to Work for Social Justice and Rights

- Identifying the sources and dynamics of injustice, discrimination and oppression.
- Adopting the layers of understanding in ESP in all fields of social work practice.
- Adopting 'radical' change oriented methods such as: advocating human rights, affirming core social work values, affirming politics of social justice and human liberation, facilitating critical consciousness, participatory-democratic egalitarian social movements.

Reading List:

- Denove.W and Schlesinger E.G, (1999) Ethnic-Sensitive Social Work Practice.
- Yil. David. G, (1998), Confronting Injustice and Oppression.
- Thorat S.K. (2009) Dalits in India: Search for a Common Destiny.
- Thorat S.K. and Newman Kathernic S., (2010) Blocked by Caste: Economic Discrimination and Social Exclusion in Modern India.
- Constitution of India

- Website of Ministry of Social Justice and Empowerment, Government of India.
- Munshi. Indra, (2007) Adivasi Life Stories: Contexts, Constraints, Choices, Rawat Publication.
- Jain, P.C. 1991. Social Movements among Tribals, New Delhi: Rawat Publications.
- Singh K.S. (ed.). Tribal Movements in India, Vol. I & II;
- Singh, J.P. & Vyas. M.N. Tribal Development: Past Efforts and New Challenges.
- Alinsky Saul,Rules for Radicals.Vintage Books Edition, 1972
- VirginiusXaxa (2003), "Tribes in India," The Oxford India Companion to Sociology and Social Anthropology, (Ed) Veena Das, New Delhi: Oxford University Press,
- Baviskar, Amita. 1997. "Tribal Politics and the Discourses of Environmentalism," Contributions to Indian Sociology, Volume 31, Number 2.
- Abbi, Anvita. 2102. Chapter 13, "Declining Adivasi Knowledge Systems and Killing of Linguistic Diversity," Social Exclusion and Adverse Inclusion: Development and Deprivation of Adivasis In India, (Editors) Dev Nathan and VirginiusXaxa, Oxford University Press, 2012.
- Jean Dreze, Meera Samson and Satyajit Singh. 1997. Chapter 2, "Resettlement Politics and Tribal Interests," Dam and the Nation: Displacement and Resettlement in the Narmada Valley. New Delhi: Oxford University Press.
- Dev, Nathan. 2012. Chapter 17, "Displacement and Reconstruction of Livelihoods," and Chapter 18, "Community Representatives" Views on Development Processes," Social Exclusion and Adverse Inclusion: Development and Deprivation of Adivasis in India, (Editors) Dev Nathan and VirginiusXaxa, Oxford University Press, 2012.
- Xaxa, Virginius. 2008 "Protective Discrimination: Why the Scheduled Tribes Lag Behind the Scheduled Castes," State, Society and Tribes, New Delhi: Pearson Education.

Course Title: RIGHTS OF PERSONS WITH DISABILITIES AND THEIR REHABILITATION

Course Code: SWCP – 11

Level: MSW (III)

Objectives:

- To facilitate basic understanding about person living with disability
- To disseminate information about the variety of policies and programmes targeting to include persons with disabilities.
- To develop understanding on the possible rehabilitation measures.
- To develop insight into the workable models of interventions for inclusion of persons with disabilities.

UNIT – I: Understanding Disability

- Definition, types, magnitude and causes of disabilities.
- Approaches towards disability; medical, psychological, economic-vocational, socio-political, human rights and capabilities.
- Examining the impact of disability on the quality of life of persons with disabilities in the context of their family, society and environment.
- Issues related to their daily living, education, sexuality, integration, employment, interpersonal relationships, marriage and the need for social work intervention.

UNIT – II: Role of the Social Worker in the Rehabilitation and Inclusion of the Disabled

- Assessment treatment and rehabilitation of persons with disabilities through a multi-disciplinary team including the social worker.
- Inclusion of persons with disabilities in schools and educational institutions.
- Skill development and vocational rehabilitation of persons with disabilities.
- Equality of opportunity and treatment in employment and occupation of persons with disabilities.

UNIT – III: International Initiatives and National Legislations and Policies for the Empowerment of persons with disabilities

- UN Initiatives: UN convention on the rights of persons with disabilities 2006; Un standard rules on the equalization of opportunities for persons with disabilities (1993); and Darker Framework for Action.
- ILO Initiatives for enhancing support to vulnerable groups including the disabled: Global employment agenda(20030; Declaration on social justice for fair globalization 92008); Global jobs pact (20090; ILO code of practice on managing disability in the workplace (2002)
- National Legislations: Rehabilitation Council of India Act, 1992; Persons with disabilities (equal opportunities, Protection of rights and full participation Act, 1995; National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disability Act, 1999; The Rights of Persons with Disabilities Bill, 2011.
- National Policies:
  - National Policy for Persons with Disabilities (2006): Physical rehabilitation, Educational rehabilitation and Economic rehabilitation.
  - Guidelines for: Issue of disability certificates; evaluation of various disabilities and procedure for certification; space standards for barrier free built environment for disabled and elderly persons.
  - Identified posts for persons with disabilities -2007.

UNIT – IV: Role of Social Work

- Intervention strategies at individual level: counselling, building support groups, assertiveness training;
- Intervention strategies at family level: Parent counselling, parent training and family crisis intervention.
- Intervention strategies at community level: Community education, community based rehabilitation
- Intervention strategies at policy making level: Advocacy in legislative and policy makig bodies; research and influencing public opinion.

Reading List:

- Ministry of Social Justice and Empowerment; http://www.socialjusticenic.in/policeies acts3.php

- Bhumali.Anil,(2009) Rithts of disabled women and children in India, serials publications, New Delhi.
- Hans. Asha and patri.A (20030 Women Disability and Identity sage, New Delhi
- Mukhrjee, Manjumohan(20060 Problems of Disabled People, Associated Publishes, India.
- Kanna. G.N. (2001), Disability Studies in India-Retrospect's and prospects Gyan Publishing house, New Delhi.
- Buckup, s. (2009), The Piece of exclusion; The economic consequences of excluding people with disabilities from the world of work. Employment sector working paper No. 43 (genevaILO)
- O'Reilly, A. (2007) The right to decent work of persons with disabilities (geneva ILO)
- Davis, Lennard. J. (19997) The Disability Studies Reader, Routadge, NY
- Shapiro, Joseph P. (1993) No Pity: People with Disabilities Forging a New civil Rights Movements.

Course Title: COMMUNITY HEALTH AND SOCIAL WORKERS

Course Code: SWCP – 12

Level: MSW (III)

Objectives:

- To understand the basic concepts related to Health and its importance.
- Identify and understand the changing health needs of ever-changing community and organize relevant effective interventions for amelioration of health problem.
- To develop students' appreciation and a commitment to healthy and socially just ways of living.
- To develop student's knowledge and understanding about ways of enhancing personal and community health and wellbeing.

UNIT – I: Concepts of Health & Nutrition

- Definition & type (Physical & Mental) of health and its dimensions; appreciation of health as relative concept; determinants of health, changing concepts of health.
- Characteristics of agent, host and environmental factors in health and disease.
- Health situation in India and Odisha-especially the demography, mortality and morbidity profile and the existing health facilities in health services.
- Mental Health- concept, community based mental health programmes.
- Nutrition- definition, concept, balance diet nutritive values and food items.
- Genetically Engineered and modified foods.

- Nutritional Assessment and monitoring.

UNIT – II Epidemiology

- Epidemiology: definition, concepts and its role in health and disease, public health-concept& importance
- Definition of the terms used in describing disease, transmission and control.
- Epidemiology of specific diseases: Communicable and non-communicable diseases, symptoms causes and prevention of disease caused by virus: measles, chickenpox, polio, & leprosy, disease caused by bacteria: diphtheria, typhoid, tuberculosis, plague, dengue, hepatitis. disease caused by parasites: Malaria, scabies, intestinal worms. Preventive & Social Medicine: concept, meaning, programmes for controlling communicable diseases.

UNIT – III Environmental Health

- Awareness of the concept of safe and wholesome water.
- Awareness of the requirements of a sanitary source of water.
- Understanding the methods of purification of water on small scale with stress on chlorination of water.
- Disposal of solid waste, liquid waste, both in the context of urban and rural conditions in the country.
- Problems in the disposal of refuse, sullage ad sewage.
- Role of social worker in environmental health.

UNIT – IV Community Health and Role of Social Work

- Primary Health Care Services: organizations & functions
- Medical Social Work: meaning nature & scope
- Health Care in Rural and Urban areas of Odisha:
- Role & Functions of Social Worker in hospital setting and community health: individual, family and community level; communication tools and techniques.

Reading List:

- Park J. E. and Park K.: Textbook of Preventive and social Medicine Banarasi Das Bharat Publishers, Jabalpur.
- Bedi, Yash Pal (1979) Social Preventive Medicine, Atma Ram and Sons; New Delhi.
- VHAI – State of India's Health.
- Shah. Ghanshyam (1997) Public Health and Urban Development, Sage: New Delhi.

- Werne. David (1994) where there is no Doctor, VHAI.
- Sinha. A.K, (ed) (1997) Human Health and Environment, Vol. I & II, APH Publishers: New Delhi.
- John Webb (2002) Medical Social Work: The Reference Book, Trafferd Publishing.
- Gehlert, Sarah and Browne. Teri (Ed) (2011) Handbook of Health Social Work Wiley Publication.

Course Title: SOCIAL MANAGEMENT

Course Code: SWCP – 13

Level: MSW (III)

Objectives:

- To understand the eco system of communities and their market landscape to help community based organizations engage with a market based economy.
- To help build the capability needs of communities towards self reliance through sustainable community enterprises.
- To help gain fundamental principles of Management.

Unit I: Understanding the community and deciphering the market

- The village social structure: relationship between social groups, communication patterns, processes of exclusion and inclusion, culture and Social value base.
- Identifying community resources: social capital, natural resources, common- property resources, education, health & employment status.
- Institutions in the community: Social institutions, formal community based institutions for eg: clubs, SHGs, village Council, etc; PRI; Administrative Structure from Block to District level; Educational Institutions; Health and Medical Institutions
- The local market economy: Money Lenders, Small & Large traders, entrepreneurs, corporations and companies; key factors of Local Market Economy: Market Boundaries; Market Values; Market Values Chains.
- Need Assessment and mapping of village resources, producers and institutions study of the community.

Unit II: Operations and Marketing Management

- Operations Management in the context of community based enterprises-organizations: product design, process selection and design, capacity decisions, location and layout decisions, sowing, transformation and storage, quality of inputs and finished products, material handling and logistics.
- Farm, Forest and Livestock resources and their conversion to products: process & risks involved. Tools for process mapping and mapping a supply chain.
- Agricultural Products: Types and issues, value addition, pricing and distribution; Agricultural Product Buyers: Retail and Wholesaler, Consumers, Customers and key buyer characteristics.
- Key aspects of sales, marketing and planning; Negotiation and selling techniques.

Unit III: Accounting and Finance

- Accounting: Need, Meaning and objectives; role of an accountant; uses of accounting information; Origin and analysis of business transactions; accounting equation.
- Financial Statements: Balance sheet, Income statement; Recording business transactions: Double entry system, the T-accounts, principles and conventions of accounting, journal entries.
- Books of accounts: Cash book, ledger, sales register, etc; posting of transactions in books
- Trial balance: closing and balancing of accounts; locating and correcting errors; preparation of balance.
- Bank transactions and bank reconciliation: need for reconciliation, causes of difference in passbook and cash book balance, procedure for bank reconciliation statement.
- Distribution of profit: determination of distributable surplus; basis of distribution.

Unit IV: Planning and Budgeting

- Levels of Planning: Village level, cluster level community enterprise / organization level
- Planning for distribution of responsibilities among community based leaders / coordinators / facilitators.
- Planning for Product basket, their local value addition for greater shelf-life and for sale in local markets.
- Planning for marketing.
- Developing proposals considering resources, cost and time budget.
- Planning for Resource Generation: Internal resource generation and from external institutions Governant Departments, Banks, Public and Private, NGOs and INGOs
- Planning for improving technical capabilities.

- Planning for allied services like Health, Education, etc.

Reading List:

- Implementing Community Enterprise system for Sustainability of Agricultural Communities: A Manual, Nayak, Amar KJR (2012)
- A Proposal for Holistic Development at a GP Level for Long Term sustainability of Small and Marginal Farmers/Producers in the GP. Amar KJR Nayak (2011)
- Ongoing Programmes & Schemes of the State Government and the Central Government, Rabindra Kumar Gouda (2012)

Course Title: SOCIAL WORK IN SCHOOLS

Course Code: SWEP – 01

Level: MSW III

Objectives:

- To understand the Rights of the Child in the context of schools.
- To acquire necessary understanding and skills to work with children in schools.

UNIT I: Conceptual framework for Social Work Practice in Schools

- Conceptual Perspectives: Social Learning Theory, General Systems Theory, Ecological Perspective
- Models of intervention: Traditional Clinical Model, The School Change model, The Community School Model, Social Interaction Model, School-Community- Pupil Relations Model

UNIT II: Context of Social Work Practice in Schools: Legislations and Policies

- UN Rights of the Child, Commission for Protection of Child Rights Act, 2005
- Constitution of India, Article 21 A, National Policy on Education (1986), National Curriculum Framework for School Education (2000),Right to Education Act (2009)
- Constitutional provisions for the education of SC, ST and religious, cultural and

linguistic minorities, policies and programmes of the Government.

- Inclusive Education policies in the V Year Plans, Integrated Education for Disabled Children (IECD), District primary Education Programme (DPEP), Sarva Shiksha Abhijan (SSA)

UNIT III: Social Justice Issues in School

- Dealing with stereotype, bias and discrimination;
- Intervention for the vulnerable populations i.e., Challenged children, SC, ST and minority;
- Dealing with the 'Achievement gap' i.e, difference in performance between students of vulnerable and privileged backgrounds.

UNIT IV: The Role of the Social Worker

- Services to students: Dealing with social or behavioural problems (Depression, Truancy, Aggression, Trauma, Substance Abuse, Sexual Activity), poor attendance, drop-out, poor performance, offences against children.
- Services to teachers: Teacher support groups, teacher training, teaching stress;
- Services to families: Providing parent support, consultation, parenting skill classes, family programming; organizing financial support for vulnerable families;
- Services to the community: Community outreach, community involvement, village Education Councils.

Reading List:

- Allen- Meares, P., Washington, R. O., & Welsh, B. L. (1996). Social Work Services in schools. 2nd ed. Boston: Allyn & Bacon.
- Dupper. David, (2003). School Social Work: Skills and Intervention for Effective Practice, John Wiley and Sons, NJ.
- Bye. Lynn and Alvarez. Michelle (2006). School Social Work: Theory to Practice, Cengage Learning.
- Germaine. Carel B and Bloom Martin (2008). Human Behaviour in the Social Environment: An Ecological View. Columbia University Press, New York.
- Greene. Roberta R,(2010) Human Behavior Theory and Social Work Practice (Modern Applications of Social Work), Transaction Publishers, New Brunswick, New Jersey.
- Journal of School Social Work(JSSW), Chennai, India.

- NCPCR, Protection of Children against Corporal Punishment in Schools and Institutions,
- http://www.ncpcr.gov.in/Reports/Protection_of_Children_against_Corporal_Punishment in_Schools_and_Institutions_December_2008.pdf
- NCERT (2000).*Assessment of Needs for Inclusive Education: Report of the First Regional Workshop for SAARC Countries*. New Delhi: NCERT
- Mohapatra, C. S. (2004). *Disability Management in India: Challenges & Commitments*. New Delhi: National Institute for the Mentally Handicapped (NIMH) and the Indian Institute of Public Administration.
- Mishra, A. (2000). "India: Special Education", in C.R. Reynolds, and F.E. Janzen (eds), *Encyclopedia of Special Education: A Reference for the Education of the Handicapped and other Exceptional Children and Adults*, 2e. USA: John Wiley and Sons
- Ministry of Social Justice and Empowerment of India. *Annual Report* (latest), New Delhi: GOI
- Ministry of Human Resources Development (MHRD).*Annual Report* (latest). New Delhi: GOI
- Ministry of Human Resources Development (2000).*Sarva Shiksha Abhiyan : Framework for Implementation*, Department of Elementary Education & Literacy, New Delhi; GOI
- Five Year Plans: http:www.planning commission.nic.in/plans/planrel/fiveYr/7th/vol2/7v2ch10.html.
- Department of Education (1986).National Policy on Education, 1986. New Delhi: MHRD, GOI
- Department of Education (2000).Sarva Shiksha Abhiyan: A Programme for Universal Elementary Education. New Delhi: MHRD, GOI.

Course Title: WORKING WITH WOMEN

Course Code: SWEP – 02

Level: MSW III

Objectives

- Develop an ability among students to analyze the position of women in rural and tribal society
- Acquire understanding on problems relating to women

- Develop in them a critical understanding about the schemes related to women

Unit-1

Status of women in rural and tribal community - in the context of family

marriage, religion and economy. Sexual division of labor its impact on health, education, illiteracy, adjustment, malnutrition, early marriages.

Unit-2

Problems relating to women – dowry, domestic violence, crimes against women, female feticide, child prostitution, exploitation and abuse of domestic female lab our.

Unit-3

Women in local self government with special reference to women in decision making. Impact of 73 amendment, development schemes and women's situations, case studies of DRDA, ICDS, SHGs.

Unit -4

Role of media in projecting the images of women, women in the media- print media, radio, films, television, and advertisement and publicity, Media and self employed women

Reading List:

- Paul chowdhry,D. Women welfare and development (A source book) ; Inter-India Publication, New Delhi -1991
- Sushila Agarwal , Status Of Women Printwell publishers,Jaipur,1988
- Pandit, S.K. Women in Society, Rawat Publications, New Delhi 1998
- Brook E and Davis, Ann (1985) Women, The family and Social Work, London.
- Samanta, R.K (2005) Empowering Rural Women and Issues, Opportunities and Approaches, B.R world of books
- Saxena,S(2005) Crimes against Women and Protective laws, Deep and Deep Publications, Pvt.Ltd. New-Delhi
- Paul chowdhry, D Women welafarae and Development(A Source Book) Inter-India Publication, New-Delhi 1991
- Agarwal Sushila, Status of Women, Print well Publisher, New-delhi.
- Bodra Gomati, Empowerment of Tribal Women
- Baig, Tara Ali Women In India, Ministry of information and Broadcasting, Govt. Of India Publication Division, New Delhi
- Agrawal Bina, Gender And Legal Rights in Landed Property in India, Kali for

Women.

- Bhargars V. Durvar, Mental Health from a Gender Perspective, Sage publication.
- Gore,M.S: Urbanisation & family Change, popular Prkashan, Bombay, 1986.
- Agarwal, R.K. Hindu Law-central Law Agency, Allahabad.
- Adhikari, A.K and Pramanik: Gender inequality and Women's empowerment, Abhijeet Publication,2006
- Sikligar, P.C:Empowerment of Tribal Women,Jaipur Mangal Deep Publications,2006.

Course Title: Working with Alcoholics and Substance Abusers

Course Code: SWEP – 03

Level: MSW (III)

Objectives:

- To facilitate basic understanding about substance abuse
- To disseminate information about addiction to alcohol.
- To develop understanding about the role of social worker in rehabilitation.
- To develop insight into the role of counseling among alcoholics and substance abusers.

UNIT – I: Basics on Substance Abuse

- Substance abuse and dependence: Meaning, Definition, nature and extent of the problem in India and Odisha.
- Types of Addictive Substances: Natural, Synthetic, Narcotics, Stimulants and depressants.
- Symptoms, short term and long term impact of substance abuse.

UNIT – II: Addiction to Alcohol

- Alcohol dependence and Alcoholism: Causes, symptoms, long-term and short-term effects.
- Impact of Alcoholism on Individual, Community and Family.
- Concept of social drinking, alcoholic and relapse.

- Phases of alcohol addiction.
- Social and economic implications of addiction.
- Alcoholism among Youth-causes and remedies.

UNIT – III: Role of Social Workers in rehabilitation

- Role of Social Worker in Preventive, curative and Rehabilitative services for substance abusers.
- Multidisciplinary Approach services for substance abusers.
- Legislation Provisions and Government programmes to control drug abuse in India.

UNIT – IV: Role of counseling

- Concepts of counselling and its association with addiction; approaches to counseling: Psychoanlytical, client centred therapy. Indigenous approaches of help and self help: Yoga, Meditation, Attitude and Values, Counselling as an treatment method for substance abusers.

Reading List:

- Chopra, R.N. and Chopra, F.C., 1965: Drug Addiction with Special Reference to India, New Delhi Council of Scientific and Industrial Research.
- National Institute of Social Defence, Govt. of India, 1992: Drug Abuse.
- Single, Eric. Et. Al, 2003: International Guidelines for Estimating the Costs of Substance Abuse and Addiction.
- Delaney and Eisen Berg, 1973: The counseling Process.
- Singh, Chandra Paul,2000 Alcohol and Drug Dependence Among Industrial Worker, Delhi Shipra Publications.
- Kaur, Ravneet and Gulati, J.k., 2007: Drug Abuse: Trends and issues, International Marketing Conference on Marketing & Society, IIMK.
- Ahuja, R, College Youth and Drug Abuse: A Sociological Study of Nature and Incidence of Drug Abuse among College and University Students, University of Rjasthan Jaipur

- Gupta, R. Punjab a drugged State, Meditrack.
- Chopra, L.C. and R.N., Chopra 1957,: The use of Cannabis Drugs in Inda. Bulletin on narcotics (United Nations Publication)
- Mohan, D.A.K. Pravakar and P.N. Sharma: Prevalence and pattern of drug abuse among Delhi University students, Indian Journal of Medical Research.
- Ropar, C 2006: Social Use, abuse and addiction-site of the author University of Tekas, Austin.
- Horgan C. Substance abuse: The Nation's number one health Problem, Princeton NJ; The Robert Wood Johnson Foundation.

Course Title: CORRECTIONAL SOCIAL WORK

Course Code: SWEP – 04

Level: MSW (III)

Objectives:

- To understand crime and delinquency as a social problem.
- To study and understand the basic elements of correctional methods and approaches.
- To gain knowledge of legal provisions.
- To study and identify the practices of non-institutional services.
- To acquire skills of correctional social work and understand the role of professional social workers in correctional institutions.

Unit- 1: Crime in the context of Social problem

- Crime: Concept, Theories of Causation, Classification of crime and approaches to deal with crime and criminals.
- Crime in India and Odisha: crime against women, crime against children, Atrocities against Scheduled Castes and Scheduled tribes; Emerging patterns and trends.
- Juvenile Delinquency: Concept, Demography, Theories of causation and approaches to delinquency prevention.

Unit- 2: Criminology and Criminal Justice System

- Concept of criminology; Social, Psychological and Legal approaches
- Courts and correctional administration. Hierarchy of courts functions and powers. Lok Adalats, Lokayukta, Legal Aid, Functions of Law Commission. Analysis of the Criminal Justice System: Police, Judiciary, Prisons and Correctional Services.

Unit -3: Correctional Administration and Services

- Institutional services: Prison, observation homes, special homes, beggar homes, rescue homes, short-stay homes, protective homes, half-way homes, de- addiction centers.
- Community based corrections and non-institutional services: Early diversion and de-institutionalization, probation and parole, adoption, foster care, child guidance centers, family counselling, crisis intervention, after-care rehabilitation and reintegration of offenders; community po.

Unit- 4: Correctional Social Work

- Definition, history, philosophy: Retribution, Restitution, General Deterrence, Special Deterrence Incapitation, Just Desserts ,objectives, methods and approaches of contemporary correctional social work: Probation and Parole, Alternative to Capital Punishment.
- Correctional Social Work in India; role of professional social workers in correctional institution, crime prevention and rehabilitation of offenders: supervision, surveillance and counselling; skills unique to correctional social work; limitations of correctional social work.

Reading List:

- Gupta, M.C. & K. Chockalingam, J. Guha Roy (2001) Child Victims of Crime: Problems and Perspectives. New Delhi, Gyan Publishing house.
- Ahuja Ram. (1996) Youth and Crime. Jaipur, Rawat Publications.
- Tripathy, P. C. (2000) Crime against Working Women, APH Publishing Co., New Delhi.
- Dabir, Neela & Nigudjar, Mohua. (2005) Children in Conflict with Law. Mumbai, TISS.
- Coleman, Clive. (2000) Introducing Criminology, Willan Publication, UK

- Ahuja, Ram. (2000) Criminology, Rawat Publication, New Delhi
- Siegal, larry J. (2000) Criminology, Wadsworth Thomson Learning, New Delhi
- Schmalleger, frank. (1999) Criminology Today: An Integartive Introduction 2nd edition, Prentice Hall, New Delhi
- Alan Vand, K. Criminal Justice System – Readings
- Mehraj-ud-din, Mir, (1984) Crime and Criminal Justice System in India, Deep & Deep Publications, New Delhi
- Choudhuri, Mrinmaya. (1995) Languishing for Justice: Being a Critical Survey of Criminal Justice System, Datt Sons, Nagpur
- Chakrabarti, N. K. [Ed.] (1997) Administration of Criminal Justice (Vol.1.). New Delhi. Deep and Deep Publications.
- Robert M Carter, Daniel Glaser, Leslie T Wilkins, (1985) Correctional Institutions, Harper & Row Publishers Inc.
- Siddique, A. (1983) Criminology, Lucknow, Eastern Book Co.
- Smykla, J. Community based Corrections.
- Bart ollas Clemens, (1985) Correctional Treatment: Theory and Practice, Prentice hall, New Jersey
- Panakal, J. J & Gokhale, S. D. (1989) Crime and Corrections in India, Mumbai, TISS

Course Title: COUNSELLING IN SOCIAL WORK

Course Code: SWEP – 05

Level: MSW (III)

Objectives:

- To develop a holistic understanding of counseling as a tool for help
- To acquire knowledge of various approaches, their theoretical under-pinning for goals, values, process and techniques
- To develop skills of application to real life situations
- To develop ability to recognize and synthesize attitudes and values the enhance investment of self in the counselor's role

- To develop ability to use the tools/scales in various settings

Unit – I:

Introduction to Counseling: Meaning, Definition, Need and importance of counseling and professional counseling. Basic principles of Counseling: Participation, Individualization, Confidentiality, communication, acceptance, self confidence, self awareness and other principles governing the counseling relationship. Components of effective counseling: Personality of the counselor's skills – Role and functions of the counselors in schools, industries, family, hospital and rehabilitation institution

Unit – II:

Types of counseling – Individual and group Counseling, Family Counseling, Marital Counseling, Student Counseling and Industrial Counseling, E-Counseling: concept, conditions and importance of E-counseling; Techniques of group counseling, strategies and structure – barriers to effective counseling sessions; Counseling evaluation.

Unit – III:

Theories of counseling: Psychoanalytic, Adlerian, Client centered, Behavioural, Rational emotive, Reality, Gestalt, Transactional analysis and eclectic Theories.

Unit – IV:

Counseling process, Interview and its significance in counseling – Use of observation in counseling and understanding of emotions in counseling. Transference and counter transference. The following standardized tests must be practiced in counseling settings. Personality, intelligence, interpersonal relations, stress, anger, self esteem, anxiety, assertiveness, depression, adjustment, mental health and family intensive. Counseling in different settings: HIV/AIDS counseling, Alcohol and Substance dependence counseling and Trauma counseling.

Reading List:

- Burnett. J. : Counseling with young people
- Fred Machinery : Counseling for personal Adjustment
- Shestroin Everlett, Brammer M. Lawrence : The dynamics of counseling process.
- Tpbbert, E.L. Introduction to counseling

- Colin Fertham, Controversis in psycho therapy and counseling, Sage publications, New Delhi, 1999.
- Kathryn Geldard & David Geldard, Counseling Children, A practical Introduction, Sage publication, New Delhi, 1997.
- Fullmer, D.W. & Bernard H.W: Counseling content and process
- Harms E & Schreiber : Handbook of counseling Techniques
- Kennedt. E : On becoming a counselor – A basic Guides for non-professional counselors, Macmillan, New Delhi.
- Development theories of E.B. Harlock and Robert kegan Psychological theory(Eric Erickson, Need Hierarchy (Maslow's) Cognitive theory (Jean Piaget)

Course Title: SOCIAL WORK WITH THE ELDERLY

Course Code: SWEP – 06

Level: MSW (III)

Objectives:

- To study the basic characteristics about the elderly population
- To understand the development tasks associated with the elderly population.
- To know the various services provided at institution dealing with the elderly.
- To link social work methods in promoting welfare among the elderly.

UNIT – I: Basics about elderly

Gerontology – Definition and scope. Status of Elders in India & Odisha:- Demographic, social, cultural and economic aspects. Needs and problems of elders. Role of elders in family. Issues of Elderly in health, occupation, income retirement planning, property rights, gender issues and family supports. Constitutional guaranteed rights and policy on older persons.

UNIT – II: Developmental tasks

Developmental tasks in elderly: Issues in health care, changes in family structure, coping with aging process, challenges due to changing physiological, economic, safety, status

in the family and other issues, Healthy aging, quality of life, coping with demise of the life partner, bereavement, resolving one's death, and any other.

UNIT – III: Developmental services for the elderly

Institutional care settings for elderly: General hospitals, geriatric wards, home based care, homes for the ages, nursing homes, Day care centres, hobby centres, elder helpline, facilities for homeless elderly. Constitutional guaranteed rights and National polices on older persons. Role of National and International agencies providing developmental services to elders.

UNIT – IV: Social Work Interventions for the elderly

- Role of Social Worker in providing the legal and governmental welfare services to elders.
- Social Work intervention through Social Case Work, Social Group Work, Community Organisation and Social Welfare administration.

Reading List:

- Bali . P. Arun, 2001 Care of the Elderly in India. Shimla, Indian Institute of Advanced Studies.
- Chatterjee, S.C., Patna, Discourses on aging and Dying. New Delhi, and K.P., Charian, V. 2008., Sage Publications
- Dandekar, Kumudini. 1996 The Elderly In India, New Delhi, Sage Publications.
- Desai, Murli and Raju, Gerontological Social Work in India – Some Siva (Ed.) 2000. issues and Perspectives. Delhi, BR Publishing House,.
- Dey, A. B (Ed.) 2003 Ageing in India: Situation Analysis and Planning for the Future. New Delhi / WHO and AIIMS.
- Emmatty, Leena. M. 2008 An insight into Dementia Care in India. New Delhi, Sage Publications.
- Hurlock, Elizabeth. 1981 Developmental Psychology. 5th Edition. New Delhi, Tata McGraw Hill Publications.
- Khan M.Z. 1989 Voluntary Welfare Services for the Aged, Dept. of Social Work, New Delhi, Jamia Milia Islamia.

- Rajan, Irudaya.S., India's Elderly, New Delhi, Sage Publications. 1999.

JOURNALS.

- Indian Journal of Gerontology, C-207, Manu Marg, Tilak Nagar, Jaipur.
- R & D Journal of Helpage India . C-14, Qutab Institutional Area, New Delhi.

Course Title: DEVELOPMENT THEORIES AND STRATEGIES: ISSUES CHALLENGES AND RESPONSES

Course Code: SWCP –15

Level: MSW (IV)

Objectives:

- To be acquainted with the development discourse.
- To gain a critical understanding of the theories, models and approaches to development.
- The role of the state and the response of non-state actors to development.

Unit – I: What is Development?

- The concepts of: development, growth, human development, social development and sustainable development.
- Core values of development; Measuring development: per capita income, PQLI, choice and access, HDI, seer's criteria.
- Development and colonialism: continuity and divergence; persistence of global inequalities and dominance.

Unit - II: Theories and Models of Development

- Modernization Theory;
- Dependency Theory;
- Neoliberalism;
- Developmental State;
- Post Development

Unit - III: Theories and Approaches to Development

- Human Development;
- Capabilities Approach;

- Women, Gender and Development: WID, WAD, GAD.
- Participatory Development;
- Good Governance;
- Institutional Turn

Unit - IV: The Role of NGOs and Civil Societies and Social Movements in Development

- The failure of state-market-international aid institutions.
- NGO's and new-liberalism; Relationship of NGOs with INGOs; NGOs and the State; NGOs and the gap between theory and praxis.
- The role of Civil society in development and its relationship with the state in the Indian Context.
- The challenge of social movement to development in India.
- The Social worker as scholar- activist-practitioner.

Reading List:

- Cohen, Michael and Robert Shenton. 1995. "The Invention of Development." Pp. 27-43 in Jonathan Crush(ed),Power of Development. London and New York: Routledge.
- Esteva, Gustavo. 1991. "Development." Pp. 1-23 in Wolfgang Sachs (ed),The Development Dictionary. London: Zed Books
- Rist, Gilbert. 2002. "Definitions of Development." Pp. 8-24 inThe History of Development: From WesternOrigins to Global Faith. London and New York: Zed Books.
- Seers,Dudley. 1972. "What are we trying to Measure?"Journal of Development Studies8(3):21-36
- Myrdal,Gunnar. 1974. "What is Development?"Journal of Economic Issues8(4):729-736.
- Wallerstein,I. 1984. "The Development of the Concept of Development."Sociological Theory2:102-116
- Kothari,Uma. 2005. "From colonial administration to development studies: a post-colonial critique of the history of development studies,"Pp. 47-66 in Uma Kothari (ed),A Radical History of Development Studies: Individuals, Institutions and

Ideologies. London: Zed Books

- Cooke, Bill. 2003. “A new continuity with colonial administration: participation in development management.”Third World Quarterly24(1):47-61
- Deutsch,Karl. 1961. “Social Mobilization and Political Development.”The American Political Science Review55(3):493-514.
- Lerner,Daniel. 1958.The Passing of Traditional Society: Modernizing the Middle East. New York: The FreePress.
- Levy,Marion. 1965. “Patterns (Structures) of Modernization and Political Development.”Annals of the American Academy of Political and Social Science358:29-40.
- Bernstein, Henry. 1971. “Modernization Theory and the Sociological Study of Development,” Journal of Development Studies7(2):141-60.
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- Shah, Ghanshyam (2004) Social Movements in India; A review of literature, Sage, India.
- Srivastava, S.K. (1988) Social Movements for Development, South Asia Books
- Rajagopal (2007) International Law from Below: Development, Social Movements and Third World Resistance, CUP

Course Title: SOCIAL WORK PRACTICE IN RURAL AREAS

Course Code: SWCP – 16

Level: MSW (IV)

Objectives

- To understand the issues faced by social workers in rural areas.
- To understand the skills necessary to practice in rural settings.
- To be acquainted with government plans and programmes for rural development in Odisha.

Unit – I: Rural Community Characteristics

Resources: natural resource, human resource, economic resources; Demography; Social structure; power structure; Political structure; Structure of rural economy; Governance structure; Presence of industries and external agencies; Indigenous knowledge systems; Needs of Rural communities: poverty landlessness, indebtedness, unemployment, migration, ill health, illiteracy, social exclusion, discrimination,

agriculture, forests.

Challenges to Rural Communities: Urbanization; deteriorating agriculture; changing land use SEZ; corporatization of agriculture and marginalization of small land holders; issues arising out of globalization.

Unit - II: Rural Development

Concept: nature, scope and significance; Approaches to Rural Development: Rural reconstruction approach, community development approach, sectoral development approach, area-specific and target group-oriented approach, economic development with social justice approach: Integrated rural development approach.

Rural local self government: Origin and development of the Panchayati Raj system in India; Salient features of 73rd Constitutional Amendment; Issues of Panchayati Raj: reservation, financial management, participation of political parties; Panchayati Raj institutions in Odisha- structure and functions. Five Year Plans and Rural Development Programmes. Poverty alleviation programmes in rural areas- MGNREGA, NRLM etc. Role of NABARD in Rural Development.

Unit - III: The Tribal Development Issue

Concept of Tribes, Indigenous peoples and Abonginals; Situational Analysis of Scheduled Tribes in Odisha: land, food security, employment/livelihood, displacement, migration, human development indices.

Scheduled Areas: Issues and Governance; Overview from Panchsheel, Tribal Sub- Plan and Special Component Plan; Other Significant Acts regarding Forest Rights, Resettlement and Rehabilitation.

Unit - IV: Response of Social Work

Building sustainable communities: indentifying strengths, weaknesses and threats: Generalist Model of Social Work Practice: work with individuals, families, systems, clusters at the communities level; Cultural Competency: understanding the value system, diversity, cultivating sensitivity, gaining trust and building relationships; Advocating Social Justice: working with the oppressed and marginalized, reducing stereotypes/discrimination based on gender, caste, ethnic background; Political advocacy: analysing policies and programmes, working for reform of polices, increasing access and better service delivery of public services.

Reading List:

- Dubey, S.C. 1995. India's Changing Villages;

- Ganguli, B.N. 1973. Gandhi's Social Philosophy. Delhi: Vikas Publishing House;
- Gore, M.S. 1993. The Social Context of Ideology: Ambedkar's Social & PoliticalT hought. New Delhi:Sage
- Kumar, Girish 2006, Local Democracy in India: Interpreting Decentralization, Sag Publications;
- Prasad, B. 2003. Rural Development: Concept, Approach and Strategy
- Sainath, P. One Hundred years of Drought
- Pandey, A.K. 1997. Tribal Society in India, New Delhi. Manak Publishing Ltd
- Agrawal, A.N. 2001. Indian Economy; Nature, Problems and Progress, VikasBiraj Prakash, New Delhi
- Chamber. Robert, 1983, Rural Development: Putting the last First, Harlow, Longman.
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- Dube, S.C., 1965 India's changing Villages, RKP, London
- Dubashi, P.R., 2000 Rural development Administration in India, Mumbai.
- Riley John. M, 1995. Stakeholders in Rural Development, Sage: New Delhi
- Sachinanda and Purendu, 2001, 2001, Fifty years of Rural Development in India, Firma KLM Pvt. Ltd, Kolkata.

Course Title: SOCIAL WORK PRACTICE IN URBAN AREAS: MIGRATION, UNORGANISED LABOUR AND LIVELIHOODS

Course Code: SWCP-17

Level: MSW (IV)

Objectives:

- Sensitize the students to the need and problems of urban communities;
- Develop a critical understanding among the students about the programmes of urban development

Unit - I:

Urban Communities - Features and characterization; Concept of Urban, Urbanism Urbanization – concept, causes and factors responsible for Urbanization; Urbanization in India – Historical development, Characteristics of clusters town, city, metropolis, suburbs, Satellite town, etc, Classification of cities. Growth of Urban settlement.

Urbanization and its impact on socio – economic development. Urbanization and structure of Caste. Concept of Slums Dwellers, Pavement Dwellers and Refugees, their characteristics and Problems. Changing Face of Urban communities: Infrastructural development, Growing heterogeneity, merging of fringe villages, the “global city” and socio-cultural and economic implications. Issues, Implications and Challenges

Unit - II:

Urban Problems – Congestion and overcrowding, Housing and slums, Environment pollution, lack of inadequate civic amenities, etc. - causes, magnitude, impact, etc., Measures for alleviating these problems.

Urban Development – Meaning, need, scope and Historical evolution; planning policy and programmes viz; slum clearance and slum improvement, Housing and Urban development corporation; Major urban development authorities in Odisha. Urban Community Development Programmes.

Unit – III:

Urban Informal sector Organised and Unorganised labour: Unorganised labour issues: Migrant workers, Debt Bondage and child labour, Wage Structure and Components of Wages of the unorganised labour, International and national labour scenario - ILO, WTO, Privatization and role of the State: Social Security Programmes for the unorganised labour.

Concept of Migration and characteristic of Migrants, Impact of Migration, Pattern of Migration to cities in India.

Unit - IV:

Concept and scope of livelihood, caste and traditional livelihoods; natural resource crisis and its impact on the livelihood of people: ecological, socio-cultural and economic dimensions; Gender, caste and age implications on livelihood. Urban poverty and livelihood issues; Social Work with urban communities – recent developments and future

perspectives.

Reading List:

- Aziz Abdual: Urban Poor and Urban Informal Sector, Ashish Publishing House, New Delhi, 1984.
- Bharadwai, R.K: Urban Development in India, National Book Trust, New Delhi, 1962.
- Bose Ashish: Studies in India's Urbanization (1901 to 1971), Tata McGraw Hill, New Delhi, 1973.
- Cullingworth, J.B: Problems of Urban Society, Vol 1 The Social Framework of Planning, London – George Allen and Unwin Ltd, 1973.
- Desai A.R and Pillai, S.D.(Eds): Slums and Urbanization, Popular Prakashan, Bombay.
- Diddee, Jaymala and Rangaswamy, Vimla (Eds): Urbanization – Trends Perspectives and Challenges, Rawat Publications, Jaipur 1993.
- Gangrade, K.D.: Community Organization in India, Popular Prakashan, Bombay, 1971.

Course Title: SOCIAL POLICY, PLANNING AND IMPLEMENTATION

Course Code: SWCP -18

Level: MSW (IV)

Objectives:

- Gain knowledge of policy analysis and the policy formulation process.
- Acquire skills in critical analysis of social policies and development plans.
- Develop an understanding of social policy in the perspective of national goals as stated in the Constitution, particularly with reference to fundamental right; and the directive principles of state policy.
- Critically understand the concept, content and process of social development.
- Develop the capacity to identify linkages among social needs, problems development issues and policies.
- Locate strategies and skills necessary for social development and reinforce

values of social justice, gender justice and equality.

Unit - I: Social Policy and Constitution: Concept of social policy, sectoral policies and social services- Relationship between social policy and social development-Values underlying social policy and planning based on the Constitutional provisions(i.e. the Directive Principles of State Policy and Fundamental Rights) and the Human Rights- Different models of social policy and their applicability to the Indian situation.

Unit - II: Sectoral Social Policies in India: Evolution of social policy in India in a historical perspective- Different sectoral policies and their implementation, e.g. Policies concerning education, health, social welfare, women, children, welfare of backward classes, social security, housing, youth, population and family welfare, environment and ecology, urban and rural development, tribal development and poverty alleviation.

Unit - III: Social Planning: Concept of social planning- Scope of social planning- the popular restricted view as planning for social services and the wider view as inclusive of all sectoral planning to achieve the goals fo social development-Indian planning in a historical perspective- The constitutional position of planning in India. The legal status of the planning commission- Coordination between centre and state, need for decentralization- Pancyati Raj, people participation.

Unit - IV: Social Policy Implementation and Social Work:

- Role of social policy in the Indian Development process: land reforms, PDS, employment, education, reservations.
- The social policy implementing structure in India; the lack of an integrated approach or convergence of development schemes and programmes.
- Role of social workers in social policy implementation.
- Do social workers have a major impact on social policy Implementation?

Reading List:

- Bagci, A.K. 1982 Political Economy of Underdevelopment, Cambridge; Cambridge University Press.
- Bandyopadhyay, D.1997 “People’s Participation in Planning: Kerala Experiment”,

Economic and Political Weekly, Sept. 24, 2450-54.

- Bhanti, R. 1993 Social Policy and Development in Rajasthan, Udaipur: Himnashu Publication.
- Bujmer, M,et.al., 1989 The Goals of Social Policy, London: UnwinHyman.
- Chakraborty,S.1987 Development Planning- Indian Experience, Oxford: Claredon Press.
- Dandekar, V.M. 1994 " Role of Economic Planning in India in the 1990s & Beyond", Economic and Political Weekly, Vol.29,No.24,1457-1464.
- Desai, V.1988 Rural Development (Vol.I) Mumbai: Himalaya Publishing House.
- Dimitto, D.M. 1991 Social Welfare: Politics and Public Policy, New Jersey: Prentice-Hall.
- Ganapathy, R.S. and Others 1985 Public policy and Policy Analysis In India, Delhi: Sage Publications.
- Ghosh, A. 1992 Planning In India: The Challenge for the Nineties, New Delhi: Sage Publications.
- Government of India Five Year Plan Documents (latest), New Delhi.
- Gupta, S.P. 1993 " Planning and Liberalization", Economic and Political Weekly, Vol.28 No.43, Oct.23,2349-2355.
- Jacob, K.K. 1992 Social Development Perspectives Hebsur, R.K. (Ed.) Social Intervention For Justice, Bombay: TISS.
- Huttman, E.D. 1981 Introduction to Social Policy, New York: McGraw-Hill.
- International Labour Office. 1973 Multinational Enterprises and Social Policy, Geneva, ILO.
- Jones, K.Et.al.,1983 Issues in Social Policy, London: ROutledge & Kegan paul.
- Joshi, P.C. 1976 Land Reform in India Kahn, A.E. 1973 Social Policy and Social Services, New York: Random House.
- Kulkarni, P.D, 1979 Social Policy and Social Development in India, Madras: Association of Schools of Social Work in India.
- Kulkarni, P.D.1952 Social Policy in India, New York: McGraW- Hill Book

Company.

- Kulkarni, P.D. 1975 Social Policy in India, Bombay, Tata Institute of Social Sciences.
- Leonard, P. 1997 Postmodern Welfare: Reconstructing an Emancipatory Project, London: Sage.
- Lindblom,C.E. 1980 The Policy-making Process, New Jersy; Prentice- Hall.
- Livingstane, A. 1969 Social Policy in Developing Countreis, London: Routledge & Kegan Pual.
- Madison, B. Q. 1980 The Meaning of Social Policy, London: Croom Helm.
- Macpherson, S. 1980 Social Policy in the Third World, London: Wheat- speat Brooks.
- Macpherson, S. 1982 Social Policy in the Third World, New York: John Wiley and Sons.
- Mathur. K. Bjorkman Top Policy Makers in India, New Delhi: Concept Publishing Co. Meadows, D.H. 1972 The Limits to Growth, New York: University Books.
- Mishra, R. 1977 Society and Social Policy, London: Macmillan Ltd.
- Mukherjee, N. 1993 Participatory Rural Appraisal; Methodology and Applications, New Delhi: Concept Publishers.
- Mundle, S. 1993 participatory Rural Appraisal: Metodology and Applications, New Delhi: Concept Publishers.
- Milliard, M. and Spicker. 1998 Social Policy in a Changing Society, London: Routlede.
- Philips, D.R. and Health and Development, London: Routledge and Verhasselt Yola (Eds) 1994 Kegan Paul.
- Rao, D.B. (Ed.) 1998 World Submit for Social Development Rao, V. “Social Policy: The Means and Ends Question” Indian Journal of Public Administration, Vol.50 No.1 Jan.-March, 1994.
- Rao, V. and Mander, H. An Agenda for Caring: Intervention for the Marginalized, New Delhi: VHAI.
- Rastogi, P.N. 1992 Policy Analysis and Problem-Solving for Social Systems, New

Delhi: Sage Publications.

- Roychaudhury, T. 1982 The Cambridge Economic History of India, Vol.I&II, New Delhi: Cambridge University.
- Roy, Sumit 1997 “Globalisation, Structural Change and Poverty”, Economic and Political Weekly, Aug. 16-23, 2117-2132.
- Sachs, W. 3997 Development Dictionary Singh, R.R. (Ed.) 1995 Whither Social Development? New Delhi: ASSWI.
- Singh, Y 1972 Modernization of Indian Tradition, Delhi: Thomas Press. Spicker, Paul 1998 Principles of Social Welfare: An Introduction to Thinking About the Welfare State,
- London:Routledge. The Probe Tean. 1999 Public Report on Basic Education in India New Association with Centre for Delhi: Oxford University Press. Development Economics
- Upadhyay, S.B. 1992 Urban Planning, Jaipur: Printwell. UNDP Human Development Reports, Oxford University Press.
- Vyasulu, V. Vani, B.P. 1997 “Development and Deprivation in Karnataka”, Economic and Political Weekly, Nov. 15 2970-2974.
- Weimer. D.L. and Policy Analysis: Concepts and Practice, New Vining, A.R. 1994 Jersey: Prentice-Hall.
- World Bank World Development Reports (Annual), Oxford University Press.
- Yadav, C.S. (Ed) 1986) Urban Planning and Policies- Part A, New Delhi: Concept Publishing Co. Encyclopedia of Social Sciences Encyclopedia of Social Work.
- De Haan, Anjan (20130 “The Social Policies of Emerging Economics: Growth and Welfare in China and India” IPC-JG working Paper No.110. Brasilia, International Policy Centre for Inclusive Growth.

Recommended Journals/Periodicals

- Alternatives; Development and Change; Economic and Political Weekly.

Course Title: DEVELOPMENT COMMUNICATION

Course Code: SWCP - 19

Level: MSW (IV)

Objectives :

- To study the basic issues in Communication.
- To learn about various channels of Communication
- To understand the channels of mass communication reaching to rural audience.

Unit : I

Development: meaning, concept, process and models of development – theories – origin – approaches to development, problems and issues in development, characteristics of developing societies, development dichotomies, gap between developed and developing societies. Development issues on national and regional and local level.

Unit : II

Development communication : meaning – concept – definition – philosophy – process – theories – role of media in development communication – strategies in development communication – social cultural and economic barriers – case studies and experience – development communication policy – strategies and action plans – democratic decentralization.

Unit : III

Communication with Individual Group, Traditional Communication: Streets play, Puppetry show & Folk media, Rural communication messages Development support communication: population and family welfare – health- education and society – environment and development – problems faced in development support communication.

Unit : IV

Writing development messages for rural audience: specific requirements of media writing with special reference to rural press, radio and television. Problems of Rural

Journalism, Farm Journals, Rural Press, Press Conference, Radio rural Forum, Role of Community Radio in Rural Communication.

Reading List:

Fernandes, Walter : Development with People, Indian Social Institute, New Delhi, 1988.

Jayaweera N. & Amunugama S. : Rethinking Development Communication, AMIC, Singapore, 1988.

Kumar, Kevel J. : Communication and Development : Communication Research Trends, Vol. 9, No.3, 1988.

Hoogvelt Ankie : The Third World in Global Development, Macmillan, London, 1982.

Hornik, Robert C : Development Communication : Information Agriculture and Nutrition in Third World, Longman, London/NY , 1988.

Melkote Srinivas : Communication for Development in the Third World – Theory and Practive, Prestic – Mall, New Delhi, 1991.

Sondhi, Krishan : Communication, Growth and Public Policy Breakthough, New Delhi, 1983.

Schramm, Wilbur : Mass Media and National Development, Stanford UP, Stanford, 1964.

Course Title: SUSTAINABLE AGRICULTURE

Course Code: SWCP - 20

Level: MSW (IV)

Objectives:

- To Understand the Indian Agricultural Policy and the Crisis in Agriculture.
- To be acquainted with sustainable agricultural practices.
- To effectively respond to the problem of food and nutritional security at the level of the farmer/community.

Unit-I: Principles & Policy for Sustainable Agriculture

Social Work in Rural-Agro ecological Communities;

History & Evolution of Agricultural Practices;

Principles of Sustainable Agriculture;

Policy & Practice of Sustainable Agriculture;

Principles of Industrial Agriculture;

Policy & Practice of Industrial Agriculture.

Unit-II: Soil Health & Water Management Soil Health:

On Farm Biomass;

Cattle Dung;

Earth Worm;

Soil Health Enhancement Techniques;

Organic Carbon Measurement.

Water Management:

In-situ water conservation;

Methods to reduce flow of rain water;

Mulching;

Moisture Management.

Unit-III: Seeds & Cropping Pattern Seeds:

Seed in the context of a micro-ecosystem;

Significance of Diversity in Seed;

Types of Seeds;

Politics of Seed Control;

Techniques of preserving seeds with Farming Communities.

Cropping Pattern:

Multiple cropping patterns & Soil Health;

Soil-climate & cropping patterns;

Cropping Patterns as enhancing photosynthesis process.

Unit-IV: Integration & Ecological Agriculture

Integration of Agriculture:

Interrelated Activities of Agriculture;

Stages of Integration;

Processes of Integration;

Programs available for Integration.

Ecological Agriculture:

Principles of Ecological Agriculture;

Transition from Integrated Agriculture to Ecological Agriculture.

Reading List:

Randhawa M.S, A History of Agriculture in India, Vol. I, II, III & IV, ICAR.

Asian Agri-History Foundation (1999), Krishi Parashara, ISRISAT.

Subramaniam. C (1995) Hand of Destiny: The Green Revolution (Vol.2) Bharatiya Vidya Bhavan.

Shina Vandana, The Violence of the Green Revolution.

Roy. B. C, Chattopadhyay, G.N, And Tirado.R; Subsidising Food Crisis. www.greenpeaceindia.org.

Howard. Albert, An Agricultural Testament, Other India Press.

Howard. Albert & Wad. Yeshwant D, The Waste Products of Agriculture- Their utilization as humus.

Howard. Albert and Berry. Wendell (1945), Soil and Health, http://www.journeytoforever.org/

Fukuoka. M. (2009) The One Straw Revolution, OIB

Fukuoka. M. (1996). The Road Back to Nature: Regaining the Paradise Lost, OIB.

Dabholkar. S. A. (2001) Plenty for All, OIB.

Save. Bhasker, The Great Agricultural Challenge, OIB.

Green Foundation, Janadharya Seed Savers.

Green Foundation, Seed to Food.

Alvares. Claude (2009), The Organic Farming Sourcebook, Other India Press.

Course Title: DISSERTATION

Course Code: SWCP - 21

Level: MSW (IV)

Dissertation

The student has to prepare and submit a dissertation under the guidance of a faculty. The student should exhibit ability to review relevant literature formulate a research question, choose appropriate methodology, develop data collection tools, analyze and interpret data and prepare the research report. The length of the dissertation excluding contents and Bibliography should not exceed ten thousand words.

Evaluation Criteria

Sl. No.	**Item**		**Weightage**
1	Choice of Topic Review of relevant literature	Scope, Research Potential Comprehension, quality, quantity	10
2	Objective and Hypothesis/Question	Relevance, clarity, relation to topic Research Design/Methodology Appropriateness, selection of variables sample and description	20
3	Tools Used	Appropriateness, use	10
4	Data analysis and interpretation	Scheme, Application of Statistical techniques, use of tables and figures relating findings to objectives and literatures, discussion on findings	20
5	Summary	Synthesis of findings Implications	10
6	Report Presentation	Cauterization, chapter size, structuring of paragraphs vocabulary, clarity, coherence, Bibliography	10
7	Viva-voce	Ability to explain the research process & defend research work	20
Total			**100**

Course Title: ENTREPRENEURSHIP

Course SWEP - 07

Level: MSW (IV)

Objectives

- To familiarize Social Work students to entrepreneurship
- To give them basic skills and competencies to encourage entrepreneurship through their Social Work practices.

Unit – I : What is Entrepreneurship?

Entrepreneurship- conceptual issues; Entrepreneurship and Development: Entrepreneurship motivating factors, competencies, performance and reward. Status of entrepreneurs in India, problems and concerns of entrepreneurs

Unit – II : How to be an Entrepreneurship?

Opportunity scouting and idea generation: creativity and innovation; the process of setting up a small business: Preliminary screening and detailed study of the feasibility of the business idea: financing/non-financing support agencies; Schemes of assistance from government and non-governmental agencies, policies/programs and procedures and the available schemes

Unit-III : Management Roles of an Entrepreneur

Management roles and functions in a small business; Designing and re-designing business process, location, layout, operations, planning and control. Issues of quality, productivity and environment; Managing business growth; Issues in marketing sales and distribution. Consortium marketing; competitive bidding/tender marketing negotiating with principal customers. Marketing Assistance, Subsidies and other Fiscal and monetary Incentives. National state level and grass-root level financial and non-financial institutions in support of small business development.

Unit – IV : Accounting

Principles of double-entry book-keeping: Journal entries, cash-book, pass book, and Bank Reconciliation Statement leader account trail balance and preparation of final accounts: Trading and Profit and Loss Account; Balance-sheet. Brief introduction to Single-Entry system of record keeping. Sources of risk/venture capital, fixed capital, working capital and a basic awareness of financial services such as leasing and factoring

Reading list:

Sivakama Sundari, S. Entrepreneurship Development of Rural Women (Vol.I) Asian and Pacific for Transfer of technology, New Delhi.

Heggade, O.D. Developing rural women entrepreneurship, Mohit publications, New Delhi

Santhawali, A.Y. Entrepreneurship Development – Publications, Jaipur.

Bhide, Amar V. The Origin and Evolution of New Business, Oxford University Press, New York, 2000

Dollinger M.J., 'Entrepreneurship strategies and Resources', 3rdedition, Pearson Education, New Delhi 2006

Desai, Vasant Dr. (2004) Management of small scale enterprises New Delhi: Himalaya Publishing Company

Taneja, Gupta, Entrepreneur Development New Venture Creation: 2ndedition Galgotia Publishing Company

Holt, David H., Entrepreneurship: Strategies and Resources, Illinois , Irwin, 1955.

Panda, Shiba Charan, Entrepreneurship Development, New Delhi, Anmol Publications

Patel, V.G., The Seven Business Crises and How to Beat Them, Tata-Mcgraw, New Delhi, 1995

SIDBI Report on Small Scale Industries Sector[latest edition]

Verma, J.C.., and Gurpal Singh, Small Business and Industry-A Handbook for Entrepreneurs, Sage, New Delhi, 2002

Course Title: NGO MANAGEMENT

Course Code: SWEP – 08

Level: MSW (IV)

Objectives:

- To understand the role of NGOs in society
- To gain clarity about the operating environment of NGOs
- To understand the issues involved in the internal management of NGOs

Unit I: Introduction to NGOs

Definitions, History, Roles in Society; Description of the NGO sector; Theoretical Perspectives on Organization and Management of NGOs.

Unit II: The legality of NGOs in India

Societies Registration Act, 1860, Indian Trust Act, 1882, Cooperative Societies Act, 1912, Company Act, 1956 (Some Relevant Part), FCRA: Foreign Contribution Regulatory Act, Income tax Act 1961, Income Tax Exemption: Under Sections 11 and 12, Rebate under Sections 80G and 35AC of Income Tax Act.

Unit – III: The operating environment of NGOs

Understanding the environment in which NGOs function: Economic, Political, Socio-Cultural and Ideological macro level forces that influence NGOs, Globalization and Foreign aid system. Principal Players and their Relationships: Governments, Markets, NGOs, Donors; Importance of partnerships.

Unit – IV: Internal Management of NGOs

Governance structure, Vision and Mission; Internal management needs of a NGO; strategies/plans for action; Managing Resources: Human and Financial; Measuring performance, participation, evaluation; Accountability to multiple stakeholders; Ethical issues faced by NGO managers; Scaling up and sustainability of NGOs; creating a learning environment

Reading List:

Lewis, David. 2007. The Management of Non-Governmental Development Organizations, second edition. New York: Routledge.

Edwards, M. and Fowler, A. (2003) The Earthscan Reader on NGO Management. London: Earthscan Publications, Ltd.

Salamon, L.M. 1994. The Rise of the Nonprofit Sector.Foreign Affairs 74 (3): pp. 109–122

Lewis, D. 2007. Advocacy and Service Delivery: Managing the Main NGO Activities in
The Management of Non-governmental Development Organizations,Second Edition

Fowler, A. 1997. Understanding International Development in Striking a Balance: A Guide to Enhancing the Effectiveness of Non-governmental Organizations in International Development London: Earthscan Publications, Ltd.,

Course Title: PROJECT MANAGEMENT

Course Code: SWEP – 09

Level: MSW (IV)

Objectives:

- To understand the fundamentals of Project management and how to initiate, plan, execute and close a project.

Unit - I: Fundamentals of Project Management

What is a Project? Definition, meaning, principles and types; What is project management? meaning, coverage and scope; Who is the project manager?; Project phases and knowledge areas. Planning and its importance; who should be involved in planning?

Unit - II: Initiating Projects and Project Identification

How to get a project started; Setting a mandate, finding a project sponsor and creating a
project team: team dynamics and running meetings.

Project Identification: Needs assessment: listening, interviewing, focus group discussions, community mapping; Capacity assessment: human, social, natural, physical, economic, cultural

Unit - III: Planning and Executing Projects

Work Breakdown Schedule (WBS), Project estimating and scheduling techniques-sequencing tasks, identifying the path of the project, considering resources; Risk planning methods; Cost planning; Communications plan; final project plan.

Team management; identifying and involving all stakeholders, user groups, interest groups, beneficiaries, decision makers; Primary and Secondary stakeholders; levels of participation;

Unit - IV: Closing a Project

Closing of a successful project; stakeholder acceptance; writing a final report; Techniques of identifying lessons learned and their analysis; acknowledging successes and failures; and identifying areas for further projects.

Reading List:

Verzuh, Eric. The Fast Forward MBA in Project Management. Published by John Wiley and Sons, Inc.

Project Management Body of Knowledge, 5th Edition. Published by Project Management Institute (PMI)

Blackman, Rachel. 2003. Project Cycle Management. UK: Tearfund.

Preskill, Hallie and Russ-Eft, Darlene. 2005. Building Evaluation Capacity. London: Sage Publications.

Capezio, Peter. 2000. Powerful Planning Skills. Mumbai: Jaico Publishing House.

Smith, Steve. 2002. Plan to Win. New Delhi: Kogan Page India Pvt. Ltd.

Dale, Reidar. 2001. Evaluation Frameworks for Development Programmes and Projects. New Delhi: Sage Publications.

Loehle, Craig. 2000. Thinking Strategically. New Delhi: Foundation Books.

Padaki, Vijay. 1995. Development Intervention and Programme Evaluation. New Delhi: Sage Publications.

Course Title: CLIMATE CHANGE, DISASTER MANAGEMENT AND REHABILITATION

Course Code: SWEP –

10 Level: MSW (IV)

Objectives:

- To understand the challenges of Climate change
- To gain a comprehensive understanding of the Disaster Management Cycle.
- To get acquainted with Disaster Management Policies and Laws in India.

Unit I:

- **Climate Change:** Concept, nature and severity of climate change. Causes of climate change. Impact of climate change: globally in general and Odisha in particular. Greenhouse effect, climate change and disaster.
- **Disaster Management:** Definition, Types of disaster (natural and manmade disaster) mining disaster, tropical cyclone, storms, floods, lightning, forest fire, tsunami and earthquakes.

Unit II:

- **Concepts associated with Climate Change and Disasters:** air pollution

and acid rain, ozone depletion, bio-diversity extinction, de-forestation and loss of biological diversity, land degradation, deserts and desertification, groundwater over exploitation, dryness and wildfires, population growth and explosion, habitat related problems.

- **Social Systems, Ecological Networks and Disasters**: a socio-political ecology of disasters, nature of human communities, community as an ecological network.

Unit III:

- **Disaster Management Cycle:** Disaster phase, Response phase, Recovery phase, Risk reduction phase, Preparedness phase.
- **The Process of Disaster Management**: mitigation, preparedness, response and recovery.
- **Majors Disasters in Odisha**: Flood, cyclone, drought, tsunami, etc
- **Disaster Management Programs and System in India**: Nation Disaster Management Act (2005), National Policy on Disaster Management (2009), Disaster Management in the Xth Five Year Plan onwards, different bodies National Disaster Management Agency (NDMA), State Disaster management Agency (SDMA), National Disaster Response Force (NDRF), National Institute of Disaster Management (NIDM), India Disaster Resource Network (IDRN). Community based disaster management and community based disaster management practices (case studies), The role of INGOs and NGOs.
- **Disaster Warning and Evacuation**: Factors influencing evacuation and some policy considerations, media and other sources of information, Phases of evacuation: Preparation, Decision

Unit IV:

- **Environmental Legislation and Regulations associated with Disaster Management:** Environment Policy of the Government of India: Five Year Plans, Environment Protection Act (1986),The Environment (Sitting for Industrial Projects) Rules (1999), The Indian Forest Act (1927 and Amendment 1984), The Indian Forest (Conservation) Act (1981), Coastal Regulation Zone Notification (1991).
- **Rehabilitation**: Need for rehabilitation, Government and Non-government programs for rehabilitation, role of NGOs for rehabilitation programmes, Critical review of programmes, Role of Social Work in minimizing the effects of disaster.

Reading List:

Anandha Kumar K.J and Ajinder Walia (2013) India Disaster Report, NIDM: New

Delhi.

Gupta. Anil K et, al (Ed) (2014). Training Module Mainstreaming Climate Change Adaptation and Disaster Risk Reduction into District Level Development Plans, NIDM : New Delhi.

Satendra and Kaushik. D (2013) Forest Fire Disaster Management NIDM: New Delhi.

Vogelbacher (2013) Flood Disaster Risk Management NIDM: New Delhi.

Kaushik. A.D. (2012) Flood Risk Mitigation and Management: A Training of Trainers Module, NIDM: New Delhi.

Course Title: People-Centered Advocacy

Course Code: SWEP – 11

Level: MSW (IV)

Objectives:

1. To acquire conceptual clarity and theoretical knowledge about linkages between state, civil society and market, governance and social policy processes
2. To acquire conceptual clarity about Social Advocacy as a method for bringing about social change to achieve equality and social justice goals enshrined in the Constitution using non-violent methods
3. To become aware of the democratic institutions, actors and the processes of democratic decision making
4. To acquire necessary skills for strategy planning to engage in Social Advocacy
5. To internalize values and attitudes necessary for working at micro, meso and macro levels and with diverse individuals and groups by following the Constitutional and democratic processes

Unit 1: Understanding People Centred Advocacy

- Politics in Social Advocacy and its role in democratic decision making
- Advocacy vis-à-vis Social Revolution and Social Action
- Relevance and importance of people centered advocacy and rights based approaches in India
- Power, politics and public arguments
- Personal and institutional benefits of Social Advocacy

Unit 2: Role of Information, Networking and the Media in Advocacy

- Power of Information in People Centered Advocacy

- Identifying incidents, collecting information and framing issues
- Mobilizing support and importance of coalitions
- Role of organization and campaign strategies
- Building favorable public opinion and putting pressure on decision makers
- Understanding the politics of media and its role in consensus and conflict creation
- Developing material for the media and its diverse audience
- Exploring alternate media for pro-people advocacy

Unit 3: Advocacy with the Legislature and Executive

- Understanding channels between legislators and advocacy groups
- Knowing the actors within and outside legislative bodies
- Role of bureaucracy in policy making, operationalization and implementation.
- Finding policy hooks and political angles. Understanding phases of policy making
- Implications of transparency and accountability vis-à-vis elected representatives and the bureaucracy
- Practical tips and strategies for advocating with legislatures and the bureaucracy

Unit 4: Advocating with the Judiciary and with the reference to the International framework.

- Understanding central and state laws and function of various courts in India
- Role of Information and PILs in Judicial Advocacy
- Post 2015 agenda, post MDG frameworks
- Making post 2015 matter for socially excluded groups in India

Reading List

NCAS.resource material and documented case stories on People Centred Advocacy

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN COMMERCE (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

U.G. Commerce Common Syllabus, Odisha

Paper	Subject	Paper Code	Full Marks	End-term Marks	Mid-term Marks	Credit Points
	Semester I					
1.1	Environmental Science	AECC -1	100	80	20	4
1.2	Financial Accounting	CORE-1	100	80	20	6
1.3	Business Law	CORE-2	100	80	20	6
1.4	Micro Economics	GE-1	100	80	20	6
	Total		**400**			**22**
	Semester II					
2.1	Communicative English/MIL	AECC-2	100	80	20	4
2.2	Cost Accounting	CORE-3	100	80	20	6
2.3	Corporate Law	CORE-4	100	80	20	6
2.4	Macro & Indian Economy	GE-2	100	80	20	6
	Total		**400**			**22**
	Semester III					
3.1	Corporate Accounting	CORE-5	100	80	20	6
3.2	Income-tax Law and Practice	CORE-6	100	80	20	6

3.3	Management Principles and Application	CORE-7	100	80	20	6
3.4	Business Statistics	GE-3	100	80	20	6
3.5	E-Commerce	SEC-1	100	80	20	4
	Total		**500**			**28**
	Semester IV					
4.1	GST and Indirect Taxes	CORE-8	100	80	20	6
4.2	Fundamentals of Data Management (End Term Exam = 60, Practical = 25, Mid-term = 15	CORE-9	100	60+25	15	6
4.3	Management Accounting	CORE-10	100	80	20	6
4.4	Principles of Marketing	GE-4	100	80	20	6
4.5	Entrepreneurship Development and Business Ethics	SEC-2	100	80	20	4
	Total		**500**			**28**
	Semester V					
5.1	Computerized Accounting& E-filling of Tax Returns (End Term Exam = 60, Practical = 25, Mid-term = 15	CORE-11	100	60+25	15	6
5.2	Fundamentals of Financial Management	CORE-12	100	80	20	6
5.3	Elective I (Any *one* of the following)	DSE-1	100	80	20	6
	A. Financial					

	Accounting and Finance	Markets, Institutions &Services					
	B. Banking and Insurance	Indian Banking and Insurance System					
	C. Management	Human Resource Management					
5.4	Elective II (Any *one* of the following)		DSE-2	100	80	20	6
	A. Accounting and Finance	Financial Statement Analysis and Reporting					
	B. Banking and Insurance	Merchant Banking and Financial Services					
	C. Management	International Business					
	Total			**400**			**24**
	Semester VI						
6.1	Auditing and Corporate Governance		CORE-13	100	80	20	6
6.2	Business Mathematics		CORE-14	100	80	20	6
6.3	Elective III (Any *one* of the following)		DSE-3	100	80	20	6
	A. Accounting and Finance	Fundamentals of Corporate Tax Planning					
	B. Banking and Insurance	Fundamentals of Investment					
	C. Management	Consumer Affairs and Customer Care					
6.4	Business Research Methods and Project work	End Term Exam = 50 Project = 30 Viva-voce = 20	DSE-4	100	50 30 Project 20 Viva-voce		6
	Total			**400**			**24**
	Grand Total			**2600**			**148**

COMMERCE

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non commerce students– 4 papers.
(Universities can exercise option of prescribing 2 GE in which case from the list of GEs given in the syllabus GE1 and GE2 only are to be taken.
Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks for papers without practical; For papers with Practicals the mark distribution would be 60+25+15
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

(CORE – 1) FINANCIAL ACCOUNTING

Objectives: The objective of this paper is to help students to acquire conceptual knowledge of financial accounting and to impart skills for recording various kinds of business transactions.

Unit - I. (a) Basics of Accounting

i. Accounting as the language of business and an information system, the users of financial accounting information and their needs. Qualitative characteristics of accounting information, Functions, advantages and limitations of accounting. Branches of accounting. Bases of accounting: cash basis and accrual basis.
ii. The nature of financial accounting principles – Basic concepts and conventions: entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures and Accounting Equation.

(a) Accounting Process

From recording of business transactions to the preparation of trial balance including adjustments: journal, sub-division of journal, ledger accounts, trial balance.

Unit – II: Reporting Standards &Business Income

1. Concepts of AS, Ind AS (Indian Accounting Standards), IFRS (International Financial Reporting Standards) & XBRL (extensible Business Reporting Language)
2. Measurement of business income-Net income: the accounting period, the continuity doctrine and matching concept. Objectives of measurement and revenue recognition.
3. Depreciation Accounting: The accounting concept of depreciation. Factors in the measurement of depreciation. Methods of computing depreciation: straight line method and diminishing balance method; Disposal of depreciable assets-change of method. Salient features of Accounting Standard 6 (AS- 6) issued by ICAI

Unit – III: Final Accounts

Capital and revenue expenditures and receipts, Preparation of financial statements of Sole Trade and Partnership Business with adjustments

Accounting for Partnership Firm: Accounting of Admission of partner, Retirement and Death of partner and Dissolution of the Partnership Firm Including Insolvency of partners

Unit – IV:

i. Hire Purchase and Instalment Systems and Accounting for Branch & Department
ii. Concepts of operating and financial lease (theory only)
iii. Departmental Accounting and Branch Accounting including foreign branch (Theory and Problem)
iv. Hire purchase and Instalment System

Learning Outcomes: The course structure of this paper would equip the students to get in-depth knowledge of financial accounting along with its practical application thereby giving an opportunity to gain easy access to this competitive business world.

Text Books Recommended

1. Financial Accounting I and Financial Accounting II: Mukherjee, Oxford University Press
2. Jain, S.P. and K.L. Narang. Financial Accounting, Kalyani Publishers, New Delhi

Suggested Readings:

1. Financial Accounting, R.K. Mittal , M.R. Bansal, V.K, Global Publication.
2. Bal Ranjan Kumar, Financial Accounting – S. Chand
3. Text Book of Financial Accounting-Anil Kumar and Mariappa- Himalaya Publishing House
4. Financial Accounting - P. C. Tulsiani, Pearson Publication
5. Anthony, R.N. Hawkins, and Merchant, Accounting: Text and Cases. McGraw-Hill Education.
6. Bansal.K.M- Financial Accounting – Taxman Publication
7. Horngren, Introduction to Financial Accounting, Pearson Education.
8. Maheshwari, S.N. and. S. K. Maheshwari. Financial Accounting. Vikas Publishing House, New Delhi.
9. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi
10. N.Godwin and D. Sanyal, Financial ACCT, Cengage Learning

(CORE – 2) BUSINESS LAW

Objective: The objective of the course is to impart basic knowledge of the important business laws along with relevant case laws.

Unit I: The Indian Contract Act, 1872

1. Contract – meaning, characteristics and kinds, Essentials of a valid contract
2. Offer and acceptance (Definition, Rules, Communication and Revocation of offer and acceptance)
3. Consideration (Definition, Elements, Types, Rules), "No Consideration No Contract" and its exceptions; Capacity to Parties (Definition and Types)
4. Consent, Free consent, Coercion, Undue Influence, Fraud, Misrepresentation, Mistake
5. Legality of objects and Consideration
6. Void and Voidable agreements – Definition, Types and Distinction
   Discharge of a contract – Modes of discharge, Breach and Remedies against breach of contract

7. Specific Contracts - Contingent contracts, Quasi, Contract of Indemnity, Guarantee, Bailment, Pledges

Unit II: The Sale of Goods Act, 1930

1. Contract of sale, meaning and difference between sale and agreement to sell
2. Conditions and warranties
3. Transfer of ownership in goods including sale by a non-owner
4. Unpaid seller – meaning, rights of an unpaid seller against the goods and the buyer

Consumers Protection Act, 1986 and Right to Information Act

a. Objectives and features of Consumers Protection Act
b. Definitions – Complainant, Complaint, Consumer, Consumer Dispute, Defect, Deficiency, District Forum, Person
c. Unfair trade practices
Consumer Protection Council (Central, State and District – their constitutions and objectives

Unit III: Partnership Laws

A. The Partnership Act, 1932
a. Definition – Partner, Partnership
b. Nature and Characteristics of Partnership
c. Types of Partners
d. Registration of a Partnership Firms and consequences of non-registration
e. Rights and Duties of Partners
f. Dissolution of firms – meaning and grounds
B. The Limited Liability Partnership Act, 2008
a. Definition
b. Salient Features of LLP
c. Advantages and disadvantages of LLP
d. Differences between: LLP and Partnership, LLP and Company
e. Incorporation of LLP

Unit IV: The Negotiable Instruments Act 1881

a. Definition, Features, Types, Parties of Negotiable Instruments: Promissory Note, bill of exchange, Cheque (Definition and Types)
b. Endorsement: Meaning and Types of Endorsement
c. Holder and Holder in Due Course, Privileges of Holder in Due Course.
d. Dishonour of Negotiable Instruments: Modes, Consequences, Notice of Dishonour; Noting and Protesting
e. Discharge of Negotiable Instruments: Meaning and Modes

Learning Outcomes: The students would be able to deal with the legal aspect of different business situations.

Text Books Recommended

1. Business Law, Garg K.C., Saareen,Sharma, Kalyani Publishers
2. Kumar, R. Legal Aspects of Business, Cengage Learning

Suggested Readings:

1. Arora Sushma – Business Law – Taxmann Publication
2. A Book of Business Laws-Jena B and Mohapatra-Himalaya Publishing House
3. Business Law, Ashok Sharma, V.K. Global Publication.
4. Business Laws: Das & Roy, Oxford University Press
5. Business Law- S K Matta, Geetika Matta, Vrinda Publications (P) Ltd
6. Business Law - Tejpal Singh, Pearson Publication
7. Kuchhal, M.C. and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi.
8. Tulsian, P.C, Business Law, S.Chand
9. Maheshwari & Maheshwari, Business Law, National Publishing House, New Delhi.

(Core-3)

COST ACCOUNTING

Objective: To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment.

CONTENTS:

Unit- 1:

Introduction to Cost Accounting: Meaning, concept, scope, objectives, principles, importance and limitations of cost accounting; Implementation of costing system; Methods & Techniques of costing; Cost concepts and Cost Sheet, Job costing and Batch Costing.

Unit – II:

Accounting for Material: Concept and technique of accounting for material; Methods of pricing of materials issues – FIFO, LIFO and Average; Treatment of material losses; Techniques of material control – level setting, Economic Ordering Quantity, ABC Analysis, VED Analysis, Perpetual inventory system, & Just-In-Time.

Unit – III:

Accounting for Labour:

Accounting for labour cost, control procedure, labour turnover, idle time, overtime, Methods of wage payment and the Incentive schemes- Halsey, Rowan, Taylor's Differential piece wage plan.

Accounting for Overheads:

Classification, Allocation & Apportionment of production overheads; Re-apportionment of Service department overheads; Absorption of overheads, methods of absorption – actual and predetermined rates, blanket and multiple rates, choice of an overhead absorption rate; Administration, selling and distribution overheads; Under absorption and over absorption of overheads.

Unit – IV:

Methods of Costing: Contract costing: Features and procedure of contract costing, uncompleted contract profit determination, Escalation clause, cost plus contracts.Process costing: Meaning and characteristics of Process costing, Procedure for process costing, treatment of process losses and wastages.

Learning Outcome: After the completion of this paper, the students will be able to have confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

Text Books Recommended

1. Cost Accounting-Arora MN A- Himalaya Publishing House
2. Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.

Suggested Reading:

1. Jain, S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani Publishers, Jalandhar.
2. Cost accounting, S.P. Gupta/ A Sharma- V.K. Global Publishing Pvt. Ltd.
3. Cost & Management Accounting I: Mitra, Oxford University Press.
4. Cost & Management Accouning, Taxmann Publications
5. Colin Drury, Management and Cost Accounting, Cengage Learning
6. Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi.
7. Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House, New Delhi.
8. Lal, Jawahar. Advanced Management Accounting Text and Cases. S. Chand & Co., New Delhi.
9. Cost Accounts - Datar and Rajan, Pearson Publication

(Core-4) CORPORATE LAWS

Objectives: The objective of the course is to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 1996. Case studies involving issues in corporate laws are required to be discussed.

Contents:

Unit – I: INTRODUCTION TO COMPANY

Meaning and Definition – Features –, High Lights of Companies Act 2013 - Body Corporate ,Kinds of Companies (Concept, Definition and Features) – One Person Company, Private Company, Public Company, Company limited by Guarantee, Company limited by Shares, Holding Company, Subsidiary Company, Government Company, Associate Company, Small Company, Foreign Company, Listed Company, Dormant company

FORMATION OF A COMPANY

Steps in formation of a Company, Promotion Stage, Meaning of Promoter, Position of Promoter & Functions of Promoter, Incorporation Stage – Meaning, Contents, Forms of

Memorandum of Association & Articles of Association and its alteration, Distinction between Memorandum of Association and Articles of Association, Certificate of Incorporation, Subscription Stage – Meaning & contents of Prospectus, Types, Mis- statement in prospectus and its consequences.

Unit - II: COMPANY ADMINISTRATION

Director (Concept and Definition), DIN, Qualification, Disqualification, Appointment, Position, Rights, Duties, Power, Resignation, Liabilities, Removal and Resignation of director, Key Managerial Personnel (Definition, Appointment and Qualifications) – Managing Director, Whole time Directors, the Companies Secretary, Chief Financial Officer, Resident Director, Independent Director, Women director.

Unit - III: SHARE CAPITAL & DEBENTURE

Share and Share Capital - Types and Definition, Allotment and Forfeiture, Calls on Shares, ESOP, Buyback, Sweat Equity, Bonus, Right, Capital Reduction, Share Certificate, Demat System, Transfer and Transmission, Redemption of Preference Shares, Debenture – Definition, Types, Rules Regarding Issue of Debenture, Rules regarding Dividend and distribution of dividend.

Unit - IV: CORPORATE MEETINGS

Corporate Meetings - Shareholder and Board, Types of Meetings – Annual General Meeting Extraordinary General meeting, Minutes of Proceedings of General Meeting, Meeting of BOD and other meetings (Section 118), Requisite of Valid Meeting- Notice, Agenda, Chairman, Quorum, Proxy, Resolutions, Minutes, Postal Ballot, E- voting, Video Conferencing,

Learning Outcomes: Students would acquire knowledge about the legal framework and the ways and means to deal with the legal aspect of different situations of corporate sector.

Text Books Recommended

1. Corporate Laws-Maheswari, Maheswari- Himalaya Publishing House
2. Corporate Law, Ashok Sharma, V.K. Global Publishing Pvt. Ltd., New Delhi

Suggested Readings:

1. **A** Compendium of Companies Act 2013, along with Rules, by Taxmann Publications.
2. Corporate Law, Gupta,Garg,Dhingra, Kalyani Publication
3. Company Law: Roy & Das, Oxford University Press.
4. Kumar, R., Legal Aspects of Business, Cengage Learning
5. Corporate Law– S K Matta, Geetika Matta, Vrinda Publications (P) Ltd
6. Arora &Banshal, Corporate Law – Vikash Publication
7. Gogna, P.P.S – Company Law, S. Chand
8. MC KuchhalCorporate Laws, Shri Mahaveer Book Depot. (Publishers).
9. GK Kapoor& Sanjay Dhamija, Company Law, Bharat Law House.

(Core-5) CORPORATE ACCOUNTING

Objectives: To help the students to acquire the conceptual knowledge of the corporate accounting and to learn the techniques of preparing the financial statements.

Contents:

Unit – I

Meaning of Company; Maintenance of Books of Accounts; Statutory Books; Annual Return Company – Issue of Shares – issue, forfeiture, reissue, issue other than cash consideration and issue to the promoters; Pro-rata issue of shares. Issue of Right and Bonus Share – Rules,

Accounting for debentures: Issue of debenture, Underwriting of shares and debentures: Determination of Underwriters Liability – with marked, unmarked & firm underwriting; Accounting of Employee Stock Option Plan – meaning; rules; Vesting Period; Exercise Period, Accounting for ESOP and Accounting of ESPS.

Unit – II: Redemption of Preference shares & Debentures

Buy Back of Securities: meaning, rules and accounting.

Redemption of Preference Shares – Rules and Accounting (with and without Bonus Shares) ; Redemption of Debenture – Important Provisions, Redemption of debenture Accounting for Redemption: by conversion, by lot, by purchase in the open market (cum and ex-interest), held as Investment and Use of Sinking Fund

Unit – III: Company's Final Accounts

Introduction to Schedule III of Companies Act 2013; Treatment of Tax; transfer to reserve, Dividend and applicable tax (out of current profit, out of past reserve); Preparation of Statement of Profit & Loss and Balance Sheet. (tax on net profit without recognizing deferred tax)

Valuation of Goodwill & Shares

Goodwill – valuation using different methods, i.e., Average Profit, Super Profit, Capitalization and Annuity.

Shares – Valuation using different methods: Asset approach, Earnings approach, Dividend Yield, Earnings-Price, Cum-div and Ex-div, Majority and Minority view and Fair Value

Unit – IV: Liquidation

Meaning of liquidation, modes of winding up, consequences of winding up, statement of affairs, liquidator's final statement of account, list 'B' contributories

Learning Outcomes: This paper can provide conceptual clarity about the techniques to prepare financial statements of companies along with accounting treatment of various situations viz. floating of shares, amalgamation and liquidation of companies.

Text Books Recommended

1. Jain, S.P. and K.L. Narang. Corporate Accounting. Kalyani Publishers, New Delhi.
2. Maheshwari, S.N. and S. K. Maheshwari. Corporate Accounting. Vikas Publishing House, New Delhi.

Suggested Readings:

1. Sehgal, Ashok and Deepak Sehgal. Corporate Accounting. Taxman Publication, New Delhi.
2. Corporate Accounting, R.K. Mittal? S. Ahuja- V .K. Global Pub. Pvt. Ltd, New Delhi.
3. Corporate Accounting – Anil Kumar, Mariappa- Himalaya Publishing House
4. Tulsian, P.C, Corporate Accounting, S. Chand
5. Monga, J.R. Fudamentals of Corporate Accounting. Mayur Paper Backs, New Delhi.
6. Gupta, Nirmal. Corporate Accounting. SahityaBhawan, Agra.
7. Bhushan Kumar Goyal, Fundamentals of Corporate Accounting, International Book House

(Core-6)

INCOME TAX LAW AND PRACTICE

Objective: To provide basic knowledge and equip students with the application of principles and provisions of Income Tax Act 1961.

Contents:

Unit I :

a) **Basic Concepts and Definitions under IT Act**: Assessee, Previous year, Assessment year, Person, Income, Sources of income, Heads of income, Gross total income, Total income, Maximum marginal rate of tax, Tax Evasion, Tax avoidance and Tax planning
b) Residential Status and Incidence of Tax, Residential status of all persons except company
c) Incomes which do not form part of Total Income Except section 10AA.
d) Agricultural Income Definition, determination of agricultural and non-agricultural Income, assessment of tax liability when there is both agricultural and non-agricultural income

Unit II:

Heads of Income and Provisions governing Heads of Income

a) Income from Salary
b) Income from House property

Unit III:Heads of Income and Provisions governing Heads of Income

a) Profits and Gains of Business and Profession Special emphasis on sec. 32, 32AC, 32AD, 35, 35D, 36(i)(ib), (ii), (iii), (iv), (vii), 37, 37(2B), 40A(2), 40A(3), 43B, (Excluding presumptive taxation)
b) Capital Gains
Meaning and types of capital assets, basic concept of transfer, cost of acquisition, cost of improvement and indexation, computation of STCG and LTCG, exemptions u/s 54

54B, 54EC and 54F, capital gain on transfer of bonus shares, right entitlement and right shares, taxability of STCG and LTCG.

c) Income from Other Sources
Basis of charge excluding deemed dividend

Unit IV:

a) **Income of other Persons** included in Assessee's Total Income Remuneration of spouse, income from assets transferred to spouse and Son's wife, income of minor.
b) Set off and Carry Forward of Losses
Mode of set off and carry forward, inter source and inter head set off, carry forward and set off of losses u/s 71B, 72, 73, 74, 74A.
c) Deductions from Gross Total Income
Basic concepts, deductions u/s 80C, 80CCC, 80CCD, 80CCE, 80D, 80DD, 80DDB, 80E, 80G, 80GG, 80GGC, 80TTA, 80U
d) Rebate u/s 87A

Computation of Total Income and Tax Payable

a) Rate of tax applicable to individual assessee
b) Computation of tax liability of an individual
c) Provision for Filing of Return Date of filing of return, relevant forms of return, different types of returns, return by whom to be signed, PAN, TAN
d) Assessment of Return Self assessment u/s140A, Summary assessment u/s 143(1), Scrutiny assessment u/s 143(3) and Best judgement assessment u/s 144.
e) Advance Tax Who is liable to pay, due dates and computation of advance tax (excluding corporate assessees)
f) Interest & Fees Section 234A, 234B, 234C, 234F
g) TDS Provisions regarding TDS from salary, interest on securities, horse racing, lottery.

Learning Outcomes: This paper would provide the understanding of various provisions of Income Tax Act as well as equip the students to make practical applications of the provisions for taxation purpose.

Text Books Recommended

1. Gour and Narang, Income tax: Law and practice, kalyani Publishers
2. Dr. Vinod Kumar Singhania, e-filing of Income Tax Returns and Computation of Tax,
3. Taxmann Publication Pvt. Ltd, New Delhi. Latest version.

Suggested readings:

1. Income tax Law and practice, Makta Jain/ Rakesh Jain, V.K. Global Pub. Pvt. Ltd., New Delhi
2. Income Tax Law and Pratcice-Saha, Dash- Himalaya Publishing House.
3. Pagare, Dinkar. Law and Practice of Income Tax. Sultan Chand and Sons, New Delhi.
4. Lal, B.B. Income Tax Law and Practice. Konark Publications, New Delhi.

(Core-7)

MANAGEMENT PRINCIPLES &APPLICATIONS

Objective:

The objective of the course is to provide the student with an understanding of basic management concepts, principles and practices.

Unit-I: Introduction:

Management-definition, importance, functions, nature-as profession, science and art, universality of management; levels of management; managerial tasks and skills

Different Schools of Thoughts: Classical School-contributions of Taylor and Henri Fayol; Neo-classical school-Human Relations approach and Behavioural Science Approach; Modern School; System approach and Contingency approach

Unit-II: Planning:

Concept, importance, steps, types, premises, barriers to effective planning and remedial measures; strategic planning-concept forecasting –concept, techniques.

Organizing:

Concept, importance, principles, different organization models-line and staff; Functional; Departmentation-need, basis, principles, Delegation of Authority-elements, steps barriers; Centralization and Decentralization of Authority; Span of Management; concept and determining factors

Unit-III: Directing and Staffing:

Directing: concepts, importance of directing, Leadership: Concept, importance, types, leadership traits, Tannenbaum & Schmidt's Model and Blake & Mouton's Model.

Staffing: concepts, importance

Unit- IV: Motivation, Co-ordination and Control:

Motivation: Concept, importance, importance of need theory, and contributions of McGregor, Maslow, Herzberg.

Coordination: concepts, importance, principles and implementation techniques. Control: concepts, importance and tools of control.

Learning Outcomes: Students would be able to make use of different management principles in the course of decision making in different forms of business organizations.

1. Pany Tushar K , Management Principles and Application, Kalyani

Text Books Recommended

1. Pany Tushar K , Management Principles and Application, Kalyani

2. Prasad, L.M. Principles and Practice of Management, Sulatan Chand

Suggested Readings:

1. Sharma gupta , Management: Principles and application , Kalyani Publishers
2. R. K . Singhal, Management Principle and application, V.K. Global Pub. Pvt. Ltd, New Delhi.
3. Management Principles and Applications-Jhunjhunwala J Mohanty- Himalaya Publishing House
4. Principles of Management: Mitra, Oxford University Press.
5. Griffin, R.W. – Management :Principles& Practices, Cengage Learning
6. Gupta R.N - Principles & Practice of Management – S. Chand
7. A K Jha, Management Principles and Application - Vrinda Publications (P) Ltd.
8. Chandan J.S – Management Concepts of Strategy – Vikash Publication
9. B.P. Singh and A.K.Singh, Essentials of Management, Excel Books
10. TN Chhabra, Management Concepts and Practice, DhanpatRai& Co. (Pvt. Ltd.), New Delhi
11. Peter F Drucker, Practice of Management, Mercury Books, London

(Core-8)

GST & INDIRECT TAX

OBJECTIVE:

The objective is to equip students with the principles and provisions of Goods and Services Tax (GST), which is, implemented from 2017 under the notion of One Nation, One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge.

Unit I- INTRODUCTION TO GOODS AND SERVICES TAX (GST)

Introduction to GST : Introduction, Constitutional provisions regarding Taxation In India, Pre-GST Indirect Taxation Structure in India, What is GST, Need for GST in India, Overview and Genesis of GST IN INDIA, GST objectives, **Scope of GST**, Salient features of GST, GST and Centre-State Financial Relations, The Constitution (122nd Amendment) Bill, Constitutional Amendments required for introduction of GST Indirect Taxes subsumed Post- GST : Principles for subsuming taxes under Goods & Services Tax (GST) in India, Indirect Taxes and Levies subsumed in GST, Events that have led to the introduction of GST, **DUAL GST : Benefits of Dual GST**, Structure Of Dual Model of GST , Key Features of Dual Model of GST, Benefits of implementing GST, CENTRAL GST – STATE / UNION TERRITORY GST – INTEGRATED GST and GST Cess, Pre-GST Regime Vs. GST
Regime, Indirect Taxes

Unit II- GST ACTS: (Structure & Terminology)

Salient features of CGST Act, SGST Act (Odisha State), IGST Act, Meaning and Definition of various terms used under GST

(Coverage- Provisions and Illustration)

PROCEDURE RELATING TO LEVY OF, COLLECTION AND EXEMPTION FROM, TAX

PROCEDURE RELATING TO LEVY OF, COLLECTION AND EXEMPTION FROM, TAX: (CGST & SGST)- **Meaning and Scope of 'Supply' under GST Law**, Taxable Person, Time of supply, Place of supply and Value of supply. Computation of Taxable Value and Tax Liability, Composition scheme; INPUT TAX CREDIT; PROCEDURE RELATING TO LEVY, COLLECTION AND EXEMPTION OF IGST; PAYMENT OF TAX, TCS, TDS; PRACTICAL PROBLEMS.

(Coverage- Provisions and Illustration)

Unit III- REGISTRATION, RETURNS AND ASSESSEMENT

REGISTRATION - Persons liable for registration, Persons not liable for registration, Types: Compulsory registration, Voluntary registration, Deemed registration - Procedure for registration, Special provisions for Casual taxable persons and Non-resident taxable persons; CLASSIFICATION OF GOODS & SERVICES- HSN, SAC; TAX INVOICE AND OTHER SUCH INSTRUMENTS IN GST - Debit Note, Credit Note, Vouchers, Invoice; ACCOUNTS AND RECORDS; RETURN- Process of Return Filing, Furnishing details of outward supplies and inward supplies, First return, Claim of input tax credit, Matching reversal and reclaim of input tax credit, Annual return and Final return; REFUND; **OFFENCES AND PENALTIES**; ASSESSMENT; AUDIT; APPEALS AND REVISION.

Unit IV- GST Council AND REGULATORY FRAMEWORK

GST COUNCIL: Structure, Powers and Functions. Provisions for amendments; ROLE OF CBEC; Division of Administrative Powers; GST AND TECHNOLOGY- GST Network, GST ECO SYSTEM, GSP, ASP; NATIONAL ANTI-PROFITEERING AUTHORITY IN GST; COMPLIANCE RATING.

Text Books Recommended

1. Swain AK & Agrawal – GST: Concepts and Applications, Himalayan Publishing House.
2. GST Manual:Taxman's Publication Ltd., New Delhi.

Suggested Books:

1. GST and Indirect Taxes,Sanjeet Sharma, V.K. Global Pub. Pvt. Ltd, New Delhi.
2. Mishra, Padhi and Bera – Text Books on GST & Practice, Vikash Publishing House Pvt. Ltd. New Delhi.

(Core-9)

FUNDAMENTALS OF DATA MANAGEMENT

Unit I: Word Processing

Working with word document- Editing text, Find and Replace text, Formatting, Spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Macros, Drop cap; Tables: Inserting, Filling and formatting a Table, Inserting Pictures and Video; Mail Merge- including linking with Database, Printing documents. Creating Business Documents using the above facilities

Preparing Presentations

Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation, Hyperlink and Slideshow. Creating Business Presentations using above facilities

Unit II: Spreadsheet and its Business Applications

Managing worksheets- Formatting, Entering data, Editing, and Printing a worksheet; handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs, Pivot Table

Spreadsheet Functions: Mathematical [SUMIF, SQRT, SUBTOTAL, SUMPRODUCT etc.], Statistical [AVERAGE, STDEV, VAR, CORRELATION, REGRESSION etc.], Financial [PMT, RATE, PV, FV, NPER, IRR, NPV, Data Table Etc.] Logical [AND, OR, IF etc.], Date and Time, lookup and reference, Database and Text functions.

Creating Spreadsheet in the area of : Loan and Lease statement; Ratio Analysis; Payroll Statements; Capital Budgeting; Depreciation Accounting; Graphical Representation of Data; Frequency Distribution and its Statistical Parameters; Correlation and Regression

Unit III: Database Management System

Creation of Tables, Multiple Table Handling-Defining Relationship [Foreign Key], Simple and Conditional Queries, Types of Queries [Update, Delete, Append], Forms, Reports, Introduction to SQL through Basic Commands.

Applying DBMS in the areas of Accounting, Inventory, HRM and its accounting, managing the data records of Employees, Suppliers and Customers

Unit IV: Website Designing

Introduction to HTML; Tags and Attributes: Text Formatting, Fonts, Hypertext Links, Tables, Images, Lists, Forms, Frames, Cascading Style Sheets.

Text Books Recommended

1. Coronel and Rob, Database Principles, Cengage Learning
2. Fundamentals of Data Management –Saha RG- Himalaya Publishing House

Suggested Readings

1. Thareja, IT & Application, Oxford
2. Aurora, Computer Fundamentals, Vikash
3. Sinha & Sinha, Fundamentals of Computers, BPB Publications
4. Dhar, P., Fundamental of IT and Its Application in Business, APH

Practical Aspects:

- **Preparation of Project report and business letters using Ms Excel and its various features**
- **Preparing PPT using Ms PowerPoint for presentations**
- **Using Ms Excel for various data analysis, Graphical Representation of Data, etc.**

pivot tables and their analysis

- **Maintenance of accounting data records and its management by applying DBMS**
- **Practical application of various web designing tools**

(Core-10)

MANAGEMENT ACCOUNTING

Objective: To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making.

CONTENTS:

Unit – I:

Management Accounting: Meaning, nature, scope, and importance of management accounting; Role of management accounting; management accounting vs. financial accounting; Role of management accounting in modern business; Tools and techniques of management accounting.

Unit – II: Ratio Analysis & Cash flow

statement Ratio Analysis:

Meaning and utility of ratios; significance of Ratio analysis; Classification of Ratios – Profitability ratios, Efficiency Ratios, Liquidity Ratios, Solvency Ratios; Advantages and limitations of Ratio Analysis.

Cash flow Statements:

Cash Flow Statements: Meaning and utility of Cash flow statements; Preparation of Cash flow statements – Indirect method; Limitations of Cash flow statements; Cash flow statements vs. Funds flow statements. (Reference to Revised AS-3 and Ind AS-7)

Unit – III:

Absorption & Marginal Costing: P/V Ratio, Break-even analysis, Margin of safety, angle of incidence; Marginal and differential costing as a tool for decision making – make or buy, change of product mix, exploring new markets, shut down decisions.

Unit – IV:

Budgeting & Standard Costing: Concept of budget and budgetary control; objectives, merits and limitations of budgetary system; Master budget, Functional budget, Fixed and Flexible budgets; Zero based budgeting. Standard Costing & Variance Analysis: Meaning of standard cost and standard costing, Advantages and disadvantages of standard costing and variance analysis: Material, Labour, & Overhead.

Learning Outcome: After the completion of this paper, the students will be able to have

confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

Text Books Recommended

1. Management Accounting, S swain/ S.P. Gupta/ A Sharma, V.K. Global Pub. Pvt. Ltd.,
2. Horngreen, Charles T., Gary L. Sundem. Introduction to Management Accounting.
3. Prentice Hall.

Suggested Reading:

1. Jain & Narang, Management Accounting, Kalyani Publications
2. Management Accounting-M Wilson- Cost Accounting-Jena B,Bal S and Das A-Himalaya Publishing House
3. Narasimhan M.S. , Management Accounting, Cengage Learning
4. Cost & Management Accouning, Taxmann Publications
5. Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House, New Delhi.
6. Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri Mahabir Book Depot, New Delhi.
7. Lal, Jawahar. Advanced Management Accounting Text and Cases. S. Chand & Co., New Delhi.
8. Khan, M.Y. and P.K. Jain. Management Accounting. Tata McGraw Hill, Publishing

(Core-11)

COMPUTERIZED ACCOUNTING & E-FILING OF TAX RETURNS

Unit – I: Computerized Accounting Package: Using Generic Software

a. Company creation, ledger creation, order processing, accounting voucher, inventory voucher, memorandum voucher, invoicing, multiple godown handling, Transfer of materials across go downs, Bank Reconciliation

b. Cost Centre, Cost Category, Bill of Material (BoM), Budget and Controls

c. Payroll Accounting

d. TDS, GST

.e. Back up & Restore, Export and Import data

Unit II: Designing Computerized Accounting System

(a) Introduction to DBMS Package – Table, Query, Form and Report

(b) Designing Computerized Accounting System using DBMS Package

Creating a voucher entry Form, Preparing ledgers, trial balance, profit & loss a/c, and

Balance Sheet with Form wizard and Report

Designing Payroll System for Accounting using Form, Query, and Repo

Unit-III: E-filing of Tax return

(a) Preparation and submission online form 10E [Relief u/s 89(1)] (a) Preparation and submission of the Income Tax Return (ITR) offline/online for individual Taxpayer [e-filing without using DSC and with using DSC, EVC]

(b) View form 26AS, Upload return, View e-file returns, e-verification

(c) Use of e-tax calculator (including interest calculation u/s 234A, 234B, 234C)

(d) E-Pay tax (Challan No./ITNS 280, ITNS 281)

(e) Preparation and submission online form 10E[Relief u/s 89(1)]

Text Books Recommended

1. Software: Singhania, V.K., E-Filing of Income Tax Returns and Computations of Tax, Taxmann

2. Book of Computerized Accoounting and E Filling of Tax Returns-Mohanty R, Dash ALN- Cost Accounting-Jena B,Bal S and Das A- Himalaya Publishing House

Suggested Readings

1. Software: "Excel Utility", incometaxindiaefiling.gov.in

Practical Aspects:

- **Creation of company and ledger accounts, voucher entries, payroll accounting,& data management in accounting software packages including TDS and GST**
- **Use of DBMS Package for various accounting database, designing of Payroll and report generation**
- **Preparation and submission of online Income Tax Returns, E-payment of tax, E-verification of returns, and viewing of 26AS.**

(Core-12)

FUNDAMENTALS OF FINANCIAL MANAGEMENT

Objective: To familiarize the students with the principles and practices of financial management.

Contents:

Unit – I: Introduction& Basic Concepts

Important functions of Financial Management, Objectives of the firm: Profit maximization

vs. Value maximization, Role of Chief Financial Officer. Financial environment in which a firm has to operate, Time Value of Money: concept and reasons, Compounding and Discounting techniques, Concepts of Annuity and Perpetuity. Risk-return relationship (concepts only)

Unit – II: Sources of Finance and Cost of Capital/ Financing Decisions

Different sources of finance; long term and short term sources, Cost of capital: concept, relevance of cost of capital, Implicit and Explicit cost, specific costs (its computation) and weighted average cost (its computation) , rationale of after tax weighted average cost of capital, marginal cost of capital (its computation).

Unit – III: Capital Expenditure Decisions / Long term Financial Decisions & Dividend Decisions

Capital Expenditure Decisions / Long term Financial Decisions

Objectives of Capital Budgeting Process, Concept of Cash flow, Methods of long term investment decisions - Discounted Payback Period, Net Present Value, Profitability Index, Average Rate of Return / Accounting Rate of Return, Internal Rate of Return (Including relative merits and demerits of each of the methods)

Dividend Decisions

Meaning, Natureand Types of Dividend, concept of pay-out ratio, retention ratio Decisions and growth, Dividend policies and formulating a dividend policy, Dividend Theories: Walter's Model, Gordon's Model

Unit – IV: Working Capital Management/ Liquidity Management

Meaning and various concepts of Working Capital, Management of Working Capital and Issues in Working Capital, Estimating Working Capital Needs; Operating or Working Capital Cycle, Policies relating to Current Assets – Conservative, Aggressive and Balance, Various sources of finance to meet working capital requirements

Learning Outcome: After the completion of this paper, students will be able to understand finance in a better way along with giving them insight to practical management of long and short finance for real business houses.

Text Books Recommended

1. Rostogi, Fundamentals of Financial Management, Taxmann Publications
2. Fundamental of Financial Management, Sharma, Gupta, Kalyani Publishers**, New Delhi.**

Suggested Readings

1. Fundamentals of Financial Management, Vandana Dangi, V.K. Global Pvt. Ltd., New Delhi
2. Parasuraman – Financial Management : A Step by Step Approach, Cengage Learning

3. Pandey, I.M. Financial Management. Vikas Publications.
4. Financial Management, Himalaya Publishing House
5. BhallaV.K – Financial Management – S.Chand
6. Horne, J.C. Van and Wackowich. Fundamentals of Financial Management. 9th ed. New Delhi Prentice Hall of India.

(Core-13)

AUDITING AND CORPORATE GOVERNANCE

Objective: To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards and to give an overview of the principles of Corporate Governance and Corporate Social Responsibility

Unit-I

Auditing: Introduction, Meaning, Objects, Basic Principles and Techniques; Classification of Audit, Audit Planning, Internal Control – Internal Check and Internal Audit; Audit Procedure – Vouching and verification of Assets & Liabilities

Unit-II

Audit of Limited Companies:

Company Auditor- Qualifications and disqualifications, Appointment, Rotation, Removal, Remuneration, Rights and Duties Auditor's Report-Contents and Types. Liabilities of Statutory Auditors under the Companies Act 2013

Special Areas of Audit:

Special features of Cost audit, Tax audit, and Management audit; Recent Trends in Auditing: Basic considerations of audit in EDP Environment; Standard on Auditing(SA); Relevant Case Studies/Problems;

Unit-III

Corporate Governance : Conceptual framework of Corporate Governance, Corporate Governance Reforms. Major Corporate Scandals in India and Abroad: Common Governance Problems Noticed in various Corporate Failures. Codes & Standards on Corporate Governance

Unit-IV

Corporate Social Responsibility (CSR): Strategic Planning and Corporate Social Responsibility; Corporate Philanthropy, Meaning of CSR, CSR and CR, CSR and Corporate Sustainability, CSR and Business Ethics, CSR and Corporate Governance, Environmental Aspect of CSR, CSR provision under the Companies Act 2013, CSR Committees

Learning Outcome: At the end of the paper student will have detail knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities.

Text Books Recommended

1. Gupta, Kamal and Ashok Arora. Fundamentals of Auditing. Tata Mc-Graw Hill Publishing Co. Ltd., New Delhi.
2. Auditing and corporate governance, Pradeep kumar , Klayani Publishers , New Delhi.

Suggested Readings:

1. Auditing and corporate governance, A. Sharma, V.K. Global Pvt. Ltd.,New Delhi
2. SATHEESH KUMAR Corporate Governance, Oxford University Press.
3. Shikha, N. and Sharma, G. Corporate Governance in India : Principles and Policies, CENGAGE Learning
4. Jha, Aruna. Auditing. Taxmann.
5. Tandon, B. N., S. Sudharsanam and S. Sundharabahu. A Handbook of Practical Auditing. S. Chand and Co. Ltd., New Delhi.
6. Ghatalia, S.V. Practical Auditing. Allied Publishers Private Ltd., New Delhi.
7. Singh, A. K. and Gupta Lovleen. Auditing Theory and Practice. Galgotia Publishing Company.
8. Alvin Arens and James Loebbecke, Auditing: an Integrated Approach
9. MC KuchhalCorporate Laws, Shri Mahaveer Book Depot. (Publishers). (Relevant Chapters)
10. Khanka – Business Ethics & Corporate Governance – Vikash Publication
11. Auditing Principles and Techniques- S. K. Basu, Pearson Publication

(Core-14)

BUSINESS

MATHEMATICS

Objective: The objective of this course is to familiarize the students with the basic mathematical tools with emphasis on applications to business and economic situations.

Contents:

Unit I Matrices and Determinant

Algebra of matrices., Inverse of a matrix, Matrix Operation – Business Application Solution of system of linear equations (having unique solution and involving not more than three variables) using matrix inversion Method and Cremer's Rule.

Unit II

Calculus

Calculus I

Mathematical functions and their types- linear, quadratic, polynomial, exponential,

logarithmic and logistic function. Concepts of limit and continuity of a function, Concept and

rules of differentiation, Maxima and Minima involving second or higher order derivatives

Calculus II

Integration: Standard forms. Methods of integration – by substitution, by parts and by use of partial fractions, definite integration, Finding areas in simple cases, Application of Integration marginal analysis. Consumer's and Producer's Surplus, Rate of Sales and the Learning Curve.

Unit III Mathematics of Finance

Compounding and discounting of a sum using different types of rates. Types of annuities, like ordinary, due, deferred, continuous, perpetual, and their future and present values using different types of rates of interest. Depreciation of Assets (General annuities to be excluded)

Unit IV Linear Programming (Use of Excel spreadsheet & Other mathematical software)

Formulation of linear programming problems (LPP): Graphical solution to LPPs. Cases of unique and multiple optimal solutions, Unbounded solutions and infeasibility, Solution to LPPs using Simplex method – maximization and minimization cases, PERT and CPM (simple Problem)

Learning Outcome: After reading this subject the students will be able to understand basic concepts in the areas of business calculus and financial mathematics and to connect acquired knowledge with practical problems in economic practice.

Text Books Recommended

1. Business Mathematics, Patri and Patri, Kalyani Publishers, New Delhi
2. Business Mathematics - S K Sahoo, Vrinda Publications (P) Ltd.

Suggested Readings:

1. Arora P.N. Business Mathematics – S.Chand
2. Business Mathematics, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd., New delhi.
3. GHOSH & SINHA BUSINESS MATHEMATICS & STATISTICS, Oxford university press.
4. Francis, J. Business Statistics, Cengage Learning
5. Anthony, M. and N. Biggs. Mathematics for Economics and Finance. Cambridge University Press.
6. Arora S.R & Gupta K. – Business Mathematics – Taxmann Publication
7. Ayres, Frank Jr. Theory and Problems of Mathematics of Finance. Schaum's Outlines Series. McGraw Hill Publishing Co.
8. Mizrahi and John Sullivan. Mathematics for Business and Social Sciences. Wiley and Sons.
9. Zamirudeen&Bhambri – Business Statistics – Vikash Publication
10. Wikes, F.M. Mathematics for Business, Finance and Economics. Thomson Learning.
11. Prasad, Bindra and P.K. Mittal. Fundamentals of Business Mathematics. Har-Anand

Publications.

12. Thukral, J.K. Mathematics for Business Studies. Mayur Publications.
13. Soni, R.S. Business Mathematics. Pitambar Publishing House.
14. Singh J. K. Business Mathematics. Himalaya Publishing House

DSE – 1

Elective – I (Any one of the following Groups)

Group – A: Accounting & Finance

Financial Markets, Institutions, & Services

Objectives: To enable the students to understand the financial institutions operating in India and services provided by them.

Unit-I

Basic Theoretical Framework: The financial system and its technology; The factors affecting the stability of the financial system; Development finance vs. universal banking; Financial intermediaries and Financial Innovation; RBI-Central Banking.

Unit-II: Financial Institutions & Non-Banking

Financial Institutions Financial Institutions:

A brief historical perspective. An update on the performance of IDBI, ICICI, IFCI and SFCs, LIC &GIC, Banking Institutions: Commercial banks - the public and the private sectors - structure and comparative performance, problems of competition; interest rates, spreads, and NPAs. Bank capital - adequacy norms and capital market support.

Non-banking financial institutions:

Evolution, control by RBI and SEBI. A perspective on future role, Unit Trust of India and Mutual Funds, Reserve bank of India Framework for/Regulation of Bank Credit . Commercial paper: Features and advantages, Framework of Indian CP Market, effective cost/ interest yield.

Unit-III

Financial services: Asset/fund based Financial services - lease finance, consumer credit and hire purchase finance, factoring definition, functions, advantages, evaluation and forfeiting, bills discounting, housing finance, venture capital financing. Fee-based / Advisory services: Stock broking, credit rating.

Unit-IV

Operations: Financial Assets/ Instruments Rights issues, issue of Debentures, issue of Equity shares - pre-issue activity, post-issue activities. The regulatory framework: SEBI and Regulation of Primary and Secondary Markets, Company Law provisions.

Learning Outcome: After completion of this paper, the students will be able to understand the role and benefits of financial institution and services.

Text Books Recommended

1. Financial Markets, Institutions & Services-Gordon, Natrajan-Himalaya Publishing

House
2. Pathak: Indian Financial Systems Pearson Education

Suggested Readings

1. Financial Market and Int. , A. goyal and M. Goyal, V.K. Global Pvt. Ltd., New Delhi
2. Financial Markets , Institutions and Services, Kaur, Talwar, KAlyani Publishers, New Delhi.
3. BHATTACHARYYA INDIAN FINANCIAL SYSTEM 2e, Oxford University Press.
4. M.Y.Khan, Financial Services, Tata McGraw-Hill, New Delhi, 2004.
5. H.R Machiraju, Indian Financial Systems, Vikas Publishing House Pvt. Ltd.2002.
6. Madura, J., Financial Institutions and Markets; Sharma R. and Mehta K. Financial Services, Cengage Learning

DSE – 1

Group B: Banking & Insurance

INDIAN BANKING AND INSURANCE SYSTEM

Objectives: To enable the students to acquire knowledge about basics of banking and insurance.

Unit-I: Concept of Bank and Banking & Types of Customers and Account holders Concept of Bank and Banking:

Historical Evolution of Banking: Origin and Development of Banking - Structure of Banking in India – Banks and Economic Development –Functions of Commercial banks (conventional and innovative functions) – Central Bank – RBI – functions – Emerging trends in Banking.

Types of Customers and Account holders:

Procedure and practice in opening and operating the accounts of customers - individuals including minors - joint account holders -Partnership firms - joint stock companies - executors and trustees-clubs and associations

Unit-II

Introduction to insurance: Purpose and need of insurance, insurance as a social security tool - insurance and economic development - Principles of insurance -various kinds of insurance - life, marine, fire, medical, general insurance - features.

Unit-III

Life Insurance - Law relating to life Insurance; General Principles of Life Insurance Contract; Proposal and policy; assignment and nomination; title and claims; General Insurance - Law relating to general insurance; different types of general insurance; general insurance Vs life insurance – Insurance business in India.

Unit-IV

Fundamentals of Agency Law: Definition of an agent; Agents regulations; Insurance intermediaries; Agents' compensation. Procedure for Becoming an Agent: Pre-requisite for obtaining a license; Duration of license; Cancellation of license; Revocation or

suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions

of the Agent: Proposal form and other forms for grant of cover; Financial and medical underwriting; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.

Learning Outcome: After the completion of this paper, the student will acquired practical knowledge of working mechanism of banking and insurance industries in India.

Text Books Recommended

1. M.N. Mishra: Insurance Principles and Practice, S. Chand & Company Ltd, Delhi.
2. Indian Institute of Bankers (Pub) Commercial Banking Vol-I/Vol-II (part I&II) Vol- III.
3. Hota P.K., and Das S.K. Financial Literacy and Banking, Kalyani Publishers

Suggested Readings

1. Dr. P. Periasamy: Principles and Practice of Insurance, Himalaya Publishing House, Delhi.
2. Mishra S. Banking Law and Practice – S Chand
3. Prasad – Banking Insurance – Vikash Publication
4. Inderjit Singh, RakeshKatyal& Sanjay Arora: Insurance Principles and Practices, Kalyani Publishers, Chennai.
5. Sheldon H.P :Practice and Law of Banking.
6. Bedi. H.L :Theory and Practice of Banking.
7. Maheshwari. S.N. :Banking Law and Practice.
8. Shekar. K.C :Banking Theory Law and Practice.
9. Pannandikar&Mithami': Banking in India.
10. Radhaswamy&Vasudevan: Text Book of Banking.
11. Varshaney: Banking Law and Practice.
12. G. Krishnaswamy : Principles & Practice of Life Insurance
13. Kothari &Bahl : Principles and Pratices of Insurance.

DSE – 1

Group – C: Management

Human Resource Management

Objective: The objective of the course is to acquaint students with the techniques and principles to manage human resource of an organization.

Contents:

Unit I: Nature and Scope & Human Resource Planning

Nature and Scope

Concept and meaning of IR &HR, Understanding the Nature and Scope of IR & HRM, Functions and importance

Human Resource Planning

Definition, Need and Features of Human Resource Planning, factors affecting Human Resource Planning

Unit II: Recruitment and Selection

Definition of Recruitment, Source, need and importance of Recruitment, Recruitment Policy process – sources of Recruitment Definition of Selection, Steps in selection.

Unit III: Training and Development

Training and Development Meaning and purpose of training, Benefits of training to organizationand employees -Training methods

Unit IV: Job Evaluation and Performance Appraisal

Job evaluation - objectives, scope, method, Job analysis, Job description, Job Specification - basic concept and significance, Performance Appraisal - Concept

Learning Outcomes: This paper can enhance the capability of the students to manage the most important assets of organization i.e. human beings which is much needed to ensure growth of that organization.

Text Books Recommended

1. Rao V.S.P - Human Resource Management. Vikash Publication
2. Human Resource Management, Sagun Ahuja, V.K. Global Pvt. Ltd., New Delhi

Suggested Readings:

1. Human Resource Management-Satapathy, Taheer and Mohanty—Himalaya Publishing House P Ltd.
2. Human Resource Management, Gupta, Joshi. Kalyani Publishers, Ne4w Delhi
3. Marketing Management & Human Resource Management: Verma et.al, Oxford University press.
4. Sinha, P. R. N. Shekhar, S.P.Human Resource Management, Cengage Learning
5. Human Resource Management -Gajendran, A K Jha, Vrinda Publications (P) Ltd
6. DeCenzo, D.A. and S.P. Robbins, "Personnel/Human Resource Management", Prentice Hall of India, New Delhi.
7. Khanka S.S. Human Resource Management. S Chand.
8. Ivancevich, John M. Human Resource Management. McGraw Hill.
9. reather and Davis. Human Resource Management. Pearson Education.

DSE-2

Group B: Banking & Insurance

MERCHANT BANKING AND FINANCIAL SERVICES

Objectives: To enable the students to understand the basic knowledge about the financial services available in India.

Unit-I

Merchant Banking: Nature and scope of Merchant Banking - Regulation of Merchant Banking Activity - overview of current Indian Merchant Banking scene - structure of Merchant Banking industry - primary Markets in India and Abroad - professional Ethics and code of conduct - current Development

Unit-II

Financial Services: Meaning and Definition, Role of Financial Services in a financial system. Leasing: Meaning and features. Introduction to equipment leasing: Types of Leases, Evolution of Indian Leasing Industry. Legal Aspects of Leasing: present Legislative Framework. Hire purchase: concept and characteristics of Hire purchase. Difference between hire purchase and leasing

Unit-III

Factoring: concept, nature and scope of Factoring - Forms of Factoring - Factoring vis-à-vis Bills Discounting - Factoring vis-à-vis credit Insurance Factoring vis-à-vis Forfeiting- Evaluation of a Factor - Evaluation of Factoring - Factoring in India current Developments.

Unit-IV

Securitization / Mortgages: Meaning, nature and scope of securitization, securitization as a Funding Mechanism, securitization of Residential Real Estate - whole Loans - Mortgages - Graduated-payment. Depository: Meaning, Evolution, Merits and Demerits of Depository. Process of Dematerialization and Dematerialization, Brief description of NSDL and CDSL

Security Brokerage:

Meaning of Brokerage, types of brokers. Difference between broker and jobber, SEBI Regulations relating to brokerage business in India.

Learning Outcome: After the completion of this course, the student will be able to understand the structure and function of mercantile banking and various financial services available in the present business world.

Text Books Recommended

1. Machiraju, Indian Financial System, Vikas Publishing House, 2nd Edition, 2002.
2. Merchant banking and financial services, Gupta /Gupta, Kalyani Publishers, New delhi

Suggested Readings:

1. M.Y.Khan, Financial Services, Tata McGraw-Hill, 11th Edition, 2008
2. Gopal C.R – Management Financial Service – S.Chand
3. NaliniPravaTripathy, Financial Services, PHI Learning, 2008
4. J.C.Verma, A Manual of Merchant Banking, Bharath Publishing House, New Delhi.
5. Varshney P.N. & Mittal D.K., Indian Financial System, Sultan Chand & Sons, New Delhi.
6. Sasidharan, Financial Services and System, Tata Mcgraw Hill, New Delhi, 1st Edition, 2008.
7. Website of SEBI.
8. Merchant Banking and Financial Services-Sharma M--Himalaya Publishing House
9. Sharma R. and Mehta K. Financial Services, Cengage Learning

DSE – 2

Group – C: Management

INTERNATIONAL BUSINESS

Objective: The objective of the course is to familiarize the students with the concepts, importanceand dynamics of international business and India's involvement with global business. The coursealso seeks to provide theoretical foundations of international business to the extent these arerelevant to the global business operations and developments.

Unit I: Introduction to International Business

a. Introduction to International Business: Globalization and its importance in world economy; Impact of globalization; International business vs. domestic business: Complexities of international business; Modes of entry into international business
b. International Business Environment: National and foreign environments and their components - economic, cultural and political-legal environments,
Issues in International Trade

Unit –II Theories of International Trade and International Organizations

a. Theories of International Trade – an overview (Classical Theories, Product Life Cycle theory, Theory of National Competitive Advantage); Commercial Policy Instruments - tariff and non-tariff measures – difference in Impact on trade, types of tariff and non tariff barriers (Subsidy, Quota and Embargo in detail) ; Balance of payment account and its components.
b. International Organizations and Arrangements: WTO – Its objectives, principles, organizational structure and functioning; An overview of other organizations – UNCTAD,; Commodity and other trading agreements (OPEC).

Unit –III International Financial Environment

a. Regional Economic Co-operation: Forms of regional groupings; Integration efforts among in Europe, North America and Asia (NAFTA, EU , ASEAN and SAARC) .
b. International Financial Environment: International financial system and institutions (IMF and World Bank – Objectives and Functions) ; Foreign exchange markets and risk management; Foreign investments - types and flows; Foreign investment in Indian perspective

Unit –IV Foreign Trade Promotion and Financing of foreign trade

a. Foreign Trade Promotion Measures and Organizations in India; Special economic zones(SEZs) and export oriented units (EOUs), ; Measures for promoting foreign investments into and from India; Indian joint ventures and acquisitions abroad.
b. Financing of foreign trade and payment terms – sources of trade finance (Banks, factoring, for faiting, Banker's Acceptance and Corporate Guarantee) and forms of payment (Cash in advance, Letter of Credit, Documentary Collection, Open Account)

Text Books Recommended

1. Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business.

2. Pearson Education
3. Cherunilam, Francis. International Business: Text and Cases. PHI Learning

Suggested Readings:

1. Charles W.L. Hill and Arun Kumar Jain, International Business. New Delhi: McGraw Hill Education
2. Johnson, Derbe., and Colin Turner. International Business - Themes & Issues in the Modern
3. Global Economy. London: Roultedge.
4. Michael R. Czinkota. et al. International Business. Fortforth: The Dryden Press.
5. Peng and Srivastav, Global Business, Cengage Learning
6. Subba Rao P – International Business-Himalaya Publishing House
7. JOSHI INTERNATIONAL BUSINESS SITKIN INTERNATIONAL BUSINESS, Oxford University Press.

DSE – 3

Elective – III (Any one of the following Groups)

Group – A: Accounting & Finance

Fundamentals of Corporate Tax Planning

Objective: To provide a conceptual idea about the various provisions of tax planning related to corporate sector.

Contents

Unit-I:

Corporate Tax in India–Concept of Tax planning, Tax management, Tax avoidance, Tax evasion, Assessment year and Financial Year

Residential status of corporate and its incidence of tax, Minimum Alternate Tax, Calculation of Tax Liability.

Unit-II:

Carryforward and set-off of losses and unabsorbed depreciation (headwise)

Unit-III:

Tax Planning with reference to Depreciation, Capital Gain and Scientific Research

Unit-IV:

Corporate Tax returns–Assessment, Return Filing, Penal provision, Double taxation Relief

Learning outcome: After completion of this paper, students will be able to help tax consultants in tax planning, assessment and filing income tax returns of corporate sector, thereby they can get themselves self-employed.

Text Books Recommended

1. Bhagabati Prasad, Direct Tax Laws & Practices
2. Corporate Tax Planning, V.K. Global Publications

Suggested Readings

1. Singhania V.K. Direct Taxes: Law & Practices, Taxmann Publication.
2. Corporate Tax Planning, Kalyani Publishers

DSE – 3

Group B: Banking & Insurance

Fundamentals of Investment

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Content

Unit-I:

The Investment Environment- The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets, the Indian securities market, the market participants and trading of securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on return.

Investor Protection

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investors' awareness and activism.

Unit-II:

Fixed Income Securities- Bond features, types of bonds, estimating bond yields, Bond Valuation types of bond risks, default risk and credit rating

Unit-III:

Approaches to Equity Analysis: Introductions to Fundamental Analysis, Technical Analysis and Efficient Market Hypothesis, dividend capitalization models, and price-earnings multiple approach to equity valuation.

Unit-IV:

Portfolio Analysis and Financial Derivatives:(a) Portfolio and Diversification, Portfolio Risk and Return. (b) Mutual Funds. (c) Introduction to Financial Derivatives, Financial Derivatives Markets in India.

Learning outcome: After completion of this paper, this paper will educate the students about various aspect of investment in detail along with understandability of stock market operation, focusing on need for common investor protection.

Text Books Recommended

1. Bhalla – Fundamentals of Investment – S.Chand
2. Rustogi, R.P., Fundamentals of Investment, Sultan Chand & Sons, New Delhi.

Suggested Readings

3. Pandian P. – Security Analysis & Portfolio Management – Vikash Publication
4. Jones, C.P., "Investments Analysis and Management", Wiley, 8th ed.
5. Prasanna, Chandra., "Investment Analysis and Portfolio Management", Tata McGraw Hill.
6. Vohra, N.D., and B.R. Bagri, "Futures and Options", McGraw Hill Publishing
7. Mayo, An Introduction to Investment,Cengage Learning.
8. Fundamentals of Investment, Sashi Gupta, Kalyani Publishers, New Delhi,
9. Fundamentals of Investment, Vandana Dangi, V.K. Globa. Pub. Pvt. Ltd. New delhi.

DSE-3

Group – C: Management

Consumer Affairs & Customer Care

Objective: This paper seeks to familiarise the students with of their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights.It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and business environment.

Unit I: Conceptual Framework

Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances- complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Internal and External Complaint handling: Corporate Redress Systems and Public Redress Systems

Unit II: The Consumer Protection Act, 1986 (CPA) Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods and services, unfair trade practice, restrictive trade practice.

Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels, Basic Consumer Rights; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA.

RTI Act

Unit III: Grievance Redress Mechanism under the Consumer Protection Act, 1986:

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Unit IV: Industry Regulators and Consumer Complaint Redress Mechanism

i. Banking: RBI and Banking Ombudsman
ii. Insurance: IRDA and Insurance ombudsman
iii. Telecommunication: TRAI
iv. Food Products: FSSAI (an overview)
v. Electricity Supply: Electricity Regulatory commission
vi. Advertising: ASCI

Text Books Recommended

1. The Consumer Protection Act, 1986
2. Bhatta KG- Customer Care Management-Himalaya Publishing House

Suggested Readings:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. Consumer Affairs"
2. (2007) Delhi University Publication. 334 pp.
3. Aggarwal, V. K. (2003). Consumer Protection: Law and Practice. 5th ed. Bharat Law
4. House, Delhi, or latest edition.
5. Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
6. Nader, Ralph (1973). The Consumer and Corporate Accountability. USA, Harcourt Brace
7. Jovanovich, Inc.
8. Sharma, Deepa (2011).Consumer Protection and Grievance-Redress in India: A Study of
9. Insurance Industry (LAP LAMBERT Academic Publishing GmbH & Co.KG,
10. Saarbrucken, Germany. 263 pp.
11. Empowering Consumers e-book, www.consumeraffairs.nic.in
12. ebook, www.bis.org
13. Nair Suja – Consumer Behaviour – Himalaya Publishing House

DSE-4

B.Com. (Hons.): Semester – VI

Business Research Methods and Project Work

Objective: This course aims at providing the general understanding of business research and the methods of business research. The course will impart learning about how to collect, analyze, present and interpret data.

Section A: Business Research Methods

50 Marks Unit-I

Introduction: Meaning of research; Scope of Business Research; Purpose of Research – Exploration, Description, Explanation; Unit of Analysis – Individual, Organization, Groups, and Data Series; Conception, Construct, Attributes, Variables, and Hypotheses.

Unit-II

Research Process: An Overview; Problem Identification and Definition; Selection of Basic Research Methods- Field Study, Laboratory Study, Survey Method, Observational Method Existing Data Based Research, Longitudinal Studies, Panel Studies

Unit-III

Measurement: Definition; Designing and writing items; Uni-dimensional and Multi-dimensional scales; Measurement Scales- Nominal, Ordinal, Interval, Ratio; Ratings and Ranking Scale, Thurst one, Likert and Semantic Differential scaling, Paired Comparison; Sampling –Steps, Types, Sample Size Decision; Secondary data sources

Hypothesis Testing: Tests concerning means and proportions; ANOVA, Chi-square test and other Non-parametric tests; testing the assumptions of Classical Normal Linear Regression.

Section B – Project Report Marks (30 + 20)

Unit-IV Report Preparation: Meaning, types and layout of research report; Steps in report writing; Citations, Bibliography and Annexure in report; JEL Classification

Note:

1. There shall be a written examination of 50% Marks on the basis of Unit I to III.

2. The student will write a project report under the supervision of a faculty member assigned by the college/institution based on field work. The Project Report carries 50% Marks and will be evaluated by University appointed examiners.

Learning Outcome: After completion of this paper, the students will be able to assess and apply a range of research method on a practical project.

Text Books Recommended

1. Mishra Business Research Methods , Oxford University Press.
2. Business Research Methods and Project work, Priyaranjan Dash, VrindaPublications (P) Ltd

Suggested Readings:

1. Business Research methods, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd., New Delhi.

2. Upagade& Shende – Research Methodology – S. Chand
3. A.K.P.C. Swain, Business Research methods and Project work, Kalyani Publishers, New Delhi
4. Dangi, H.K. Business Research methods, Cengage Learning
5. Chawla Deepak – Research Methodology – Vikash Publication

(GE – 1) MICRO ECONOMICS

Objective: Objective of the course is to acquaint the students with the concepts of micro-economics dealing with consumer behavior. The course also makes the student understand the supply side of the market through the production and cost behavior of firms.

Unit: I Demand and Consumer behaviour

Concept of demand: demand function, law of demand, derivation of individual and market demand curves, shifting of the demand curve, elasticity of demand, Consumer behavior, Marshallian utility approach and Indifference Curve approach; utility maximization conditions . Income-Consumption Curve (ICC) and Price-Consumption Curve (PCC)

Unit: II Production and Cost

Production function: Short-run and Long-run; Total Product, Average Product and Marginal Product, Law of returns to a variable factor, Law of Returns to Scale; Concepts of Iso-quant and iso-cost line;
Cost: Accounting and Economic Costs; Social and Private Costs; Short-run and Long-run Costs; Relation between Average and Marginal

Unit: III Perfect Competition

Concept of Perfectly Competitive market: Assumptions, Profit maximization conditions; Related concepts of Total Revenue, Average Revenue and Marginal Revenue, Short-run and Long- run equilibrium of a firm; determination of short-run supply curve of a firm, measuring producer surplus under perfect competition

Unit: IV Imperfect

Competition Monopoly

Concept of Monopoly: Sources of monopoly power; Short-run and Long-run equilibrium of a monopoly firm; Price discrimination; Social Cost of Monopoly (concept only).

Monopolistic Competition

Concept of Imperfectly Competitive market; Monopolistic Competition: Features and examples; Oligopoly: Non-Collusive Oligopoly: Sweezy's Kinked demand Curve Model, Collusive Oligopoly: Cartel (concept with example)

Learning Outcomes: The students would be able to apply tools of consumer behaviour and

firm theory to business situations.

Text Books Recommended

1. Micro Economics-K C Dash- Himalaya Publishing House
2. Ahuja, H.L, Micro Economics, S.Chand

Suggested Readings:

1. Mehta P.K, Singh M. – Micro Economics – Taxmann Publication
2. Micro Economics-T.R. Jain , B.D. Majhi, V.K. Global
3. Browining, E.K. and J.M. Browning; Microeconomic Theory and Applications,
4. Kalyani Publishers, New Delhi.
5. Microeconomics I and Statistics: Das & Sengupta, Oxford University Press
6. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
7. Dwivedi, D.N. Micro Economics, Vikash Publication
8. Pindyck, R.S., D. L. Rubinfeld and P. L. Mehta; Microeconomics, Pearson Education.
9. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
10. Maddala G.S.and E.Miller; Microeconomics: Theory and Applications,
11. MCGraw-Hill International.

(GE-2)

Macro & Indian Economy

Objectives: The course aims at providing the student with knowledge of basic concepts of the macro economics. The modern tools of macro-economic analysis are discussed and the policy framework is elaborated, including the open economy.

Contents:

Unit I Introduction to Macro Economics

Introduction: Meaning and definition of Microeconomics and macroeconomics, Difference between Microeconomics and macroeconomics, macro-economic goals, components of Macroeconomics, Economic Systems: Mixed economy, Socialism economy, Capitalism economy and Islamic economy (only meaning and characteristics)

Unit II National Income Accounting

Definition of National Income, Concepts of National Income,GDP and GNP, Methods of Measuring National Income, Uses of National Income, Difficulties in calculating National Income, Real Income, Per Capita Income and Growth Rate

Unit:III National Income Equilibrium

I Concepts of Equilibrium, Consumptions & Savings, Investment Theory, Government Sector, Foreign Sector, Determination of Equilibrium, Multiplier Concept, Inflationary Gap and Deflationary Gap, Summary of Two-, Three- and Four-sector Economies

Unit:IV Role of Government

Expenditure, Public Debt, and Government Policy

Economic functions of Government, Types of Budget, Government Revenue, Government Expenditure, Public Debt, and Government Policy

Macroeconomic Problems

Introduction, Business cycle, Unemployment, Inflation, Deflation, Depression, RBI and monetary policy

Learning Outcomes: Students would be able to apply the modern tools of macro-economic analysis so as to minimize the adverse impact of macro-economic factors on business.

Text Books Recommended

1. Macro & Indian Economy, M. Treheran, T Treheran, V.K. Global publishing Pvt. Ltd., New Delhi
2. Ahuja H.L – Macro Economics – S.Chand

Suggested Readings

1. Mankiw, N. Gregory. Principles Macroeconomics.Cengage Learning
2. Macro and Indian economy, P.K. Dhar, Kalyani Publishers
3. Macro and Indian Economy-V K Puri- Himalaya Publishing House
4. Dornbusch, Rudiger., Stanley. Fischer and Richard Startz, Macroeconomics. Irwin/McGraw-Hill.
5. Vaish – Macro Economics – Vikash Publication
6. Macroeconomics & Indian Economy: Bhattacharyya, Oxford University Press.

(GE-3)

Business Statistics

Objective: The objective of this course is to familiarize students with the basic statistical toolsused for managerial decision-making.

Contents:

Unit I:

Statistical Data and Descriptive Statistics (With the use of Excel and other statistical software)

Nature and Classification of data: Univariate, Bivariate and multivariate data; time-series and cross-sectional data
Measures of Central Tendency
a) Mathematical averages including arithmetic mean, geometric mean and harmonic mean. Properties and applications.
b) Positional Averages
Mode and Median and other partition values including quartiles, deciles, and percentiles

Unit II:

Measures of Variation (With the use of Excel and other statistical software)

Absolute and relative, Range, quartile deviation, mean deviation, standard deviation, and their coefficients, Properties of standard deviation/variance Skewness: Meaning, Measurement using Karl Pearson and Bowley's measures; Concept of Kurtosis

Unit III:

Simple Correlation and Regression Analysis (With the use of Excel and other latest software)

Correlation Analysis: Meaning of Correlation: simple, multiple and partial; linear and non-linear, Correlation and Causation, Scatter diagram, Pearson's co-efficient of correlation; calculation and properties (proofs not required). Correlation and Probable error; Rank Correlation

Regression Analysis: Principle of least squares and regression lines, Regression equations and estimation; Properties of regression coefficients; Relationship between Correlation and Regression coefficients; Standard Error of Estimate

Unit IV:

Index Numbers (With the use of Excel and other latest software)

Meaning and uses of index numbers: Construction of index numbers: fixed and chain base: univariate and composite. Aggregative and average of relatives – simple and weighted

Tests of adequacy of index numbers, Base shifting, splicing and deflating. Problems in the construction of index numbers

Construction of consumer price indices, important share price indices

Time Series Analysis (With the use of Excel and other latest software)

Components of time series, Additive and multiplicative models Trend analysis, Fitting of trend line using principle of least squares – linear, second degree parabola and exponential, Conversion of annual linear trend equation to quarterly/monthly basis and vice-versa; Moving averages Seasonal variations- Calculation of Seasonal Indices using Simple averages, Ratio-to-trend, and Ratio-to-moving averages methods. Uses of Seasonal Indices

Learning Outcomes: Students would be armed with the knowledge of using different statistical tools very much required in the decision making process in any business as well as business research.

Text Books Recommended

1. Gupta, S.P., and Archana Gupta. Statistical Methods. Sultan Chand and Sons, New Delhi.
2. Business Statistics - Levine and Viswanathan, Pearson Publication

Suggested Readings:

1. Business statistics, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd, New Delhi.
2. Patri and Patri, Business statistics , Kalyani Publishers New Delhi.

3. Keller G, and Arora H, BSTAT, Cengage Learning
4. Gupta, S.C. Fundamentals of Statistics. Himalaya Publishing House.
5. Business Statistics– S K Sahoo, P K Prusty, Vrinda Publications (P) Ltd
6. Microeconomics I and Statistics: Das & Sengupta, Oxford University Press.
7. Sharma J K, Fundamentals of Business Statistics – Vikash Publication
8. Vohra N. D., Business Statistics, McGraw Hill.

(GE-4)

Principles of Marketing

Objective: The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

Contents:

Unit I: Introduction:

Nature, scope and importance of marketing; Selling vs Marketing; Marketing mix, Marketing environment: concept, importance, and components (Economic, Demographic, Technological, Natural, Socio-Cultural and Legal).

Consumer Behaviour and Market segmentation:

Consumer Behaviour: Nature and Importance, Factors influencing consumer buying behaviour. Market segmentation: concept, importance and bases; Product differentiation vs. market segmentation.

Unit II: Product:

Concept and importance, Product classifications; Concept of product mix; Branding, packaging and labeling; Product life-cycle; New Product Development Process

Unit III: Pricing, Distribution Channels and Physical Distribution

Pricing: Significance, Factors affecting price of a product, Pricing policies and strategies, Distribution Channels and Physical Distribution: Channels of distribution - meaning and importance; Types of distribution channels; Factors affecting choice of distribution channel

Unit IV: Promotion and Recent developments in marketing:

Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion, and their distinctive characteristics. Recent developments in marketing: Social Marketing, online marketing, direct marketing, services marketing, green marketing, Rural marketing; Consumerism

Learning outcome: After the completion of this paper, the students will able to identify marketing components and fit them in the value chain along with the various marketing strategies.

Text Books Recommended

1. Marketing Principles and Management-Sherleker and Pany-- Himalaya Publishing House
2. Kotler, Philip, Gary Armstrong, Prafulla Agnihotri and AhsanUlHaque. Principlesof Marketing. 13th edition. Pearson Education.

Suggested Readings:

1. Principles of Marketing, Bajaj, Kaur, Kalyani Publishers, New Delhi.
2. Principles of Marketing , R.K. Mittal , A. Sharma, V .K. Global Pub. Pvt. Ltd, New Delhi.
3. Marketing Management & Human Resource Management: Verma et.al, Oxford University Press.
4. Lamb, C. W., Hair, J.F. and Sharma, D. MKTG, Cengage Learning
5. Principles of Marketing M K Nabi, K C Raut, Vrinda Publications (P) Ltd
6. Arun Kumar – Marketing management – Vikash Publication
7. Rudani R.B – Basics of Marketing Management – S. Chand
8. Majaro, Simon. The Essence of Marketing. Prentice Hall, New Delhi.
9. Zikmund William G. and Michael D'Amico. Marketing; Creating and Keeping Customers in an E-Commerce World. Thomson Learning.
10. Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition. DhanpatRai& Company.

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN SCIENCE (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

Course Structure of U.G. Botany Honours				
Semester	**Course**	**Course Name**	**Credit**	**Total marks**
Semester-I	AECC-I		4	100
	C-1 (Theory)	Microbiology and Phycology	4	75
	C-1 (Practical)	Microbiology and Phycology	2	25
	C-2 (Theory)	Biomolecules and Cell Biology	4	75
	C-2 (Practical)	Biomolecules and Cell Biology	2	25
	GE -1A (Theory)	Biodiversity (Microbes, Algae, Fungi & Archegoniate)	4	75
	GE -1A(Practical)	Biodiversity (Microbes, Algae, Fungi & Archegoniate)	2	25
	AECC-II		4	100
	C-3 (Theory)	Mycology and Phytopathology	4	75

Semester-II	C-3 (Practical)	Mycology and Phytopathology	2	25
	C-4 (Theory)	Archegoniate	4	75
	C-4 (Practical)	Archegoniate	2	25
	GE -2A (Theory)	Plant Physiology & Metabolism	4	75
	GE -2A(Practical)	Plant Physiology & Metabolism	2	25
Semester-III	C-5 (Theory)	Anatomy of Angiosperms	4	75
	C-5 (Practical)	Anatomy of Angiosperms	2	25
	C-6 (Theory)	Economic Botany	4	75
	C-6 (Practical)	Economic Botany	2	25
	C-7 (Theory)	Genetics	4	75
	C-7 (Practical)	Genetics	2	25
	SEC-1		4	100
	GE -1B (Theory)	Plant Ecology & Taxonomy	4	75
	GE -1B (Practical)	Plant Ecology & Taxonomy	2	25
Semester-IV	C-8 (Theory)	Molecular Biology	4	75
	C-8 (Practical)	Molecular Biology	2	25
	C-9 (Theory)	Plant Ecology & Phytogeography	4	75
	C-9 (Practical)	Plant Ecology & Phytogeography	2	25

	C-10 (Theory)	Plant Systematics	4	75
	C-10 (Practical)	Plant Systematics	2	25
	SEC II		4	100
	GE-2B (Theory)	Plant Anatomy , Embryology & Biotechnology	4	75
	GE-2B(Practical)	Plant Anatomy , Embryology & Biotechnology	2	25
Semester-V	C-11 (Theory)	Reproductive Biology of Angiosperms	4	75
	C-11 (Practical)	Reproductive Biology of Angiosperms	2	25
	C-12 (Theory)	Plant Physiology	4	75
	C-12 (Practical)	Plant Physiology	2	25
	DSE - 1 (Theory)	Analytical Techniques in Plants Sciences	4	75
	DSE - 1 (Practical)	Analytical Techniques in Plants Sciences	2	25
	DSE - 2 (Theory)	Natural Resource Management	4	75
	DSE - 2 (Practical)	Natural Resource Management	2	25
Semester-VI	C-13 (Theory)	Plant Metabolism	4	75
	C-13 (Practical)	Plant Metabolism	2	25
	C-14 (Theory)	Plant Biotechnology	4	75
	C-14 (Practical)	Plant Biotechnology	2	25
	DSE - 3 (Theory)	Horticulture Practices & Post Harvest Technology	4	75
	DSE-3 (Practical)	Horticulture Practices & Post Harvest Technology	2	25
	DSE – 4 Project work	Project Work	6	100
		Total	**148**	**2600**

BOTANY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers
Generic Elective for non-Botany students – 4 papers. In case University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper. The students have the option of taking any two.

Marks per paper – Mid term: 15 marks, End term: 60 marks (Theory) + 25 marks (Practical), Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 40 hours (theory) + 10 hours (practical)

Core Paper I

MICROBIOLOGY AND PHYCOLOGY

Unit-I

Introduction to microbial world, microbial nutrition, growth and metabolism. **Viruses:-** Discovery, physicochemical and biological characteristics; classification (Baltimore), general structure with special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Economic importance of viruses with reference to vaccine production, role in research, medicine and diagnostics, as causal organisms of plant diseases.

Unit–II

(i) **Bacteria: -** Discovery, general characteristics, types- archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts), cell structure, nutritional types, reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction). Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).

(ii) **Cyanobacteria:-**Ecology and occurrence, cell structure, heterocyst, reproduction, economic importance; role in biotechnology. Morphology and life-cycle of *Nostoc*. General characteristics of prochlorophyceae, Evolutionary significance of Prochloron.

Unit–III

(i) **Algae:-** General characteristics; Ecology and distribution; range of thallus organization; Cell structure and components; cell wall, pigment system, reserve food (of only groups represented in the syllabus), flagella and methods of reproduction, classification; criteria, system of Fritsch, and evolutionary classification of Lee (only upto groups); Role of algae in the environment, agriculture, biotechnology and industry.

(i) Chlorophyta:- General characteristics, occurrence, range of thallus organization, cell structure and reproduction. Morphology and life-cycles of *Chlamydomonas*, *Volvox*, *Oedogonium* and *Coleochaete*.

Unit-IV

(i) **Charophyta:-** General characteristics; occurrence, morphology, cell structure and life-cycle of *Chara*; evolutionary significance.

(ii) **Xanthophyta:-** General characteristics; Occurrence, morphology and life- cycle of *Vaucheria*.

(iii) **Phaeophyta:-**Characteristics, occurrence, cell structure and reproduction. Morphology and life-cycles of *Ectocarpus* and *Fucus*.

(iv) **Rhodophyta:-**General characteristics, occurrence, cell structure and reproduction. Morphology and life-cycle of *Polysiphonia*.

PRACTICAL

Microbiology

(i) Electron micrographs/Models of viruses –T-Phage and TMV, Line drawings/ Photographs of Lytic and Lysogenic Cycle.

(ii) Types of Bacteria to be observed from temporary/permanent slides/photographs.

(iii) Examination of bacteria from bacterial culture by Gram's staining method.

(iv) Electron micrographs of bacteria, binary fission, endospore, conjugation, root Nodule (live materials and photographs).

Phycology

Study of vegetative and reproductive structures of Nostoc, Chlamydomonas (electron micrographs), Volvox, Oedogonium,Coleochaete, Chara, Vaucheria, Ectocarpus, Fucus and Polysiphonia, Procholoron, Diatoms through, temporary preparations and permanent slides.

Text Books:

1. Singh, V., Pandey, P.C., and Jain, D.K. (2017). Microbiology and Phycology, Rastogi Publication, Meerut.

Reference Books:

1. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
2. Prescott, L.M., Harley J.P., Klein D. A. (2010). Microbiology, McGraw-Hill, India. 8th edition.
3. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
4. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008). Biology, Pearson Benjamin Cummings, USA. 8th edition.
5. Pelczar, M.J., Chan, E.C.S., Krieg, N.R. (2011) Microbiology, 8th edition, Tata McGraw-Hill Co, New Delhi.
6. Willey, Sherwood and Christopher. Laboratory exercises in Microbiology. McGraw-Hill, India. 9th edition.
7. Vasistha B.R. (2017) Botany for Degree student, Algae, S. Chand Publication, New Delhi.
8. Mishra B. K. (2018) Microbiology and Phycology, Kalyani Publishers, New Delhi.

Core Paper II BIOMOLECULES AND CELL BIOLOGY

Unit-I

(i) Biomolecules and Bioenergenetics: Types and significance of chemical bonds; Structure and properties of water; pH and buffers. Laws of thermodynamics, concept of free energy, endergonic and exergonic reactions, coupled reactions, redox reactions.

(ii) Enzymes: Structure of enzyme: holoenzyme, apoenzyme, cofactors, coenzymes and prosthetic group; Classification of enzymes; Features of active site, substrate specificity, properties of enzymes, mechanism of action (activation energy, lock and key hypothesis, induced - fit theory), Michaelis – Menten equation, enzyme inhibition and factors affecting enzyme activity.

(iii) Carbohydrates: Nomenclature, classification, structure and function of Monosaccharides, Disaccharides, Oligosaccharides and polysaccharides

Unit –II

(i) Lipids: Definition and major classes of storage and structural lipids. Fatty acids structure and functions. Essential fatty acids. Triacyl glycerols structure, functions and properties.

(ii) Proteins: Structure and classification of amino acids; Peptide bonds; Levels of protein structure-primary, secondary, tertiary and quarternary; Isoelectric point; Protein denaturation and biological roles of proteins.

(iii) Nucleic acids: Structure of nitrogenous bases; Structure and function of nucleotides; Types of nucleic acids; Structure of A, B, Z types of DNA; Types of RNA; Structure of tRNA.

Unit –III

(i) The Cell: Cell as a unit of structure and function; Characteristics of prokaryotic and eukaryotic cells; Origin of eukaryotic cell (Endosymbiotic theory).

(ii) Cell wall and plasma membrane: Chemistry, structure and function of Plant Cell Wall. Overview of membrane function; fluid mosaic model; Chemical composition of membranes; Membrane transport – Passive, active and facilitated transport, endocytosis and exocytosis.

(i) Cell organelles: Nucleus; Structure-nuclear envelope, nuclear pore complex, nuclear lamina, molecular organization of chromatin; nucleolus.

Unit-IV

(i) Cytoskeleton: Role and structure of microtubules, microfilaments and intermediary filament.

(ii) Chloroplast, mitochondria and peroxisomes: Structural organization; Function; Semiautonomous nature of mitochondria and chloroplast. Endoplasmic Reticulum, Golgi Apparatus, Lysosomes.

(iii) Cell division: Eukaryotic cell cycle, different stages of mitosis and meiosis. Cell cycle,

Regulation of cell cycle.

PRACTICAL

(i) Qualitative tests for carbohydrates, reducing sugars, non-reducing sugars, lipids and proteins.

(ii) Study of plant cell structure with the help of epidermal peel mount of Onion/*Rhoeo*

(iii) Demonstration of the phenomenon of protoplasmic streaming in *Hydrilla* leaf.

(iv) Counting the cells per unit volume with the help of haemocytometer. (Yeast/pollen grains).

(v) Study the phenomenon of plasmolysis and deplasmolysis.

(vi) Study of different stages of mitosis and meiosis using aceto carmine and aceto orcine method from Onion root tip and bud respectively.

Text Books:

1. Rastogi, V. B. (2016). Introductory Cytology, Kedar Nath & Ram Nath, Meerut
2. Gupta, P. K. (2017). Biomolecules and Cell Biology, Rastogi Publication, Meerut.

Reference Books:

1. Sahoo, K. (2017) Biomolecules and Cell Biology, Kalyani Publishers, New Delhi.
2. Tymoczko, J.L., Berg, J.M. and Stryer, L. (2012) Biochemistry: A short course, 2nd ed., W.H. Freeman
3. Nelson, D.L. and Cox, M.M. (2008) Lehninger Principles of Biochemistry, 5th Edition, W.H. Freeman and Company.
4. Cooper, G.M. and Hausman, R.E. 2009 The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
5. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009 The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco

Core Paper III

MYCOLOGY AND PHYTOPATHOLOGY

Unit-I

(i) Introduction to true fungi: Definition, General characteristics; Affinities with plants and animals; Thallus organization; Cell wall composition; Nutrition; Classification.

(i) Zygomycota: General characteristics; Ecology; Thallus organisation; Life cycle with reference to *Rhizopus*.

(ii) Ascomycota: General characteristics (asexual and sexual fruiting bodies); Ecology; Life cycle, Heterokaryosis and parasexuality; life cycle and classification with reference to *Saccharomyces*, *Aspergillus*, *Penicillium,*and *Neurospora.*

(iv) Basidiomycota: General characteristics; Ecology and Classification; Life cycle of *Puccinia* and *Agaricus*.

Unit-II

(i) Allied Fungi: General characteristics; Status of Slime molds, Classification;

Occurrence; Types of plasmodia; Types of fruiting bodies.

(ii) Oomycota: General characteristic; Ecology; Life cycle and classification with reference to *Phytophthora,* and *Albugo.*

(iii) Symbiotic associations: Lichen – Occurrence; General characteristics; Growth forms and range of thallus organization; Nature of associations of algal and fungal partners; Reproduction. Mycorrhiza-Ectomycorrhiza, Endomycorrhiza and their significance. Economic importance of Lichens.

Unit-III

Applied Mycology: Role of fungi in biotechnology, Mushroom cultivation, Application of fungi in food industry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Mycoproteins); Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides); Medical mycology.

Unit-IV

Phytopathology: Terms and concepts; General symptoms; Geographical distribution of diseases; etiology; symptomology; Host- Pathogen relationships; disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine. Bacterial diseases – Citrus canker and angular leaf spot disease of Cotton. Viral diseases – Tobacco Mosaic, Vein Clearing. Fungal diseases – Early blight of potato, Loose and covered smut.

PRACTICAL

(i) Introduction to the world of fungi (Unicellular, coenocytic/ septate mycelium, ascocarps & basidiocarps).

(ii) *Rhizopus*: study of asexual stage from temporary mounts and sexual structures through permanent slides.

(iii) *Aspergillus, Penicillium* and *Saccharomyces* : study of asexual stage from temporary mounts. Study of Sexual stage from permanent slides/photographs.

(iv) *Puccnia :* Study of different stages from temporary mounts and permanent slides.

(v) *Agaricus*: Specimens of button stage and full grown mushroom; sectioning of gills of *Agaricus*, and fairy rings are to be shown.

(vi) *Albugo:* Study of symptoms of plants infected with *Albugo*; asexual phase study through section/ temporary mounts and sexual structures through permanent slides.

(vii) *Phytopathology*: Herbarium specimens of bacterial diseases; Citrus Canker; Viral diseases: Mosaic disease of ladies finger, papaya, cucurbits, moong, black gram, Fungal diseases: Blast of rice, Tikka disease of ground nut, powdery mildew of locally available plants and White rust of crucifers.

Text Books:

1. Mishra, B. K. (2017), Mycology and Phytopathology, Kalynai Publishers, New Delhi.

Reference Books:

1. Sharma, P. D. (2017). Mycology and Phytopathology Rastogi Publication, Meerut.
2. Agrios, G.N. (1997) Plant Pathology, 4th edition, Academic Press, U.K.
3. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley &Sons (Asia) Singapore. 4th edition.
4. Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge University Press, Cambridge. 3rd edition.
5. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Publishers India Ltd.
6. Mehrotra, R. S.(2011). Plant Pathology. Tata Mc Graw-Hill Publishing Company Limited, New Delhi

Core Paper IV

ARCHEGONIATAE

Unit-I

(i) Introduction: Unifying features of archegoniates; Transition to land habit; Alternation of generations. General characteristics; Origin of land plants and Adaptations to land habit;

(ii) Bryophytes : Origin and Classification; Range of thallus organization. Classification (up to family). Structure, Reproduction and evolutionary trends in *Riccia*, *Marchantia*, *Anthoceros* and *Funaria* (developmental stages not included). Ecological and economic importance of bryophytes.

Unit-II

Pteridophytes: General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Psilotum*, *Selaginella*, *Equisetum, Pteris* and *Marsilea*. Apogamy, and apospory, heterospory and seed habit, telome theory, stellar evolution and economic importance.

Unit-III

Gymnosperms: General characteristics, classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus*, *Ginkgo* and *Gnetum*. (Developmental details not to be included).Ecological and economic importance.

Unit-IV

Palaeobotany: Geological time scale, fossils and fossilization process. Morphology, anatomy and affinities of Rhynia, Calamites, Lepidodendron, Lyginopteris, Cycadeoidea and Williamsonnia.

PRACTICAL

(i) Morphology, anatomy and reproductive structures of *Riccia, Marchantia, Anthoceros, Funaria*.

(ii) *Psilotum*- Study of specimen, transverse section of synangium (permanent slide).

(iii) *Selaginella*- Morphology, whole mount of leaf with ligule, transverse section of stem, whole mount of strobilus, whole mount of microsporophyll and megasporophyll (temporary slides), longitudinal section of strobilus (permanent slide).

(iv) *Equisetum*- Morphology, transverse section of internode, longitudinal section of strobilus, transverse section of strobilus, whole mount of sporangiophore, whole mount of spores (wet and dry) (temporary slide), transverse section of rhizome (permanent slide).

(v) Study of temporary preparations and permanent slides of *Marsilea*.

(vi) *Pteris*- Morphology, transverse section of rachis, vertical section of sporophyll, whole mount of sporangium, whole mount of spores (temporary slides), transverse section of rhizome, whole mount of prothallus with sex organs and young sporophyte (permanent slide).

(vii) *Cycas*- Morphology (coralloid roots, bulbil, leaf), whole mount of microsporophyll and megaspore, T.S root, leaflet, rachis

(viii) *Pinus*- Morphology (long and dwarf shoots, whole mount of dwarf shoot, male and female cones), T.S. Needle, stem, L.S. male cone, whole mount of microsporophyll, whole mount of Microspores (temporary slides), L.S.of female cone.

(ix) *Gnetum*- Morphology (stem, male & female cones), transverse section of stem, vertical section of ovule (permanent slide).

(x) Study of some fossil slides / photographs as per theory.

Text Books:

1. Vasistha, B. R. (2017) Botany for Degree student, Bryophyta, S. Chand Publication, New Delhi.
2. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Archegoniate, Rastogi Publication, Meerut.

Reference Books:

1. Acharya, B. S. (2017), Archegoniate, Kalyani Publishers, New Delhi.
2. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. New Delhi, India.
3. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
4. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.

Core Paper V
ANATOMY OF ANGIOSPERMS

Unit-I

(i) Introduction and scope of Plant Anatomy: Applications in systematics, forensics and pharmacognosy.
(ii) Tissues: Classification of tissues; Simple and complex tissues (no phylogeny); cyto-differentiation of tracheary elements and sieve elements; Pits and plasmodesmata; Cell wall ingrowths and transfer cells, adcrustation and incrustation, Ergastic substances.

Unit-II

(i) Stem: Organization of shoot apex (Apical cell theory, Histogen theory, Tunica Corpus theory, continuing meristematic residue, cyto-histological zonation); Types of vascular bundles; Anatomy of dicot and monocot stem. Vascular Cambium: Structure, function and seasonal activity of cambium; secondary growth in stem (normal and anomalous). Root Stem transition.

(ii) Leaf: Anatomy of dicot and monocot leaf, Kranz anatomy.

Unit-III

(i) Root: Organization of root apex (Apical cell theory, Histogen theory, Korper-Kappe theory); Quiescent centre; Root cap; Anatomy of dicot and monocot root; Endodermis, exodermis and origin of lateral root. Secondary growth in roots.

(ii) Wood: Axially and radially oriented elements; Types of rays and axial parenchyma; Cyclic aspects and reaction wood; Sapwood and heartwood; Ring and diffuse porous wood; Early and late wood, tyloses; Dendrochronology.

(iii) Periderm: Development and composition of periderm, rhytidome and lenticels.

Unit –IV

(i) Adaptive and Protective Systems Epidermal tissue system, cuticle, epicuticular waxes, trichomes (uni-and multicellular, glandular and nonglandular: two examples of each), stomata (classification); Anatomical adaptations of xerophytes and hydrophytes.
(ii) Secretory System: Hydathodes, cavities, lithocysts and laticifers.

(iii) Mechanical tissue system.

PRACTICAL

1. Study of distribution and types of parenchyma, collenchyma and sclerenchyma, Xylem: Tracheary elements-tracheids, vessel elements; thickenings; perforation plates; xylem fibres, Phloem: Sieve tubes-sieve plates; companion cells; phloem fibres.
2. Wood: ring porous; diffuse porous; tyloses; heart- and sapwood.
3. Epidermal system: cell types, stomata types; trichomes: non-glandular and glandular.
4. Root: monocot, dicot, secondary growth.
5. Stem: monocot, dicot - primary and secondary growth (normal and anomalous); periderm; lenticels.

6. Leaf: isobilateral, dorsiventral, C_4 leaves (Kranz anatomy).
7. Ecological anatomy.

Text Books:

1. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Anatomy of Angiosperms, Rastogi Publication, Meerut.

Reference Books:

1. Eames, A.J. and Mc Daniels, L.H., (1953). An introduction to plant anatomy, Tata Mc Grow Hills, New Delhi
2. Esau, K. (1977). Anatomy of Seed Plants. John Wiley & Sons, Inc., Delhi.
3. Tayal, M. S. (2012) Plant Anatomy Rajpal and Sons, New Delhi
4. Mishra, B. K. (2017). Anatomy of Angiosperms, Kalyani Publishers, New Delhi.
5. Pandey, B. P. (2017) Plant Anatomy, S. Chand Publication, New Delhi.

Core Paper VI

ECONOMIC BOTANY

Unit-I

(i) Origin of Cultivated Plants: Concept of Centres of Origin, their importance with reference to Vavilov's work. Examples of major plant introductions; Crop domestication and loss of genetic diversity; evolution of new crops/varieties, importance of germplasm diversity.

(ii) Cereals: Cultivation and brief account of Wheat, Rice and millets.

(iii) Legumes: General account, importance to man and ecosystem.

(iv) Sugars & Starches: Morphology, cultivation and processing of sugarcane, products and by-products of sugarcane industry. Potato – morphology, cultivation, propagation & uses.

Unit-II

(i) Spices: Listing of important spices, their family and part used, economic importance with special reference to fennel, saffron, clove and black pepper Beverages: Tea, Coffee (morphology, processing & uses)

(ii) Drug-yielding plants: Therapeutic and habit-forming drugs with special reference to Cinchona, Digitalis, Papaver and Cannabis.

(iii) Tobacco: Tobacco (Morphology, processing, uses and health hazards)

Unit-III

(i) Oils & Fats: General description, classification, extraction, their uses and health implications groundnut, coconut, linseed and *Brassica* (Botanical name, family & uses)

(**i**) Essential Oils: General account, extraction methods, comparison with fatty oils &

their uses.

Unit-IV

(i) Natural Rubber: Para-rubber: tapping, processing and uses.

(ii) Timber plants: General account with special reference to teak and pine. Fibers: Classification based on the origin of fibers, Cotton and Jute (morphology, extraction and uses).

PRACTICAL

(i) Cereals: Rice (habit sketch, study of paddy and grain, starch grains).
(ii) Legumes: Soya bean/moong bean/black gram, Groundnut, (habit, fruit, seed structure, micro-chemical tests).
(iii) Sugars & Starches: Sugarcane (habit sketch; cane juice- micro-chemical tests), Potato (habit sketch, tuber morphology, T.S. tuber to show localization of starch grains, starch grains, micro-chemical tests).
(iv) Spice and Beverages: clove, black pepper ,Tea (plant specimen, tea leaves), Coffee (plant specimen, beans).
(v) Oils & Fats: Groundnut, Mustard–plant specimen, seeds; tests for fats in crushedseeds.
(vi) Drug-yielding plants: Specimens of *Digitalis, Papaver* and *Cannabis.*
(vii) Woods: *Tectona*, *Pinus/*Sal: Specimen, Section of young stem.
(viii) Fiber-yielding plants: Cotton (specimen, whole mount of seed to show lint and fuzz; whole mount of fiber and test for cellulose), Jute (specimen, transverse section of stem, test for lignin on transverse section of stem and fiber).

Text Books:

1. B. P. Pandey, (2017) Economic Botany. S. Chand Publication, New Delhi.

Reference Books:

1. Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
2. Samba Murty, A.V.S.S. and Subrahmanyam, N.S. (2011). Text Book of Modern Economic Botany, CBS Publishers and Distributors, New Delhi.
3. Hill, Albert F. Economic Botany, Tata Mc Grow Hill Publishing Company, Ltd. New Delhi.
4. Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.
5. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Economic Botany, Rastogi Publication, Meerut.
6. Baruah, B. (2017). Economic Botany, Kalyani Publishers, New Delhi.

Core Paper VII

GENETICS

Unit-I

(i) Mendelian genetics and its extension Mendelism: History; Principles of inheritance; Chromosome theory of inheritance; Autosomes and sex chromosomes; Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Interaction of genes, Pleiotropy, Recessive and Dominant traits, Polygenic inheritance.

(ii) Extrachromosomal Inheritance: Chloroplast mutation: Variegation in Four o'clock plant; Mitochondrial mutations in yeast; cytoplasmic male sterility; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium.

Unit-II

Linkage, crossing over and chromosome mapping: Linkage and crossing over-Cytological basis of crossing over; Recombination frequency, two factor and three factor crosses; Interference and coincidence; Numericals based on gene mapping; Sex Linkage.

Unit-III

(i) Variation in chromosome number and structure: Deletion, Duplication, Inversion, Translocation, Position effect, Euploidy and Aneuploidy

(ii) Gene mutations: Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents); Detection of mutations: CIB method. Role of Transposons in mutation. DNA repair mechanisms.

Unit-IV

(i) Fine structure of gene: Classical vs. molecular concepts of gene; Cis-Trans complementation test for functional allelism; Structure of Phage T4, rII Locus.

(**i**) Population and Evolutionary Genetics: Gene pool, Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift. Genetic variation and Speciation.

PRACTICAL

1. Analysis of allelic and genotypic frequencies.
2. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square analysis.
3. Chromosome mapping using test cross data.
4. Pedigree analysis for dominant and recessive autosomal and sex linked traits.
5. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).
6. Blood Typing: ABO groups & Rh factor.

7. Chromosome anomaly : Translocation Ring, Laggards and Inversion Bridge, break etc (through photographs).

Text Books:

1. Singh B. D. (2017). Fundamental of Genetics, Kalyani Publishers, New Delhi.

2. Gupta P. K. (2017). Genetics, Rastogi Publication, Meerut.

Reference Books:

1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, John Wiley & Sons, India. 8th edition.
2. Sinnot, E.W., Dunn, L.C. and Dobzhansky, T. (1985) Principles of Genetics, Tata Mc Grow Hill, New Delhi
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. Benjamin Cummings, U.S.A. 10th edition.
4. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W.H. Freeman and Co., U.S.A. 10th edition.
5. Strickberger, M.W. Genetics, Pearson Publishers, 3rd Edition
6. Rastogi V. B. (2017). Genetics, Kedar Nath & Ram Nath, Meerut

Core Paper VIII

MOLECULAR BIOLOGY

Unit-I Nucleic acids: Carriers of genetic information: Historical perspective; DNA as the carrier of genetic information (Griffith's, Hershey & Chase, Avery, McLeod & McCarty), Types of genetic material, denaturation and renaturation, cot curves. Organization of DNA and structure of RNA- Prokaryotes, Viruses, Eukaryotes, Fraenkel-Conrat's experiment. Organelle DNA - mitochondria and chloroplast DNA. The Nucleosome -Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin.

Unit-II

(i) The replication of DNA: Chemistry of DNA synthesis (Kornberg's discovery); General principles – bidirectional, semi-conservative and semi discontinuous replication, RNA priming; Various models of DNA replication, including rolling circle, θ (theta) mode of replication, replication of linear ds-DNA, replication of the 5′ end of linear chromosome; Enzymes involved in DNA replication.

(ii) Central dogma and genetic code: Key experiments establishing-The Central Dogma (Adaptor hypothesis and discovery of mRNA template), Genetic code (deciphering & salient features)

(iii) Processing and modification of RNA: Split genes-concept of introns and exons, removal of introns, spliceosome machinery, splicing pathways, group I & group II intron splicing, alternative splicing eukaryotic mRNA processing (5′ cap, 3′

polyA tail); Ribozymes, exon shuffling; RNA editing and mRNA transport.

Unit-III

Mechanism of Transcription: Transcription in prokaryotes and eukaryotes;
Regulation of transcription in prokaryotes and eukaryotes: Principles of transcriptional regulation; Prokaryotes: Operon concept- Regulation of lactose metabolism and tryptophan synthesis in *E.coli.* Eukaryotes: transcription factors, heat shock proteins, steroids and peptide hormones; Gene silencing

Unit-IV

Translation (Prokaryotes and eukaryotes): Ribosome structure and assembly; Charging of tRNA, aminoacyl tRNA synthetases; Various steps in protein synthesis, proteins involved in initiation, elongation and termination of polypeptides; Fidelity of translation; Inhibitors of protein synthesis; Post-translational modifications of proteins.

PRACTICAL

1. Preparation of LB medium and raising E. coli.
2. Isolation of genomic DNA from suitable plant material.
3. RNA estimation by orcinol method.
4. DNA estimation by diphenylamine reagent/UV Spectrophotometry.
5. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments)
6. Study of Barr body from buccal smear preparation.

Text Books:

1. Gupta P. K. (2017). Molecular Biology, Rastogi Publication, Meerut.

Reference Books:

1. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
2. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th edition.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
4. Sheeler, P. and Bianchi, D.E. (2009) Molecular Biology of the Cell, Willey Publisher, New Delhi
5. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W.H. Freeman and Co., U.S.A. 10th edition.
6. Alberts, B. et al. 2014. Molecular Biology of the cell Garland Science. 6th Edition
7. Power, C. B. (2017) Cell Biology, Himalaya Publishing House, New Delhi

8. Sahu, A.C. (2017). Essentials of Molecular Biology, Kalynai Publishers, New Delhi.

Core Paper IX

PLANT ECOLOGY & PHYTOGEOGRAPHY

Unit-I

(i) Introduction Concept of ecology, Autoecology, Synecology, system ecology, Levels of organization. Inter-relationships between the living world and the environment, the components of environment, concept of hydrosphere and lithosphere and dynamism, homeostasis.

(ii) Light, temperature, wind and fire: Variations; adaptations of plants to their variation.

Unit-II

(i) Soil: Formation; Composition; Physical; Chemical and Biological components; Soil profile; Role of climate in soil development.

(ii) Water: Importance: States of water in the environment; Atmospheric moisture; Precipitation types (rain, fog, snow, hail, dew); Hydrological Cycle; Water in soil; Water table.

Unit-III

Biotic interactions and Population ecology: Characteristics and Dynamics.

Plant communities: Concept of ecological amplitude; Habitat and niche; Characters: analytical and synthetic; Ecotone and edge effect; Dynamics: succession – processes, types; climax concepts.

Unit-IV

(i) Ecosystems: Structure; Processes; Trophic organisation; Food chains and Food webs; Ecological pyramids.

(ii) Functional aspects of ecosystem: Principles and models of energy flow; Production and productivity; Ecological efficiencies; Biogeochemical cycles; Cycling of Carbon, Nitrogen and Phosphorus.

(iii) Phytogeography: Principles; Continental drift; Theory of tolerance; Endemism; Phytogeographical division of India; Vegetation of Odisha.

PRACTICAL

1. Determination of pH of various soil and water samples (pH meter, universal indicator/Lovibond comparator and pH paper)
2. Analysis for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from two soil samples by rapid field tests.
3. Determination of dissolved oxygen of water samples from polluted and unpolluted sources.
4. Study of morphological adaptations of hydrophytes, xerophytes, halophyles (two

each).

5. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
6. Quantitative analysis of herbaceous vegetation for frequency, density and abundance in the college campus.
7. Field visit to familiarize students with ecology of different sites.

Text Books:

1. Sharma, P.D. (2017). Fundamentals of Ecology. Rastogi Publications, Meerut, India.

Reference Books:

1. Odum, E.P. (2005). Fundamentals of ecology. Cengage Learning India Pvt. Ltd., New Delhi. 5thedition.
2. Singh, J.S., Singh, S.P., Gupta, S. (2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.
3. Wilkinson, D.M. (2007). Fundamental Processes in Ecology: An Earth Systems Approach. Oxford University Press. U.S.A.
4. Kormondy, E.J. (1996). Concepts of ecology. PHI Learning Pvt. Ltd., Delhi, India. 4th edition.
5. Santra, S. C. (2015) Environmental Science. New Central Book Agency (P) Ltd. Kolkata.
6. Das M. C. and Das S. P. (2009). Fundamental of Ecology. Tata MGrow Hill, New Delhi.
7. Shukla R.S. and Chandel P.S. (2016). A Text Book of Plant Ecology. S Chand Publication, New Delhi

Core Paper X PLANT

SYSTEMATICS

Unit-I

Plant identification, Classification, Nomenclature; Biosystematics. Identification: Field inventory; Functions of Herbarium; Important herbaria and botanical gardens of the world and India; Virtual herbarium; E-flora; Documentation: Flora, Monographs, Journals; Keys: Single access and Multi-access

Unit-II

Taxonomic hierarchy: Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept (taxonomic, biological, evolutionary).

Botanical nomenclature: Principles and rules (ICN); Ranks and names; Typification, author citation, valid publication, rejection of names, principle of priority and its limitations; Names of hybrids.

Unit-III

(i) Systematics- an interdisciplinary science: Evidence from palynology, cytology, phytochemistry and molecular data.

(ii) Systems of classification: Major contributions of Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan and Cronquist; Classification systems of Bentham and Hooker (up to series) and Hutchinson (up to series); Brief reference of Angiosperm Phylogeny Group (APG III) classification.

Unit-IV

Phylogeny of Angiosperms: Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly and clades). Origin& evolution of angiosperms; co- evolution of angiosperms and animals; methods of illustrating evolutionary relationship (phylogenetic tree, cladogram).

Families of Angiosperms : Descriptive studies of Magnoliaceae, Rosaceae, Rubiacae, Poaceae, Orchidaceae, Musaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Lamiaceae.

PRACTICAL

(i) Study of vegetative and floral characters of available materials of the families included in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification).

(ii) Field visit, plant collection and herbarium preparation and submission. Mounting of properly dried and pressed specimen of at least fifteen wild plants with herbarium label (to be submitted in the record book)

Text Books:

1. Sharma O. P. (2009) Plant Taxonomy, Tata Mc Grow Hill, New Delhi

Reference Books:

1. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi.3rdedition.
2. Jeffrey, C. (1982). An Introduction to *Plant Taxonomy.* Cambridge University Press, Cambridge.
3. Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2nd edition.
4. Saxena, H. O. and Brahman, M..The Flora of Orissa, CSIR Publication.
5. Bose T. K. (2009). Trees of the World, Regional Plant Resource Centre, Bhubaneswar, Odisha, India
6. Radford, A.E. (1986). Fundamentals of *Plant Systematics*. Harper and Row, New York.
7. Hanes, H. H. (2009). Botany of Bihar and Orissa,

8. Mohanty, C. R. (2017). Text Book of Plant Systematics, Kalynai Publisher, New Delhi.
9. Subrahmainayam, M. S. (2011) Modern Plant Taxonomy, Vikash Publishing House, New Delhi
10. Pandey, B. P., (2017). Taxonomy of Angiosperm. S. Chand Publication.

Core Paper XI REPRODUCTIVE

BIOLOGY OF ANGIOSPERMS

Unit-I

(i) Introduction: History and scope.

(ii) Anther: Anther wall: Structure and functions, micro-sporogenesis, callose deposition and its significance.

(iii) Pollen biology: Micro-gametogenesis; Pollen wall structure, MGU (male germ unit) structure, NPC system; Palynology and scope (a brief account); Pollen wall proteins; Pollen viability, storage and germination; Abnormal features: Pseudomonads, polyads, massulae, pollinia.

Unit-II

Ovule: Structure; Types; Special structures–endothelium, obturator, aril, caruncle and hypostase; Female gametophyte– mega-sporogenesis and mega-gametogenesis; Types and ultrastructure of different mature embryo sacs (Details of *Polygonum* type), Developmental pattern of mono-, bi- and tetrasporic embryo sacs.

Unit-III

(i) Pollination and fertilization: Pollination types and significance; adaptations; structure of stigma and style; path of pollen tube in pistil; double fertilization.
(ii) Self incompatibility: Basic concepts; Methods to overcome self- incompatibility: mixed pollination, bud pollination, stub pollination; Intraovarian and *in vitro* pollination; Modification of stigma surface.

Unit-IV

(i) Endosperm: development, structure and functions
(ii) Embryo: Types of embryogeny; General pattern of development of dicot and monocot embryo; Suspensor: structure and functions; Embryo- endosperm relationship; Nutrition of embryo; Embryo development in *Paeonia*.
(iii) Seed: Structure, importance and dispersal mechanisms
(iv) Polyembryony and apomixes: Introduction; Classification; Causes and applications.

PRACTICAL

(i) Anther: Wall and its ontogeny; Tapetum (amoeboid and glandular); MMC, spore tetrads, uninucleate, bicelled and dehisced anther stages through slides/micrographs, male germ unit (MGU) through photographs and schematic

representation.

(ii) Pollen grains: Fresh and acetolyzed showing ornamentation and aperture, psuedomonads, polyads, pollinia (slides/photographs, fresh material), ultrastructure of pollen wall (micrograph); Pollen viability: Tetrazolium test, Germination: Calculation of percentage germination in different media using hanging drop method.

(iii) Ovule: Types-anatropous, orthotropous, amphitropous/ campylotropous, circinotropous, unitegmic, bitegmic; Tenuinucellate and crassinucellate; Special structures: Endothelium, obturator, hypostase, caruncle and aril (permanent slides/specimens/photographs). Female gametophyte through permanent slides/ photographs: Types, ultrastructure of mature egg apparatus.

(iv) Embryogenesis: Study of development of dicot embryo through permanent slides/photographs; dissection of developing seeds for embryos at various developmental stages; Study of suspensor through electron micrographs.

(v) Tracing the path of pollen tube.

(vi) Study of haustorial endosperm.

Text Books:

1. Singh, V., Pandey, P.C, and Jain, D.K. (2017). Reproductive Biology of Angiosperms, Rastogi Publications, Meerut

Reference Books:

1. Maheswari, P. (2009). Embryology of Angiosperms.
2. Shivanna, K.R. (2003). Pollen Biology and Biotechnology. Oxford and IBH Publishing Co. Pvt. Ltd. Delhi.
3. Raghavan, V. (2000). Developmental Biology of Flowering plants, Springer, Netherlands.
4. Johri, B.M. l (1984). Embryology of Angiosperms, Springer-Verlag, Netherlands.
5. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, Vikas Publishing House. Delhi. 5th edition.
6. Mishra, B. K. (2017). Reproductive Biology of Angiosperms, Kalyani Publishers, New Delhi.

Core Paper XII

PLANT PHYSIOLOGY

Unit-I

(i) Plant water relationship: Water Potential and its components, plasmolysis and imbibitions, water absorption by roots, aquaporins, pathway of water movement, symplast, apoplast, trans-membrane pathways, root pressure, guttation. Ascent of sap– cohesion-tension theory. Transpiration and factors affecting transpiration, anti-transpirants, mechanism of stomatal movement.

(ii) Translocation in the phloem: Experimental evidence in support of phloem as the site of sugar translocation. Pressure–Flow Model; Phloem loading and unloading; Source–sink relationship.

Unit-II

(i) Mineral nutrition: Essential and beneficial elements, macro and micronutrients, methods of study and use of nutrient solutions, criteria for essentiality, mineral deficiency symptoms, roles of essential elements, chelating agents.

(ii) Nutrient Uptake: Soil as a nutrient reservoir, transport of ions across cell membrane, passive absorption, electrochemical gradient, facilitated diffusion, active absorption, role of ATP, carrier systems, proton ATPase pump and ion flux, uniport, co-transport, symport, and antiport.

Unit-III

Plant growth regulators: Discovery, chemical nature (basic structure), bioassay and physiological roles of Auxin, Gibberellins, Cytokinin, Abscisic acid, Ethylene. Brassinosteroids and Jasmonic acid.

Unit-IV

(i) Physiology of flowering: Photoperiodism, flowering stimulus, florigen concept, vernalization, seed dormancy. Senescence: Types and causes.

(ii) Phytochrome: Discovery, chemical nature, role of phytochrome in photo-morphogenesis, low energy responses (LER) and high irradiance responses (HIR), mode of action.

PRACTICAL

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. Determination of water potential of given tissue (potato tuber) by weight method.
3. Study of the effect of wind velocity and light on the rate of transpiration in excised twig/leaf.
4. Calculation of stomatal index and stomatal frequency from the two surfaces of leaves of a mesophyte and xerophyte.
5. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and xerophyte (both surfaces).
6. To study the phenomenon of seed germination (effect of light).
7. To study the induction of amylase activity in germinating barley grains
8. To demonstrate suction due to transpiration.
9. Measurement of relation between transpiration and transpiring surface.
10. Measurement of cuticular resistance to transpiration.

Text Books:

1. Sinha, R. K. (2015). Modern Plant Physiology, Narosa Publishing House, New

Delhi.

Reference Books:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
2. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
3. Bajracharya D. (1999). Experiments in Plant Physiology-A Laboratory Manual. Narosa Publishing House, New Delhi.
4. Salisbury, F. B. and Ross, C. W. Plant Physiology Wadsworth Publishing Company, California
5. Sahoo, A. C. (2018). Outlines of Plant Physiology Kalynai Publishers, New Delhi.
6. Srivastava, N. K.. (2017). Plant Physiology, Rastogi Publications, Meerut.
7. Pandey and Sinha (2011). Plant Physiology, Vikash Publishing House, New Delhi

Core Paper XIII

PLANT METABOLISM

Unit-I

(i) Concept of metabolism: Introduction, anabolic and catabolic pathways, regulation of metabolism, role of regulatory enzymes (allosteric ,covalent modulation and Isozymes).

(ii) Mechanisms of signal transduction: Calcium, phospholipids, cGMP, NO.

Unit-II

Carbon assimilation: Historical background, photosynthetic pigments, role of photosynthetic pigments, Red drop and Emerson Enhancement Effect, antenna molecules and reaction centres, photochemical reactions, photosynthetic electron transport, PSI, PSII, Q cycle, C_3, C_4 pathways; Crassulacean acid metabolism; Factors affecting CO_2 reduction. Photorespiration.

Unit-III

(i) Carbon Oxidation: Glycolysis, fate of pyruvate, regulation of glycolysis, oxidative pentose phosphate pathway, oxidative decarboxylation of pyruvate, regulation of PDH, NADH shuttle; TCA cycle, amphibolic role, anaplerotic reactions, regulation of the cycle, mitochondrial electron transport, oxidative phosphorylation, cyanide-resistant respiration, factors affecting respiration.

(**i**) ATP-Synthesis: Mechanism of ATP synthesis, substrate level phosphorylation, chemiosmotic mechanism (oxidative and photo- phosphorylation), ATP synthase, Boyers conformational model, Racker's experiment, Jagendorf's experiment; role of uncouplers.

Unit-IV

(i) Lipid metabolism: Synthesis and breakdown of triglycerides, β-oxidation, glyoxylate cycle, gluco-neogenesis and its role in mobilisation of lipids during seed germination, α oxidation.

(ii) Nitrogen metabolism: Nitrate assimilation, free living and symbiotic biological nitrogen fixation (examples of legumes and non-legumes); Nitrification, Physiology and biochemistry of nitrogen fixation; Ammonia assimilation and trans-amination.

PRACTICAL

1. Isolation and quantitization of photosynthetic pigments.
2. Experimental demonstration of Hill's reaction.
3. To study the effect of light intensity on the rate of photosynthesis.
4. Effect of carbon dioxide on the rate of photosynthesis.
5. To compare the rate of respiration in different parts of a plant.
6. Demonstration of absorption spectrum of photosynthetic pigments.
7. Assay of the enzyme Catalase.
8. Photoreduction of dye by isolated chloroplasts.

Text Books:

1. Gupta, S, K. (2017). Plant Metabolism, Rastogi Publication, Meerut.

Reference Books:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
2. Taiz, L., Zeiger, E., Møller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
3. Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York.
4. Sahoo, A. C. (2018). Outlines of Plant Metabolism, Kalynai Publishers, New Delhi.

Core Paper XIV PLANT

BIOTECHNOLOGY

Unit-I

Plant Tissue Culture: Historical perspective; Aseptic tissue culture techniques, Composition of media; Nutrient and hormone requirements (role of vitamins and hormones). Totipotency; Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and hybrids;Cryopreservation; Germplasm Conservation).

Unit-II

Recombinant DNA technology-I: Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC).Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning).

Unit-III

Recombinant DNA technology-II: Gene Construct; construction of genomic and cDNA libraries, screening DNA libraries to obtain gene of interest by genetic selection; complementation, colony hybridization; Probes-oligonucleotide, heterologous, Methods of gene transfer- *Agrobacterium*-mediated, Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit-IV

Applications of Biotechnology: Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products–Human Growth Hormone; Humulin; Biosafety concerns.

PRACTICAL

1. a) Preparation of tissue culture (MS) medium.
   (b) Demonstration of *in vitro* sterilization and inoculation methods using leaf and nodal explants of tobacco, *Datura*, *Brassica* etc.
2. Study of another culture through photographs.
3. Preparation of artificial seeds.
4. Study of Bt cotton through photographs.
5. Isolation of plasmid DNA.
6. Gel electrophoresis (demonstration).

Text Books:

1. Chawla, H. S. (2010). Introduction to Plant Biotechnology. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

Reference Books:

1. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
2. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

3. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.
4. Singh, B. D. (2018). Plant Biotechnology Kalynai Publishers, New Delhi.
5. Gupta, P. K. (2017). Plant Biotechnology, Rastogi Publication, Meerut.
6. Dubey, R. C. (2017). Advanced Biotechnology, S, Chand Publication, New Delhi

Discipline Specific Elective Paper-I

ANALYTICAL TECNIQUES IN PLANT SCIENCES

Unit-I

Imaging and related techniques: Principles of microscopy; Light microscopy; Fluorescence microscopy; Flow cytometry (FACS); Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.

Unit-II

Cell fractionation: Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, $CsCl_2$gradient, analytical centrifugation, ultracentrifugation. Radioisotopes: Use in biological research, auto-radiography, pulse chase experiment. Spectrophotometry: Principle and its application in biological research.

Unit-III

Chromatography: Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography. Characterization of proteins and nucleic acids: Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

Unit-IV

Biostatistics: Statistics, data, population, samples, variables, parameters; Representation of Data: Tabular, Graphical; Measures of frequency and central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variance, standard deviation; Chi-square test for goodness of fit. Test of significance: comparison of large, small and paired samples (T-Test) and correlation.

PRACTICAL

1. Study of different microscopic techniques for chromosome study
2. Study of PCR Demonstration.
3. To separate pigments by paper chromatography.
4. To separate phytochemicals by thin layer chromatography.
5. To estimate protein through Lowry's methods.
6. To separate proteins using PAGE.

7.To separate DNA (marker) using AGE.
8. Spectrometric estimation of total sugar by Anthrone method.
9.Chi-square analysis of mendelian ratio.
10. T-Test.

Text Books:

1. Patil, C. S. (2017). Advanced Analytical Techniques, ABE Books, New Delhi.

Reference Books:

1. Plummer, D.T. (1996). An Introduction to Practical Biochemistry. Tata McGraw-Hill Publishing Co. Ltd. New Delhi. 3rd edition.
2. Ruzin, S.E. (1999). Plant Micro technique and Microscopy, Oxford University Press, New York. U.S.A.
3. Ausubel, F., Brent, R., Kingston, R. E., Moore, D.D., Seidman, J.G., Smith, J.A., Struhl, K. (1995). Short Protocols in Molecular Biology. John Wiley & Sons. 3rd edition.
4. Zar, J.H. (2012). Biostatistical Analysis. Pearson Publication. U.S.A. 4th edition.
5. Aneja, K. R. (2014). Laboratory manual of microbiology and biotechnology, Medtech, New Delhi

Discipline Specific Elective Paper-II

NATURAL RESOURCE MANAGEMENT

Unit-I

(i) Natural resources: Definition and types.
(ii) Sustainable utilization :Concept, approaches (economic, ecological and socio-cultural).
(iii) Land: Utilization (agricultural, horticultural, silvicultural); Soil degradation and management.
(iv) Water: Fresh water (rivers, lakes, groundwater, water harvesting technology, rain water storage and utilization.

Unit-II

Biological Resources: Biodiversity-definition and types; Significance; Threats; Management strategies; Bioprospecting; IPR; CBD; National Biodiversity Action Plan).

Forests: Definition, Cover and its significance (with special reference to India); Major and minor forest products; Depletion; Management.

Unit-III

(i) Energy: Renewable and non-renewable sources of energy-solar, wind, tidal, geothermal and bioenergy resources.
(ii) Contemporary practices in resource management: EIA, GIS, Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint.

Unit-IV

Resource Accounting; Waste management. National and international efforts in resource management and conservation

PRACTICAL

i. Estimation of solid waste generated by a domestic system (biodegradable and non-biodegradable) and its impact on land degradation.
ii. Collections of data on forest cover of specific area.
iii. Measurement of dominance of woody species by DBH (diameter at breast height) method.
iv. Calculation and analysis of ecological footprint.
v. Ecological modeling.
vi. Estimation of soil moisture content and soil texture.
vii. Estimation of soil porosity
viii. Estimation of soil water-holding capacity.
ix. Estimation of soil organic matter and soil carbon

Text Books:

1. Pandey, B. W. 2005. Natural Resource Management. Mittal Publication, New Delhi

Reference Books:

1. Vasudevan, N. (2006). Essentials of Environmental Science. Narosa Publishing House, New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.
3. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Discipline Specific Elective Paper-III

HORTICULTURAL PRACTICES AND POST-HARVEST TECHNOLOGY

Unit-I

(i) Introduction: Scope and importance, Branches of horticulture; Role in rural economy and employment generation; Importance in food and nutritional security; Urban horticulture and ecotourism.

(ii) Ornamental plants: Types, classification (annuals, perennials, climbers and trees); Identification and salient features of some ornamental plants [rose, marigold, gladiolus, carnations, orchids, poppies, gerberas, tuberose, sages, cacti and succulents (*Opuntia, Agave* and spurges)]

Unit-II

(i) Fruit and vegetable crops: Production, origin and distribution; Description of plants and their economic products; Management and marketing of vegetable and fruit crops.

(i) Horticultural techniques: Application of manure, fertilizers, nutrients and PGRs; Weed control; Biofertilizers, biopesticides; Irrigation methods (drip irrigation, surface irrigation, furrow and border irrigation); Hydroponics; Propagation Methods: asexual (grafting, cutting, layering, budding), sexual (seed propagation), Scope and limitations.

(ii) Landscaping and garden design :Planning and layout (parks and avenues); gardening traditions - Ancient Indian, European, Mughal and Japanese Gardens; Urban forestry; policies and practices.

Unit-III

(i) Post-harvest technology: Importance of post harvest technology in horticultural crops; Evaluation of quality traits; Harvesting and handling of fruits, vegetables and cut flowers; Principles, methods of preservation and processing; Methods of minimizing loses during storage and transportation;

(ii) Disease control and management : Field and post-harvest diseases; Identification of deficiency symptoms; remedial measures and nutritional management practices; Crop sanitation; IPM strategies (genetic, biological and chemical methods for pest control); Quarantine practices;

Unit-IV

Horticultural crops - conservation and management: Documentation and conservation of germplasm; Role of micropropagation and tissue culture techniques; Varieties and cultivars of various horticultural crops; IPR issues; National, international and professional societies and sources of information on horticulture.

PRACTICAL

i. Identification and description of salient features of ornamental plants included in the syllabus.
ii. Horticultural techniques (Drip irrigation, surface irrigation, furrow and border irrigation).
iii. Study of practice of asexual propagation methods (grafting, cutting, layering, budding)
iv. Planning and layout of parks and avenues
v. Handing of harvested fruits, vegetables and cut flowers
vi. Methods of fruit preservation
vii. Basic tissue cultures technique

Text Books:

1. Peter, K. V. (2009). Basics of Horticulture, Kalyani Publishers, New Delhi.

Reference Books:

1. Singh, D. & Manivannan, S. (2009). Genetic Resources of Horticultural Crops. Ridhi International, Delhi, India.
2. Swaminathan, M.S. and Kochhar, S.L. (2007). Groves of Beauty and Plenty: An Atlas

of Major Flowering Trees in India. Macmillan Publishers, India.
3. NIIR Board (2005). Cultivation of Fruits, Vegetables and Floriculture. National Institute of Industrial Research Board, Delhi.
4. Kader, A.A. (2002). Post-Harvest Technology of Horticultural Crops. UCANR Publications, USA.
5. Capon, B. (2010). Botany for Gardeners. 3rd Edition. Timber Press, Portland, Oregon.
6. Pandey, P. H. (2007). Principles and Practices of Post Harvest Technology, Kalyani Publishers, New Delhi.

Discipline Specific Elective Paper-IV

INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

Unit-I

(i) Scope of microbes in industry and environment: Bioreactors/Fermenters and fermentation processes: Solid-state and liquid-state (stationary and submerged) fermentations; Batch and continuous fermentations. Components of a typical bioreactor, Types of bioreactors- laboratory.

(ii) Microbial production of industrial products: Microorganisms involved, media, fermentation conditions, downstream processing and uses; Filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, lyophilization, spray drying.

Unit-II

Microbial enzymes of industrial interest and enzyme immobilization: Microorganisms for industrial applications and hands on screening microorganisms for casein hydrolysis; starch hydrolysis; cellulose hydrolysis. Methods of immobilization, advantages and applications of immobilization, large scale applications of immobilized enzymes (glucose isomerase and penicillin acylase).

Unit-III

Microbes and quality of environment: Distribution of microbes in air; Isolation of microorganisms from soil, air and water.

Microbial flora of water: Water pollution, role of microbes in sewage and domestic waste water treatment systems. Determination of BOD, COD, TDS and TOC of water samples; Microorganisms as indicators of water quality.

Unit-IV

Microbes in agriculture and remediation of contaminated soils: Biological fixation; Mycorrhizae; Bioremediation of contaminated soils. Isolation of root nodulating bacteria, arbuscular mycorrhizal colonization in plant roots.

PRACTICAL

1.Principles and functioning of instruments in microbiology laboratory
2.Hands on sterilization techniques and preparation of culture media
3. Screening microorganisms for industrial use.
4. Mycorrhiza, arbuscular mycorrhizal colonization in plant roots
5. Determination of BOD, COD, TDS and TOC of water samples;
6. Microorganisms as indicators of water quality

Text Books:

1. P. D. Sharma. (2017) Environmental Microbiology. Rastogi Publications, Meerut.

Suggested Readings

1. Pelzar, M.J. Jr., Chen E.C. S., Krieg, N.R. (2010). Microbiology: An application based approach. Tata McGraw Hill Education Pvt. Ltd., Delhi.
2. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. Pearson Benjamin Cummings, San Francisco, U.S.A. 9th edition.
3. Pradipta K. Mohapatra (2008). Text Book of Environmental Microbiology, I. K. International Publishing House, New Delhi
4. A. K. Rath (2018). Industrial and Environmental Microbiology, Kalyani Publishers, New Delhi.

OR

Discipline Specific Elective Paper-IV

DISSERTATION / PROJECT WORK

Identification of problem	Review of Literature	Methodology	Findings	Analysis	Viva-Voce	Total
10	10	10	25	25	20	100

** = Students who score more than ≥60% in aggregate are eligible for project work

Generic Elective Paper I A

BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATES)

Unit-I

Microbes :Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic **cycle**, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit-II

(i) Algae: General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Morphology and life- cycles of the following: *Chlamydomonas, Oedogonium, Nostoc and Fucus, Vaucheria, Polysiphonia,* Economic importance of algae.

(ii) Fungi : Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; True Fungi-General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota) *Penicillium* (Ascomycota), *Puccnia, Agaricus* Basidiomycota); Symbiotic Associations-Lichens:

Unit-III

(i) **Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organization, Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria* (Developmental details not to be included).

(ii) **Pteridophytes:** General characteristics, classification, early land plants (*Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris* (Developmental details not to be included).Heterospory and seed habit, stellar evolution. Ecological and economical importance of Pteridophytes.

Unit-IV

Gymnosperms: General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*. (Developmental details not to be included).Ecological and economical importance.

PRACTICAL

1. Gram staining
2. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas, Oedogonium, Vaucheria, Fucus* and *Polysiphonia* through temporary preparations and permanent slides.
3. *Rhizopus and Penicillium*: Asexual stage from temporary ounts and sexual structures through permanent slides.

4. *Puccinia* and *Agaricus*: Specimens of button stage and full grown mushroom;

Sectioning of gills of *Agaricus*.

5. *Marchantia and Funaria*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
6. *Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m.microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
7. *Equisetum*- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
8. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
9. *Pinus*- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarf shoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

Text Books:

1. Mitra, J.N., Mitra, D. and Choudhury, S.K. Studies in Botany Volume 1. Moulik Publisher, Kolkata. Ninth Revised Edition

Reference Books:

1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi.2nd edition.
2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, Mac Millan Publishers Pvt. Ltd., Delhi.
4. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
7. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
8. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
9. Pandey, B. P. (2017), Botany for degree studies (as per CBCS). S. Chand
10. Acharya, B. S. and Mishra, B. K. (2018). Plant Biodiversity, Kalyani Publishers, New Delhi.

Generic Elective Paper IIA

PLANT PHYSIOLOGY AND METABOLISM

Unit-I

(i) Plant-water relations: Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation.

(ii) Mineral nutrition: Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

(iii) Translocation in phloem.: Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading

Unit-II

(i) Photosynthesis: Photosynthetic Pigments (*Chl* a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C_3, C_4 and CAM pathways of carbon fixation.

(ii) Respiration: Glycolysis, anaerobic respiration, TCA cycle; Oxidative Phosphorylation.

Unit-III

(i) Enzymes: Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

(ii) Nitrogen metabolism: Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit-IV

(i) Plant growth regulators: Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene.

(ii) Plant response to light and temperature: Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on hotomorphogenesis; Vernalization.

PRACTICAL

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration.
6. To study the effect of light intensity and bicarbonate concentration on O_2 evolution in photosynthesis.
7. Comparison of the rate of respiration in any two parts of a plant.

Text Books:

1. A. C. Sahu (2018). Plant Physiology and Metabolism. Kalyani Publishers, New Delhi.

Reference Books:

1. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
3. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.
4. H. S. Srivatava. Plant Physiology, Rastogi Publications, New Delhi

Generic Elective Paper IB PLANT

ECOLOGY AND TAXONOMY

Unit-I

(i) Ecological factors: Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes

(ii) Plant communities : Characters; Ecotone and edge effect; Succession; Processes and types

Unit-II

(i) Ecosystem : Structure; Biotic and abiotic components, energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon, nitrogen and Phosphorous

(ii) Phytogeography: Principal biogeographical zones, Endemism.

Unit-III

(i) Introduction to plant taxonomy: Identification, Classification, Nomenclature.

(ii) Identification : Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access

Unit-IV

(i) Taxonomic hierarchy: Ranks, categories and taxonomic groups

(ii) Botanical nomenclature: Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.

(iii) Classification: Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (upto series), Hutchinson (upto series).

(iv) Taxonomic description of the families : Malvaceae, Fabaceae, Asteraceae and Poaceae, Apocynaceae, Lamiaceae and Musaceae.

PRACTICAL

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
3. Comparison of bulk density, porosity and rate of infiltration of water in soil ofthree habitats.
4. (a) Study of morphological adaptations of hydrophytes and xerophytes (four each). (b)Study of biotic interactions of the following: Stem parasite (*Cuscuta),* Rootparasite
5. (*Orobanche*), Epiphytes, Predation (Insectivorous plants)
6. Determination of minimal quadrat size for the study of herbaceous vegetation inthe college campus by species area curve method. (species to be listed)
7. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law .
8. Study of vegetative and floral characters of the families as in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification).
9. Mounting of properly dried and pressed specimen of any ten wild plant's with herbarium label (to be submitted in the record book).

Text Books:

1. Sharma, P.D. (2017). Fundamentals of Ecology. Rastogi Publications, Meerut, India.

Reference Books:

1. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
3. Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA, U.S.A.
4. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.
5. Sahu, A. C. (2017). Plant Ecology and Phytogeography, Kalyani Publishers, New Delhi.
6. Das, M. C. and Das, S. P. (2009). Fundamental of Ecology. Tata MGrow Hill, New Delhi.
7. Shukla, R.S. and Chandel, P.S. (2016). A text book of Plant Ecology. S Chand Publication, New Delhi
8. Mohanty, C. R. (2017). Text Book of Plant Systematics, Kalynai Publisher, New Delhi.

Generic Elective Paper IIB

PLANT ANATOMY AND EMBRYOLOGY

Unit-I

(i) Meristematic and permanent tissues : Root and shoot apical meristems; Simple and complex tissues
(ii) Organs :Anatomy of dicot and monocot root stem and leaf.

Unit-II

(i) Secondary Growth: Vascular cambium – structure and function, seasonal activity. Secondary growth in and stem, Wood (heartwood and sapwood)
(ii) Adaptive and protective systems: Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes.

Unit-III

(i) Structural organization of flower: Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.
(ii) Pollination and fertilization : Pollination mechanisms and adaptations; Double fertilization;

Unit-IV

(i) Endosperm: Endosperm types, structure and functions.
(ii) Embryo: Dicot and monocot embryo; Structure and development, Embryo endosperm relationship.
(iii) Seed-structure and development, appendages and dispersal mechanisms.

PRACTICAL

1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: *Zea mays;* Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
5. Leaf: Dicot and Monocot leaf (only Permanent slides).
6. Adaptive anatomy: Xerophyte (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous**.**

Text Books:

1. Singh, Pandey and Jain (2017). Anatomy of Angiosperms, Rastogi Publication, Meerut.

Reference Books:

1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.
3. C. R. Mohanty (2018). Plant Anatomy and Embryology. Kalyani Publishers, New Delhi.

CAPACITY BUILDING OF FACULTY

Following modules have been proposed for training of faculties:

- Isolation and quantification of nucleic acids following spectrophotometric and gel electrophoresis techniques
- Techniques of Chromatography
- Micrometry and Haemocytometry
- Tissue Culture Techniques
- PCR techniques
- Chromosome techniques

The above module may be of 3-4 weeks duration with 30 participants.

LIST OF EQUIPMENTS

Sl. No.	List of Equipments	Quantity
01	Dissecting Microscope (Indian Make)	2 no.
02	Compound Microscope (Indian Make) with photographic attachment	2 no.
03	Occular and Stage Micrometer (Indian Make)	1 no.
04	Uv Spectrophotometer (Indian Make)	1 no.
05	Cold Centrifuge (Indian Make)	1 no.
06	Refrigerator (Indian Make)	1 no.
07	Soil Thermometer (Indian Make)	1 no.
08	Anemometer (Indian Make)	1 no.
09	Psychrometer (Indian Make)	1 no.
10	Rain gauge (Indian Make)	1 no.

11	pH meter (Indian Make)	1 no.
12	Herbarium Press (Indian Make)	1 set
13	Hot air Oven (Indian Make)	1 no.
14	Electronic Balance (Indian Make)	1no.
15	Gel Electrophoresis (Indian Make) Vertical and submarine	1 no.
16.	Power Pack for electrophoresis	1 no.
17	Blood Testing Kit (Indian Make)	1 no.
18	Laminar Flow (Indian Make)	1 no.
19	BOD Incubator (Indian Make)	1 no.
20	Autoclave (Indian Make)	1 no.

Course structure of UG Chemistry Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Inorganic Chemistry-I	04	75
	C-I Practical	Inorganic Chemistry-I Lab	02	25
	C-II	Physical Chemistry-I	04	75
	C-II Practical	Physical Chemistry-I Lab	02	25
	GE-I	GE-I	04	75
	GE-I Practical	GE-I Lab	02	25
			22	**400**
II	AECC-II	AECC-II	04	100
	C-III	Organic Chemistry-I	04	75
	C-III Practical	Organic Chemistry-I Lab	02	25
	C-IV	Physical Chemistry-II	04	75
	C-IV Practical	Physical Chemistry-II	02	25
	GE-II	GE-II	04	75
	GE-II Practical	GE-II Lab	02	25
			22	**400**
III	C-V	Inorganic Chemistry-II	04	75
	C-V Practical	Inorganic Chemistry-II Lab	02	25
	C-VI	Organic Chemistry-II	04	75
	C-VI Practical	Organic Chemistry-II Lab	02	25
	C-VII	Physical Chemistry-III	04	75
	C-VII Practical	Physical Chemistry-III Lab	02	25
	GE-III	GE-III	04	75
	GE-III Practical	GE-III Lab	02	25
	SECC-I	SECC-I	04	100
			28	**500**
IV	C-VIII	Inorganic Chemistry-III	04	75
	C-VIII Practical	Inorganic Chemistry-III Lab	02	25

	C-IX	Organic Chemistry-III	04	75
	C-IX Practical	Organic Chemistry-III Lab	02	25
	C-X	Physical Chemistry-IV	04	75
	C-X Practical	Physical Chemistry-IV Lab	02	25
	GE-IV	GE-IV (Theory)	04	75
	GE-IV Practical	GE-IV (Practical)	02	25
	SECC-II	SECC-II	04	100
			28	**500**
V	C-XI	Organic Chemistry-IV	04	75
	C-XI Practical	Organic Chemistry-IV	02	25
	C-XII	Physical Chemistry-V	04	75
	C-XII Practical	Physical Chemistry-V	02	25
	DSE-I	DSE-I	04	75
	DSE-I Practical	DSE-I Lab	02	25
	DSE-II	DSE-II	04	75
	DSE-II Practical	DSE-II Lab	02	25
			24	**400**
VI	C-XIII	Inorganic Chemistry- IV	04	75
	C-XIII Practical	Inorganic Chemistry-IV	02	25
	C-XIV	Organic Chemistry-V	04	75
	C-XIV Practical	Organic Chemistry-V	02	25
	DSE-III	DSE-III	04	75
	DSE-III Practical	DSE-III Lab	02	25
	DSE-IV	DSE-IV	04	75
	DSE-IV Practical	DSE-IV Lab	02	25
	OR			
	DSE-IV	Dissertation	06	100*
			24	**400**
		TOTAL	**148**	**2600**

Discipline Specific Elective Papers: (Credit: 06 each)

(4 papers to be selected by students of Chemistry Honours): DSE (1-IV)

1. Polymer Chemistry
2. Green Chemistry
3. Industrial Chemicals & Environment
4. Inorganic Materials of Industrial Importance
5. *Dissertation (can be opted as alternative of DSE-IV only and of 6 credits. **Dissertation content: 60, Seminar cum Viva: 20)**
6. Analytical Methods in Chemistry (Alternative)

CHEMISTRY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 6 papers suggested)

Generic Elective for non-Chemistry students – 4 papers. Incase the University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 15 marks, End term : 60 marks, Practical- 25 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper – 40 hours Theory classes + 20 hours Practical classes

CORE PAPER 1

INORGANIC CHEMISTRY-I

Unit-I

Atomic structure

Bohr's theory, its limitations and atomic spectrum of hydrogen atom, Sommerfeld's modification. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle, Schrödinger's wave equation (time independent) and its significance, Derivation of Schrödinger's wave equation (for hydrogen atom) in Cartesian coordinate, significance of ψ and ψ^2. Normalized and orthogonal wave functions. Sign of wave functions; Setting of Schrödinger's equation in polar coordinates (derivation not required), radial and angular wave functions for hydrogen atom. Radial and angular distribution curves; Shapes of s, p, d and f orbitals; Quantum numbers and their significance. Pauli's Exclusion principle, Hund's rule of maximum

multiplicity, Aufbau's principle and its limitations**.**

Unit-II

Periodicity of elements

Periodicity of Elements: s, p, d, f block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s & p-blocks. (a) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. (b) Atomic radii (van der Waals) (c) Ionic and crystal radii. (d) Covalent radii (octahedral and tetrahedral) (e) Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. (f) Electron gain enthalpy, trends of electron gain enthalpy. (g) Electronegativity, Pauling's/ Mulliken's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization. Sanderson's electron density ratio.

Unit-III

Chemical bonding-I

(i) Ionic bond: General characteristics, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals. Born-Landé equation with derivation. Madelung constant, Born-Haber cycle and its application, Solvation energy.

(**i**) Covalent bond: Valence Bond theory (Heitler-London approach). Hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements, equivalent and non-equivalent hybrid orbitals, Resonance and resonance energy.

Molecular orbital theory. Molecular orbital diagrams of diatomic and simple polyatomic molecules N_2, O_2, C_2, B_2, F_2, CO, NO, and their ions (CO^+, NO^+, NO^-).

Unit-IV

Chemical bonding-II

VSEPR theory, shapes of simple molecules and ions containing lone and bond pairs of electrons, multiple bonding (σ and π bond approach) and bond lengths. Covalent character in ionic compounds, polarizing power and polarizability. Fajan's rules and consequences of polarization. Ionic character in covalent compounds: Bond moment and dipole moment. Percentage ionic

character from dipole moment and electronegativity difference.

(i) Metallic Bond: Qualitative idea of valence bond and band theories. Semiconductors and insulators.

(ii) *Weak Chemical Forces:* van der Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, Instantaneous dipole-induced dipole interactions. Repulsive forces, Hydrogen bonding (theories of hydrogen bonding, valence bond treatment) Effects of chemical force, melting and boiling points, solubility energetics of dissolution process**.**

Oxidation-reduction: Redox equations, standard electrode potential and its applications to inorganic reactions. Principles involved in some volumetric analyses (iron and copper).

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017
4. Malik, Tuli, Madan Selected Topic in Inorganic Chemistry, S. Chand, New Delhi, 17th Ed., 2010.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. I, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER I LAB

Students are required to learn the followings:

i. Calibration and use of apparatus
ii. Preparation of solutions of different Molarity/Normality of titrants.

List of experiments

(A) Acid-Base Titrations

i. Estimation of carbonate and hydroxide present together in mixture.

ii. Estimation of carbonate and bicarbonate present together in a mixture.

iii. Estimation of free alkali present in different soaps/detergents

(B) Oxidation-Reduction Titrimetry

i. Standardization of $KMnO_4$ with standard sodium oxalate and estimation of Fe (II) using standardized $KMnO_4$ solution.

ii. Estimation of percentage of oxalic acid and sodium oxalate in a given mixture.

iii. Estimation of Fe (II) and Fe (III) in a mixture by standard $K_2Cr_2O_7$ solution.

Reference text Books:

1. J. Mendham, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER II PHYSICAL

CHEMISTRY- I

Unit- I

Gaseous state-I

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path and viscosity of gases, including their temperature and pressure dependence, relation between mean free path and coefficient of viscosity, calculation of σ from η; variation of viscosity with temperature and pressure.

Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities.

Behaviour of real gases: Deviations from ideal gas behaviour, compressibility factor, Z, and its variation with pressure for different gases. Causes of deviation from ideal behaviour. van der Waal's equation of state, its derivation and application in explaining real gas behaviour. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, relation between critical constants and van der Waals constants, law of corresponding states.

Unit-II Liquid state

Qualitative treatment of the structure of the liquid state; physical properties of liquids; vapour pressure, surface tension and coefficient of viscosity, and their determination. Effect of addition of various solutes on surface tension and viscosity. Explanation of cleansing action of detergents. Temperature variation of viscosity of liquids and comparison with that of gases. Qualitative discussion of structure of water.

Ionic equilibria- I

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono- and diprotic acids.

Unit- III: Solid state

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analyses of powder diffraction patterns of NaCl, CsCl and KCl. Defects in crystals (stoichiometric and non- stoichiometric). Glasses and liquid crystals.

Unit-IV

Ionic equilibria - II

Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications; buffer capacity, buffer

range, buffer action and applications of buffers in analytical chemistry and biochemical processes in the human body. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle. Qualitative treatment of acid – base titration curves (calculation of pH at various stages). Theory of acid–base indicators; selection of indicators and their limitations. Multistage equilibria in polyelectrolyte systems; hydrolysis and hydrolysis constants.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn. 2017.
3. Kapoor K. L., Text Book of Physical Chemistry, McGraw Hill, 3rd Edn. 2017
4. Castellan G. W. Physical Chemistry 4thEdn. Narosa (2004).

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications
2. Mortimer R. G., Physical Chemistry, Elsevier (Academic Press), 3rd Ed (2008).
3. Ball D. W. Physical Chemistry Thomson Press, India (2007).
4. Engel T. & Reid P., Physical Chemistry, 3rd Ed. Pearson (2013)

CORE PAPER II LAB

Surface tension measurements.

a. Determine the surface tension by (i) drop number (ii) drop weight method.
b. Study the variation of surface tension of detergent solutions with concentration.

Viscosity measurement using Ostwald's viscometer.

a. Determination of viscosity of aqueous solutions of (i) polymer (ii) ethanol and (iii) sugar at room temperature.
b. Study the variation of viscosity of sucrose solution with the concentration of solute.

pH- metry

a. Study the effect on pH of addition of HCl/NaOH to solutions of acetic acid, sodium acetate and their mixtures.
b. Preparation of buffer solutions of different pH (i) Sodium acetate-acetic acid (ii) Ammonium chloride-ammonium hydroxide.
c. pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.
d. Determination of dissociation constant of a weak acid.

Ionic equilibria

a. Determination of solubility product of PbI_2 by titrimetric method.

Reference Books

1. Khosla, B. D. Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry, 8th Ed.; McGraw-Hill, New York (2003).
3. Viswanathan, B., Raghavan, P.S. Practical Physical Chemistry, Viva Books (2009).
4. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co., New York (2003).

CORE PAPER – III

ORGANIC CHEMISTRY I

Unit –I:

Basics of organic chemistry

Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength.

Homolytic and heterolytic fission with suitable examples. Curly arrow rules; Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and relative stability of carbocations, carbanions, free radicals and carbenes.

Introduction to types of organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

Carbon-carbon sigma bonds

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Free radical

substitutions: Halogenation -relative reactivity and selectivity.

Unit – II:

Stereochemistry

Fischer Projection, Newmann and Sawhorse Projection formulae; Geometrical isomerism: cis–trans and, syn-anti isomerism, E/Z notations with C.I.P rules.

Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with one and two chiral-centres, Distereoisomers, meso-structures, Racemic mixture and resolution, inversion. Relative and absolute configuration: D/L and R/S designations.

Unit – III:

Chemistry of aliphatic hydrocarbons

Carbon-Carbon pi bonds:

Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.

Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration- demercuration, hydroboration oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1,2- and 1,4-addition reactions in conjugated dienes and, Diels-Alder reaction; Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes.

Cycloalkanes and Conformational Analysis

Types of cycloalkanes and their relative stability, Baeyer strain theory, Conformational analysis of alkanes (ethane and n-butane): Relative stability with energy diagrams. Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms.

Unit – IV:

Aromatic hydrocarbons

Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/ carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of the groups

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Bhal and Bhal, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
3. Kalsi, P. S., Stereochemistry Conformation and Mechanism; 8thEdn, New Age

International, 2015.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER III LAB

Students are required to learn the followings:

- Checking the calibration of the thermometer
- Determination of melting point, effect of impurities on the melting point – mixed melting point of two unknown organic compounds
- Determination of boiling point of liquid compounds [boiling point lower than and more than 100°C (up to 160°C) by distillation and capillary method respectively](**e**.g., ethanol, cyclohexane, ethyl methyl ketone, cyclohexanone, acetylacetone, anisole, crotonaldehyde, mesityl oxide etc.).

List of experiments

1. Functional group tests for alcohols, phenols, carbonyl and carboxylic acid groups and identification of unknown organic compounds of CHO system (without element detection).
2. Separation and purification of any one component of following binary solid mixture based on the solubility in common laboratory reagents like water (cold, hot), dil. HCl, dil. NaOH, dil. $NaHCO_3$, etc. and determination of melting point.

   Benzoic acid/p-Toluidine; p-Nitrobenzoic acid/p-Aminobenzoic acid; p-Nitrotolune/p-Anisidine etc.
3. Chromatography
   - Separation of a mixture of two amino acids by ascending and horizontal paper chromatography
   - Separation of a mixture of two sugars by ascending paper chromatography
   - Separation of a mixture of o-and p-nitrophenol or o-and p-aminophenol by thin layer chromatography (TLC)

Reference Books:

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)

CORE PAPER IV

PHYSICAL CHEMISTRY II

Unit –I

Chemical Thermodynamics

Intensive and extensive variables; state and path functions; isolated, closed and open systems; zeroth law of thermodynamics.

First law: Concept of heat(q), work(w), internal energy(U) and statement of first law; enthalpy(H), relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases (ideal and van der Waals) under isothermal and adiabatic conditions.

Thermochemistry: Heats of reactions: standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions.

Unit-II

Carnot cycle, efficiency of heat engine, Carnot theorem

Second Law: Concept of entropy; thermodynamic scale of temperature, statement of the second law of thermodynamics; molecular and statistical interpretation of entropy. Calculation of entropy change for reversible and irreversible processes.

Third Law: Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules.

Free Energy Functions: Gibbs and Helmholtz energy; variation of S, G, A with T, V, P; Free energy change and spontaneity. Relation between Joule-Thomson coefficient and other thermodynamic parameters, inversion temperature, Gibbs-Helmholtz equation, Maxwell relations, thermodynamic equation of state.

Unit-III

Systems of variable composition

Partial molar quantities, dependence of thermodynamic parameters on composition; Gibbs Duhem equation, chemical potential of ideal mixtures, change in thermodynamic functions in mixing of ideal gases.

Chemical equilibrium

Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases, concept of fugacity. Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient (Vant Hoff's reaction). Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Free energy of mixing and spontaneity; thermodynamic derivation of relations between the various equilibrium constants K_p, K_c and K_x. Le Chatelier principle (quantitative treatment) and its applications.

Unit-IV

Solutions and Colligative Properties

Dilute solutions; lowering of vapour pressure, Raoult's and Henry's Laws and their applications. Thermodynamic derivation using chemical potential to derive relations between the four colligative properties: (i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) osmotic pressure and amount of solute. Applications in calculating molar masses of normal, dissociated and associated solutes in solution.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017
4. Castellan G. W. Physical Chemistry 4th Ed. Narosa (2004).

Reference Books:

1. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013).
2. McQuarrie, D. A. & Simon, J. D. Molecular Thermodynamics Viva Books Pvt. Ltd.: New Delhi (2004).
3. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.

CORE PAPER IV LAB

THERMOCHEMISTRY

a) Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system (method of back calculation of heat capacity of calorimeter from known enthalpy of solution or enthalpy of neutralization).

b) Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide.

c) Calculation of the enthalpy of ionization of ethanoic acid.

d) Determination of heat capacity of the calorimeter and integral enthalpy (endothermic and exothermic) solution of salts.

e) Determination of basicity/ proticity of a polyprotic acid by the thermochemical method in terms of the changes of temperatures observed in the graph of temperature versus time for different additions of a base. Also calculate the enthalpy of neutralization of the first step.

f) Determination of enthalpy of hydration of copper sulphate.

g) Determination of heat of solution (ΔH) of oxalic acid/benzoic acid from solubility measurement.

Reference Books

1. Khosla, B. D.; Garg, V. C. & Gulati, A., Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
2. Athawale, V. D. & Mathur, P. Experimental Physical Chemistry, New Age International: New Delhi (2001).
3. Viswanathan, B., Raghavan, P.S. Practical Physical Chemistry, Viva Books (2009)

CORE PAPER V

INORGANIC CHEMISTRY II

Unit - I

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy. Methods of purification of metals: Electrolytic process, Parting process, van Arkel-de Boer process and Mond's process, Zone refining.

Acids and Bases

Brönsted-Lowry concept of acid-base reactions, solvated proton, relative strength of acids, types of acid-base reactions, Lewis acid-base concept, Classification of Lewis acids, Hard and Soft Acids and Bases (HSAB) application of HSAB principle.

Unit-II

Chemistry of *s* and *p* Block Elements - I

Inert pair effect, Relative stability of different oxidation states, diagonal relationship and anomalous behaviour of first member of each group. Allotropy and catenation. Complex formation tendency of *s* and *p* block elements.

Hydrides and their classification ionic, covalent and interstitial.

Basic beryllium acetate and nitrate.

Unit-III

Chemistry of *s* and *p* Block Elements - II

Study of the following compounds with emphasis on structure, bonding, preparation, properties and uses.

Boric acid and borates, boron nitrides, borohydrides (diborane) carboranes and graphitic compounds, silanes. Oxides and oxoacids of nitrogen, Phosphorus and chlorine. Peroxo acids of sulphur, interhalogen compounds, polyhalide ions, pseudohalogens and basic properties of halogens.

Unit-IV

Noble Gases

Occurrence and uses, rationalization of inertness of noble gases, clathrates; preparation and

properties of XeF_2, XeF_4 and XeF_6; Nature of bonding in noble gas compounds (Valence bond treatment and MO treatment for XeF_2). Molecular shapes of noble gas compounds (VSEPR theory).

Inorganic Polymers:

Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes, and polysulphates.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
4. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.(2010).

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. I, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER V LAB

Iodometric / Iodimetric titrations

(i) Standardization of sodium thiosulphate solution by standard of $K_2Cr_2O_7$ solution.

(ii) Estimation of Cu(II) using standard sodium thiosulphate solution (Iodimetrically).

(iii) Estimation of available chlorine in bleaching powder iodometrically.

Inorganic preparations

(i) Cuprous oxide (Cu_2O)

(ii) Cuprous chloride(Cu_2Cl_2)

(iii) Manganese(III) phosphate($MnPO_4.H_2O$)

(iv) Aluminium potassium sulphate (K_2SO_4. $Al_2(SO_4)_2.24H_2O$ - Potash alum).

(v) Lead chromate ($PbCrO_4$)

Reference Books:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis, 6th Ed., Pearson, 2009.

2. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt. Ltd., (2017).

CORE PAPER VI

ORGANIC CHEMISTRY-II

Unit - I

Chemistry of Halogenated Hydrocarbons

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – SN_1, SN_2 and SN_i mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution vs. elimination.

Aryl halides: Preparation, including preparation from diazonium salts, nucleophilic aromatic substitution; SNAr, Benzyne mechanism.

Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

Organometallic compounds of Mg and Li – Use in synthesis of organic compounds.

Unit-II

Alcohols, Phenols, Ethers and Epoxides

Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction; Preparation and properties of glycols: Oxidation by periodic acid and lead tetraacetate, Pinacol-Pinacolone rearrangement;

Phenols: Preparation and properties; Acidity and factors effecting it, Ring substitution reactions, Reimer–Tiemann and Kolbe's–Schmidt Reactions, Fries and Claisen rearrangements with mechanism;

Ethers and Epoxides: Preparation and reactions with acids. Reactions of epoxides with alcohols, Ammonia derivatives and $LiAlH_4$.

Unit-III

Carbonyl Compounds

Structure, reactivity and preparation:

Nucleophilic additions, Nucleophilic addition-elimination reactions with ammonia derivatives with mechanism; Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Perkin, Cannizzaro and Wittig reaction, Beckmann rearrangements, α halo form reaction and

Baeyer Villiger oxidation, - substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, $LiAlH_4$, $NaBH_4$, MPV.; Addition reactions of unsaturated carbonyl compounds: Michael addition.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of diethyl malonate and ethyl acetoacetate.

Unit-IV

Carboxylic Acids and their Derivatives

Preparation, physical properties and reactions of monocarboxylic acids: Typical reactions of dicarboxylic acids, hydroxy acids and unsaturated acids: succinic, lactic, malic, tartaric, citric, maleic and fumaric acids;

Preparation and reactions of acid chlorides, anhydrides, esters and amides; Comparative study of nucleophilic substitution at acyl group -Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hofmann-bromamide degradation and Curtius rearrangement.

Sulphur containing compounds: Preparation and reactions of thiols and thioethers**.**

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Bhal and Bhal, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
3. Mendham, J.,et al, A. I. Vogel's Quantitative Chemical Analysis, 6th Ed., Pearson, 2009.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER VI LAB

Organic preparations:

i. Acetylation of one of the following compounds: amines (aniline, *o*-, *m*-, *p*-toluidines and *o*-, *m*-, *p*-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) by any one method:
   a. Using conventional method.
   b. Using green approach

ii. Benzolyation of one of the following amines (aniline, *o*-, *m*-, *p*- toluidines and *o*-, *m*-, *p*-anisidine) and one of the following phenols (β-naphthol, resorcinol, p- cresol) by Schotten-Baumann reaction.

iii. Bromination of any one of the following:
   a. Acetanilide by conventional methods
   b. Acetanilide using green approach (Bromate-bromide method)

iv. Nitration of any one of the following:
   a. Acetanilide/nitrobenzene by conventional method
   b. Salicylic acid by green approach (using ceric ammonium nitrate).

The above derivatives should be prepared using 0.5-1g of the organic compound.
Calculate percentage yield, based upon isolated yield (crude) and theoretical yield.
Purification of the crude product by recrystallisation from water/alcohol, or sublimation, whichever is applicable and determination of melting point.

Reference Books

1. Vogel, A. I. Elementary Practical Organic Chemistry, Part 1: Small scale Preparations, Pearson (2011)
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry*, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical OrganicChemistry, 5th Ed.*, Pearson (2012)
4. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry:Preparation and Quantitative Analysis,* University Press (2000).
5. Ahluwalia, V.K. & Dhingra, S. *Comprehensive Practical Organic Chemistry: QualitativeAnalysis,* University Press (2000).

CORE PAPER VII PHYSICAL CHEMISTRY-III

Unit-I

Phase Equilibria-I

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems, Clausius- Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems, with applications (H_2O and sulphur system).

Phase diagrams for systems of solid-liquid equilibria involving eutectic (Pb-Ag system, desilverisation of lead), congruent (ferric chloride-water) and incongruent (sodium sulphate-water) melting points, completely miscible solid solutions (intermediate, medium, maximum freezing points).

Unit-II

Phase Equilibria-II

Three component systems, water-chloroform-acetic acid system, triangular plots.

Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), azeotropes, partial miscibility of liquids, CST, miscible pairs, steam distillation.

Nernst distribution law: its derivation and applications.

Unit-III

Chemical Kinetics

Order and molecularity of a reaction, rate laws in terms of the advancement of a reaction, differential and integrated form of rate expressions up to second order reactions, experimental methods of the determination of orders.

Kinetics of complex reactions (integrated rate expressions up to first order only): (i) Opposing reactions (ii) parallel reactions (iii) consecutive reactions and their differential rate equations (steady-state approximation in reaction mechanisms) (iv) chain reactions.

Temperature dependence of reaction rates; Arrhenius equation; activation energy. Collision theory of reaction rates, qualitative treatment of the theory of absolute reaction rates.

Unit-IV

Catalysis

Types of catalyst, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces; effect of particle size and efficiency of nanoparticles as catalysts. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis.

Surface chemistry:

Physical adsorption, chemisorption, adsorption isotherms (Langmuir, Freundlich and Gibb's isotherms), nature of adsorbed state.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. Kapoor K. L., Text Book of Physical Chemistry, McGraw Hill, 3rd Edn. 2017
4. Castellan G. W. Physical Chemistry 4th Edn. Narosa (2004).

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Levine, I. N. *Physical Chemistry 6thEd.*, Tata McGraw-Hill (2011).
3. Ball D. W. Physical Chemistry Thomson Press, India (2007).
4. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013)

CORE PAPER VII LAB

1. Determination of distribution coefficients of:
   (a) Iodine between water and carbon tetrachloride.
   (b) Acetic/ benzoic acid between water and cyclohexane.
2. Study the equilibrium of at least one of the following reactions by the distribution method:
   - $I_2(aq) + I^- \rightarrow I_3^-(aq)$
   - $Cu^{2+}(aq) + nNH_3 \rightarrow Cu(NH_3)_n$
3. Study the kinetics of the following reactions.
   (i) Integrated rate method:
   a) Acid hydrolysis of methyl acetate with hydrochloric acid.

b) Saponification of ethyl acetate.

(ii) Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate.

4. Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.

Reference Books:

1. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.*; McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).

CORE PAPER VIII

INORGANIC CHEMISTRY-III

Unit-I

Coordination Chemistry

Werner's theory, valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding.

IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelate effect, Labile and inert complexes.

Crystal field theory, measurement of CFSE weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq in octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry, Jahn-Teller theorem, square planar geometry. Qualitative aspect of ligand field and MO Theory.

Unit-II

Transition Elements-I

General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, and ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer & Ebsworth diagrams). Difference between the first, second and third transition series.

Unit-III

Transition Elements-II

Chemistry of Ti, V, Cr, Mn, Fe and Co in various oxidation states (excluding their metallurgy).

Lanthanoids and Actinoids

Electronic configuration, oxidation states, colour, spectral and magnetic properties,lanthanide contraction, separation of lanthanides (ion-exchange method only).

General features of actinoids, separation of Np, Pm, Am from U.

Unit-IV

Bioinorganic Chemistry

Metal ions present in biological systems, classification of elements according to their action in biological system. Na/K-pump, carbonic anhydrase and carboxypeptidase. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and As), reasons for toxicity, Use of chelating agents in medicine.

Iron and its application in bio-systems, Haemoglobin and myoglobin.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
4. Shriver D. E. Atkins P. W., Inorganic Chemistry, Oxford University Pres, 5th Edn..

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Bioinorganic Chemistry, Asim Kumar Das, Books & Allied (P) Ltd. 1st Ed. 2015.
3. Selected Topic in Inorganic Chemistry, Mallick, Madan and Tuli, S. Chand Publisher. 17th Ed. 2010.

4. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER VIII LAB

Inorganic preparations

Preparation of complexes:

i. Hexamine nickel(II), $[Ni(NH_3)_6]Cl_2$
ii. Potassium trioxalatoferrate (III) trihydrate
iii. Tetraamminecopper (II) sulphate, $[Cu(NH_3)_4]SO_4.H_2O$
iv. Tetraamminecarbonatocobalt (III) nitrate

Complexometric titration

i. Estimation of Ca by EDTA
ii. Estimation of Mg by EDTA

Gravimetric Analysis:

i. Estimation of nickel (II) using dimethylglyoxime (DMG).
ii. Estimation of copper as CuSCN
iii. Estimation of iron as Fe_2O_3 by precipitating iron as $Fe(OH)_3$.
iv. Estimation of Al(III) by precipitating with oxine and weighing as $Al(oxine)_3$ (Aluminium Oxinate).

Chromatography of metal ions

Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions:

i. Ni(II) and Co(II)
ii. Fe(III) and Al(III)

Reference Books:

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS (1978).
2. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER IX

ORGANIC CHEMISTRY-III

Unit-I

Nitrogen Containing Functional Groups

Preparation and important reactions of nitro and compounds, nitriles.

Amines: Effect of substituent and solvent on basicity; Preparation and properties: Gabriel phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction; Distinction between 1°, 2° and 3° amines with Hinsberg reagent and nitrous acid.

Unit-II

Diazonium Salts

Preparation and their synthetic applications.

Polynuclear Hydrocarbons

Reactions of naphthalene and anthracene Structure, Preparation and structure elucidation and important derivatives of naphthalene and anthracene. Polynuclear hydrocarbons.

Unit-III

Heterocyclic Compounds

Classification and nomenclature, Structure, aromaticity in 5-numbered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of: Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Pyrimidine. Fischer indole synthesis and Madelung synthesis, Derivatives of furan: Furfural and furoic acid (preparation only).

Unit-IV

Alkaloids

Natural occurrence, General structural features, Isolation and their physiological action. Hoffmann's exhaustive methylation, Emde's modification, Structure elucidation and synthesis of Hygrine and Nicotine. Medicinal importance of Nicotine, Hygrine, Quinine, Morphine, Cocaine, and Reserpine.

Terpenes

Occurrence, classification, isoprene rule; Elucidation of structure and synthesis of Citral, Neral and α- terpineol.

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Advanced Organic Chemistry, 2nd Edition, Arun Bahl & B S Bahl, S. Chand Publisher, 2012.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER IX LAB

Qualitative organic analysis of organic compounds

1. Detection of extra elements (N, X, S) in organic compounds by Lassaigne's test.
2. Qualitative analysis of unknown organic compounds containing simple functional groups under CHN system (amine, nitro, amide and imide), determination of melting/ boiling point, and preparation of their derivative.

Reference Books

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
3. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
4. Ghoshal, A., Mahapatra, B., Nad, A. K. An Advanced Course in Practical Chemistry, New Central Book Agency (2007).

CORE PAPER X

PHYSICAL CHEMISTRY-IV

Unit-I

Conductance-I

Arrhenius theory of electrolytic dissociation. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution. Kohlrausch law of independent migration of ions. Debye-Hückel-Onsager equation, Wien effect, Debye-Falkenhagen effect, Walden's rules.

UNIT-II

Conductance-II

Ionic velocities, mobilities and their determinations, transference numbers and their relation to ionic mobilities, determination of transference numbers using Hittorf and Moving Boundary methods. Applications of conductance measurement: (i) degree of dissociation of weak electrolytes, (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts, (iv) conductometric titrations, and (v) hydrolysis constants of salts.

Unit-III

Electrochemistry-I

Quantitative aspects of Faraday's laws of electrolysis, rules of oxidation/reduction of ions based on half-cell potentials, applications of electrolysis in metallurgy and industry.

Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining free energy, enthalpy and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass electrodes.

Unit-IV

Electrochemistry-II

Concentration cells with and without transference, liquid junction potential; determination of activity coefficients and transference numbers. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation).

Electrical properties of atoms and molecules

Basic ideas of electrostatics, Electrostatics of dielectric media. Clausius-Mosotti equation and Lorenz-Laurentz equation (no derivation), Dipole moment and molecular polarizabilities and their measurements.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. Kapoor, K. L., Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn., 2017
4. Castellan G. W. Physical Chemistry 4th Ed. Narosa (2004).

Reference Books:

1. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013).
2. Levine, I. N. Physical Chemistry 6th Ed., Tata McGraw-Hill (2011).
3. McQuarrie, D. A. & Simon, J. D. Molecular Thermodynamics Viva Books Pvt. Ltd.: New Delhi (2004).
4. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.

CORE PAPER X LAB

Conductometry

I. Determination of cell constant.

II. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.

III. Perform the following conductometric titrations:

- i. Strong acid vs. strong base
- ii. Weak acid vs. strong base
- iii. Strong acid vs. weak base

Potentiometry

I Perform the following potentiometric titrations:

i. Strong acid vs. strong base

ii. Weak acid vs. strong base

iii. Dibasic acid vs. strong base

Reference Books:

1. Khosla, B. D., Garg, V. C. & Gulati, A., Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
2. Garland, C. W. Nibler, J. W. & Shoemaker, D. P., Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C., Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co., New York (2003).
4. Viswanathan, B., Raghavan, P.S., Practical Physical Chemistry, Viva Books (2009).

CORE PAPER XI

ORGANIC CHEMISTRY-IV

Unit-I

Organic Spectroscopy-I

UV Spectroscopy: Types of electronic transitions, λ_{max}, Lambert-Beer's law and its limitations, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption; Application of Woodward rules for calculation of λ_{max} for the following systems: α, β the unsaturated aldehydes: ketones, carboxylic acids and esters; Conjugated dienes: alicyclic, homoannular and heteroannular; Extended conjugated systems (aldehydes, ketones and dienes); distinction between cis and trans isomers.

Unit-II

Organic Spectroscopy-II

IR Spectroscopy: Fundamental and non-fundamental molecular vibrations; IR absorption positions of O and N containing functional groups; Effect of H-bonding, conjugation, resonance and ring size on IR absorptions; Fingerprint region and its significance; application in simple functional group analysis.

Unit-III

Organic Spectroscopy-III

NMR Spectroscopy: Basic principles of Proton Magnetic Resonance, chemical shift andfactors influencing it; Spin-spin coupling and coupling constant; Anisotropic effects in alkene, alkyne, aldehydes and aromatics; Interpretation of NMR spectra of simple compounds.

Mass Spectroscopy- Basic principle, Fragmentation pattern, instrumentation, determination of m/e ratio. Application of mass spectroscopy on CH_4, C_2H_6, *n*-butane and *neo*-pentane.

Applications of IR, UV & NMR for identification of simple organic molecules.

Unit-IV

Carbohydrates

Occurrence, classification and their biological importance.

Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Interconversions of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation;

Disaccharides – Structure elucidation of maltose; Polysaccharides – Elementary treatment of starch, cellulose.

Recommended Text Books:

1. Kemp William, Organic Spectroscopy, 3rd Edition, Palgrave Publisher, 1991.
2. Davis, B. G., Fairbanks, A. J., Carbohydrate Chemistry, Oxford Chemistry Primer, Oxford University Press.
3. J Kalsi P. S., Spectroscopy of Organic Compounds, 5th Edition, New Age International Publishers, 2016.
4. Advanced Organic Chemistry, 2nd Edition, Arun Bahl & B S Bahl, S. Chand Publisher, 2012.

Reference Books:

1. Y R Sharma, Elementary Organic Spectroscopy, 5th Edition, S. Chand & Company, 2013.
2. Jag Mohan, Organic Spectroscopy and Applications, Narosa Publishers, 2012.
3. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013).

4. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
5. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER XI LAB

1. Qualitative analysis of carbohydrate: aldoses and ketoses, reducing and non-reducing sugars.
2. Qualitative analysis of unknown organic compounds containing simple bifunctional groups, for e.g. salicylic acid, cinnamic acid, nitrophenols etc.
3. Quantitative estimation of sugars:
   (c) Estimation glucose by titration with Fehling's solution.
   (d) Estimation of sucrose by titration with Fehling's solution.
   (e) Estimation glucose and sucrose in a given mixture.
4. Identification of labelled peaks in the ^{1}H NMR spectra of the known organic compounds explaining the relative δ-values and splitting pattern.
5. Identification of labelled peaks in the IR spectrum of the same compound explaining the relative frequencies of the absorptions (CORE PAPERH, O-H, N-H, CORE PAPERO, CORE PAPERN, CORE PAPERX, C=C, C=O, N=O, C≡C, C≡N stretching frequencies; characteristic bending vibrations are included).

Reference Books:

1. Vogel, A.I. *Quantitative Organic Analysis,* Part 3, Pearson (2012).
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
4. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis,* University Press (2000).
5. Ahluwalia, V.K. & Dhingra, S. *Comprehensive Practical Organic Chemistry: Qualitative Analysis,* University Press (2000).

CORE PAPER XII PHYSICAL CHEMISTRY V

Unit-I

Quantum Chemistry-I

Quantum mechanical operators, Postulates of quantum mechanics, Schrödinger equation and its application to particle in one-dimensional box (complete solution) - quantization of energy levels, zero-point energy, normalization of wave functions, probability distribution functions, nodal properties. Extension to three-dimensional boxes, separation of variables, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion: Setting up of Schrödinger equation and discussion of solution and wave functions. Vibrational energy of diatomic molecules and zero-point energy.

Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component.

Rigid rotator model of rotation of diatomic molecule: Schrödinger equation, transformation to spherical polar coordinates. Separation of variables (Preliminary treatment).

Unit-II

Chemical Bonding

Chemical bonding: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+. Bonding and antibonding orbitals. Qualitative extension to H_2. Comparison of LCAO-MO and VB treatments of H_2 (only wave functions, detailed solution not required) and their limitations. Localized and non-localized molecular orbitals treatment of triatomic (BeH_2, H_2O) molecules. Qualitative MO theory and its application to AH_2 type molecules.

Unit-III

Molecular Spectroscopy-I

Interaction of electromagnetic radiation with molecules and various types of spectra; Born-Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic

molecules, modes of vibration. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Unit-IV

Molecular Spectroscopy-II

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation.

Photochemistry

Characteristics of electromagnetic radiation, physical significance of absorption coefficients. Laws of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitised reactions, quenching, chemiluminescence.

Recommended Text Books:

1. McQuarie D., Quantum Chemistry, University Science Publishers, 2007
2. Chandra, A. K. Introductory Quantum Chemistry Tata McGraw-Hill (2001).
3. Banwell, C. N. & McCash, E. M. Fundamentals of Molecular Spectroscopy 4th Ed. Tata McGraw-Hill: New Delhi (2010).
4. Prasad R K., Quantum Chemistry, New Age International Publishers, 4th Edn,2010.
5. Rohatagi Mukherjee K K., Fundamentals of Photochemistry, Wiley Eastern Ltd., 1992.

Reference Books:

1. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
2. Kapoor, K. L., Text Book of Physical Chemistry, McGraw Hill, Vol. II, IV.
3. Levine, I. N. Quantum Chemistry, PHI.

CORE PAPER XII LAB

Spectroscopy/Colorimetry

1. Study of absorption spectra (visible range) of $KMnO_4$ and determine the λ_{max}

value. Calculate the energies of the transitions in kJ mol^{-1}, cm^{-1}, and eV.

2. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/ $KMnO_4$/ $K_2Cr_2O_7$ in a solution of unknown concentration.

3. Determine the dissociation constant of an indicator (phenolphthalein).

Spectrophotometric titration

1. Determine the concentration of HCl against 0.1 N NaOH spectrophotometrically.
2. To find the strength of given ferric ammonium sulfate solution of (0.05 M) by using EDTA spectrophotometrically.
3. To find out the strength of $CuSO_4$ solution by titrating with EDTA spectrophotometrically.
4. To determine the concentration of Cu(II) and Fe(III) solution photometrically by titrating with EDTA.

Reference Books

1. Khosla, B. D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.;* McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).
4. J. N. Gurtu, R. Kapoor, Experimental Physical Chemistry.

CORE PAPER XIII
INORGANIC CHEMISTRY-IV

Unit-I

Organometallic Compounds-I

Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands.

Metal carbonyls: 18 electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of

3d series. Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. π-acceptor behaviour of CO (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

Zeise's salt: Preparation and structure, evidences of synergic effect and comparison of synergic effect with that in carbonyls.

Unit-II

Organometallic Compounds-II

Metal Alkyls: Important structural features of methyl lithium (tetramer) and trialkyl aluminium (dimer), concept of multicentre bonding in these compounds. Role of triethyl aluminium in polymerisation of ethene (Ziegler – Natta Catalyst). Species present in ether solution of Grignard reagent and their structures.

Ferrocene: Preparation and reactions (acetylation, alkylation, metallation, Mannich Condensation), structure and aromaticity, comparison of aromaticity and reactivity with that of benzene.

Unit-III

Catalysis by Organometallic Compounds

Study of the following industrial processes and their mechanism:

1. Alkene hydrogenation (Wilkinson's Catalyst)
2. Hydroformylation (Co salts)
3. Wacker Process
4. Synthetic gasoline (Fischer Tropsch reaction)

Theoretical Principles in Qualitative Analysis (H_2S Scheme)

Basic principles involved in analysis of cations and anions and solubility products, common ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride and phosphate) and need to remove them after Group II.

Unit-IV

Thermodynamic & kinetic aspects and reaction mechanism of metal complexes

Thermodynamic and kinetic stability, Stepwise and overall formation constants and their relationship, factors affecting stability. Introduction to inorganic reaction mechanisms-types of reaction and classification of substitution reaction. Substitution reaction of square planar complexes, Trans effect and its applications, theories of trans-effect (electrostatic polarization and Static π-Bonding Theory). Kinetics of octahedral substitution (classification of metal ions based on water exchange rate), General mechanism of ligand substitution reactions in octahedral complexes (D, I, I_d, I_a).

Recommended Text Books:

1. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd Ed., 2017.
3. Shriver D. E. Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, 7th Edition, Prentice Hall, 1996-0307.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Selected Topic in Inorganic Chemistry, Mallick, Madan and Tuli, S. Chand Publisher. 17th Ed. 2010.
3. Mehrotra R.C. and Singh, A. *Organometallic Chemistry*, New Age International Publishers, 2nd Edn, 2000.
4. Gupta B. D. and Elias A. J., Basic Organometallic Chemistry, 2nd Edn., University Press (2013).

CORE PAPER XIII LAB

- Qualitative analysis of mixtures containing 4 radicals (2 anions and 2 cations). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

  CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, F^-, Cl^-, Br^-, I^-, NO_3^-, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}.

- Mixtures may contain one insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$, CaF_2 or Al_2O_3) or

combination of interfering anions e.g. CO_3^{2-} and SO_3^{2-}, NO_2^- and NO_3^-, Cl^- and Br^-, Cl^- and I^-, Br^- and I^-, NO_3^- and Br^-, NO_3^- and I^-.

- Spot tests should be done whenever possible.

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, 7th Ed, Revised by G. Svehela, 4th Ed., Person (2007).
2. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER XIV ORGANIC CHEMISTRY-V

Unit-I

Amino Acids, Peptides and Proteins

Amino acids: Classification; α-Amino acids - Synthesis, ionic properties and reactions. Zwitterions, pK_a values, isoelectric point and electrophoresis.

Peptides: Classification, Determination of their primary structures-end group analysis, methods of peptide synthesis. Synthesis of peptides using N-protecting, CORE PAPER protecting and CORE PAPER activating groups - Solid-phase synthesis.

Proteins: Structure of proteins, protein denaturation and renaturation

Unit-II Enzymes

Introduction, classification and characteristics of enzymes. Salient features of active site of enzymes. Mechanism of enzyme action (taking trypsin as example), factors affecting enzyme action, coenzymes and cofactors and their role in biological reactions, specificity of enzyme action (including stereo specificity), enzyme inhibitors and their importance, phenomenon of inhibition (competitive, uncompetitive and non-competitive inhibition including allosteric inhibition).

Nucleic Acids

Components of nucleic acids, Nucleosides and nucleotides;

Structure, synthesis and reactions of: Adenine, Guanine, Cytosine, Uracil and Thymine;

Structure of polynucleotides.

Unit-III Lipids

Introduction to oils and fats; common fatty acids present in oils and fats, Hydrogenation of fats and oils, Saponification value, acid value, iodine number. Reversion and rancidity.

Concept of Energy in Biosystems

Cells obtain energy by the oxidation of foodstuff (organic molecules). Introduction to metabolism (catabolism and anabolism).

Overview of catabolic pathways of fat and protein.

Interrelationship in the metabolic pathways of protein, fat and carbohydrate. Caloric value of food, standard caloric content of food types.

Unit-IV

Pharmaceutical Compounds: Structure and Importance

Classification, structure and therapeutic uses of antipyretics: Paracetamol (with synthesis), Analgesics: Ibuprofen (with synthesis), Antimalarials: Chloroquine (with synthesis). An elementary treatment of Antibiotics and detailed study of chloramphenicol, Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine).

Dyes

Classification, colour and constitution; Mordant and Vat dyes; Chemistry of dyeing. Synthesis and applications of: *Azo dyes* – Methyl orange and Congo red (mechanism of Diazo Coupling); *Triphenylmethane dyes* - Malachite Green, and crystal violet; *Phthalein dyes* – Phenolphthalein and Fluorescein.

Recommended Text books

1. Nelson, D.L., Cox, M.M. and Lehninger, A.L. Principles of Biochemistry. 6th Edn. W.H. Freeman and Co. (2013).
2. Kar Ashutosh, Medicinal chemistry, New Age International (P) Ltd., (2007)
3. Debojyoti Das, Biochemistry, (Part-I) Academic Publishers (1979)

Reference Books:

1. Talwar, G.P. & Srivastava, M. Textbook of Biochemistry and Human Biology, 3rd Ed. PHI Learning.

2. Berg, J.M., Tymoczko, J.L. & Stryer, L. Biochemistry, W.H. Freeman, 2002.
4. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009) Harper's Illustrated Biochemistry. XXVIII edition. Lange Medical Books/ McGraw-Hill.
5. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2006) Biochemistry, 6th Edition. W.H. Freeman and Co. (2002).
6. Wilson, K. & Walker, J. Practical Biochemistry. Cambridge University Press (2009).
7. The Tools of Biochemistry (1977; Reprint 2011) Cooper, T.G., Wiley India Pvt. Ltd. (New Delhi), ISBN: 978-81-265-3016-8.

CORE PAPER XIV LAB

1. Preparations of the following compounds
    i. Aspirin
    ii. Methyl orange
2. Estimation of phenol and aniline by bromination method.
3. Saponification value of an oil/ fat/ ester.
4. Estimation of glycine by Sorenson's formalin method.
5. Estimation formaldehyde (formalin).
6. Estimation of ascorbic acid in fruit juices/Vitamin C tablet (Iodometric method)
7. Determination of Iodine number of an oil/ fat.

Reference Books:

1. Arthur, I. Vogel, Elementary Practical Organic Chemistry, Part-1 Small scale preparations, Indian Edition, Pearson (2011).
2. Manual of Biochemistry Workshop, 2012, Department of Chemistry, University of Delhi.
3. Arthur, I. Vogel, *Quantitative Organic Analysis*, Pearson.
4. Wilson, K. & Walker, J. Practical Biochemistry. Cambridge University Press (2009).

Discipline Specific Elective Paper-1

POLYMER CHEMISTRY

Unit-I

Introduction and history of polymeric materials:

Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers.

Functionality and its importance:

Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization. Bi- functional systems, Poly-functional systems.

Unit-II

Mechanism & Kinetics of Polymerization:

Polymerization reactions – addition and condensation, mechanism and kinetics of step growth, radical chain growth, ionic chain (both cationic and anionic) and coordination polymerizations, Mechanism and kinetics of copolymerization, polymerization techniques.

Crystallization and crystallinity:

Determination of crystalline melting point and degree of crystallinity, Morphology of crystalline polymers, Factors affecting crystalline melting **point**.

Unit-III

Molecular weight of polymers and their determination (M_n, M_w, M_v, M_z) by end group analysis, viscometry and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersity index.

Glass transition temperature (T_g) and it determination: WLF equation, Outlines of factors affecting glass transition temperature (T_g).

Unit-IV

Properties of polymers (physical, thermal and mechanical properties)

Preparation, structure, properties and applications of the following polymers: polyolefins (polyethylene, polypropylene), polystyrene, polyvinyl chloride, polyvinyl acetate, polyacrylamide, fluoro polymers (Teflon), polyamides (nylon-6 and nylon 6, 6). Thermosetting polymers - phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, conducting polymers (polyacetylene, polyaniline). Brief outline of biodegradable polymers.

Recommended Text Books:

1. V. R. Gowarikar, Jayadev Sreedhar, N. V. Viswanathan, Polymer Science 1st Edition, New Age International Publishers, 1986.

2. Premamoy Ghosh, Polymer Science and Technology: Plastics, Rubber, Blends and Composites, 3rd Edition, McGraw Hill Education, 2010.
3. P. Bahadur & N.V.Sastry, Principles of polymer science, Narosa Publishing house, New Delhi 2002.
4. Fred W. Billmeyer, Textbook of Polymer Science, 3rd ed. Wiley- Interscience (1984)

Reference books

1. L.H. Sperling, Introduction to Physical Polymer Science, 4th ed. John Wiley & Sons (2005)
2. Malcolm P. Stevens, Polymer Chemistry: An Introduction, 3rd ed. Oxford University Press (2005)
3. Seymour/ Carraher's Polymer Chemistry, 9th ed. by Charles E. Carraher, Jr. (2013).
4. Nayak P.L., Polymer Chemistry, Kalyani Publisher (2017).

Discipline Specific Elective Paper I LAB

Polymer synthesis (At least three experiments)

1. Preparation of nylon-6,6 / Polyaniline.
2. Preparations of phenol-formaldehyde resin-novalac/ phenol-formaldehyde resin resold.
3. Preparation of urea-formaldehyde resin.
4. Free radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA) / Methyl Acrylate (MA) / Acrylic acid (AA).
   a. Purification of monomer.
   b. Polymerization using benzoyl peroxide (BPO) / 2,2'-azo-bis-isobutylonitrile (AIBN).
5. Redox polymerization of acrylamide.
6. Precipitation polymerization of acrylonitrile.

Polymer characterization/analysis (At least two different experiments)

1. Determination of molecular weight by viscometry:
   a. Polyacrylamide / Polystyrene
   b. Polyvinyl pyrolidine (PVP)
2. Determination of acid value/ saponification value of a resin.

3. Determination of hydroxyl number of a polymer using colorimetric method.
4. Estimation of the amount of HCHO in the given solution by sodium sulphite method
5. Analysis of some IR spectra of polymers – Identification of labelled peaks in IR spectra of known polymer.

Reference Books:

1. Hundiwale G.D., Athawale V.D., Kapadi U.R. and Gite V. V., Experiments in Polymer Science, New Age Publications (2009).
2. Malcohm P. Stevens, Polymer Chemistry: An Introduction, 3rd Ed.
3. Joel R. Fried, Polymer Science and Technology, 2nd Ed. Prentice-Hall (2003).
4. Petr Munk and Tejraj M. Aminabhavi, Introduction to Macromolecular Science, 2nd Ed. John Wiley & Sons (2002).
5. Malcolm P. Stevens, Polymer Chemistry: An Introduction, 3rd ed. Oxford University Press (2005).

Discipline Specific Elective Paper-II

GREEN CHEMISTRY

Unit-I

Introduction to Green Chemistry

What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry.

Principles of Green Chemistry and Designing a Chemical synthesis- I

Twelve principles of Green Chemistry. Explanations of principle with special emphasis on - Designing green synthesis processes: Prevention of Waste/ by-products; maximize the incorporation of the materials used in the process into the final products (Atom Economy) with reference to rearrangement, addition, substitution and elimination reactions; Prevention/ minimization of hazardous/ toxic products; Designing safer chemicals; Use of safer solvents and auxiliaries (e.g. separating agent) - green solvents (supercritical CO_2, water, ionic liquids), solvent less processes, immobilized solvents.

Unit-II

Principles of Green Chemistry and Designing a Chemical synthesis-II

Explanation of green chemistry principles with special emphasis on:

Energy efficient processes for synthesis - use of microwaves and ultrasonic energy. Selection of starting materials (use of renewable feedstock); avoidance of unnecessary derivatization (e.g. blocking group, protection groups, deprotection); Use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; designing of biodegradable products use of chemically safer substances for prevention of chemical accidents, inherent safer design greener - alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol); real-time, in-process monitoring and control to prevent the formation of hazardous substances; development of green analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.

Unit-III

Examples of Green Synthesis/ Reactions and some real world cases-I

Green Synthesis of the following compounds: adipic acid, catechol, methyl methacrylate, urethane, disodium iminodiacetate (alternative to Strecker synthesis), paracetamol, furfural.

Microwave assisted reactions: Applications to reactions (i) in water: Hofmann Elimination, hydrolysis (of benzyl chloride, methyl benzoate to benzoic acid), Oxidation (of toluene, alcohols); (ii) reactions in organic solvents: Diels-Alder reaction and Decarboxylation reaction.

Ultrasound assisted reactions: Applications to esterification, saponification, Simmons-Smith Reaction (Ultrasonic alternative to Iodine).

Unit-IV

Examples of Green Synthesis/ Reactions and some real world cases- II

Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments; Designing of Environmentally safe marine antifoulant; Right fit pigment: synthetic azopigments to replace toxic organic and inorganic pigments; Synthesis of a compostable and widely applicable plastic (poly lactic acid) from corn; Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting

Future Trends in Green Chemistry

Oxidizing and reducing reagents and catalysts; multifunctional reagents; Combinatorial green

chemistry; Proliferation of solvent less reactions; Green chemistry in sustainable development. (Bio-diesel, bio-ethanol and biogas).

Recommended Text Books:

1. Anastas P.T. & Warner J.K.: Green Chemistry- Theory and Practical, Oxford University Press (2000).
2. Ahluwalia V.K. & Kidwai M.: New Trends in Green Chemistry, Anamalaya Publishers, New Delhi (2004).
3. Kumar V., An Introduction to Green Chemistry, Vishal Publishing Co., (2015).

Reference Books:

1. Matlack A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
2. Das Asim K. amd Das Mahua , Environment Chemistry with Green Chemistry, Books and Allied (P) Ltd. (2010)

Discipline Specific Elective Paper II LAB

At least five experiments should be done:

1. Acetylation of primary amine (Aniline to N-phenylacetamide) using Zn dust.
2. Nitration of salicylic acid by green method (Using calcium nitrate and acetic acid).
3. Bromination of acetanilide using ceric ammonium nitrate/KBr.
4. Microwave assisted nitration of Phenols using $Cu(NO_3)_2$.
5. Detection of elements in organic compounds by green method (Sodium carbonate fusion).
6. Base catalyzed Aldol condensation (Synthesis of dibenzalpropanone).
7. Vitamin C clock reaction using vitamin C tablets, tincture of iodine, hydrogen peroxide and liquid laundry starch. Effect of concentration on clock reaction.
8. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
9. Diels Alder reaction in water: Reaction between furan and maleic acid in water and at room temperature rather than in benzene and reflux.
10. Preparation and characterization of nanoparticles (Cu, Ag) using plant extract.
11. Preparation of propene by following two methods or any other reactions like addition, elimination, substitution showing atomic economy can be studied
    (I) Triethylamine ion + OH^- $\rightarrow$ Propene + Trimethylpropene + water

(II) 1-propanol $\xrightarrow{H_2SO_4/\Delta}$ propene + water

Reference Books:

1. Monograph on Green Chemistry Laboratory Experiments, edited and published by Green Chemistry Task Force Committee, DST Govt. of India, p. 1-79.
2. Kirchoff, M. & Ryan, M.A. *Greener approaches to undergraduate chemistry experiment*. American Chemical Society, Washington DC (2002).
3. Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. *Green Chemistry Experiment:A monograph International Publishing House Pvt Ltd. New Delhi*. Bangalore CISBN978-93-81141-55-7 (2013).

Discipline Specific Elective Paper-III

INDUSTRIAL CHEMICALS AND ENVIRONMENT

Unit-I

Industrial Gases and Inorganic Chemicals

Industrial Gases: Large scale production uses storage and hazards in handling of the following gases: oxygen, nitrogen, argon, hydrogen, acetylene, carbon monoxide, chlorine, sulphur dioxide.
Inorganic Chemicals: Manufacture, application and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, potassium dichromate and potassium permanganate.

Industrial Metallurgy

Preparation of metals (ferrous and nonferrous) and ultrapure metals for semiconductor technology.

Unit-II

Environment and its segments

Ecosystems. Biogeochemical cycles of carbon, nitrogen and sulphur.

Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry. Environmental effects of ozone. Major sources of air pollution.

Pollution by SO_2, CO_2, CO, NO_x, and H_2S and control procedures.

Effects of air pollution on living organisms and vegetation. Greenhouse effect and global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and halogens, removal of sulphur from coal.

Unit-III

Water Pollution: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems.

Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: electroplating, textile, tannery, dairy, petroleum and petrochemicals, fertilizer. Sludge disposal.

Industrial waste management: incineration of waste. Water treatment and purification (reverse osmosis, ion exchange). Water quality parameters for wastewater, industrial water and domestic water.

Unit-IV

Energy and Environment

Sources of energy: Coal, petrol and natural gas. Nuclear fusion/fission, solar energy, hydrogen, geothermal, tidal and hydel.

Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management.

Biocatalysis

Introduction to biocatalysis: Importance in green chemistry and chemical industry.

Recommended Text Books:

1. De, A. K. *Environmental Chemistry*: New Age International Pvt., Ltd, New Delhi, 2010.
2. Stocchi E., *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
3. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).

Reference Books:

1. Felder R.M. and Rousseau R.W., *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
2. Dara S. S., *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
3. Miller G.T., Environmental Science, 11th edition. Brooks/ Cole (2006).
4. Mishra, Environmental Studies, Selective and Scientific Books, New Delhi (2005).

Discipline Specific Elective Paper III LAB

1. Determination of Dissolved Oxygen (DO) in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride, sulphate and salinity of water samples by simple titration method ($AgNO_3$ and potassium chromate).
6. Estimation of total alkalinity of water samples (CO^{2-}, HCO^{-}) using double titration method.
7. Measurement of dissolved CO_2.
8. Study of some of the common bio-indicators of pollution.
9. Estimation of SPM in air samples.
10. Preparation of borax/ boric acid.

Reference Books:

1. Dara S. S., A Textbook on Experiments and Calculations in Engineering Chemistry S Chand & Company; 9th revised edition (2015).
2. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
3. R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
4. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
5. S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.

Discipline Specific Elective Paper-IV

INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

Unit I

Silicate Industries

Glass: Glassy state and its properties, classification (silicate and nonsilicate glasses). Manufacturing and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics: Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre.

Cements: Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

Unit II

Fertilizers: Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates; polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.

Batteries: Primary and secondary batteries, battery components and their role, Characteristics of Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery. Fuel cells, Solar cell and polymer cell.

Unit III

Surface Coatings:

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings, metal spraying and anodizing.

Unit IV

Alloys: Classification of alloys, ferrous and non-ferrous alloys, Specific properties of elements in alloys. Manufacture of Steel (removal of silicon, decarbonization, demanganization, desulphurization, dephosphorisation) and surface treatment (argon treatment, heat treatment nitriding, carburizing). Composition and properties of different types of steels.

Chemical explosives: Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

Recommended Text Books:

1. Stocchi E., *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
2. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).
3. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.

Reference Books:

1. Felder R.M. and Rousseau R.W., *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.

2. Dara S. S., *A Textbook of Engineering Chemistry,* S. Chand & Company Ltd. New Delhi.

3. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.

4. R. Gopalan, D. Venkappayya, S. Nagarajan: Engineering Chemistry, Vikas Publications, New Delhi.

Discipline Specific Elective Paper-IV LAB

List of Practicals

1. Determination of free acidity in ammonium sulphate fertilizer.
2. Estimation of Calcium in Calcium ammonium nitrate fertilizer.
3. Estimation of phosphoric acid in superphosphate fertilizer.
4. Determination of composition of dolomite (by complexometric titration).
5. Analysis of (Cu, Ni); (Cu, Zn) in alloy or synthetic samples.
6. Analysis of Cement.
7. Estimation of Iron from Cement Volumetrically
8. Preparation of pigment (zinc oxide).

Reference Books

1. Dara S. S., A Textbook on Experiments and Calculations in Engineering Chemistry S Chand & Company; 9th revised edition (2015).
2. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
3. R. M. Felder, R. W. Rousseau: Elementary Principles of Chemical Processes, Wiley

Publishers, New Delhi.

4. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: Introduction to Ceramics, Wiley Publishers, New Delhi.
5. J. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
6. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.
7. R. Gopalan, D. Venkappayya, S. Nagarajan: Engineering Chemistry, Vikas Publications, New Delhi.

Alternative to DSC CORE PAPER IV

Discipline Specific Elective Paper- V

DISSERTATION

A project work is to be carried out by the student in consultation with the teachers of the department. The report of work (dissertation) in a standard format is to be submitted and presented for evaluation.

Distribution of marks

(a) Project Report/Dissertation (Proper documentation of literature, data, discussion etc. and logical flow of work undertaken): 50 Marks

(b) Seminar/Presentation: 30 marks

(c) Viva voce: 20 marks

Brief Guidelines to Project Work:

1. Students shall undertake the project work (experimental/theoretical) related to any branch of chemistry/Chemical science under the guidance of teacher(s) from the department or jointly with teachers/research personnel of other institutes.
2. The following activities have been outlined as guidelines (not exhaustive):
   - Physiochemical studies (pH, conductivity, turbidity, etc.) of different wetlands (ponds, lakes, river etc.)
   - Analysis of iron in pond / tube well / river water.
   - Analysis of Hardness of water samples.
   - Adulteration detection activities in food stuff and other edible items.
   - Extraction and preliminary characterization of useful chemicals (as far as possible) from plants.
   - Solubility, surface tension, and viscosity measurements of some solution of practical

relevance, (cough syrup, soap solution, pesticides, fertilizers.. etc.)

- Pollution related activities (Industrial/Agricultural/Municipal etc.)
- Nutrition related activities, (essential metal detection in food, cereals, pulses, fruits etc.).
- Small synthetical work (inorganic/Organic/Polymeric compounds)

2. The UG level project work is a group activity, maximum number of students being limited to three. HOD to notify the name of teacher(s) for supervising the project work of each group. A teacher can guide more than one group, if necessary.
4. No two groups in the same institution are permitted to do project work on the same problem.
5. Each student shall prepare and submit the project report separately for evaluation. Two copies of project report are required to be submitted in bound form (spiral/paperback).
6. The project report shall be divided as:

Chapter I: Introduction (Introduction on the topic, review of literature, objective and scope of the work)

Chapter II: Materials and methods

Chapter II: Results and discussion

Chapter IV: Conclusions and Scope of future studies

Chapter V: References

Reference Books:

1. M. A. Malati, An Investigative, Integrated Approach to Practical Project Work; Mid-Kent College of Higher/Further Education, UK (October 1999); Imprint: Woodhead Publishing; ISBN: 978-1-898563-47-1.
2. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) Practical skills in chemistry. 2nd Ed., Prentice-Hall, Harlow.

Alternative for Discipline Specific Elective (DSE) Papers Discipline Specific Elective Paper-VI

ANALYTICAL METHODS IN CHEMISTRY

Unit I

UV-Visible and IR Spectrometry

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, validity of Beer-Lambert's law.

UV-Visible Spectrometry: Basic principles, instrumentation (choice of source, monochromator and detector) for single and double beam instrument; Basic principles of quantitative analysis:

estimation of metal ions from aqueous solution, geometrical isomers, keto-enol tautomers. Determination of composition of metal complexes using Job's method of continuous variation and mole ratio method.

Infrared Spectrometry: Basic principles of instrumentation (choice of source, monochromator & detector) for single and double beam instrument; sampling techniques. Structural illustration through interpretation of data, Effect and importance of isotope substitution.

Unit II

Qualitative and quantitative aspects of analysis

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, normal law of distribution if indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Flame Atomic Absorption Spectrometry

Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal. Techniques for the quantitative estimation of trace level of metal ions from water samples.

Unit III

Thermal and electro-analytical methods of analysis

Theory of thermo-gravimetry (TG), basic principle of instrumentation. Techniques for quantitative estimation of Ca and Mg from their mixture.

Classification of electro-analytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points.

Unit IV

Separation techniques

Solvent extraction: Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions.

Chromatography: Classification, principle and efficiency of the technique. Mechanism of separation: adsorption, partition & ion exchange. Development of chromatograms: frontal, elution and displacement methods. Qualitative and quantitative aspects of chromatographic methods of analysis: TLC and HPLC.

Recommended text books:

1. Vogel, Arthur I: A Test book of Quantitative Inorganic Analysis (Rev. by G.H. Jeffery and others) 5th Ed., The English Language Book Society of Longman.
2. Skoog, Holler and Crouch, Principles of Instrumental Analysis, Cengage Learning, 6th Indian Reprint (2017).
3. Christian, Gary D; Analytical Chemistry, 6th Ed., John Wiley & Sons, New York, 2004.

Reference books

1. Harris, Daniel C: Exploring Chemical Analysis, Ed. New York, W. H. Freeman, 2001.
2. Willard, Hobert H. et al.: Instrumental Methods of Analysis, 7th Ed., Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Mikes, O. & Chalmes, R.A. Laboratory Hand Book of Chromatographic & Allied Methods, Elles Harwood Ltd. London.
4. Pavia, Lamman, Kriz and Vyvyan, Introduction to Spectroscopy, Cengage Learning, 3rd Indian Reprint (2017).
5. Dash U N , Analytical Chemistry.

Discipline Specific Elective Paper -VI LAB

1. Paper chromatographic separation of Fe^{3+}, Al^{3+}, and Cr^{3+}.
2. Separation and identification of the monosaccharides present in the given mixture (glucose & fructose) by paper chromatography. Reporting the R_f values.
3. Separate a mixture of Sudan yellow and Sudan Red by TLC technique and identify them on the basis of their R_f values.
4. Chromatographic separation of the active ingredients of plants, flowers and juices by TLC.
5. Determine the pH of the given aerated drinks fruit juices, shampoos and soaps.
6. Determination of Na, Ca, Li in cola drinks and fruit juices using flame photometric techniques.
7. Analysis of soil: determination of pH of soil, total soluble salt, estimation of calcium, magnesium, phosphate, nitrate.
8. Separation of metal ions from their binary mixture.
9. Separation of amino acids from organic acids by ion exchange chromatography.
10. Determination of dissolved oxygen in water.
11. Determination of chemical oxygen demand (COD).

Reference Books:

1. Vogel, Arthur I: A Test book of Quantitative Inorganic Analysis (Rev. by G. H. Jeffery and others) 5th Ed., The English Language Book Society of Longman.
2. Willard, Hobert H. et al.: Instrumental Methods of Analysis, 7th Ed., Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age, International Publisher, 2009.

GENERIC ELECTIVE (GE)

Generic Elective Paper I (Theory)

ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

Section A: Inorganic Chemistry-I

Unit-I

Atomic Structure

Review of: Bohr's theory and its limitations, dual behaviour of matter and radiation, de-Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra.

Quantum mechanics: Time independent Schrodinger equation and meaning of various terms in it. Significance of ψ and ψ^2, Schrödinger equation for hydrogen atom. Radial and angular parts of the hydogenic wave functions (atomic orbitals) and their variations for 1s, 2s, 2p, 3s, 3p and 3d orbitals (Only graphical representation). Quantum numbers and their significance, shapes of s, p and d atomic orbitals, nodal planes.

Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbital, Anomalous electronic configurations.

Unit-II

Chemical Bonding and Molecular Structure

Ionic Bonding: General characteristics, energy considerations. Lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules and its applications.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.

Concept of resonance and resonating structures in various inorganic and organic compounds.

MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules (N_2, O_2) and heteronuclear diatomic molecules (CO, NO). Comparison of VB and MO approaches.

Section B: Organic Chemistry-I

Unit- III

Fundamentals of Organic Chemistry

Physical Effects, Electronic Displacements: Inductive effect, Electrometric effect, Resonance and hyperconjugation. Cleavage of bonds: Homolysis and heterolysis.

Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.

Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Hückel's rule.

Stereochemistry

Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). D and L; cis-trans nomenclature; CIP Rules: R/ S (for one chiral carbon atoms) and E / Z Nomenclature (for up to two C=C systems).

Unit-IV

Aliphatic Hydrocarbons

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Alkanes: (Up to 5 Carbons) *Preparation:* Catalytic hydrogenation, Wurtz reaction,Kolbe's synthesis, from Grignard reagent. *Reactions:* Free radical Substitution: Halogenation.

Alkenes: (Up to 5 Carbons) *Preparation:* Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis-alkenes (Partial catalytic hydrogenation) and trans-alkenes (Birch reduction). *Reactions:* cis-addition (alk. $KMnO_4$) and trans-addition (bromine), Addition of HX (Markownikoff's and anti- Markownikoff's addition),

Hydration, Ozonolysis.

Alkynes: (Up to 5 Carbons) *Preparation:* Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. *Reactions:* formation of metal acetylides, addition of bromine and alkaline $KMnO_4$,ozonolysis.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd Ed., 2017.
3. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, Pearson Education, 4th Ed. 2002.
5. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Bhal Arun & Bhal B S , Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
7. Kalsi, P. S. Stereochemistry Conformation and Mechanism; 8th Edn, New Age International, 2015.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.
3. Mallick, Madan and Tuli, S. Chand Selected Topic in Inorganic Chemistry, 17th Edn. 2010.
4. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications.

Generic Elective Paper I LAB

Section A: Inorganic Chemistry

Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe(II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu(II) ions iodometrically using $Na_2S_2O_3$.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl) in organic compounds (containing up to two extra elements)
2. Separation of mixtures by Chromatography: Measure the R_f value in each case (combination of two compounds to be given)

(a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography.

(b) Identify and separate the sugars present in the given mixture by paper chromatography.

Reference Books:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

Generic Elective Paper II (Theory)

CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY

Section A: Physical Chemistry-I

Unit-I

Chemical Energetics

Review of thermodynamics and the Laws of Thermodynamics.

Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.

Statement of Third Law of thermodynamics.

Chemical Equilibrium

Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG^o, Le Chatelier's principle. Relationships between K_p, K_c and K_x for reactions involving ideal gases.

Unit- II

Ionic Equilibria

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Section B: Organic Chemistry-II

Unit- III

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons

Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid. Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (up to 4 carbons on benzene). Side chain oxidation of alkyl benzenes (up to 4 carbons on benzene).

Alkyl and Aryl Halides

Alkyl Halides (Up to 5 Carbons) Types of Nucleophilic Substitution (SN_1, SN_2 and SN_i) reactions.

Preparation: from alkenes and alcohols. Reactions: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation. Williamson's ether synthesis: Elimination vs substitution.

Aryl Halides Preparation: (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions.

Reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by –OH group) and effect of nitro substituent. Benzyne Mechanism: KNH_2/NH_3 (or $NaNH_2/NH_3$).

Unit- IV

Alcohols, Phenols and Ethers (Up to 5 Carbons)

Alcohols: Preparation: Preparation of 1°, 2° and 3° alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes and ketones, carboxylic acid and esters.

Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, Alk. $KMnO_4$, acidic dichromate, conc. HNO_3). Oppeneauer oxidation Diols: (Up to 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement.

Phenols: (Phenol case) Preparation: Cumene hydroperoxide method, from diazonium salts. Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer Tiemann Reaction, Gattermann -Koch Reaction,

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Aldehydes and ketones (aliphatic and aromatic): Formaldehyde, acetaldehyde, acetone and benzaldehyde

Preparation: from acid chlorides and from nitriles.

Reactions – Reaction with HCN, ROH, $NaHSO_3$, NH_2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co, 47th Edn., 2017.
3. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017.
4. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Arun Bahl & B S Bahl, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

Generic Elective Paper II LAB Section

A: Physical Chemistry

Thermochemistry (any three)

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of enthalpy of ionization of acetic acid.
4. Determination of integral enthalpy of solution of salts (KNO_3, NH_4Cl).
5. Determination of enthalpy of hydration of copper sulphate.

6. Study of the solubility of benzoic acid in water and determination of ΔH.

Ionic equilibria

pH measurements

a) Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.

b) Preparation of buffer solutions:

- Sodium acetate-acetic acid
- Ammonium chloride-ammonium hydroxide

Measurement of the pH of buffer solutions and comparison of the values with theoretical values.

Section B: Organic Chemistry

1. Purification of organic compounds by crystallization (from water) and determination of melting.
2. Preparations, recrystallisation, determination of melting point and calculation of quantitative yields of the followings:

(a) Bromination of Phenol/Aniline

(b) Benzoylation of amines/phenols

(c) Oxime and 2,4 dinitrophenylhydrazone of aldehyde/ketone

Reference Books

1. A.I. Vogel: Textbook of Practical Organic Chemistry, 5th edition, Prentice-Hall.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
4. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

Generic Elective Paper III (Theory)

CHEMISTRY OF S- AND P-BLOCK ELEMENTS, STATES OF MATTER & CHEMICAL KINETICS

Section A: Inorganic Chemistry-II

Unit-I

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon as reducing agent.

Hydrometallurgy, Methods of purification of metals (Al, Pb, Fe, Cu, Ni): electrolytic, oxidative refining, Parting process, van Arkel-de Boer process and Mond's process.

s- and *p*-Block Elements

Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling & Mulliken scales). Allotropy in C, S, and P.

Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.

Unit-II

Compounds of *s*- and *p*-Block Elements

Hydrides and their classification (ionic, covalent and interstitial), structure and properties with respect to stability of hydrides of p- block elements.

Concept of multicentre bonding (diborane).

Structure, bonding and their important properties like oxidation/reduction, acidic/basic nature of the following compounds and their applications in industrial, organic and environmental chemistry.

Hydrides of nitrogen (NH_3, N_2H_4, N_3H, NH_2OH); Oxoacids of P, S and Cl; Halides and oxohalides: PCl_3, PCl_5, $SOCl_2$.

Section B: Physical Chemistry- II

Unit-III

Kinetic Theory of Gases

Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation.

Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation. van der Waals equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation.

Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance.

Temperature dependence of these distributions. Most probable, average and root mean square velocities (no derivation). Collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).

Liquids

Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Unit-IV

Solids

Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X–Ray diffraction by crystals, Bragg's law. Structures of NaCl, and CsCl (qualitative treatment only). Defects in crystals.

Chemical Kinetics

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.

Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
3. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co, 47th Edn., 2017.
5. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017.

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

Generic Elective Paper -III LAB

Section A: Inorganic Chemistry

Qualitative analysis of inorganic slat mixture using H_2S: not more than four ionic species (two anions and two cations and excluding insoluble salts) out of the following:

Cations : NH_4^+, Pb^{2+}, Ag^+, Bi^{3+}, Cu^{2+}, Cd^{2+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, K^+

Anions: CO_3^{2-}, S^{2-}, SO_3^{2-}, NO_2^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-}, PO_4^{3-}, F^-

(Spot tests should be carried out wherever feasible)

Section B: Physical Chemistry

Chemical Kinetics

Study the kinetics of the following reactions.

1. Initial rate method: Iodide-persulphate reaction
2. Integrated rate method:
    a. Acid hydrolysis of methyl acetate with hydrochloric acid.
    b. Saponification of ethyl acetate.
    c. Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate

Reference Books:

1. Svehla, G, Vogel's Qualitative Inorganic Analysis, 7th Ed, 4th Ed., Pearson Education (2007).
2. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1stEdn., CBS Publishers & Distributors Pvt Ltd., (2017).

Generic Elective Paper- IV (Theory)

ORGANOMETALLICS, BIOINORGANIC CHEMISTRY, POLYNUCLEAR HYDROCARBONS AND UV, IR SPECTROSCOPY

Section A: Inorganic Chemistry- III

Unit-I

Chemistry of 3d metals

Oxidation states displayed by Cr, Fe, Co, Ni and Co.

A study of the following compounds (including preparation and important properties);

Peroxo compounds of Cr, $K_2Cr_2O_7$, $KMnO_4$, $K_4[Fe(CN)_6]$, sodium nitroprusside, $[Co(NH_3)_6]Cl_3$, $Na_3[Co(NO_2)_6]$.

Organometallic Compounds

Definition and Classification with appropriate examples based on nature of metal-carbon bond (ionic, s, p and multicentre bonds). Structures of methyl lithium, Zeiss salt and ferrocene. EAN rule as applied to carbonyls. Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. π-acceptor behaviour of carbon monoxide. Synergic effects (VB approach).

Unit-II

Bio-Inorganic Chemistry

A brief introduction to bio-inorganic chemistry. Role of metal ions present in biological systems with special reference to Na^+, K^+ and Mg^{2+} ions: Na/K pump; Role of Mg^{2+} ions in energy production and chlorophyll. Role of Ca^{2+} in blood clotting, and structural role (bones).

Section B: Organic Chemistry- III

Unit-III

Polynuclear and heteronuclear aromatic compounds

Properties of the following compounds with reference to electrophilic and nucleophilic substitution: Naphthalene, Anthracene, Furan, Pyrrole, Thiophene, and Pyridine.

Active methylene compounds

Preparation: Claisen ester condensation. Keto-enol tautomerism.

Reactions: Synthetic uses of ethylacetoacetate (preparation of non-heteromolecules having up to 6 carbon).

Unit-IV

Application of Spectroscopy (UV-Visible, IR) to Simple Organic Molecules

Electromagnetic radiations, electronic transitions, λ_{max} & ε_{max}, chromophore, auxochrome, bathochromic and hypsochromic shifts. Application of electronic spectroscopy and Woodward rules for calculating λ_{max} of conjugated dienes and α, β – unsaturated compounds.

Infrared radiation and types of molecular vibrations, functional group and fingerprint region. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Recommended Text Books:

1. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
2. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
3. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
4. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Arun Bahl & B S Bahl, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Das Asim K., Bioinorganic Chemistry, Books & Allied (P) Ltd. 1st ed. 2015.
3. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.
4. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

Generic Elective Paper IV LAB

Section A: Inorganic Chemistry

1. Preparation of following compounds (Any two)

a. Cuprous oxide (Cu_2O)

b. Cuprous chloride, Cu_2Cl_2

c. Manganese(III) phosphate, $MnPO_4.H_2O$

d. Lead chromate ($PbCrO_4$)

2. Separation of mixtures by chromatography: Measure the R_f value in each case. (Combination of two ions to be given)

- Paper chromatographic separation of Fe^{3+}, $A1^{3+}$ and Cr^{3+} or
- Paper chromatographic separation of Ni^{2+}, Co^{2+}, Mn^{2+} and Zn^{2+}

Section B: Organic Chemistry

Systematic qualitative organic analysis of organic compounds possessing mono-functional groups (-COOH, phenolic, aldehyde, ketone, amide, nitro, amines) and preparation of one derivative.

Reference Books

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Edn, Pearson, 2009.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
3. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
4. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt. Ltd., (2017).

List of minimum instrument required for undertaking practical classes of UG-CBCS in Chemistry (Core and DSC Practicals)

Sl.	Name of the instrument	Numbers
1.	Ostwald's viscometer	02
2.	Tensiometer (Surface tension measurements)	01
3.	Digital pH-meter with accessories	02
4.	Digital Conductivity meter with accessories	02

5.	Potentiometer with accessories	01
6.	Colorimeter	01
7.	Calorimeter with accessories (precision thermometer)	01
8.	Visible spectrophotometer (single beam)	01
9.	Magnetic stirrer (with/without hot plate)	02
10.	Heating mantle	01
11.	Melting point apparatus	02
12.	Vacuum pump for filtration	01
13.	Single distillation units (All glass) 2lit/hr capacity	02
14.	Single pan digital balance with precision 0.01 gm and 0.001 gm	02
15.	Water bath (Electrical)	01
16.	Fume hood	01
17.	Kipp's apparatus (PP)	02
18.	Fire extinguishers	02
19.	Aspirator for chromatographic developer	01
20.	Air oven (up to 300^{o}C)	01
21.	Microwave oven (kitchen quality)	01

22.	Small lab accessories like glassware, plastic wares, laboratory wires and other small accessories as per requirement.	

COMMON SYLLABUS FOR BSc COMPUTER SCIENCE

B. Sc. (Honours) Computer Science (CBCS)

Preamble

Information and Communication Technology (ICT) has today become integral part of all industry domains as well as fields of academics and research. The industry requirements and technologies have been steadily and rapidly advancing. Organizations are increasingly opting for open source systems. The students too these days are thinking beyond career in the industry and aiming for research opportunities. A genuine attempt has been made while designing the new syllabus for this 3- year B. Sc. Computer Science (H) course. Not only does it prepare the students for a career in Software industry, it also motivates them towards further studies and research opportunities. The core philosophy of overall syllabus is to:

a. Form strong foundation of Computer science,

b. Introduce emerging trends to the students in gradual way,

c. Groom the students for the challenges of ICT industry

The Government of Odisha has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the State of Odisha in line with the University Grants Commission (UGC). The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The Government of Odisha has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Universities & Colleges in Odisha in line with UGC. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the Universities and Colleges must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching–learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities and Colleges in the states as well as the country. This creates difficulty for the academia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it uniform grading system. This will facilitate student mobility across institutions within and

has been followed in the top institutions in India and abroad. So, it is desirable to introduce

uniform grading system. This will facilitate student mobility across institutions within and

across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines, which is being adopted by the state of Odisha.

CHOICE BASED CREDIT SYSTEM (CBCS): The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in Odisha. This will benefit the students to move across institutions within Odisha to begin with and across states and countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

1. **Core Course**: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course**: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

> **Discipline Specific Elective (DSE) Course**: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).
>
> **Dissertation/Project**: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.
>
> **Generic Elective (GE) Course**: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. **Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course**: They ((i) Environmental Science, (ii) English/MIL Communication) are mandatory for all disciplines. AEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

Project work/Dissertation is considered as a special course involving application of knowledge

in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

GUIDELINES FOR PROJECT FORMULATION

As the project work constitutes a major component in most of the professional programs and it is to be carried out with due care and should be executed with seriousness by the candidates.

TYPE OF PROJECT

As majority of the students are expected to work out a real-life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. It is not mandatory for a student to work on a real-life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with the guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form:

1. Title of the Project

2. Introduction and Objectives of the Project

3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.)

4. Analysis (DFDs at least up to second level, ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).

5. A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules. Process Logic of each module. Testing process to be used. Reports generation

6. Tools / Platform, Hardware and Software Requirement specifications

7. Future scope and further enhancement of the project.

SEMESTER	COURSE OPTED	COURSE NAME	CREDITS
I	Ability Enhancement Course-1	AEC-1 (Environmental Science)	2
	Core Course-1	Programming using C	4
	Core Course-1 Practical	Programming using C LAB	2
	Core Course-2	Digital Logic	4
	Core Course-2 Practical	Digital Logic Lab	2
	Generic Elective-1	GE-1	4
	Generic Elective-1 Practical	GE-1 Tutorial/ LAB	2
II	Ability Enhancement Course-2	AEC-2 (English Communication/MIL)	2
	Core Course-3	Programming using C++	4
	Core Course-3 Practical	Programming using C++ LAB	2
	Core Course-4	Data Structures	4
	Core Course-4 Practical	Data Structures LAB	2
	Generic Elective-2	GE-2	4
	Generic Elective-2 Practical	GE-2 Tutorial/ LAB	2
III	Core Course-5	JAVA Programming	4
	Core Course-5 Practical	JAVA Programming LAB	2
	Core Course-6	Database Systems	4
	Core Course-6 Practical	Database Systems LAB	2
	Core Course-7	Discrete Mathematical Structures	4
	Core Course-7 Practical	Discrete Mathematical Structures LAB	2
	Skill Enhancement Course-1	SEC-1	2
	Generic Elective-3	GE-3	4
	General Elective-3 Practical	GE-3 Tutorial/ LAB	2
IV	Core Course-8	Operating Systems	4
	Core Course-8 Practical	Operating Systems LAB	2
	Core Course-9	Computer Networks	4
	Core Course-9 Practical	Computer Networks LAB	2
	Core Course-10	Computer Graphics	4
	Core Course-10 Practical	Computer Graphics LAB	2
	Skill Enhancement Course-2	SEC-2	2
	Generic Elective-4	GE-4	4
	General Elective-4 Practical	GE-4 Tutorial/ LAB	2
V	Core Course-11	Web Technology	4
	Core Course-11 Practical	Web Technology LAB	2
	Core Course-12	Software Engineering	4
	Core Course-12 Practical	Software Engineering Lab	2
	Discipline Specific Elective-1	DSE-1	4
	Discipline Specific Elective-1 Practical	DSE-1 LAB/ Tutorial	2
	Discipline Specific Elective-2	DSE-2	4
	Discipline Specific Elective-2 Practical	DSE-2 LAB/ Tutorial	2
VI	Core Course-13	Artificial Intelligence	4
	Core Course-13 Practical	Artificial Intelligence LAB	2
	Core Course-14	Algorithm Design Techniques	4
	Core Course-14 Practical	Algorithm Design Techniques LAB	2
	Discipline Specific Elective-3	DSE-3	4
	Discipline Specific Elective-3 Practical	DSE-3 LAB/ Tutorial	2

	Discipline Specific Elective-4	DSE-4	4
	Discipline Specific Elective-4 Practical	DSE-4 LAB/ Tutorial	2

CORE Papers: (Credit: 06 each)

CORE – 1: Programming Using C

CORE – 2: Digital Logic

CORE – 3: Programming Using C++

CORE – 4: Data Structure

CORE – 5: Java Programming

CORE – 6: Database Systems

CORE – 7: Discrete Mathematical Structures CORE –

8: Operating System

CORE – 9: Computer Network CORE

– 10: Computer Graphics CORE –

11: Web Technologies CORE – 12:

Software Engineering CORE – 13:

Artificial Intelligence

CORE – 14: Algorithm Design Techniques

Discipline Specific Electives (DSE) Papers:

DSE–1: Numerical Techniques

DSE–2: Unix Shell Programming

DSE–3: Data Science

DSE–4: Project Work / Dissertation

OR

Data Mining

Skill Enhancement Courses (SEC):

SEC – 1: Python Programming. SEC

– 2: Android Programming.

Ability Enhancement Courses (AEC): AEC –

1: Environmental Science.

AEC – 2: English Communication/MIL.

Generic Elective (GE): (Credit: 06 each) papers offered by Computer Science/IT Departments for other disciplines. It is recommended that the other departments must offer the following papers as GE.

GE – 1: Computer Fundamentals

GE – 2: C and Data Structures

GE – 3: Programming in Python

GE – 4: Web Technology

However the students from **Computer Science/IT** discipline shall choose **four papers of any one discipline** as their GE papers from the following list**.**

GE-1:

a) Mathematics–1
b) Physics–1
c) Statistics–1
d) Electronics –1

GE-2:

a) Mathematics–2
b) Physics–2
c) Statistics–2
d) Electronics –2

GE-3:

a) Mathematics–3
b) Physics–3
c) Statistics–3
d) Electronics –3

GE-4:

a) Mathematics–4
b) Physics–4
c) Statistics–4
d) Electronics –4

Detailed Syllabus

CORE – 1: Programming Using

C OBJECTIVES:

- To learn basics of C programming language.
- To be able to develop logics to create programs/ applications in C.

Unit-1

Introduction: Introduction to Programming Language, Introduction to C Programming, Keywords & Identifiers, Constants, Variables, Input and Output Operations, Compilation and pre-processing, **Data types**: Different data types, Data types qualifier, modifiers, Memory representation, size and range, **Operators:** Operators (Arithmetic, Relational, Logical, Bitwise, Assignment & compound assignment, Increment & Decrement, Conditional), Operator types (unary, binary, ternary). Expressions, Order of expression (Precedence and associativity)
Control structures: Decision Making and Branching (Simple IF Statement, IF…ELSE Statement, Nesting IF… ELSE Statement, ELSE IF Ladder), Selection control structure (Switch Statement).

Unit-2

Loops: The WHILE Statement, The DO…WHILE Statement, The FOR Statement, Jumps in Loops, **Array**: Concept of Array, Array Declaration, types of array (one and multiple dimension), Character Arrays and Strings, Subscript and pointer representation of array, Array of Pointers, Limitation of array, **Pointers**: Concept of Pointer (null pointer, wild pointer, dangling pointer, generic pointer), Pointer Expressions, Accessing the Address of a Variable, Declaring Pointer Variables, Initializations of Pointer Variable, Accessing a Variable through its Pointer, Pointer arithmetic.

Unit-3

Storage class: Types (auto, register, static, extern), scope rules, declaration and definition.
Function: Function & types (User defined function, library function) Function Definition, Declaration, Function Calls, Header file and library, Function Arguments, string handling function (strlen, strcmp, strcpy, strncpy, strcat, strstr), Function recursion, Functions Returning Pointers, Pointers to Functions, Command line arguments, Application of pointer (dynamic memory allocation).

Unit-4

Structure and Union: Defining, Declaring, Accessing, Initialization Structure, nested structure, self-referential structure, bit-field, Arrays of Structures, Structures and Functions, Unions, difference between structure and union, active data member, structure within union, Self-referential Structure, **File**: File Management in C, Defining and Opening a File, File opening modes (read, write, append), Closing a File, File operations, file and stream, Error Handling During I/O Operations, sequential and random access file, low level and high level file.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI
2. Paul Deitel, Harvey Deitel, “C: How to Program”, 8/e, Prentice Hall.
3. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana

Core-1 Practical: Programming Fundamentals using C Lab 1.1.5

1. Write a Program to find greatest among three numbers.
2. Write a Program to all arithmetic operation using switch case.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

   S = 1+1/2+1/3+1/4+……
6. Write a Program to compute the sum of the first n terms of the following series

   S =1-2+3-4+5…….
7. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
8. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
9. Write a Program to compute the factors of a given number.
10. Write a program to swap two numbers using macro.
11. Write a Program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
```

12. Write a Program to perform following actions on an array entered by the user:
    a) Print the even-valued elements
    b) Print the odd-valued elements
    c) Calculate and print the sum and average of the elements of array
    d) Print the maximum and minimum element of array
    e) Remove the duplicates from the array
    f) Print the array in reverse order

    The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.
13. Write a Program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
14. Write a program that swaps two numbers using pointers.
15. Write a program in which a function is passed address of two variables and then alter its contents.
16. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
17. Write a program to find sum and average of n elements entered by the user. To write this program, allocate memory dynamically using malloc( ) / calloc( ) functions.
18. Write a menu driven program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat function.
    c) Concatenate two strings using strcat function.
    d) Compare two strings
    e) Calculate length of the string (use pointers)
    f) Convert all lowercase characters to uppercase
    g) Convert all uppercase characters to lowercase
    h) Calculate number of vowels
    i) Reverse the string
19. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
20. Write a program to copy the content of one file to other.

CORE–2: DIGITAL LOGIC

OBJECTIVES

- To understand different methods used for the simplification of Boolean functions and binary arithmetic.
- To design and implement combinational circuits, synchronous & asynchronous sequential circuits.
- To study in detail about Semiconductor Memory Systems.

Unit-1

Character Codes, Decimal System, Binary System, Decimal to Binary Conversion, Hexadecimal Notation, Boolean Algebra, Basic Logic Functions: Electronic Logic Gates, Synthesis of Logic Functions, Minimization of Logic Expressions, Minimization using Karnaugh Maps, Synthesis with NAND and NOR Gates, Tri-State Buffers

Unit-2

Arithmetic: Addition and Subtraction of Signed Numbers, Addition/ Subtraction Logic Unit, Design of Fast Adders: Carry-Lookahead Addition, Multiplication of Positive Numbers, Signed-Operand Multiplication: Booth Algorithm, Fast Multiplication: Bit-Pair Recodng Multipliers, Carry-Save Addition of Summands, Integer Division, Floating-Point Numbers and Operations: IEEE Standard for Floating-Point Numbers, Arithmetic Operations on Floating-Point Numbers, Guard Bits and Truncation, Implementing Floating-Point Operations.

Unit-3

Flip-Flops, Gated Latches, Master-Slave Flip-Flops, Edge-Triggering, T Flip-Flops, JK Flip-Flops. Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic Devices (PLDs), Programmable Array Logic (PAL), Complex Programmable Logic Devices (CPLDs), Field-Programmable Gate Array (FPGA), Sequential Circuits, UP/ DOWN Counters, Timing Diagrams, The Finite State Machine Model, Synthesis of Finite State Machines.

Unit-4

Memory System: Semiconductor RAM Memories, Internal Organization of Memory Chips, Static Memories, Asynchronous DRAMS, Synchronous DRAMS, Structure of Large Memories, Memory System Considerations, RAMBUS Memory. Read-Only Memories: ROM, PROM, EPROM, EEPROM, Flash Memory, Speed, Size, and Cost of Memory. Secondary Storage: Magnetic Hard Disks, Optical Disks, Magnetic Tape Systems.

Text Books:

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/e (TMH)

Reference Books:

1. M. Morris Mano: Digital Logic and Computer Design, Pearson

CORE–2 Practical: Digital Logic Lab

1. Introduction to Xilinx software (VHDL)

Write the VHDL code for

2. Realizing all logic gates.

3. Combination Circuit.
4. ADDER.

5. SUBTRACTOR.

6. MUX.

7. DE-MUX.

8. Encoder.

9. Decoder.

10. PAL.

11. PLA.

Write the VHDL program for the following Sequential Logic Circuits

12. Flip Flops.

13. Shift Registers.

14. Counters.

15. Memory Elements.

CORE–3: Programming Using C++

OBJECTIVES

- To know about the Object Oriented Programming concepts.
- To learn basics of C++ programming language.
- To be able to develop logics to create programs/ applications in **C++.**

Unit-1

Principles of Object-Oriented Programming: Object-Oriented Programming (OOP) Paradigm, Basic Concepts of OOP, Benefits of OOP, Characteristics of OOPS, Object Oriented Languages, Applications of OOP.

C++ Program, C++ statements, Expressions and11C8ontrol Structures.

Introduction to C++, Difference between C & C++, Tokens, Data types, Operators, Structure of

C++ Program, C++ statements, Expressions and11C8ontrol Structures.

Functions in C++: Argument passing in function, Inline Functions, Default Arguments, Const. Arguments, Friend function.

Unit-2

Classes and Objects: Defining Member Functions, Making an outside Function Inline, Nested Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friend Functions.

Constructors & Destructors: Constructors, Parameterized Constructors, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Destructors.

Unit-3

Inheritance: Basics of Inheritance, Type of Inheritance, Virtual Base Classes, Abstract Classes, Member Classes, Nesting of Classes. Polymorphism: Pointers, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions, Function Overloading, Operator Overloading.

Unit-4

Managing Console I/O Operations: C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators.
Files: Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling during File Operations, Command-line Arguments.

Text Books

1. E. Balgurusawmy, Object Oriented Programming with C++, 4/e (TMH).
2. Paul Deitel, Harvey Deitel, "C++: How to Program", 9/e. Prentice Hall.

Reference Books:

1. Bjarne Stroustroup, Programming - Principles and Practice using C++, 2/e, Addison-Wesley 2014
2. Herbtz Schildt, C++: The Complete reference, MGH, 4/ed.
3. P. C. Sethi, P. K. Behera, “Programming in C++”- Kalyani Publisher, Ludhiana

CORE–3 Practical: Programming using C++ Lab

1. Write a Program to find greatest among three numbers using nested if…else statement.
2. Write a Program to check a number is prime or not.
3. Write a Program to find the GCD and LCM of two numbers.
4. Write a program to print the result for following series: 1! + 2! + 3! + ……
5. Write a program to print multiplication table from 1 to 10.
6. Write a Program for Swapping of two numbers using pass by value.
7. Write a Program for Swapping of two numbers using pass by address.
8. Write a Program for Swapping of two numbers using pass by reference.
9. Write a Program to find sum of four numbers using default argument passing.
10. Write a Program to find square and cube of a number using inline function.
11. Write a Program to find the factorial of a number.
12. Write a Program to find reverse of a number.
13. Write a program to find sum of four numbers using default argument passing in member

function.

14. Write a Program to find area of circle, triangle and rectangle using function overloading.
15. Write a program to distinguish the properties of static and non-static ata members.
16. Write a program to show the method of accessing static private member function.
17. Write a program to show the ways of calling constructors and destructors.
18. Write a program to perform ++ operator overloading using member function.
19. Write a program to perform ++ operator overloading using friend function.
20. Write a program to perform + operator overloading for two complex number addition.
21. Write a program to perform + operator overloading for string concatenation.
22. Write a program to perform single inheritance.
23. Write a program to perform multiple inheritance.
24. Write a program to create an integer array using new operator and find the sum and average of array elements.
25. Write a program to implement virtual destructor.
26. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
27. Write a program to Copy the contents of one file to other.

CORE–4: Data Structure

OBJECTIVES

- To learn how the choice of data structures impacts the performance of programs.
- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees.
- To learn efficient searching and sorting techniques.

Unit-1

Introduction: Basic Terminology, Data structure, Time and space complexity, Review of Array, Structures, Pointers.

Linked Lists: Dynamic memory allocation, representation, Linked list insertion and deletion, Searching, Traversing in a list, Doubly linked list, Sparse matrices.

Unit-2

Stack: Definition, Representation, Stack operations, Applications (Infix–Prefix–Postfix Conversion & Evaluation, Recursion).

Queues: Definition, Representation, Types of queue, Queue operations, Applications.

Unit-3

Trees: Tree Terminologies, General Tree, Binary Tree, Representations, Traversing, BST, Operations on BST, Heap tree, AVL Search Trees, M-way search tree, Applications of all trees.

Unit-4

Sorting: Exchange sorts, Selection Sort, Bubble sort, Insertion Sorts, Merge Sort, Quick Sort, Radix Sort, Heap sort.

Searching: Linear search, Binary search.

Text book

1. Classic Data Structure , D. Samanta , PHI , 2/ed.

REFERENCES

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Galgotia Publications, 2000.
2. Sastry C.V., Nayak R, Ch. Rajaramesh, Data Structure & Algorithms, I. K. International Publishing House Pvt. Ltd, New Delhi.

CORE – 4 Practical: Data Structure Lab

Write a C/ C++ Program for the followings

1. To insert and delete elements from appropriate position in an array.
2. To search an element and print the total time of occurrence in the array.
3. To delete all occurrence of an element in an array.
4. Array implementation of Stack.
5. Array implementation of Linear Queue.
6. Array implementation of Circular Queue.
7. To implement linear linked list and perform different operation such as node insert and delete, search of an item, reverse the list.
8. To implement circular linked list and perform different operation such as node insert and delete.
9. To implement double linked list and perform different operation such as node insert and delete.
10. Linked list implementation of Stack.
11. Linked list implementation of Queue.
12. Polynomial representation using linked list.
13. To implement a Binary Search Tree.
14. To represent a Sparse Matrix.
15. To perform binary search operation.
16. To perform Bubble sort.
17. To perform Selection sort.
18. To perform Insertion sort.
19. To perform Quick sort.

20. To perform Merge sort.

CORE – 5: Java Programming

OBJECTIVES

- To learn the fundamentals of Object Oriented Programming in Java environment.
- To learn the use of Java language and the Java Virtual Machine.
- To write simple Java programming applications.

Unit-1

Introduction to Java: Java History, Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords (super, this, final, abstract, static, extends, implements, interface) , Data Types, Wrapper class, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods). Input through keyboard using Command line Argument, the Scanner class, BufferedReader class.

Unit-2

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Class Variables & Methods, Objects, Object reference, Objects as parameters, final classes, Garbage Collection.

Constructor- types of constructor, this keyword, super keyword. Method overloading and Constructor overloading. Aggregation vs Inheritance, Inheritance: extends vs implements, types of Inheritance, Interface, Up-Casting, Down-Casting, Auto-Boxing, Enumerations, Polymorphism, Method Overriding and restrictions. Package: Pre-defined packages and Custom packages.

Unit-3

Arrays: Creating & Using Arrays (1D, 2D, 3D and Jagged Array), Array of Object, Referencing Arrays Dynamically. Strings and I/O: Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability& Equality, Passing Strings To & From Methods, StringBuffer Classes and StringBuilder Classes. IO package: Understanding StreamsFile class and its methods, Creating, Reading, Writing using classes: Byte and Character streams, FileOutputStream, FileInputStream, FileWriter, FileReader, InputStreamReader, PrintStream, PrintWriter. Compressing and Uncompressing File.

Unit-4

Exception Handling, Threading, Networking and Database Connectivity: Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Text Books:

1. E. Balagurusamy, “Programming with Java”, TMH, 4/Ed,

Reference books:

1. Herbert Schildt, “The Complete Reference to Java”, TMH, 10/Ed.

CORE – 5 Practical: Java Programming Lab

1. To find the sum of any number of integers entered as command line arguments.
2. To find the factorial of a given number.
3. To convert a decimal to binary number.
4. To check if a number is prime or not, by taking the number as input from the keyboard.
5. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
6. Write a program that show working of different functions of String and StringBufferclasss like setCharAt( ), setLength( ), append( ), insert( ), concat( )and equals( ).
7. Write a program to create a – "distance" class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
8. Modify the – "distance" class by creating constructor for assigning values (feetandinches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
9. Write a program to show that during function overloading, if no matching argument is found, then Java will apply automatic type conversions (from lower to higher data type)
10. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword.
11. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program – "DivideByZero" that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate different mouse handling events like mouseClicked( ), mouseEntered( ), mouseExited( ), mousePressed( ), mouseReleased( ) & mouseDragged( ).
23. Write a program to demonstrate different keyboard handling events.

CORE-6: Database Systems

OBJECTIVES

- To learn the fundamental elements of database system.

- To learn the basic concepts of relational database management systems.
- To learn various SQL commands.

Unit-1

Introduction to Database and Database Users, Database System Concepts and Architecture: data Models, schema, and instances, Conceptual Modeling and Database Design: Entity Relationship (ER) Model: Entity Types, Entity Sets, Attributes, Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, ER Naming Conventions. Enhanced Entity-Relationship (EER) Model.

Unit-2

Database Design Theory and Normalization: Functional Dependencies, Normal Forms based on Primary Keys, Second and third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

Unit-3

Relational data Model and SQL: Relational Model Concepts, Basic SQLs, SQL Data Definition and Data types, Constraints in SQL, Retrieval Queries in SQL, INSERT, DELETE, UPDATE Statements in SQL, Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT, Binary Relation: JOIN and DIVISION.

Unit-4

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing, Transaction and System Concepts, Properties of Transactions, Recoverability, Serializability, Concurrency Control Techniques, Locking techniques for Concurrency Control, Concurrency Control based on Time-Stamp Ordering.

Text Book:

1. Fundamentals of Database Systems, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson Education

Reference Book:

1. An Introduction to Database System, Date C. J. - Pearson Education, New Delhi - 2005

CORE-6 Practical: Database Systems Labs

Create and use the following database schema to answer the given queries.

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL
Job_type	Varchar(50)	NO		NIL
Manager	Char(3)	Yes	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES	FK	NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

DEPARTMENT Schema

Field	Type	NULL	KEY	DEFAULT
Dno	Integer	No	PRI	NULL
Dname	Varchar(50)	Yes		NULL
Location	Varchar(50)	Yes		New Delhi

Query List

1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
2. Query to display unique Jobs from the Employee Table.
3. Query to display the Employee Name concatenated by a Job separated by a comma.
4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
5. Query to display the Employee Name and Salary of all the employees earning more than $2850.
6. Query to display Employee Name and Department Number for the Employee No= 7900.
7. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.
8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
9. Query to display Name and Hire Date of every Employee who was hired in 1981.
10. Query to display Name and Job of all employees who don't have a current Manager.
11. Query to display the Name, Salary and Commission for all the employees who earn commission.
12. Sort the data in descending order of Salary and Commission.
13. Query to display Name of all the employees where the third letter of their name is 'A'.
14. Query to display Name of all employees either have two 'R's or have two 'A's in their name and are either in Dept No = 30 or their Mangers Employee No = 7788.
15. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
16. Query to display the Current Date.
17. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.

    employee was hired.

18. Query to display Name and calculate the number of months between today and the date each employee was hired.

19. Query to display the following for each employee <E-Name> earns < Salary> monthly but wants <3*Current Salary>. Label the Column as Dream Salary.
20. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.
21. Query to display Name, Hire Date and Day of the week on which the employee started.
22. Query to display Name, Department Name and Department No for all the employees.
23. Query to display Unique Listing of all Jobs that are in Department # 30.
24. Query to display Name, Department Name of all employees who have an 'A' in their name.
25. Query to display Name, Job, Department No. and Department Name for all the employees working at the Dallas location.
26. Query to display Name and Employee no. Along with their Manger's Name and the Manager's employee no; along with the Employees Name who do not have a Manager.
27. Query to display Name, Department No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.
28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies $100.
29. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees.
30. Query to display the number of employees performing the same Job type functions.
31. Query to display the no. of managers without listing their names.
32. Query to display the Department Name, Location Name, No. of Employees and the average salary for all employees in that department.
33. Query to display Name and Hire Date for all employees in the same dept. as Blake.
34. Query to display the Employee No. And Name for all employees who earn more than the average salary.
35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.
36. Query to display the names and salaries of all employees who report to King.
37. Query to display the department no, name and job for all employees in the Sales department.

CORE – 7: Discrete Mathematical

Structure OBJECTIVES

- To learn the mathematical foundations for Computer Science.
- Topics covered essential for understanding various courses.

Unit-1

Logics and Proof: Propositional Logic, Propositional Equivalences, Predicates and Quantifiers Nested Quantifiers, Rules inference, Mathematical Induction.

Sets and Functions: Sets, Relations, Functions, Closures of Equivalence Relations, Partial ordering well ordering, Lattice, Sum of products and product of sums principle of Inclusions and Exclusions

Unit-2

Combinatory: Permutations, Combinations, Pigeonhole principle

Recurrence Relation: Linear and Non-linear Recurrence Relations, Solving Recurrence Relation using Generating Functions.

Unit-3

Graphs: Introduction to graphs, graphs terminologies, Representation of graphs, Isomorphism, **Connectivity & Paths:** Connectivity, Euler and Hamiltonian Paths, Introduction to tree, tree traversals, spanning tree and tree search: Breadth first search, Depth first search, cut-set, cut-vertex.

Unit-4

Modeling Computation: Finite State Machine, Deterministic Finite Automata (DFA), Non-Deterministic Finite Automata (NFA), Grammars and Language, Application of Pumping Lemma for Regular Language.

Text Books:

1. "Discrete Mathematics and its Applications with Combinatory and Graph Theory" 7th edition by Kenneth H. Rosen.

Reference Books:

1. Elements of Discrete Mathematics by C. L. Liu and D.P. Mohapatra, TMH, 2012
2. J. P Tremblay, R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH, 1997.
3. A Modern Approach to Discrete Mathematics and Structure by J. K. Mantri & T. K Tripathy ,Laxmi Publication
4.

CORE – 7 Practical: Discrete Mathematical Structure Lab

Write the following programs using C/ C++

1. Tower of Hanoi
2. Graph representation using Adjacency List.
3. Graph representation using Adjacency Matrix.
4. String Matching using finite state machine.
5. Detecting whether a number is even or odd using Finite State Machine.
6. To identify keywords such as char, const, continue using Finite State Machine.
7. To find the power set for a given set.
8. To find GCD of two numbers using recursion.
9. To find Binomial coefficients.
10. To find Permutation and Combination result for a given pair of values n and r.
11. To check a number is prime or not.
12. To calculate the Euclidean distance between two points.
13. To find the Roots of polynomials.
14. Find the shortest path pair in a plane.

CORE–8: Operating System

OBJECTIVES

- To understand Operating system structure and services.
- To understand the concept of a Process, memory, storage and I/O management.

Unit–1

Introduction to Operating System, System Structures: Operating system services, system calls, system programs, Operating system design and implementation, Operating system structure.

Unit–2

Process Management: Process Concept, Operations on processes, Process scheduling and algorithms, Inter-process Communication, Concepts on Thread and Process, Deadlocks: Deadlock detection, deadlock prevention, and deadlock avoidance fundamentals.

Unit-3

Memory Management Strategies: Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management: Concepts, implementation (Demand Paging), Page Replacement, Thrashing.

Unit–4

Storage Management: File System concept, Access Methods, File System Mounting, File Sharing and File Protection, Implementing File Systems, Kernel I/O Systems.

Text book – Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, Eighth Edition, Wiley Student Edition 2009.

Reference book:

1. Morden Operating System , Tanenbaum ,Pearson , 4/ed. 2014
2. Richard F Ashley, Linux with Operating System Concepts, Chapman and Hall/CRC Published August 26, 2014
3. Richard Blum, Linux Command Line and Shell Scripting Bible, O' Reilly

CORE-8 Practical: Operating System Lab

1. Write a program (using *fork()* and/or *exec()* commands) where parent and child execute:
   a) same program, same code.
   b) same program, different code.
   c) before terminating, the parent waits for the child to finish its task.
2. Write a program to report behavior of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behavior of Linux kernel including information on configured memory, amount of free and used memory. (memory information)
4. Write a program to print file details including owner access permissions, file access time, where file name is given as argument.
5. Write a program to copy files using system calls.
6. Write a program using C to implement FCFS scheduling algorithm.
7. Write a program using C to implement Round Robin scheduling algorithm.
8. Write a program using C to implement SJF scheduling algorithm.
9. Write a program using C to implement non-preemptive priority based scheduling algorithm.
10. Write a program using C to implement preemptive priority based scheduling algorithm.
11. Write a program using C to implement SRTF scheduling algorithm.

12. Write a program using C to implement first-fit, best-fit and worst-fit allocation strategies.

CORE – 9: Computer Networks OBJECTIVES

- To learn how do computers and terminals actually communicate with each other.
- To understand the parts of a communication network and how they work together.

Unit-1

Introduction to Data Communications and Network Models: Protocols and Standards, Layers in OSI Models, Analog and Digital Signals, Transmission Modes, Transmission Impairment, Data Rate Limits, Performance, Digital Transmission, Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge (fundamental concepts only).

Unit-2

Signal Conversion: Digital-to-Digital Conversion, Analog-to-Digital Conversion, Digital-to-analog Conversion, Analog-to-analog Conversion.
Transmission Media: Guided Media, Unguided Media, Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch.

Unit-3

Error Detection and Correction: Checksum, CRC, Data Link Control: Framing, Flow and Error Control, Noiseless Channels, Noisy channels, (Stop and Wait ARQ, Slidding Window Protocol , Go Back N, Selective Repeat) HDLC, Point-to-Point Protocol. Access Control: TDM, CSMA/CD, and Channelization (FDMA, TDMA, and CDMA).

Unit-4

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Virtual-Circuit Networks: Frame Relay and ATM, Transport Layer: Process-Process Delivery: UDP, TCP. Application layers: DNS, SMTP, POP, FTP, HTTP, Basics of WiFi (Fundamental concepts only), Network Security: Authentication, Basics of Public Key and Private Key, Digital Signatures and Certificates (Fundamental concepts only).

Text Books:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan,TMH.

Reference Books:

1. Computer Networks, A. S. Tanenbaum, 4th edition, Pearson Education.

CORE – 9 Practical: Computer Networks Lab

Use C/C++/ any Network Simulator

1. Simulate Even Parity generator and checker.
2. Simulate two dimensional Parity generator and checker.
3. Simulate checksum generator and checker.

4. Simulate Hamming code method.
5. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
6. Simulate and implement stop and wait protocol for noisy channel.
7. Simulate and implement go back n sliding window protocol.
8. Simulate and implement selective repeat sliding window protocol.
9. Simulate and implement distance vector routing algorithm.

CORE – 10: Computer Graphics OBJECTIVES

- To be able to learn the core concepts of Computer Graphics.
- To be able to create effective programs for solving graphics problems.

Unit-1

Computer Graphics: A Survey of Computer graphics, Overview of Graphics System: Video Display Devices, Raster-Scan Systems, Input Devices, Hard-Copy Devices, Graphics Software.

Unit-2

Graphics Output Primitives: Point and Lines, Algorithms for line, circle & ellipse generation, Filled-Area Primitives. Attributes of Graphics Primitives: Point, line, curve attributes, fill area attributes, Fill methods for areas with irregular boundaries.

Unit-3

Geometric Transformations (both 2-D & 3-D): Basic Geometric Transformations, Transformation Matrix, Types of transformation in 2-D and 3-D Graphics: Scaling, Reflection, shear transformation, rotation, translation. 2-D, 3-D transformation using homogeneous coordinates.

Unit-4

Two Dimensional Viewing: Introduction to viewing and clipping, Viewing transformation in 2-D, Viewing pipeline, Clipping Window, Clipping Algorithms: Point clipping, Line clipping and Polygon clipping.

Text books

1. Mathematical Elements for Computer Graphics, D. F. Rogers & J. A. Adams, MGH, 2/ed.
2. Donald Hearn & M. Pauline Baker, “Computer Graphics with OpenGL”, Pearson Education.

Reference books

1. D. Hearn and M. Baker, “Computer Graphics with Open GL”, Pearson, 2/ed.
2. D. F. Rogers, “Procedural Elements for Computer Graphics”, MGH

CORE – 10 Practical: Computer Graphics Lab

Develop the programs using C/C++ or Java

1. Write a program to implement Bresenham’s line drawing algorithm.
2. Write a program to implement mid-point circle drawing algorithm.
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.

4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to fill a polygon using Scan line fill algorithm.
6. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).
7. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.

CORE – 11: Web Technologies

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:
The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press

2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

CORE – 11 Practical: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
2. Practicing basic and advanced text for formatting.
3. Practice use of image, video and sound in HTML documents.
4. Designing of web pages- Document layout, list, tables.
5. Practicing Hyperlink of web pages, working with frames.
6. Working with forms and controls.
7. Acquaintance with creating style sheet, CSS properties and styling.
8. Working with background, text, font, list properties.
9. Working with HTML elements box properties in CSS.
10. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
11. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
12. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
13. Write a PHP program to check if number is prime or not.
14. Write a PHP program to print first ten Fibonacci numbers.
15. Create a MySQL data base and connect with PHP.
16. Write PHP script for string and retrieving user information from my SQL table.
    a. Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
    b. Store this data in MySQL data base.
    c. Next page display all user in HTML table using PHP (display .PHP).
17. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

CORE – 12: Software Engineering

OBJECTIVES:

- To learn the way of developing software with high quality and the relevant techniques.
- To introduce software engineering principles for industry standard.
- To focus on Project management domain and Software risks management.

Unit-1

Introduction: Evolution of Software to an Engineering Discipline, Software Development Projects, Exploratory Style of Software Development, Emergence of Software Engineering, Changes in Software Development Practices, Computer Systems Engineering.
Software Lifecycle Models: Waterfall Model and its Extensions, Rapid Application Development (RAD), Agile Development Models, Spiral Model.

Unit-2

Software Project Management: Software Project Management Complexities, Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO, Halstead's Software Science, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management.

Unit-3

Requirement Analysis and Specification: Requirements Gathering and Analysis, Software Requirement Specifications, Formal System Specification Axiomatic Specification, Algebraic Specification, Executable Specification and 4GL.
Software Design: Design Process, Characterize a Good Software Design, Cohesion and Coupling, Layered Arrangements of Modules, Approaches to Software Design (Function Oriented & Object-Oriented).

Unit-4

Coding and Testing: Coding: Code Review, Software Documentation, Testing, Unit Testing, Black Box and White Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, Software Maintenance.

Text Book:

1. Fundamental of Software Engineering, Rajib Mall, Fifth Edition, PHI Publication, India.

Reference Books:

1. Software Engineering– Ian Sommerville, 10/Ed, Pearson.
2. Software Engineering Concepts and Practice – Ugrasen Suman, Cengage Learning India Pvt, Ltd.
3. R. Misra, C. Panigrahi, B. Panda: Principles of Software Engineering & System Design, YesDee Publication

CORE – 12 Practical: Software Engineering Lab

S. No. Practical Title

1. • Problem Statement,
   • Process Model
2. Requirement Analysis:

- Creating a Data Flow
- Data Dictionary, Use Cases

3. Project Management:
   - Computing FP
   - Effort
   - Schedule, Risk Table, Timeline chart
4. Design Engineering:
   - Architectural Design
   - Data Design, Component Level Design
5. Testing:
   - Basis Path Testing

Sample Projects:

1. **Criminal Record Management:** Implement a criminal record management system for jailers, police officers and CBI officers.
2. **Route Information**: Online information about the bus routes and their frequency and fares
3. **Car Pooling**: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System
7. Examination and Result computation system
8. Automatic Internal Assessment System
9. Parking Allocation System
10. Wholesale Management System

CORE–13: Artificial Intelligence

OBJECTIVES:

- To learn the basic concepts of AI principles and approaches.
- To develop the basic understanding of the building blocks of AI.

Unit-1

Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behavior and environment.

Unit-2

Problem Solving and Searching Techniques: Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, Hill climbing and its Variations,

Heuristics Search Techniques: Best First Search, A* algorithm, Constraint Satisfaction Problem, Introduction to Game Playing, Min-Max and Alpha-Beta pruning algorithms.

Unit-3

Knowledge Representation : Introduction to First Order Predicate Logic, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, Frames, and Scripts, Production Rules, Conceptual Graphs.

Unit-4

Dealing with Uncertainty and Inconsistencies Truth Maintenance System, Default Reasoning, Probabilistic Reasoning, Bayesian Probabilistic Inference, Possible World Representations, Basics of NLP.

Text books

1. Artificial Intelligence a Modern Approach, Stuart Russell and Peter Norvig, Pearson 3/ed.

Reference books

1. Artificial Intelligence, Rich &Knight , TMG , 3 e/d.

2. DAN.W. Patterson, Introduction to A.I and Expert Systems – PHI, 2007

3. W.F. Clocksin and Mellish, Programming in PROLOG, Narosa Publishing House, 3rd edition, 2001

CORE–13 Practical: Artificial Intelligence Lab

Write a Prolog program

1. To find the factorial of a number
2. To remove the nth item from a list.
3. To find the permutation of a set.
4. To implement append for two lists.
5. To implement palindrome.
6. To find the greater of two numbers X and Y.
7. To find the greatest number in the list of numbers.
8. To find the sum of given list of numbers.
9. To find the reverse of a list.
10. To solve 8 queens problem.
11. To solve 8-puzzle problem using best first search
12. To implement DFS.
13. To implement BFS.
14. To implement best first search.
15. To solve traveling salesman problem.

CORE – 14: Algorithm Design

Techniques OBJECTIVES:

- To be able to learn design principles and concepts of algorithms.
- To have a mathematical foundation in analysis of algorithm.

Unit-1

Introduction: Algorithm specification: Pseudo code, Space complexity and time complexity, Analysis and design of Insertion sort algorithm, Divide and Conquer paradigm, Recurrence relations, Solving Recurrences: Substitution methods, Recursion tree method, and Master method.

Unit-2

Searching and Sorting: Analysis of Linear Search, Binary Search, Merge Sort and Quick Sort, Heap Sort.

Hashing: Hash functions, Hash table, Collision resolution: Chaining and Open Addressing (Linear probing, Quadratic probing, Double hashing).

Unit-3

Greedy Technique: General Method, Applications: Fractional Knapsack Problem , Job Sequencing with Deadlines, Huffman Codes.
Dynamic Programming: General Method, Applications: Matrix Chain Multiplication, Longest common subsequence.

Unit-4

Graph Algorithms: Representations of Graphs, Breadth-first search, Depth-first search, Topological sort, Minimum Spanning Trees: Prim's and Kruskal's algorithm, Single-source shortest paths: Bellman-Ford algorithm, Dijkstra's algorithm.

Text books

1. Introduction to Algorithms, by Thomas H, Cormen, Charles E. Leiserson , Ronald L. Rivest, Clifford Stein, PHI.

Reference books

1. Algorithm Desgin, by Jon Kleinberg, Eva Tardos.

CORE – 14 Practical: Algorithm Design Techniques Lab

Using C or C++ implement the following

1. Quick sort.
2. Heap sort.
3. Merge sort.
4. Matrix Multiplication using recursion.
5. Linear Search.

6. Binary Search.
7. Huffman code.
8. Fractional knapsack problem.
9. Matrix chain multiplication.
10. Longest Common Subsequence.
11. Prim's algorithm.
12. Kruskal's algorithm.
13. BFS.
14. DFS.
15. Dijkstra Algorithm.

DSE-1: Numerical

Techniques OBJECTIVES:

- To learn various numerical techniques.
- To be able to implement different numerical techniques using programming language.

Unit-1

Floating point representation and computer arithmetic, Significant digits, Errors: Round-off error, Local truncation error, Global truncation error, Order of a method, Convergence and terminal conditions, Efficient computations.

Unit-2

Bisection method, Secant method, Regula−Falsi method Newton−Raphson method, Newton's method for solving nonlinear systems.

Unit-3

Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation Piecewise polynomial interpolation: Linear interpolation.

Unit-4

Numerical integration: Trapezoid rule, Simpson's rule (only method), Newton−Cotes formulas, Gaussian quadrature, Ordinary differential equation: Euler's method Modified Euler's methods, Runge-Kutta second methods

Text books

1. S.S. Sastry, "Introductory Methods of Numerical Analysis", EEE , 5/ed.
2. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publisher, 6/e (2012)

Reference books

1. Numerical Analysis: J. K. Mantri & S. Prahan, Laxmi Publication.
2. Introduction to Numerical Analysis, Josef Stoer and Roland Bulirsch, Springer.

DSE – 1 Practical: Numerical Techniques Lab

Implement using C/ C++ or MATLAB/ Scilab

1. Find the roots of the equation by bisection method.
2. Find the roots of the equation by secant/Regula−Falsi method.
3. Find the roots of the equation by Newton‘s method.
4. Find the solution of a system of nonlinear equation using Newton’s method.
5. Find the solution of tri-diagonal system using Gauss Thomas method.
6. Find the solution of system of equations using Jacobi/Gauss-Seidel method.
7. Find the cubic spline interpolating function.
8. Evaluate the approximate value of finite integrals using Gaussian/Romberg integration.
9. Solve the boundary value problem using finite difference method.

DSE – 2: Unix Shell

Programming OBJECTIVES:

- To learn the basics of UNIX OS, UNIX commands and File system.
- To familiarize students with the Linux environment.
- To learn fundamentals of shell scripting and shell programming.
- To be able to write simple programs using UNIX.

Unit-1

Introduction: Unix Operating systems, Difference between Unix and other operating systems, Features and Architecture, Installation, Booting and shutdown process, System processes (an overview), External and internal commands, Creation of partitions in OS, Processes and its creation phases – Fork, Exec, wait, exit.

Unit-2

User Management and the File System: Types of Users, Creating users, Granting rights, User management commands, File quota and various file systems available, File System Management and Layout, File permissions, Login process, Managing Disk Quotas, Links (hard links, symbolic links)

Unit-3

Shell introduction and Shell Scripting: Shell and various type of shell, Various editors present in Unix, Different modes of operation in vi editor, Shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls, Pipes and Filters.

Unit-4

Unix Control Structures and Utilities: Decision making in Shell Scripts (If else, switch), Loops in shell, Functions, Utility programs (cut, paste, join, tr, uniq utilities), Pattern matching utility (grep).

Text Books:

1. Sumitabha, Das, Unix Concepts And Applications, Tata McGraw-Hill Education, 2017, 4/Ed.

Reference Books:

1. Nemeth Synder & Hein, Linux Administration Handbook, Pearson Education, 2010, 2/ Ed.

DSE – 2 Practical: Unix Programming Lab

1. Write a shell script to check if the number entered at the command line is prime or not.
2. Write a shell script to modify "cal" command to display calendars of the specified months.
3. Write a shell script to modify "cal" command to display calendars of the specified range of months.
4. Write a shell script to accept a login name. If not a valid login name display message "Entered login name is invalid".
5. Write a shell script to display date in the mm/dd/yy format.
6. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.
7. Write a shell script to display the multiplication table of any number.
8. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
9. Write a shell script to find the sum of digits of a given number.
10. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
11. Write a shell script to find the LCD (least common divisor) of two numbers.
12. Write a shell script to perform the tasks of basic calculator.
13. Write a shell script to find the power of a given number.
14. Write a shell script to find the greatest number among the three numbers.
15. Write a shell script to find the factorial of a given number.
16. Write a shell script to check whether the number is Armstrong or not.

DSE-3: Data

Science

OBJECTIVES:

- To learn emerging issues related to various fields of data science.
- To understand the underlying principles of data science, exploring data analysis.
- To learn the basics of R Programming.

Unit-1

Data Scientist's Tool Box: Turning data into actionable knowledge, introduction to the tools that will be used in building data analysis software: version control, markdown, git, GitHub, R, and RStudio.

Unit-2

R Programming Basics: Overview of R, R data types and objects, reading and writing data, Control structures, functions, scoping rules, dates and times, Loop functions, debugging tools,

Simulation, code profiling.

Unit-3

Getting and Cleaning Data: Obtaining data from the web, from APIs, from databases and from colleagues in various formats, basics of data cleaning and making data "tidy".

Unit-4

Exploratory Data Analysis: Essential exploratory techniques for summarizing data, applied before formal modeling commences, eliminating or sharpening potential hypotheses about the world that can be addressed by the data, common multivariate statistical techniques used to visualize high-dimensional data.

Text Books

1. Rachel Schutt, Cathy O'Neil, "Doing Data Science: Straight Talk from the Frontiline" by Schroff/O'Reilly, 2013.

Reference Books

1. Foster Provost, Tom Fawcett, "Data Science for Business" What You Need to Know About Data Mining and Data-Analytic Thinking by O'Reilly, 2013.
2. John W. Foreman, "Data Smart: Using data Science to Transform Information into Insight" by John Wiley & Sons, 2013.
3. Eric Seigel, "Predictive Analytics: The Power to Predict who Will Click, Buy, Lie, or Die", 1st Edition, by Wiley, 2013.

DSE-3 Practical: Elementary Data Science Lab

1. Write a program that prints "Hello World" to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement linear search.
8. Implement binary search.
9. Implement matrices addition, subtraction and Multiplication
10. Fifteen students were enrolled in a course. There ages were:

20 20 20 20 20 21 21 21 22 22 22 22 23 23 23

i. Find the median age of all students under 22 years.
ii. Find the median age of all students.
iii. Find the mean age of all students.
iv. Find the modal age for all students.
v. Two more students enter the class. The age of both students is 23. What is now mean, mode and median?

DSE–4: PROJECT WORK/ DISSERTATION OR DATA MINING

DSE–4: DATA MINING

OBJECTIVES:

- To introduce the basic concepts of data warehousing, data mining, Issues, and Implication.
- To learn the core topics like Association rules, Classification & Prediction and Clustering techniques.
- To make a study on the Applications and Trends in Data Mining.

Unit-1

Data Warehouse Fundamentals: Introduction to Data Warehouse, OLTP Systems, OLAP, Differences between OLTP and OLAP, Characteristics of Data Warehouse, Functionality of Data Warehouse, Advantages and Applications of Data Warehouse, Advantages, Applications, Top- Down and Bottom-Up Development Methodology, Tools for Data warehouse development, Data Warehouse Types, Data cubes

Unit-2

Introduction to Data Mining: Data mining, Functionalities, Data Preprocessing: Preprocessing the Data, Data cleaning, Data Integration and Transformation, Data reduction, Discretization and Concept hierarchies.

Unit-3

Mining Association Rules: Basics Concepts – Single Dimensional Boolean Association Rules from Transaction Databases, Multilevel Association Rules from transaction databases, Multi dimension Association Rules from Relational Database and Data Warehouses. Apriori Algorithm, FP-Tree algorithm

Unit-4

Classification and Prediction: Introduction, Issues, Decision Tree Induction, Naïve Bayesian Classification, Classification based on Concepts from Association Rule Mining, Classifier Accuracy.

Text Books:

1. J. Han and M. Kamber, Data Mining Concepts and Techniques, Elsevier, 2011

Reference Books:

1. K.P. Soman ,Shyam Diwakar, V.Ajay ,2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.

2. Data Mining Techniques, Arun K. Pujari, Universities Press, 2006

3. Modern Approaches of Data Mining: Theory & Practice, M. Panda, S. Dehuri, M. R. Patra, Narosa Publishing House, 2018.

DSE – 4 Practical: Data Mining Lab

Using Scilab/ MATLAB/ C/ Python/ R

1. Build a Data Warehouse and perform it's operations.
2. Perform data preprocessing tasks and Demonstrate performing association rule mining on data sets.
3. Demonstrate performing classification on data sets.
4. Demonstrate performing clustering on data sets.
5. Demonstrate performing Regression on data sets.
6. Credit Risk Assessment. Sample Programs using German Credit Data.
7. Sample Programs using Hospital Management System.

SEC – 1: Python

Programming

OBJECTIVES:

- To enable the students to understand the basic principles of the Python Language.
- To use the tools to do simple programs in python.

Unit-1

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Unit-2

Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Unit-3

Overview of Programming: Structure of a Python Program, Elements of Python

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)

Unit-4

Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.

Text Books

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011

Reference Books

1. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

Online References:

1. Python Tutorial/Documentation www.python.or 2015
2. http://docs.python.org/3/tutorial/index.html
3. http://interactivepython.org/courselib/static/pythonds
4. http://www.ibiblio.org/g2swap/byteofpython/read/

Software Lab based on Python Programming:

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon users choice.
2. Write a Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Write a Program to display the first n terms of Fibonacci series.
5. Write a Program to find factorial of the given number.
6. Write a Program to find sum of the following series for n terms: 1 – 2/2! + 3/3! ---------n/n!
7. Write a Program to calculate the sum and product of two compatible matrices.

SEC-2: Android

Programming

OBJECTIVES:

- To learn the basics of Android Programming.
- To develop simple Android applications.

Unit-1

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

Unit-2

Overview of object oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

Unit-3

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating an android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.

Unit-4

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, Dialog.

Database: Understanding of SQLite database, connecting with the database.

Text Books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Reference Book:

1. James C. Sheusi, "Android application Development for Java Programmers", Cengage Learning, 2013.
2. M. Burton, & D. Felker, "Android Application Development for Dummies", 2/e, Wiley India.

Online References:

1. http://www.developer.android.com
2. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebooks also).
3. http://developer.android.com/guide/components/fundamentals.html
4. http://developer.android.com/training/multiscreen/screensizes.html
5. http://developer.android.com/guide/topics/ui/controls.html

Software Lab based on Android Programming:

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher-in-charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

AEC –1: Environmental Science

AEC – 2: English Communication/MIL

GE–1: Computer Fundamentals

OBJECTIVES:

- To make the students understand and learn the basics of computer.
- To make them familiar with the parts and functions of computer.
- To learn the features of some emerging technologies.

Unit-1

Introduction: Introduction to computer system, uses, types.

Data Representation: Number systems and character representation, binary arithmetic

Human Computer Interface: Types of software, Operating system as user interface, utility programs

Unit-2

Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter
Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks

Unit-3

Computer Organisation and Architecture: C.P.U., registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors.

Unit-4

Overview of Emerging Technologies: Bluetooth, cloud computing, big data, data mining, mobile computing and embedded systems.

Text Books:

1. A. Goel, Computer Fundamentals, Pearson Education, 2010.

Reference Books:

1. P. Aksoy, L. DeNardis, Introduction to Information Technology, Cengage Learning, 2006
2. P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers, 2007

GE–1 Practical: Computer Fundamentals Lab

Practical exercises based on MS Office tools including document preparation and spreadsheet handling packages.

MS Word:

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of February, 2019.
   - Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
   - The headings of the columns should be in 12-point and bold.
   - The rest of the document should be in 10-point Times New Roman.
   - Leave a gap of 12-points after the title.

2. Create a telephone directory.
   - The heading should be 16-point Arial Font in bold
   - The rest of the document should use 10-point font size
   - Other headings should use 10-point Courier New Font.
   - The footer should show the page number as well as the date last updated.

3. Design a time-table form for your college.
   - The first line should mention the name of the college in 16-point Arial Font and should be bold.
   - The second line should give the course name/teacher‘s name and the department in 14-point Arial.

4. Create the following documents:
   a) A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.

b) Use a newsletter format to promote upcoming projects or events in your classroom or college.

5. Enter the following data into a table given below:

Salesperson	Dolls	Trucks	Puzzles
Kennedy, Sally	1327	1423	1193
White, Pete	1421	3863	2934
Pillar, James	5214	3247	5467
York, George	2190	1278	1928
Banks, Jennifer	1201	2528	1203
Atwater, Kelly	4098	3079	2067

Add a column Region (values: S, N, N, S, S, S) between the Salesperson and Dolls columns to the given table Sort your table data by Region and within Region by Salesperson in ascending order: In this exercise, you will add a new row to your table, place the word "Total" at the bottom of the Salesperson column, and sum the Dolls, Trucks, and Puzzles columns.

MS Excel

6. Given the following worksheet

	A	B	C	D
1	Roll No.	Name	Marks	Grade
2	1001	Sachin	99	
3	1002	Sehwag	65	
4	1003	Rahul	41	
5	1004	Sourav	89	
6	1005	Har Bhajan	56	

Calculate the grade of these students on the basis of following guidelines:

If Marks	Then Grade
>= 80	A+
>= 60 < 80	A
>= 50 < 60	B
< 50	F

7. Given the following worksheet

	A	B	C	D	E	F	G
1	**Salesman**			**Sales in (Rs.)**			
2	No.	Qtr1	Qtr2	Qtr3	Qtr4	Total	Commission
3	S001	5000	8500	12000	9000		
4	S002	7000	4000	7500	11000		
5	S003	4000	9000	6500	8200		
6	S004	5500	6900	4500	10500		
7	S005	7400	8500	9200	8300		
8	S006	5300	7600	9800	6100		

Calculate the commission earned by the salesmen on the basis of following Candidates:

If Total Sales	**Commission**
< 20000	0% of sales
> 20000 and < 25000	4% of sales
> 25000 and < 30000	5.5% of sales
> 30000 and < 35000	8% of sales
>= 35000	11% of sales

The total sales is sum of sales of all the four quarters.

8. Create Payment Table for a fixed Principal amount, variable rate of interests and time in the format below:

No. of Instalments	5%	6%	7%	8%	9%
3	XX	XX	XX	XX	XX
4	XX	XX	XX	XX	XX
5	XX	XX	XX	XX	XX
6	XX	XX	XX	XX	XX

9. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

- HRA Dependent on Basic
  30% of Basic if Basic <=1000
  25% of Basic if Basic>1000 & Basic<=3000
  20% of Basic if Basic >3000
- DA Fixed for all employees, 30% of Basic
- Conveyance Allowance Rs. 50/- if Basic is <=1000
  Rs. 75/- if Basic >1000 & Basic<=2000
  Rs. 100 if Basic >2000
- Entertainment Allowance NIL if Basic is <=1000 Rs. 100/- if Basic > 1000

Deductions

- Provident Fund 6% of Basic
- Group Insurance Premium Rs. 40/- if Basic is <=1500
  Rs. 60/- if Basic > 1500 & Basic<=3000
  Rs. 80/- if Basic >3000

Calculate the following:

Gross Salary = Basic + HRA + DA + Conveyance + Entertainment

Total deduction = Provident Fund + Group Insurance Premium

Net Salary = Gross Salary – Total Deduction

9.

The following table gives year wise sale figure of five salesmen in Rs.

Salesman	2000	2001	2002	2003
S1	10000	12000	20000	50000
S2	15000	18000	50000	60000
S3	20000	22000	70000	70000
S4	30000	30000	100000	80000
S5	40000	45000	125000	90000

(*a*) Calculate total sale year wise.

(*b*) Calculate the net sale made by each salesman

(*c*) Calculate the maximum sale made by the salesman

(d) Calculate the commission for each salesman under the condition.

(*i*) If total sales >4,00,000 give 5% commission on total sale made by the salesman.

(*ii*) Otherwise give 2% commission.

(*e*) Draw a bar graph representing the sale made by each salesman.

(*f*) Draw a pie graph representing the sale made by salesman in 2000.

GE – 2: C and Data Structure

OBJECTIVES:

- To learn the basics of C programming language.
- To understand the fundamentals of linear data structure.
- To be able write simple C and data structure programs.

Unit-1

Algorithm, flowchart, program development steps, structure of C program, A Simple C program, identifiers, basic data types and sizes, Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators,

assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation.

Input-output statements, statements and blocks, if and switch statements, loops- while, do-while and for statements, break, continue, goto and labels, programming examples.

Unit-2

Designing structured programs, Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, header files, C preprocessor, example c programs.

Unit-3

Arrays- concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two-dimensional and multi-dimensional arrays, applications of arrays. pointers- concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory managements functions, command line arguments, C program examples.

Unit-4

Introduction to data structures, representing stacks and queues in C using arrays, infix to post fix conversion, postfix expression evaluation, Applications of Queue.

Searching - Linear and binary search methods, sorting - Bubble sort, selection sort, Insertion sort, Quick sort.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)
2. Seymour Lipschutz, “Data Structure with C”, - Schaum’s Outlines MGH.

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI
2. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana
3. Data Structures Using C - A. S. Tanenbaum, Y. Langsam, M. J. Augenstein, PHI/Pearson.

GE – 2 Practical: C and Data Structure Lab

1. Write a Program to find the greatest among three numbers.
2. Write a Program to check a number is leap year or not.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

$$S = 1+1/2+1/3+1/4+\ldots\ldots$$

6. Write a function to find whether a given no. is prime or not.
7. Write a Program to compute factorial of a number.
8. Write a Program to print a triangle of stars as follows (take number of lines from user):

*

***
*****
****

9. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
10. To insert and delete elements from appropriate position in an array.
11. To search an element and print the total time of occurrence in the array.
12. Array implementation of Stack.
13. Array implementation of Queue.
14. To perform Bubble sort.
15. To perform Selection sort.

GE – 3: Programming in Python

OBJECTIVES:

- To enable the students to understand the core principles of the Python Language.
- To use the tools to produce well designed programs in python.
- To create effective GUI applications.

Unit-1

Introduction to Python: Python Interpreter, Python as calculator, Python shell, Indentation, identifier and keywords, literals, strings, operatory (Arithmetic, Relational or decrement operator). Input output statement, control statements, (Branding, looping, conditional statement, Exit function)

Unit-2

String manipulations: Subscript operator, indexing, slicing a string, other functions on strings string module.

Strings and number system, format functions: converting strings to numbers & Vice Versa.

List, tuples, sets, Dictionaries: Basic list operators, replacing, inserting, removing an element, searching, Sorting lists, dictionary literals, adding & removing keys, accessing & replacing values, traversing dictionaries , Array in Python.

Unit-3

Design with Functions: hiding redundancy, complexity, arguments & return values; Formal/Actual arguments, named arguments, program structure and design, Recursive functions, scope & Global statements, Importing modules, Math modules & Random modules. Exception Handling: Exceptions, except clause, try and finally clause, user defined exceptions.

File Handling: Manipulating files & directories, OS & SYS modules, Reading, Writing text & numbers from/to file.

Unit-4

Simple Graphics: “Turtle” module; simple drawing colors, shapes, digital images, image file formats, Graphical U&S interfaces: Event driver programming, Paradigm, tkinter module, creating.

Simple GUI: buttons, labels entry fields, dialogs, widget attributes-sizes fonts, colors, layout.

Text Books

1. Python Programming using problem solving approach by Reema Thareja, Oxford University Press.2017

Reference Books

1. Introduction to Computation and Programming Using Python with application to understanding data by Guttag John V. PHI
2. Introduction to Computer Science using Python by Charles Diorbach, Wiley.

GE-3 Practical: Programming in Python Lab

1. Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature.

2. Using while loop, produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).

3. Write a program that reads an integer value and prints ―leap year‖ or ―not a leap year‖.

4. Write a program that takes a positive integer n and then produces n lines of output shown as follows.

For example enter a size: 5

```
*
**
***
****
*****
```

5. Write a function that takes an integer ‗n‘ as input and calculates the value of 1 + 1/1! + 1/2! + 1/3! + … + 1/n

6. Write a function that takes an integer input and calculates the factorial of that number.

7. Write a function that takes a string input and checks if it‘s a palindrome or not.

8. Write a list function to convert a string into a list, as in list (‗abc‘) gives [a, b, c].

9. Write a program to generate Fibonacci series.

10. Write a program to check whether the input number is even or odd.

11. Write a program to compare three numbers and print the largest one.

12. Write a program to print factors of a given number.

13. Write a method to calculate GCD of two numbers.

14. Write a program to create Stack Class and implement all its methods. (Use Lists).

15. Write a program to create Queue Class and implement all its methods. (Use Lists)

16. Write a program to implement linear and binary search on lists.

17. Write a program to sort a list using insertion sort and bubble sort and selection sort.

GE – 4: Web

Technology

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:
The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press
2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

GE-4 Practical: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
1. Practicing basic and advanced text for formatting.
2. Practice use of image, video and sound in HTML documents.
3. Designing of web pages- Document layout, list, tables.
4. Practicing Hyperlink of web pages, working with frames.
5. Working with forms and controls.
6. Acquaintance with creating style sheet, CSS properties and styling.
7. Working with background, text, font, list properties.
8. Working with HTML elements box properties in CSS.
9. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
10. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
11. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
12. Write a PHP program to check if number is prime or not.
13. Write a PHP program to print first ten Fibonacci numbers.
14. Create a MySQL data base and connect with PHP.
15. Write PHP script for string and retrieving user information from my SQL table.
(a) Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
(b) Store this data in MySQL data base.
(c) Next page display all user in HTML table using PHP (display PHP).
16. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

Equipment:

1. Desktop Computer

Core i5 (minimum 8th Generation Processor, 8 GB RAM, 2 TB HDD)

Number of Desktops: 30 (or as per student strength). It must be connected through structured Local Area Network (LAN).

2. Software

LibreOffice, Scilab, C, C++, Java, Assembler, VHDL, Linux/ Unix Prolog etc. , preferably Open Source Software.

Faculty Training:

Most of the Colleges are offering B.Sc. Computer Science (H) under self-financing mode. There is limited faculty to manage the course. It is assumed that for majority of such colleges there is no permanent faculty. If this is the case then faculty training is required for all Core Courses as well as Discipline Specific Elective Courses.

For colleges having adequate faculty, faculty training may be organized for the following Courses in phased manner (six month before the beginning of the Subject in the concerned semester).

i. Digital Logic
ii. Data Structures
iii. Operating Systems
iv. Database Systems
v. Java Programming
vi. Web Technology
vii. Artificial Intelligence
viii. Algorithm Design Techniques
ix. Unix Shell Programming
x. Data Mining
xi. Data Science
xii. Android Programming
xiii. Programming in Python

COMMON SYLLABUS FOR B.Sc. (ITM)

Course structure of B. Sc. (ITM)

Preamble

Information and Communication Technology (ICT) has today become integral part of all industry domains as well as fields of academics and research. The industry requirements and technologies have been steadily and rapidly advancing. Organizations are increasingly opting for open source systems. A genuine attempt has been made while designing the syllabus for this 3- year B. Sc. (ITM) course. It prepare the students for a career in Software industry. The core philosophy of overall syllabus is to:

a. Introduce emerging trends to the students in gradual way,

b. Groom the students for the challenges of ICT industry

The Government of Odisha has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the State of Odisha in line with the University Grants Commission (UGC). The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The Government of Odisha has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Universities & Colleges in Odisha in line with UGC. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the Universities and Colleges must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching–learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities and Colleges in the states as well as the country. This creates difficulty for the academia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top institutions in India and abroad. So, it is desirable to introduce uniform grading system. This will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines, which is being adopted by the state of Odisha.

CHOICE BASED CREDIT SYSTEM (CBCS): The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in Odisha. This will benefit the students to move across institutions within Odisha to begin with and across states and countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

1. **Core Course**: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course**: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

Discipline Specific Elective (DSE) Course: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

Dissertation/Project: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

Generic Elective/ Inter-disciplinary (GE/ IC) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective/ Inter-disciplinary.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. **Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course**: They ((i) Environmental Science, (ii) English/ MIL Communication) are mandatory for all disciplines. AEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

Project work/Dissertation is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/ Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

GUIDELINES FOR PROJECT FORMULATION

As the project work constitutes a major component in most of the professional programs and it is to be carried out with due care and should be executed with seriousness by the candidates.

TYPE OF PROJECT

As majority of the students are expected to work out a real-life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. It is not mandatory for a student to work on a real-life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with the guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form:

1. Title of the Project

2. Introduction and Objectives of the Project

3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.)

4. Analysis (DFDs at least up to second level, ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).

5. A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules. Process Logic of each module. Testing process to be used. Reports generation

6. Tools / Platform, Hardware and Software Requirement specifications

7. Future scope and further enhancement of the project.

SEMESTER	COURSE OPTED	COURSE NAME	CREDITS
I	Ability Enhancement Course-1	AEC-1 (Environmental Science)	4
	Core Course-1	Digital Logic	4
	Core Course-1 Practical/Tutorial	Digital Logic LAB	2
	Core Course-2	Programming using C	4
	Core Course-2 Practical/Tutorial	Programming using C LAB	2
	Generic Elective/ Interdisciplinary Course -1	GE/IC-1 (Discrete Mathematical Structures)	4

	Generic Elective/ Interdisciplinary Course -1 Practical/Tutorial	GE/IC-1 LAB/Tutorial (Discrete Mathematical Structures LAB)	2
II	Ability Enhancement Course-2	AEC-2 (English/ MIL Communication)	4
	Core Course-3	Computer Organization	4
	Core Course-3 Practical / Tutorial	Computer Organization LAB	2
	Core Course-4	Data Structures	4
	Core Course-4 Practical/Tutorial	Data Structures LAB	2
	Generic Elective/ Interdisciplinary Course -2	GE/IC-2 (Numerical Techniques)	4
	Generic Elective/ Interdisciplinary Course -2 Practical/Tutorial	GE/IC-2 LAB/Tutorial (Numerical Techniques LAB)	2
III	Core Course-5	Programming using C++	4
	Core Course-5 Practical/Tutorial	Programming using C++ LAB	2
	Core Course-6	Database Systems	4
	Core Course-6 Practical/Tutorial	Database Systems LAB	2
	Core Course-7	Principles of Management	4
	Core Course-7 Practical/ Tutorial	Principles of Management Tutorial	2
	Skill Enhancement Course-1	SEC-1 (Python Programming)	4
	Generic Elective/ Interdisciplinary Course -3	GE/IC-3 (Statistical Techniques)	4
	Generic Elective/ Interdisciplinary Course -3 Practical/Tutorial	GE/IC-3 LAB/Tutorial (Statistical Techniques LAB)	2
IV	Core Course-8	JAVA Programming	4
	Core Course-8 Practical/Tutorial	JAVA Programming LAB	2
	Core Course-9	Business Accounting	4
	Core Course-9 Practical/Tutorial	Business Accounting Tutorial	2
	Core Course-10	Operating Systems	4
	Core Course-10 Practical/Tutorial	Operating Systems LAB	2
	Skill Enhancement Course-2	SEC-2 (Android Programming)	4
	Generic Elective/ Interdisciplinary Course -4	GE/IC-4 (Operations Research)	4
	Generic Elective/ Interdisciplinary Course -4 Practical/Tutorial	GE/IC-4 LAB/Tutorial (Operations Research LAB)	2
V	Core Course-11	Web Technology	4
	Core Course-11 Practical/Tutorial	Web Technology LAB	2
	Core Course-12	Software Engineering	4
	Core Course-12 Practical/Tutorial	Software Engineering Lab	2
	Discipline Specific Elective-1	DSE-1 (Data Science)	4
	Discipline Specific Elective-1 Practical/Tutorial	DSE-1 LAB/ Tutorial (Data Science LAB)	2
	Discipline Specific Elective-2	DSE-2 (Managerial Economics)	4

	Discipline Specific Elective-2 Practical/Tutorial	DSE-2 LAB/ Tutorial (Managerial Economics Tutorial)	2
VI	Core Course-13	Management Accounting	4
	Core Course-13 Practical/Tutorial	Management Accounting Tutorial	2
	Core Course-14	Computer Networks	4
	Core Course-14 Practical/Tutorial	Computer Networks LAB	2
	Discipline Specific Elective-3	DSE-3 (Financial Management)	4
	Discipline Specific Elective-3 Practical/Tutorial	DSE-3 LAB/ Tutorial (Financial Management Tutorial)	2
	Discipline Specific Elective-4	DSE-4 (Project Work / E-Commerce)	6/4
	Discipline Specific Elective-4 Practical/Tutorial	DSE-4 LAB/ Tutorial (E-Commerce Tutorial)	2

CORE Papers:

CORE – 1: Digital Logic

CORE – 2: Programming Using C

CORE – 3: Computer Organization

CORE – 4: Data Structure

CORE – 5: Programming Using C++

CORE – 6: Database Systems

CORE – 7: Principles of Management

CORE – 8: Java Programming CORE – 9:

Business Accounting CORE – 10:

Operating Systems CORE – 11: Web

Technologies CORE – 12: Software

Engineering CORE – 13: Management

Accounting CORE – 14: Computer

Networks

Discipline Specific Electives (DSE) Papers:

DSE–1: Data Science

DSE–2: Managerial Economics

DSE–3: Financial Management DSE–4:

Project Work / E-Commerce

Skill Enhancement Courses (SEC): SEC –

1: Python Programming SEC – 2:

Android Programming

Ability Enhancement Courses (AEC): AEC –

1: Environmental Science.

AEC – 2: English/ MIL Communication.

Generic Elective (GE)/ Interdisciplinary Course (IC):

GE/IC – 1: Discrete Mathematical Structures

GE/IC – 2: Numerical Techniques

GE/IC – 3: Statistical Techniques

GE/IC – 4: Operations Research

Detailed Syllabus

CORE–1: DIGITAL LOGIC

OBJECTIVES

- To understand different methods used for the simplification of Boolean functions and binary arithmetic.
- To design and implement combinational circuits, synchronous & asynchronous sequential circuits.
- To study in detail about Semiconductor Memory Systems.

Unit-1

Character Codes, Decimal System, Binary System, Decimal to Binary Conversion, Hexadecimal Notation, Boolean Algebra, Basic Logic Functions: Electronic Logic Gates, Synthesis of Logic Functions, Minimization of Logic Expressions, Minimization using Karnaugh Maps, Synthesis with NAND and NOR Gates, Tri-State Buffers

Unit-2

Arithmetic: Addition and Subtraction of Signed Numbers, Addition/ Subtraction Logic Unit, Design of Fast Adders: Carry-Lookahead Addition, Multiplication of Positive Numbers, Signed-Operand Multiplication: Booth Algorithm, Fast Multiplication: Bit-Pair Recodng Multipliers, Carry-Save Addition of Summands, Integer Division, Floating-Point Numbers and Operations: IEEE Standard for Floating-Point Numbers, Arithmetic Operations on Floating-Point Numbers, Guard Bits and Truncation, Implementing Floating-Point Operations.

Unit-3

Flip-Flops, Gated Latches, Master-Slave Flip-Flops, Edge-Triggering, T Flip-Flops, JK Flip-

Flops. Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic

Devices (PLDs), Programmable Array Logic (PAL), Complex Programmable Logic Devices (CPLDs), Field-Programmable Gate Array (FPGA), Sequential Circuits, UP/ DOWN Counters, Timing Diagrams, The Finite State Machine Model, Synthesis of Finite State Machines.

Unit-4

Memory System: Semiconductor RAM Memories, Internal Organization of Memory Chips, Static Memories, Asynchronous DRAMS, Synchronous DRAMS, Structure of Large Memories, Memory System Considerations, RAMBUS Memory. Read-Only Memories: ROM, PROM, EPROM, EEPROM, Flash Memory, Speed, Size, and Cost of Memory. Secondary Storage: Magnetic Hard Disks, Optical Disks, Magnetic Tape Systems.

Text Books:

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/e (TMH)

Reference Books:

1. M. Morris Mano: Digital Logic and Computer Design, Pearson

CORE–1 Practical: Digital Logic Lab

1. Introduction to Xilinx software (VHDL)

Write the VHDL code for

2. Realizing all logic gates.

3. Combination Circuit.

4. ADDER.

5. SUBTRACTOR.

6. MUX.

7. DE-MUX.

8. Encoder.

9. Decoder.

10. PAL.

11. PLA.

Write the VHDL program for the following Sequential Logic Circuits

12. Flip Flops.

13. Shift Registers.

14. Counters.

15. Memory Elements.

CORE–2: PROGRAMMING USING

C OBJECTIVES:

- To learn basics of C programming language.
- To be able to develop logics to create programs/ applications in C.

Unit-1

Introduction: Introduction to Programming Language, Introduction to C Programming, Keywords & Identifiers, Constants, Variables, Input and Output Operations, Compilation and pre-processing, **Data types**: Different data types, Data types qualifier, modifiers, Memory representation, size and range, **Operators:** Operators (Arithmetic, Relational, Logical, Bitwise, Assignment & compound assignment, Increment & Decrement, Conditional), Operator types (unary, binary, ternary). Expressions, Order of expression (Precedence and associativity)

Control structures: Decision Making and Branching (Simple IF Statement, IF…ELSE Statement, Nesting IF… ELSE Statement, ELSE IF Ladder), Selection control structure (Switch Statement).

Unit-2

Loops: The WHILE Statement, The DO…WHILE Statement, The FOR Statement, Jumps in Loops, **Array:** Concept of Array, Array Declaration, types of array (one and multiple dimension), Character Arrays and Strings, Subscript and pointer representation of array, Array of Pointers, Limitation of array, **Pointers**: Concept of Pointer (null pointer, wild pointer, dangling pointer, generic pointer), Pointer Expressions, Accessing the Address of a Variable, Declaring Pointer Variables, Initializations of Pointer Variable, Accessing a Variable through its Pointer, Pointer arithmetic.

Unit-3

Storage class: Types (auto, register, static, extern), scope rules, declaration and definition. **Function**: Function & types (User defined function, library function) Function Definition, Declaration, Function Calls, Header file and library, Function Arguments, string handling function (strlen, strcmp, strcpy, strncpy, strcat, strstr), Function recursion, Functions Returning Pointers, Pointers to Functions, Command line arguments, Application of pointer (dynamic memory allocation).

Unit-4

Structure and Union: Defining, Declaring, Accessing, Initialization Structure, nested structure, self-referential structure, bit-field, Arrays of Structures, Structures and Functions, Unions, difference between structure and union, active data member, structure within union, Self-referential Structure.

File: File Management in C, Defining and Opening a File, File opening modes (read, write, append), Closing a File, File operations, file and stream, Error Handling During I/O Operations, sequential and random access file, low level and high level file.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI

2. Paul Deitel, Harvey Deitel, “C: How to Program”, 8/e, Prentice Hall.
3. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana

Core-2 Practical/Tutorial: Programming Fundamentals using C Lab

1. Write a Program to find greatest among three numbers.
2. Write a Program to all arithmetic operation using switch case.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

   S = 1+1/2+1/3+1/4+……
6. Write a Program to compute the sum of the first n terms of the following series

   S =1-2+3-4+5…….
7. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
8. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
9. Write a Program to compute the factors of a given number.
10. Write a program to swap two numbers using macro.
11. Write a Program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
```

12. Write a Program to perform following actions on an array entered by the user:
    a) Print the even-valued elements
    b) Print the odd-valued elements
    c) Calculate and print the sum and average of the elements of array
    d) Print the maximum and minimum element of array
    e) Remove the duplicates from the array
    f) Print the array in reverse order

    The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.
13. Write a Program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
14. Write a program that swaps two numbers using pointers.
15. Write a program in which a function is passed address of two variables and then alter its contents.
16. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
17. Write a program to find sum and average of n elements entered by the user. To write this program, allocate memory dynamically using malloc( ) / calloc( ) functions.
18. Write a menu driven program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat function.
    c) Concatenate two strings using strcat function.
    d) Compare two strings
    e) Calculate length of the string (use pointers)
    f) Convert all lowercase characters to uppercase
    g) Convert all uppercase characters to lowercase
    h) Calculate number of vowels
    i) Reverse the string
19. Given two ordered arrays of integers, write a program to merge the two-arrays to get an

ordered array.

20. Write a program to copy the content of one file to other.

CORE–3: COMPUTER ORGANIZATION

OBJECTIVES

- To study the basic organization of digital computers (CPU, memory, I/O, software).
- To have a better understanding and utilization of digital computers.
- To be familiar with Assembly Language Programming (ALP)

Unit-1

Basic Structure of Computers: Computer Types, Functional Units, Input Unit, Memory Unit, Arithmetic and Logic Unit, Output Unit, Control Unit, Basic Operational Concepts, Bus Structures, Software. Machine Instructions and Programs: Numbers, Arithmetic Operations, and Characters: Number Representation, Addition of Positive Numbers, Addition and Subtraction of Signed Numbers, Overflow of Integer Arithmetic, Floating-Point Numbers & Operations, Characters, Memory Locations and Addresses, Byte Addressability, Word Alignment, Accessing Numbers, Characters, and Character Strings, Memory Operations, Instructions and Instruction Sequencing, Register Transfer Notation, Basic Instruction Types, Instruction Execution and Straight-Line Sequencing, Branching, Condition Codes, Generating Memory Addresses, Addressing Modes, Implementation of Variables and Constants, Indirection and Pointers, Indexing and Arrays, Relative Addressing.

Unit-2

Basic Processing Unit: Register Transfers, Performance on Arithmetic or Logic Operation, fetching a Word from Memory, Storing a Word in Memory. Execution of a Complete Instruction, Branch Instruction, Multiple Bus Organization Hardwired Control, A Complete Processor. Micro-programmed Control: Microinstructions, Microprogram Sequencing, Wide-Branch Addressing, Microinstructions with Next-Address Field, Prefetching Microinstructions, Emulation.

UNIT-3

Input/ Output Organization: Accessing I/O Devices, Interrupts, Interrupt Hardware, Enabling & Disabling Interrupts, Handling Multiple Devices, Controlling Device Requests, Exceptions. Direct Memory Access, Bus Arbitration, Buses, Synchronous Bus, Asynchronous Bus, Interface Circuits: Parallel Port, Serial Port, Standard I/O Interfaces, Peripheral Component Interconnect (PCI) Bus, SCSI Bus, Universal Serial Bus (USB)

Unit-4

Pipelining: Role of Cache Memory, Pipeline Performance, Data Hazards: Operand Forwarding, Handling Data Hazards in Software, Side Effects. Instruction Hazards: Unconditional Branches, Conditional Branches and Branch Prediction. Influence on Instruction Sets: Addressing Modes, Condition Codes, Data path and Control Considerations. Superscalar Operation: Out-of-Order Execution, Execution Completion, Dispatch Operation, RISC & CISC Processors.

Text Books

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/Ed (TMH)

Reference Books

1. William Stallings: Computer Organization and Architecture (Design for Performance), 9/Ed
2. S. Brown, & Z. Vranesic, “Fundamentals of Digital Logic Design with VHDL”, 2/Ed, McGraw-Hill

CORE–3 Practical/Tutorial: Computer Organization Lab

1. Study of the complete Architecture of 8085 Microprocessor along with its instruction set.
2. Introduction to GNU Simulator 8085, with its features.
3. Write an Assembly Language Program to add N consecutive numbers.
4. Write an Assembly Language Program to find the smallest and largest number from a given series.
5. Write an Assembly Language Program for subtraction of two 8-bit numbers.
6. Write an Assembly Language Program for displaying a Rolling message “Hello 123”.
7. Write an Assembly Language Program to perform ASCII to Decimal conversion.
8. Write an Assembly Language Program to add two unsigned binary numbers.
9. Write an Assembly Language Program to subtraction of two unsigned binary numbers.

Demonstrate the followings:

10. Assembling and Dis-assembling of computer.
11. Trouble shooting in Computer.

CORE–4: DATA STRUCTURE

OBJECTIVES

- To learn how the choice of data structures impacts the performance of programs.
- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees.
- To learn efficient searching and sorting techniques.

Unit-1

Introduction: Basic Terminology, Data structure, Time and space complexity, Review of Array, Structures, Pointers.

Linked Lists: Dynamic memory allocation, representation, Linked list insertion and deletion, Searching, Traversing in a list, Doubly linked list, Sparse matrices.

Unit-2

Stack: Definition, Representation, Stack operations, Applications (Infix–Prefix–Postfix Conversion & Evaluation, Recursion).

Queues: Definition, Representation, Types of queue, Queue operations, Applications.

Unit-3

Trees: Tree Terminologies, General Tree, Binary Tree, Representations, Traversing, BST, Operations on BST, Heap tree, AVL Search Trees, M-way search tree, Applications of all trees.

Unit-4

Sorting: Exchange sorts, Selection Sort, Bubble sort, Insertion Sorts, Merge Sort, Quick Sort, Radix Sort, Heap sort.

Searching: Linear search, Binary search.

Text Books:

1. Classic Data Structure , D. Samanta , PHI , 2/ed.

Reference Books:

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Galgotia Publications, 2000.
2. Sastry C.V., Nayak R, Ch. Rajaramesh, Data Structure & Algorithms, I. K. International Publishing House Pvt. Ltd, New Delhi.

CORE – 4 Practical/Tutorial: Data Structure Lab

Write a C/ C++ Program for the followings

1. To insert and delete elements from appropriate position in an array.
2. To search an element and print the total time of occurrence in the array.
3. To delete all occurrence of an element in an array.
4. Array implementation of Stack.
5. Array implementation of Linear Queue.
6. Array implementation of Circular Queue.
7. To implement linear linked list and perform different operation such as node insert and delete, search of an item, reverse the list.
8. To implement circular linked list and perform different operation such as node insert and delete.
9. To implement double linked list and perform different operation such as node insert and delete.
10. Linked list implementation of Stack.
11. Linked list implementation of Queue.
12. Polynomial representation using linked list.
13. To implement a Binary Search Tree.
14. To represent a Sparse Matrix.
15. To perform binary search operation.
16. To perform Bubble sort.
17. To perform Selection sort.

18. To perform Insertion sort.
19. To perform Quick sort.
20. To perform Merge sort.

CORE–5: PROGRAMMING USING C++

OBJECTIVES

- To know about the Object Oriented Programming concepts.
- To learn basics of C++ programming language.
- To be able to develop logics to create programs/ applications in **C++.**

Unit-1

Principles of Object-Oriented Programming: Object-Oriented Programming (OOP) Paradigm, Basic Concepts of OOP, Benefits of OOP, Characteristics of OOPS, Object Oriented Languages, Applications of OOP.
Introduction to C++, Difference between C & C++, Tokens, Data types, Operators, Structure of C++ Program, C++ statements, Expressions and Control Structures.
Functions in C++: Argument passing in function, Inline Functions, Default Arguments, Const. Arguments, Friend function.

Unit-2

Classes and Objects: Defining Member Functions, Making an outside Function Inline, Nested Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friend Functions.
Constructors & Destructors: Constructors, Parameterized Constructors, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Destructors.

Unit-3

Inheritance: Basics of Inheritance, Type of Inheritance, Virtual Base Classes, Abstract Classes, Member Classes, Nesting of Classes. Polymorphism: Pointers, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions, Function Overloading, Operator Overloading.

Unit-4

Managing Console I/O Operations: C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators.
Files: Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling during File Operations, Command-line Arguments.

Text Books

1. E. Balgurusawmy, Object Oriented Programming with C++, 4/e (TMH).
2. Paul Deitel, Harvey Deitel, "C++: How to Program", 9/e. Prentice Hall.

Reference Books:

1. Bjarne Stroustroup, Programming - Principles and Practice using C++, 2/e, Addison-Wesley 2014
2. Herbtz Schildt, C++: The Complete reference, MGH, 4/ed.
3. P. C. Sethi, P. K. Behera, "Programming in C++"- Kalyani Publisher, Ludhiana

CORE–5 Practical/Tutorial: Programming using C++ Lab

1. Write a Program to find greatest among three numbers using nested if…else statement.
2. Write a Program to check a number is prime or not.
3. Write a Program to find the GCD and LCM of two numbers.
4. Write a program to print the result for following series: 1! + 2! + 3! + ……
5. Write a program to print multiplication table from 1 to 10.
6. Write a Program for Swapping of two numbers using pass by value.
7. Write a Program for Swapping of two numbers using pass by address.
8. Write a Program for Swapping of two numbers using pass by reference.
9. Write a Program to find sum of four numbers using default argument passing.
10. Write a Program to find square and cube of a number using inline function.
11. Write a Program to find the factorial of a number.
12. Write a Program to find reverse of a number.
13. Write a program to find sum of four numbers using default argument passing in member function.
14. Write a Program to find area of circle, triangle and rectangle using function overloading.
15. Write a program to distinguish the properties of static and non-static ata members.
16. Write a program to show the method of accessing static private member function.
17. Write a program to show the ways of calling constructors and destructors.
18. Write a program to perform ++ operator overloading using member function.
19. Write a program to perform ++ operator overloading using friend function.
20. Write a program to perform + operator overloading for two complex number addition.
21. Write a program to perform + operator overloading for string concatenation.
22. Write a program to perform single inheritance.
23. Write a program to perform multiple inheritance.
24. Write a program to create an integer array using new operator and find the sum and average of array elements.
25. Write a program to implement virtual destructor.
26. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
27. Write a program to Copy the contents of one file to other.

CORE-6: DATABASE SYSTEMS

OBJECTIVES

- To learn the fundamental elements of database system.
- To learn the basic concepts of relational database management systems.

- To learn various SQL commands.

Unit-1

Introduction to Database and Database Users, Database System Concepts and Architecture: data Models, schema, and instances, Conceptual Modeling and Database Design: Entity Relationship (ER) Model: Entity Types, Entity Sets, Attributes, Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, ER Naming Conventions. Enhanced Entity-Relationship (EER) Model.

Unit-2

Database Design Theory and Normalization: Functional Dependencies, Normal Forms based on Primary Keys, Second and third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

Unit-3

Relational data Model and SQL: Relational Model Concepts, Basic SQLs, SQL Data Definition and Data types, Constraints in SQL, Retrieval Queries in SQL, INSERT, DELETE, UPDATE Statements in SQL, Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT, Binary Relation: JOIN and DIVISION.

Unit-4

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing, Transaction and System Concepts, Properties of Transactions, Recoverability, Serializability, Concurrency Control Techniques, Locking techniques for Concurrency Control, Concurrency Control based on Time-Stamp Ordering.

Text Book:

1. Fundamentals of Database Systems, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson Education

Reference Book:

1. An Introduction to Database System, Date C. J. - Pearson Education, New Delhi - 2005

CORE-6 Practical/Tutorial: Database Systems Labs

Create and use the following database schema to answer the given queries.

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL

Job_type	Varchar(50)	NO		NIL
Manager	Char(3)	Yes	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES	FK	NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

DEPARTMENT Schema

Field	Type	NULL	KEY	DEFAULT
Dno	Integer	No	PRI	NULL
Dname	Varchar(50)	Yes		NULL
Location	Varchar(50)	Yes		New Delhi

Query List

1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
2. Query to display unique Jobs from the Employee Table.
3. Query to display the Employee Name concatenated by a Job separated by a comma.
4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
5. Query to display the Employee Name and Salary of all the employees earning more than $2850.
6. Query to display Employee Name and Department Number for the Employee No= 7900.
7. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.
8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
9. Query to display Name and Hire Date of every Employee who was hired in 1981.
10. Query to display Name and Job of all employees who don't have a current Manager.
11. Query to display the Name, Salary and Commission for all the employees who earn commission.
12. Sort the data in descending order of Salary and Commission.
13. Query to display Name of all the employees where the third letter of their name is 'A'.
14. Query to display Name of all employees either have two 'R's or have two 'A's in their name and are either in Dept No = 30 or their Mangers Employee No = 7788.
15. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
16. Query to display the Current Date.
17. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.
18. Query to display Name and calculate the number of months between today and the date each employee was hired.
19. Query to display the following for each employee <E-Name> earns <Salary> monthly but wants <3*Current Salary>. Label the Column as Dream Salary.
20. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.

21. Query to display Name, Hire Date and Day of the week on which the employee started.
22. Query to display Name, Department Name and Department No for all the employees.
23. Query to display Unique Listing of all Jobs that are in Department # 30.
24. Query to display Name, Department Name of all employees who have an 'A' in their name.
25. Query to display Name, Job, Department No. and Department Name for all the employees working at the Dallas location.
26. Query to display Name and Employee no. Along with their Manger's Name and the Manager's employee no; along with the Employees Name who do not have a Manager.
27. Query to display Name, Department No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.
28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies $100.
29. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees.
30. Query to display the number of employees performing the same Job type functions.
31. Query to display the no. of managers without listing their names.
32. Query to display the Department Name, Location Name, No. of Employees and the average salary for all employees in that department.
33. Query to display Name and Hire Date for all employees in the same dept. as Blake.
34. Query to display the Employee No. And Name for all employees who earn more than the average salary.
35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.
36. Query to display the names and salaries of all employees who report to King.
37. Query to display the department no, name and job for all employees in the Sales department.

CORE–7: PRINCIPLES OF

MANAGEMENT OBJECTIVES

- To understand the basic principles of management.
- To provide a basis of understanding towards working of business organization through the process of management.

Unit-1

Nature of Management: Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization.

Evolution of Management Thought: Contribution of F.W.Taylor, Henri Fayol ,Elton Mayo, Chester Barhard & Peter Drucker to the management thought. Various approaches to management (i.e. Schools of management thought)Indian Management Thought.

Unit-2

Functions of Management (Part-I)

Planning - Meaning - Need & Importance, types levels– advantages & limitations, Forecasting - Need & Techniques, Decision making - Types - Process of rational decision

making & techniques of decision making,
Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation – Decentralization,

Unit-3

Functions of Management (Part-II)

Staffing - Meaning & Importance, Direction - Nature – Principles, Communication - Types & Importance, Motivation - Importance – theories, Leadership - Meaning - styles, qualities & functions of leaders
Controlling-Need, Nature, importance, Process & Techniques, Coordination - Need, Importance.

Unit-4

Strategic Management

Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India.

Text Books:

1. Horold Koontz and Iteinz Weibrich, Essential of Management, McGraw Hills International
2. K.Aswathapa, Essential of Business Administration, Himalaya Publishing House

Reference Books:

1. L.M.Parasad Principles & practice of management - Sultan Chand & Sons - New Delhi
2. Tripathi, Reddy, Principles of Management, Tata McGraw Hill

CORE-7 Practical/Tutorial: Principles of Management Tutorial Classes

CORE – 8: JAVA PROGRAMMING

OBJECTIVES

1. To learn the fundamentals of Object Oriented Programming in Java environment.
2. To learn the use of Java language and the Java Virtual Machine.
3. To write simple Java programming applications.

Unit-1

Introduction to Java: Java History, Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords (super, this, final, abstract, static, extends, implements, interface) , Data Types, Wrapper class, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods). Input through keyboard using Command line Argument, the Scanner class, Buffered Reader class.

Unit-2

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Class Variables & Methods, Objects, Object reference, Objects as parameters, final classes, Garbage Collection.

Constructor- types of constructor, this keyword, super keyword. Method overloading and Constructor overloading. Aggregation vs Inheritance, Inheritance: extends vs implements, types of Inheritance, Interface, Up-Casting, Down-Casting, Auto-Boxing, Enumerations, Polymorphism, Method Overriding and restrictions. Package: Pre-defined packages and Custom packages.

Unit-3

Arrays: Creating & Using Arrays (1D, 2D, 3D and Jagged Array), Array of Object, Referencing Arrays Dynamically. Strings and I/O: Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability& Equality, Passing Strings To & From Methods, String Buffer Classes and StringBuilder Classes. IO package: Understanding Streams File class and its methods, Creating, Reading, Writing using classes: Byte and Character streams, File Output Stream, File Input Stream, File Writer, File Reader, Input Stream Reader, Print Stream, Print Writer. Compressing and Uncompressing File.

Unit-4

Exception Handling, Threading, Networking and Database Connectivity: Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Text Books:

1. E. Balagurusamy, “Programming with Java”, TMH, 4/Ed,

Reference books:

1. Herbert Schildt, “The Complete Reference to Java”, TMH, 10/Ed.

CORE – 8 Practical/Tutorial: Java Programming Lab

1. To find the sum of any number of integers entered as command line arguments.
2. To find the factorial of a given number.
3. To convert a decimal to binary number.
4. To check if a number is prime or not, by taking the number as input from the keyboard.
5. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
6. Write a program that show working of different functions of String and StringBufferclasss like set Char At( ), set Length( ), append( ), insert( ), concat ( )and equals( ).
7. Write a program to create a – “distance” class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
8. Modify the – “distance” class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
9. Write a program to show that during function overloading, if no matching argument is found, then Java will apply automatic type conversions (from lower to higher data type)
10. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword.

11. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program – "Divide By Zero" that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate different mouse handling events like mouse Clicked( ), mouse Entered( ), mouse Exited( ), mouse Pressed( ), mouse Released( ) & mouse Dragged( ).
23. Write a program to demonstrate different keyboard handling events.

CORE – 9: BUSINESS

ACCOUNTING OBJECTIVES

- To impart the basic business accounting knowledge.

Unit-1

Introduction: Financial Accounting-definition and Scope, objectives of Financial Accounting, Accounting v/s Book Keeping terms used in accounting, users of accounting information and limitations of Financial Accounting.

Conceptual Framework: Accounting Concepts, Principles and Conventions, Accounting Standards concept, objectives, benefits, brief review of Accounting Standards in India, Accounting Policies, Accounting as a measurement discipline, valuation Principles, accounting estimates

Unit-2

Recording of transactions: Voucher system; Accounting Process, Journals, Subsidiary Books, Ledger, Cash Book, Bank Reconciliation Statement, Trial Balance.

Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation.

Unit-3

Preparation of final accounts: Preparation of Trading and Profit & Loss Account and

Balance Sheet of sole proprietary business

Unit-4

Introduction to Company Final Accounts: Important provisions of Companies Act, 1956 in respect of preparation of Final Accounts, Understanding of final accounts of a Company.

Computerized Accounting: Computers and Financial application, Accounting Software packages, An overview of computerized accounting system - Salient features and significance, Concept of grouping of accounts, Codification of accounts, Maintaining the hierarchy of ledger, Generating Accounting Reports.

Text Books :

1. Anil Chowdhry, "Fundamentals of Accounting & Financial Analysis", Pearson Education
2. Rajesh Agarwal, R. Srinivasan, "Accounting Made Easy", TMH

Reference Books:

1. Amrish Gupta, "Financial Accounting for Management", Pearson Education
2. S. N. Maheshwari, "Financial Accounting for Management: Vikas Publishing House

CORE-9 Practical/Tutorial: Business Accounting Tutorial

CORE–10: OPERATING SYSTEM

OBJECTIVES

- To understand Operating system structure and services.
- To understand the concept of a Process, memory, storage and I/O management.

Unit–1

Introduction to Operating System, System Structures: Operating system services, system calls, system programs, Operating system design and implementation, Operating system structure.

Unit–2

Process Management: Process Concept, Operations on processes, Process scheduling and algorithms, Inter-process Communication, Concepts on Thread and Process, Deadlocks: Deadlock detection, deadlock prevention, and deadlock avoidance fundamentals.

Unit-3

Memory Management Strategies: Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management: Concepts, implementation (Demand Paging), Page Replacement, Thrashing.

Unit–4

Storage Management: File System concept, Access Methods, File System Mounting, File Sharing and File Protection, Implementing File Systems, Kernel I/O Systems.

Text book:

1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, and Greg Gagne,

Eighth Edition, Wiley Student Edition 2009.

Reference book:

1. Modern Operating System, Tanenbaum, Pearson, 4/Ed. 2014
2. Richard F Ashley, Linux with Operating System Concepts, Chapman and Hall/CRC Published August 26, 2014
3. Richard Blum, Linux Command Line and Shell Scripting Bible, O' Reilly

CORE-10 Practical/Tutorial: Operating System Lab

1. Write a program (using *fork()* and/or *exec()* commands) where parent and child execute:
   a) same program, same code.
   b) same program, different code.
   c) before terminating, the parent waits for the child to finish its task.
2. Write a program to report behavior of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behavior of Linux kernel including information on configured memory, amount of free and used memory. (memory information)
4. Write a program to print file details including owner access permissions, file access time, where file name is given as argument.
5. Write a program to copy files using system calls.
6. Write a program using C to implement FCFS scheduling algorithm.
7. Write a program using C to implement Round Robin scheduling algorithm.
8. Write a program using C to implement SJF scheduling algorithm.
9. Write a program using C to implement non-preemptive priority based scheduling algorithm.
10. Write a program using C to implement preemptive priority based scheduling algorithm.
11. Write a program using C to implement SRTF scheduling algorithm.
12. Write a program using C to implement first-fit, best-fit and worst-fit allocation strategies.

CORE – 11: WEB TECHNOLOGY

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:

The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press
2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

CORE – 11 Practical/Tutorial: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
2. Practicing basic and advanced text for formatting.
3. Practice use of image, video and sound in HTML documents.
4. Designing of web pages- Document layout, list, tables.
5. Practicing Hyperlink of web pages, working with frames.
6. Working with forms and controls.
7. Acquaintance with creating style sheet, CSS properties and styling.
8. Working with background, text, font, list properties.
9. Working with HTML elements box properties in CSS.

10. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
11. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
12. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
13. Write a PHP program to check if number is prime or not.
14. Write a PHP program to print first ten Fibonacci numbers.
15. Create a MySQL data base and connect with PHP.
16. Write PHP script for string and retrieving user information from my SQL table.
    a. Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
    b. Store this data in MySQL data base.
    c. Next page display all user in HTML table using PHP (display .PHP).
17. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

CORE – 12: SOFTWARE ENGINEERING

OBJECTIVES:

- To learn the way of developing software with high quality and the relevant techniques.
- To introduce software engineering principles for industry standard.
- To focus on Project management domain and Software risks management.

Unit-1

Introduction: Evolution of Software to an Engineering Discipline, Software Development Projects, Exploratory Style of Software Development, Emergence of Software Engineering, Changes in Software Development Practices, Computer Systems Engineering.
Software Lifecycle Models: Waterfall Model and its Extensions, Rapid Application Development (RAD), Agile Development Models, Spiral Model.

Unit-2

Software Project Management: Software Project Management Complexities, Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO, Halstead's Software Science, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management.

Unit-3

Requirement Analysis and Specification: Requirements Gathering and Analysis, Software Requirement Specifications, Formal System Specification Axiomatic Specification, Algebraic Specification, Executable Specification and 4GL.

Software Design: Design Process, Characterize a Good Software Design, Cohesion and Coupling, Layered Arrangements of Modules, Approaches to Software Design (Function Oriented & Object-Oriented).

Unit-4

Coding and Testing: Coding: Code Review, Software Documentation, Testing, Unit Testing, Black Box and White Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, Software Maintenance.

Text Book:

1. Fundamental of Software Engineering, Rajib Mall, Fifth Edition, PHI Publication, India.

Reference Books:

1. Software Engineering– Ian Sommerville, 10/Ed, Pearson.
2. Software Engineering Concepts and Practice – Ugrasen Suman, Cengage Learning India Pvt, Ltd.

CORE – 12 Practical/Tutorial: Software Engineering Lab

S. No. Practical Title

1. • Problem Statement,
   - Process Model
2. Requirement Analysis:
   - Creating a Data Flow
   - Data Dictionary, Use Cases
3. Project Management:
   - Computing FP
   - Effort
   - Schedule, Risk Table, Timeline chart
4. Design Engineering:
   - Architectural Design
   - Data Design, Component Level Design
5. Testing:
   - Basis Path Testing

Sample Projects:

1. **Criminal Record Management:** Implement a criminal record management system for jailers, police officers and CBI officers.
2. **Route Information**: Online information about the bus routes and their frequency and fares
3. **Car Pooling**: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System

7. Examination and Result computation system
8. Automatic Internal Assessment System
9. Parking Allocation System
10. Wholesale Management System

CORE – 13: MANAGEMENT ACCOUNTING OBJECTIVES

- To encourage the acquisition of knowledge and skills relating to the application of management accounting concepts and techniques for business decisions.
- To introduce the short-term and long-term strategic decision-making models.

Unit-1

Nature, Scope of Management Accounting: Meaning, definition, nature and scope of Management Accounting; Comparison of Management Accounting with Cost Accounting and Financial Accounting. Cost concepts: Meaning, Scope, Objectives, and Importance of Cost Accounting; Cost, Costing, Cost Control, and Cost Reduction; Elements of Cost, Components of total Cost, Cost Sheet. Classification of Costs: Fixed, Variable, Semi- variable, and Step Costs; Product, and Period Costs; Direct, and Indirect Costs; Relevant, and Irrelevant Costs; Shut-down, and Sunk Costs; Controllable, and Uncontrollable Costs; Avoidable, and Unavoidable Costs; Imputed / Hypothetical Costs; Out-of-pocket Costs; Opportunity Costs; Expired, and Unexpired Costs; Conversion Cost. Cost Ascertainment: Cost Unit and Cost Center. Introduction to Overhead allocation, Overhead apportionment, and Overhead absorption.

Unit-2

Cost-Volume-Profit Analysis: Contribution, Profit-Volume Ratio, Margin of safety, Cost Break-even Point, Composite Break-even Point, Cash Break-even Point, Key Factor, Break-even Analysis. Relevant Costs and Decision Making: Pricing, Product Profitability, Make or Buy, Exploring new markets, Export Order, Sell or Process Further, Shut down vs. Continue.

Unit-3

Budgets and Budgetary Control: Meaning, Types of Budgets, Steps in Budgetary Control, Fixed and Flexible Budgeting, Cash Budget. Responsibility Accounting: Concept, Significance, Different responsibility centers, Divisional performance – Financial measures, Transfer pricing.

Unit-4

Standard Costing and Variance Analysis: Meaning of Standard Cost and Standard Costing, Advantages, Limitations and Applications; Material, Labor, Overhead and Sales variances. Introduction to Target Costing, Life Cycle Costing, Quality Costing, and Activity based Costing.

Text Books:

1. C.T. Horngren, Gary L. Sundem, Jeff O. Schatzberg, and Dave Burgstahler: Introduction to Management Accounting, Pearson
2. M.N. Arora: A Textbook of Cost and Management Accounting, Vikas Publishing House Pvt. Ltd.

Reference Books:

1. M.Y. Khan, and P.K. Jain, Management Accounting: Text Problems and Cases, McGraw Hill Education (India) Pvt. Ltd.

CORE – 13 Practical/Tutorial: Management Accounting Tutorial

CORE – 14: COMPUTER NETWORKS

OBJECTIVES

- To learn how do computers and terminals actually communicate with each other.
- To understand the parts of a communication network and how they work together.

Unit-1

Introduction to Data Communications and Network Models: Protocols and Standards, Layers in OSI Models, Analog and Digital Signals, Transmission Modes, Transmission Impairment, Data Rate Limits, Performance, Digital Transmission, Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge (fundamental concepts only).

Unit-2

Signal Conversion: Digital-to-Digital Conversion, Analog-to-Digital Conversion, Digital-to-analog Conversion, Analog-to-analog Conversion.
Transmission Media: Guided Media, Unguided Media, Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch.

Unit-3

Error Detection and Correction: Checksum, CRC, Data Link Control: Framing, Flow and Error Control, Noiseless Channels, Noisy channels, (Stop and Wait ARQ, Slidding Window Protocol , Go Back N, Selective Repeat) HDLC, Point-to-Point Protocol. Access Control: TDM, CSMA/CD, and Channelization (FDMA, TDMA, and CDMA).

Unit-4

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Virtual-Circuit Networks: Frame Relay and ATM, Transport Layer: Process-Process Delivery: UDP, TCP. Application layers: DNS, SMTP, POP, FTP, HTTP, Basics of WiFi (Fundamental concepts only), Network Security: Authentication, Basics of Public Key and Private Key, Digital Signatures and Certificates (Fundamental concepts only).

Text Books:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan,TMH.

Reference Books:

1. Computer Networks, A. S. Tanenbaum, 4th edition, Pearson Education.

CORE – 14 Practical/Tutorial: Computer Networks Lab

Use C/C++/ any Network Simulator

1. Simulate Even Parity generator and checker.

2. Simulate two dimensional Parity generator and checker.

3. Simulate checksum generator and checker.
4. Simulate Hamming code method.
5. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
6. Simulate and implement stop and wait protocol for noisy channel.
7. Simulate and implement go back n sliding window protocol.
8. Simulate and implement selective repeat sliding window protocol.
9. Simulate and implement distance vector routing algorithm.

DSE-1: DATA SCIENCE

OBJECTIVES:

- To learn emerging issues related to various fields of data science.
- To understand the underlying principles of data science, exploring data analysis.
- To learn the basics of R Programming.

Unit-1

Data Scientist's Tool Box: Turning data into actionable knowledge, introduction to the tools that will be used in building data analysis software: version control, markdown, git, GitHub, R, and RStudio.

Unit-2

R Programming Basics: Overview of R, R data types and objects, reading and writing data, Control structures, functions, scoping rules, dates and times, Loop functions, debugging tools, Simulation, code profiling.

Unit-3

Getting and Cleaning Data: Obtaining data from the web, from APIs, from databases and from colleagues in various formats, basics of data cleaning and making data "tidy".

Unit-4

Exploratory Data Analysis: Essential exploratory techniques for summarizing data, applied before formal modeling commences, eliminating or sharpening potential hypotheses about the world that can be addressed by the data, common multivariate statistical techniques used to visualize high-dimensional data.

Text Books:

1. Rachel Schutt, Cathy O'Neil, "Doing Data Science: Straight Talk from the Frontiline" : Schroff/O'Reilly, 2013.

Reference Books:

1. Foster Provost, Tom Fawcett, "Data Science for Business" What You Need to Know About Data Mining and Data-Analytic Thinking by O'Reilly, 2013.
2. John W. Foreman, "Data Smart: Using Data Science to Transform Information into Insight" : John Wiley & Sons, 2013.
3. Eric Seigel, "Predictive Analytics: The Power to Predict who Will Click, Buy, Lie, orDie", 1st Edition, by Wiley, 2013.

DSE-1 Practical/Tutorial: Data Science Lab

1. Write a program that prints "Hello World" to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n

3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement linear search.
8. Implement binary search.
9. Implement matrices addition, subtraction and Multiplication
10. Fifteen students were enrolled in a course. There ages were:

20 20 20 20 20 21 21 21 22 22 22 22 23 23 23

i. Find the median age of all students under 22 years
ii. Find the median age of all students
iii. Find the mean age of all students
iv. Find the modal age for all students
v. Two more students enter the class. The age of both students is 23. What is now mean, mode and median?

DSE–2: MANAGERIAL

ECONOMICS OBJECTIVES:

- To introduce the economic concepts.
- To familiarize with the students the importance of economic approaches in managerial decision making.
- To understand the applications of economic theories in business decisions.

Unit-1:

Demand, Supply and Market equilibrium: individual demand, market demand, individual supply, market supply, market equilibrium; Elasticity of demand and supply: Price elasticity of demand, income elasticity of demand, cross price elasticity of demand, elasticity of supply; Theory of consumer behavior: cardinal utility theory, ordinal utility theory (indifference curves, budget line, consumer choice, price effect, substitution effect, income effect for normal, inferior and giffen goods), revealed preference theory.

Unit-2:

Producer and optimal production choice: optimizing behavior in short run (geometry of product curves, law of diminishing margin productivity, three stages of production), optimizing behavior in long run (isoquants, isocost line, optimal combination of resources) Costs and scale: traditional theory of cost (short run and long run, geometry of cot curves, envelope curves), modern theory of cost (short run and long run), economies of scale, economies of scope.

Unit-3:

Theory of firm and market organization: perfect competition (basic features, short run equilibrium of firm/industry, long run equilibrium of firm/industry, effect of changes in demand, cost and imposition of taxes); monopoly (basic features, short run equilibrium, long run equilibrium, effect of changes in demand, cost and imposition of taxes, comparison with perfect competition, welfare cost of monopoly), price discrimination, multiplant monopoly;

monopolistic competition (basic features, demand and cost, short run equilibrium, long run equilibrium, excess capacity); oligopoly (Cournot's model, kinked demand curve model, dominant price leadership model, prisoner's dilemma)

Unit-4:

Factor market: demand for a factor by a firm under marginal productivity theory (perfect competition in the product market, monopoly in the product market), market demand for a factor, supply of labour, market supply of labour, factor market equilibrium.

Text Books:

1. Yogesh Maheswari, Managerial Economics, PHI Learning, New Delhi.
2. G. S. Gupta, Managerial Economics, Tata Mcgraw-Hill, New Delhi.

Reference Books:

1. Moyer &Harris, Managerial Economics, Cengage Learning, New Delhi.
2. Geetika, Ghosh & Choudhury, Managerial Economics, Tata Mcgrawhill, New Delhi.
3. Dominick Salvatore, Principles of Microeconomics, Oxford University Press, (5th Ed.)

DSE-2 Practical/Tutorial: Managerial Economics

Tutorial DSE-3: FINANCIAL MANAGEMENT

OBJECTIVES:

- To introduce students to financial planning, its objectives, its benefits, its stages, and the factors that help towards the success of financial planning.
- To introduce students about the methods used in financial planning to assess the short-term financial needs.

Unit-1

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Profit Maximization, Wealth Maximization - Traditional and Modern Approach; Functions of finance – Finance Decision, Investment Decision, Dividend Decision; Objectives of Financial Management; Organization of finance function; Concept of Time Value of Money, present value, future value, and annuity; Risk & Return: Historical return, expected return, absolute return, holding period return, annualized return, arithmetic & geometric return; Risk - Systematic & unsystematic risk – their sources and measures.

Unit-2

Long -term investment decisions: Capital Budgeting - Principles and Techniques; Nature and meaning of capital budgeting; Estimation of relevant cash flows and terminal value; Evaluation techniques - Accounting Rate of Return, Net Present Value, Internal Rate of Return & MIRR, Net Terminal Value, Profitably Index Method. Concept and Measurement of Cost of Capital: Explicit and Implicit costs; Measurement of cost of capital; Cost of debt; Cost of perpetual debt; Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of over-all cost of capital based on Historical and Market weights.

Unit-3

Capital Structures: Approaches to Capital Structure Theories - Net Income approach, Net Operating Income approach, Modigliani-Miller (MM) approach, Traditional approach, Capital Structure and Financial Distress, Trade-Off Theory. Dividend Policy Decision - Dividend and Capital; The irrelevance of dividends: General, MM hypothesis; Relevance of

dividends: Walter's model, Gordon's model; Leverage Analysis: Operating and Financial Leverage; EBIT -EPS analysis; Combined leverage.

Unit-4

Working Capital Management: Management of Cash - Preparation of Cash Budgets (Receipts and Payment Method only); Cash management technique, Receivables Management-Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs - Collection Cost, Capital Cost, Default Cost, Delinquency Cost, Inventory Management (Very Briefly) - ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ, Determination of Working Capital.

Text Books:

1. M. Y. Khan, P. K. Jain, Financial Management Text Problem and Cases, TMH.
2. I. M. Pandey, Financial Management, Theory and Practices, Vikas Publishing House.

Reference Books:

1. R. A. Brealey, S. C. Myers, F. Allen, P. Mohanty: Principles of Corporate Finance, McGraw Hill Higher Education.
2. J. V. Horne, J. M. Wachowicz, Fundamentals of Financial Management, Prentice Hall.

DSE-3 Practical/Tutorial: Financial Management Tutorial

DSE-4: SOFTWARE PROJECT WORK / E-COMMERCE DSE-4: E-

COMMERCE

OBJECTIVES

- To introduce the concepts of electronic commerce.
- To make the user understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.

Unit-1

Introduction to E-Commerce: Definition and scope of E-Commerce and M-Commerce, E-Commerce trade cycle, Electronic Markets, Internet Commerce, Benefits and Impacts of E-Commerce.

Elements of E-Commerce: Various elements, e-visibility, e-shops, Delivery of goods and services, Online payments, After- sales services, Internet E-Commerce security.

Unit-2

EDI and Electronic Payment Systems: Introduction and definition of EDI, EDI layered Architecture, EDI technology and standards, EDI communications and transactions, Benefits and applications of EDI with example, Electronic Payment Systems: credit/debit/smart cards, e-credit accounts, e-money.

Unit-3

Introduction to EC models: Inter-organization and intra-organization E-Commerce, E-Commerce Models: B2B, B2C, C2B, C2C, G2C, C2G

E-Business: Introduction to Internet bookshops, Grocery Suppliers, Software Supplies and support, Electronic newspapers, Virtual auctions, Online share dealing, e-diversity.

Unit-4

E-Security and Legal Issues: Security concerns in E-Commerce, Privacy, integrity, authenticity, non-repudiation, confidentiality, SSL, Digital Signatures and fire walls, IT Act 2000, Cyber-crimes and cyber laws

Mobile Commerce and Future of E-Commerce: Introduction to Mobile Commerce, Benefits of Mobile Commerce, Impediments of M-Commerce, M-Commerce framework, Emerging and future trends.

Text Books:

1. G.S.V.Murthy, E-Commerce Concepts, Models, Strategies, Himalaya Publishing House.
2. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, "E-Commerce Fundamentals and Applications, Wiley Student Edition.

Reference Books:

1. Gray P. Schneider , Electronic commerce, International Student Edition.

DSE-4 Practical/Tutorial: E-Commerce Tutorial

SEC – 1: PYTHON PROGRAMMING

OBJECTIVES:

- To enable the students to understand the basic principles of the Python Language.
- To use the tools to do simple programs in python.

Unit-1

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Unit-2

Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Unit-3

Overview of Programming: Structure of a Python Program, Elements of Python

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)

Unit-4

Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.

Text Books

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011

Reference Books

1. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

Online References:

1. Python Tutorial/Documentation www.python.or 2015
2. http://docs.python.org/3/tutorial/index.html
3. http://interactivepython.org/courselib/static/pythonds
4. http://www.ibiblio.org/g2swap/byteofpython/read/

Software Lab based on Python Programming:

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon users choice.
2. Write a Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Write a Program to display the first n terms of Fibonacci series.
5. Write a Program to find factorial of the given number.
6. Write a Program to find sum of the following series for n terms: 1 – 2/2! + 3/3!--------- n/n!
7. Write a Program to calculate the sum and product of two compatible matrices.

AEC–1: Environmental Science

AEC–2: English Communication/MIL

SEC-2: ANDROID PROGRAMMING

Assessment: 10)

OBJECTIVES:

- To learn the basics of Android Programming.
- To develop simple Android applications.

Unit-1

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

Unit-2

Overview of Object Oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

Unit-3

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating

an android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.

Unit-4

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, Dialog.

Database: Understanding of SQLite database, connecting with the database.

Text Books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Reference Book:

1. James C. Sheusi, "Android application Development for Java Programmers", Cengage Learning, 2013.
2. M. Burton, & D. Felker, "Android Application Development for Dummies", 2/e, Wiley India.

Online References:

1. http://www.developer.android.com
2. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebo
3. http://developer.android.com/guide/components/fundamentals.html
4. http://developer.android.com/training/multiscreen/screensizes.html
5. http://developer.android.com/guide/topics/ui/controls.html

Software Lab based on Android Programming:

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher-in- charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

GE/IC–1: DISCRETE MATHEMATICAL

STRUCTURES OBJECTIVES

- To learn the mathematical foundations for Computer Science.
- Topics covered essential for understanding various courses.

Unit-1

Logics and Proof: Propositional Logic, Propositional Equivalences, Predicates and Quantifiers Nested Quantifiers, Rules inference, Mathematical Induction.

Sets and Functions: Sets, Relations, Functions, Closures of Equivalence Relations, Partial ordering well ordering, Lattice, Sum of products and product of sums principle of Inclusions and Exclusions

Unit-2

Combinatory: Permutations, Combinations, Pigeonhole principle

Recurrence Relation: Linear and Non-linear Recurrence Relations, Solving Recurrence Relation using Generating Functions.

Unit-3

Graphs: Introduction to graphs, graphs terminologies, Representation of graphs, Isomorphism,

Connectivity & Paths: Connectivity, Euler and Hamiltonian Paths, Introduction to tree, tree traversals, spanning tree and tree search: Breadth first search, Depth first search, cut-set, cut- vertex.

Unit-4

Modeling Computation: Finite State Machine, Deterministic Finite Automata (DFA), Non- Deterministic Finite Automata (NFA), Grammars and Language, Application of Pumping Lemma for Regular Language.

Text Books:

1. "Discrete Mathematics and its Applications with Combinatory and Graph Theory" 7th edition by Kenneth H. Rosen.

Reference Books:

1. Elements of Discrete Mathematics by C. L. Liu and D.P. Mohapatra, TMH, 2012
2. J. P Tremblay, R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH, 1997.

GE/IC-1 Practical/Tutorial: Discrete Mathematical Structures Lab

Write the following programs using C/ C++

1. Tower of Hanoi
2. Graph representation using Adjacency List.
3. Graph representation using Adjacency Matrix.

4. String Matching using finite state machine.
5. Detecting whether a number is even or odd using Finite State Machine.
6. To identify keywords such as char, const, continue using Finite State Machine.
7. To find the power set for a given set.
8. To find GCD of two numbers using recursion.
9. To find Binomial coefficients.
10. To find Permutation and Combination result for a given pair of values n and r.
11. To check a number is prime or not.
12. To calculate the Euclidean distance between two points.
13. To find the Roots of polynomials.
14. Find the shortest path pair in a plane.

GE/IC-2: NUMERICAL

TECHNIQUES OBJECTIVES:

- To learn various numerical techniques.
- To be able to implement different numerical techniques using programming language.

Unit-1

Floating point representation and computer arithmetic, Significant digits, Errors: Round-off error, Local truncation error, Global truncation error, Order of a method, Convergence and terminal conditions, Efficient computations.

Unit-2

Bisection method, Secant method, Regula−Falsi method Newton−Raphson method, Newton's method for solving nonlinear systems.

Unit-3

Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation Piecewise polynomial interpolation: Linear interpolation.

Unit-4

Numerical integration: Trapezoid rule, Simpson's rule (only method), Newton−Cotes formulas, Gaussian quadrature, Ordinary differential equation: Euler's method Modified Euler's methods, Runge-Kutta second methods

Text books

1. S.S. Sastry, "Introductory Methods of Numerical Analysis", EEE , 5/ed.
2. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publisher, 6/e (2012)

Reference books

1. Numerical Analysis: J. K. Mantri & S. Prahan, Laxmi Publication.
2. Introduction to Numerical Analysis, Josef Stoer and Roland Bulirsch, Springer.

GE/IC – 2 Practical/Tutorial: Numerical Methods Lab

Implement using C/ C++ or MATLAB/ Scilab

1. Find the roots of the equation by bisection method.
2. Find the roots of the equation by secant/Regula−Falsi method.
3. Find the roots of the equation by Newton's method.
4. Find the solution of a system of nonlinear equation using Newton's method.
5. Find the solution of tri-diagonal system using Gauss Thomas method.
6. Find the solution of system of equations using Jacobi/Gauss-Seidel method.
7. Find the cubic spline interpolating function.
8. Evaluate the approximate value of finite integrals using Gaussian/Romberg integration.
9. Solve the boundary value problem using finite difference method.

GE/IC–3: STATISTICAL

TECHNIQUES OBJECTIVES

- To understand the concept of population and sample.
- To use frequency distribution to make decision.
- To understand and to calculate various types of averages and variation.

Unit-1

Statistical Methods: Definition and scope of Statistics, concepts of statistical population and sample. **Data:** quantitative and qualitative, attributes, variables, scales of measurement nominal, ordinal, interval and ratio. **Presentation:** tabular and graphical, including histogram.

Unit-2

Measures of Central Tendency: mathematical and positional. **Measures of Dispersion:** range, quartile deviation, mean deviation, standard deviation, coefficient of variation, Moments, absolute moments, factorial moments, skewness and kurtosis, Sheppard's corrections.

Unit-3

Bivariate data: Definition, scatter diagram, simple, partial and multiple correlation (3-variables only), rank correlation. Simple linear regression.

Unit-4

Principle of least squares and fitting of polynomials and exponential curves. Theory of

attributes: Independence and association of attributes, consistency of data, measures of association and contingency, Yule's coefficient of colligation.

Text Books:

1. S.C. Gupta, Fundamentals of Statistics, Sultan chand & sons, Delhi.
2. A.M.Goon, M.K.Gupta and B. Dasgupta, Fundamentals of Statistics, The World Press, Kolkata.

Reference Books:

1. S.P. Gupta, Statistical Methods, Sultan Chand and sons New Delhi

GE/IC–3 Practical/Tutorial: Statistical Techniques Lab

List of Practical

1. Graphical representation of data.
2. Problems based on measures of central tendency.
3. Problems based on measures of dispersion.
4. Problems based on combined mean and variance and coefficient of variation.
5. Problems based on moments, skewness and kurtosis.
6. Fitting of polynomials, exponential curves.
7. Karl Pearson's correlation coefficient.
8. Correlation coefficient for a bivariate frequency distribution.
9. Lines of regression, angle between two lines of regression and estimated values of variables.
10. Spearman rank correlation with and without ties.
11. Partial and multiple correlations.
12. Planes of regression and variances of residuals for given simple correlations.

GE/IC-4: OPERATIONS

RESEARCH OBJECTIVES:

- To enable the students to understand various operational research methods.
- To learn various methods of solving optimization problems.

Unit-1

Linear Programming: Formulation of L.P. Problems, Graphical Solutions (Special cases: Multiple optimal solution, infeasibility, unbounded solution); Simplex Methods (Special cases: Multiple optimal solution, infeasibility, degeneracy, unbounded solution) Big-M method and Two-phase method; Duality and Sensitivity (emphasis on formulation & economic interpretation); Formulation of Integer programming, Zero- one programming, Goal Programming.

Unit-2

Elementary Transportation: Formulation of Transport Problem, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method. (Special cases: Multiple Solutions, Maximization case, Unbalanced case, prohibited routes) Elementary Assignment: Hungarian Method, (Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions

on assignment.)

Unit-3

Network Analysis: Construction of the Network diagram, Critical Path - float and slack analysis (Total float, free float, independent float), PERT, Project Time Crashing

Unit-4

Decision Theory: Pay off Table, Opportunity Loss Table, Expected Monetary Value, Expected Opportunity Loss, Expected Value of Perfect Information and Sample Information

Text Books:

1. N. D. Vohra, Quantitative Management, Tata McGraw Hill.
2. P. K. Gupta, Man Mohan, Kanti Swarup, Operations Research, Sultan Chand.

Reference Books:

1. V. K. Kapoor, Operations Research, Sultan Chand & Sons.
2. J. K. Sharma, Operations Research Theory & Applications, Macmillan India Limited.

GE/IC-4 Practical/Tutorial: Operations Research Lab

Use C/C++ for implantation of the following Problems.

1. Mathematical formulation of L.P.P and solving the problem using graphical method.
2. Mathematical formulation of L.P.P and solving the problem using Simplex technique.
3. Allocation problem using Transportation model
4. Allocation problem using Assignment model
5. Networking problem using CPM and PERT

Equipment:

1. Desktop Computer

Core i5 (minimum 8th Generation Processor, 8 GB RAM, 2 TB HDD)

Number of Desktops: 30 (or as per student strength). It must be connected through structured Local Area Network (LAN).

2. Software

LibreOffice, Scilab, C, C++, Java, Assembler, VHDL, Linux/ Unix Prolog etc. , preferably Open Source Software.

Faculty Training:

Faculty training may be organized for the following Courses in phased manner (six month before the beginning of the Subject in the concerned semester).

i. Digital Logic
ii. Computer Organization
iii. Data Structures
iv. Operating Systems
v. Database Systems
vi. Java Programming
vii. Web Technology
viii. Data Science
ix. Android Programming
x. Python Programming

CORSE STRUCTURE OF U.G. MATHEMATICS

Preamble

Mathematics is an indispensable tool for much of science and engineering. It provides the basic language for understanding the world and lends precision to scientific thought. The mathematics program at Universities of Odisha aims to provide a foundation for pursuing research in Mathematics as well as to provide essential quantitative skills to those interested in related fields. With the maturing of the Indian industry, there is a large demand for people with strong analytical skills and broad-based background in the mathematical sciences.

COURSE STRUCTURE FOR MATHEMATICS HONORS

Semester	Course	Course Name	Credits
I	AECC-I	AECC-I	04
	C-I	Calculus	04
	C-I	Practical	02
	C-II	Discrete Mathematics	05
	C-II	Tutorial	01
	GE-I	GE-I	05
	GE-I	Tutorial	01
			22
II	AECC-II	AECC-II	04
	C-III	Real Analysis	05
	C-III	Tutorial	01
	C-IV	Differential equations	04
	C-IV	Practical	02
	GE-II	GE-II	05
	GE-II	Tutorial	01
			22
III	C-V	Theory of Real functions	05
	C-V	Tutorial	01
	C-VI	Group Theory-I	05
	C-VI	Tutorial	01
	C-VII	Partial differential equations and system of ODEs	04
	C-VII	Practical	02
	GE-III	GE-III	05
	GE-III	Tutorial	01
	SECC-I	SECC-I	04

			28
IV	C-VIII C-VIII	Numerical Methods and Scientific Computing Practical	04 02
	C-IX C-IX	Topology of Metric spaces Tutorial	05 01
	C-X C-X	Ring Theory Tutorial	05 01
	GE-IV GE-IV	GE-IV (Theory) Tutorial	05 01
	SECC-II	SECC-II	04
			28
Semester	Course	Course Name	Credits
V	C-XI C-XI	Multivariable Calculus Tutorial	05 01
	C-XII C-XII	Linear Algebra Tutorial	05 01
	DSE-I DSE-I	Linear Programming Tutorial	05 01
	DSE-II DSE-II	Probability and Statistics Tutorial	05 01
			24
VI	C-XIII C-XIII	Complex analysis Tutorial	05 01
	C-XIV C-XIV	Group Theory-II Tutorial	05 01
	DSE-III DSE-III	Differential Geometry Tutorial	05 01
	DSE-IV	Number Theory/Project	06
			24
		TOTAL	**148**

B.A./B.SC.(HONOURS)-MATHEMATICS

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 5 papers suggested)

Generic Elective for non Mathematics students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper –

For practical paper: Mid term : 15 marks, End term : 60 marks, Practical- 25 marks

For non practical paper: Mid term : 20 marks, End term : 80 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper –

Practical paper-40 hours theory classes + 20 hours Practical classes

Non Practical paper-50 hours theory classes + 10 hours tutorial

CORE PAPER-1

CALCULUS

Objective: The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of mathematical nature as well as practical problems. More precisely, main target of this course is to explore the different tools for higher order derivatives, to plot the various curves and to solve the problems associated with differentiation and integration of vector functions.

Expected Outcomes: After completing the course, students are expected to be able to use Leibnitz's rule to evaluate derivatives of higher order, able to study the geometry of various types of functions, evaluate the area, volume using the techniques of integrations, able to identify the difference between scalar and vector, acquired knowledge on some the basic properties of vector functions.

UNIT-I

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of the type $e^{ax+b}\sin x, e^{ax+b}\cos x, (ax+b)^n \sin x, (ax+b)^n \cos x$, concavity and inflection points, asymptotes, curve tracing in Cartesian coordinates, tracing in polar coordinates of standard curves, L' Hospitals rule, Application in business ,economics and life sciences.

UNIT-II

Riemann integration as a limit of sum, integration by parts, Reduction formulae, derivations and illustrations of reduction formulae of the type

$\int \sin^n x\,dx, \int \cos^n x\,dx, \int \tan^n x\,dx, \int \sec^n x\,dx, \int (\log x)^n\,dx, \int \sin^n x \cos^n x\,dx,$

definite integral, integration by substitution.

UNIT-III

Volumes by slicing, disks and washers methods, volumes by cylindrical shells, parametric equations, parameterizing a curve, arc length, arc length of parametric curves, area of surface of revolution, techniques of sketching conics, reflection properties of conics, rotation of axes and second degree equations, classification into conics using the discriminant, polar equations of conics.

UNIT-IV

Triple product, introduction to vector functions, operations with vector-valued functions, limits and continuity of vector functions, differentiation and integration of vector functions, tangent and normal components of acceleration.

LIST OF PRACTICALS

(Using any software/ MATLAB to be performed on a Computer.)

1. Plotting the graphs of the functions $e^{ax+b}, \log(ax+b), 1/ax+b, \sin(ax+b), \cos(ax+b)$ and $|ax+b|$ to illustrate the effect of a and b on the graph.
2. Plotting the graphs of the polynomial of degree 4 and 5.
3. Sketching parametric curves (E.g. Trochoid, cycloid, hypocycloid).

4. Obtaining surface of revolution of curves.
5. Tracing of conics in Cartesian coordinates /polar coordinates.
6. Sketching ellipsoid, hyperboloid of one and two sheets (using Cartesian co-ordinates).

BOOKS RECOMMENDED:

1. H. Anton, I. Bivens and S. Davis, *Calculus*, 10thEd.,John Wiley and Sons (Asia)P.Ltd., Singapore, 2002.
2. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
3. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.

BOOKS FOR REFERNCE:

1. James Stewart, Single Variable Calculus, Early Transcendentals, Cengage Learning, 2016.
2. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi,2005.

CORE PAPER-II

DISCRETE MATHEMATICS

Objective: This is a preliminary course for the basic courses in mathematics and all its applications. The objective is to acquaint students with basic counting principles, set theory and logic, matrix theory and graph theory.

Expected Outcomes: The acquired knowledge will help students in simple mathematical modeling. They can study advance courses in mathematical modeling, computer science, statistics, physics, chemistry etc.

UNIT-I

Sets, relations, Equivalence relations, partial ordering, well ordering, axiom of choice, Zorn's lemma, Functions, cardinals and ordinals, countable and uncountable sets, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments, Well-ordering property of positive integers, Division algorithm, Divisibility and

Euclidean algorithm, Congruence relation between integers, modular arithmetic, Chinese remainder theorem, Fermat's little theorem.

UNIT-II

Principles of Mathematical Induction, pigeonhole principle, principle of inclusion and exclusion Fundamental Theorem of Arithmetic, permutation combination circular permutations binomial and multinomial theorem, Recurrence relations, generating functions, generating function from recurrence relations.

UNIT-III

Matrices, algebra of matrices, determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix, Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems, Eigen values, Eigen vectors of amatrix.

UNIT-IV

Graph terminology, types of graphs, sub-graphs, isomorphic graphs, Adjacency and incidence matrices, Paths, Cycles and connectivity, Eulerian and Hamiltonian paths, Planar graphs.

BOOKS RECOMMENDED:

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
2. Kenneth Rosen Discrete mathematics and its applications Mc Graw Hill Education 7th edition.
3. V Krishna Murthy, V. P. Mainra, J. L. Arora, An Introduction to Linear Algebra, Affiliated East-West Press Pvt. Ltd.

BOOKS FOR REFERENCE:

1. J. L. Mott, A. Kendel and T.P. Baker: Discrete mathematics for Computer Scientists and Mathematicians, Prentice Hall of India Pvt Ltd, 2008.

CORE PAPER-III

REAL ANALYSIS

Objective: The objective of the course is to have the knowledge on basic properties of the field of real numbers, studying Bolzano-Weierstrass Theorem , sequences and convergence of sequences, series of real numbers and its convergence etc. This is one of the core courses essential to start doing mathematics.

Expected Outcome: On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis and understand limits and their use in sequences, series, differentiation and integration. Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

UNIT-I

Review of Algebraic and Order Properties of R, ε-neighborhood of a point in R, Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima, The Completeness Property of R, The Archimedean Property, Density of Rational (and Irrational) numbers in R., Intervals, Interior point, , Open Sets, Closed sets, , Limit points of a set , Illustrations of Bolzano-Weierstrass theorem for sets, closure, interior and boundary of a set.

UNIT-II

Sequences and Subsequences, Bounded sequence, Convergent sequence, Limit of a sequence. Limit Theorems, Monotone Sequences,. Divergence Criteria, Bolzano Weierstrass Theorem for Sequences, Cauchy sequence, Cauchy's Convergence Criterion. Infinite series, convergence and divergence of infinite series, Cauchy Criterion, Tests for convergence: Comparison test, Limit Comparison test, Ratio Test, Cauchy's nth root test, Integral test, Alternating series, Leibniz test, Absolute and Conditional convergence.

UNIT-III

Limits of functions (epsilon-delta approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits, Infinite limits and limits at infinity, Continuous functions, sequential criterion for continuity & discontinuity. Algebra of continuous functions, Continuous functions on an interval, Boundedness Theorem, Maximum Minimum Theorem, Bolzano's Intermediate value theorem, location of roots theorem, preservation of

intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem, Monotone and Inverse Functions.

UNIT-IV

Differentiability of a function at a point & in an interval, Caratheodory's theorem, chain Rule, algebra of differentiable functions, Mean value theorem, interior extremum theorem. Rolle's theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities.

BOOKS RECOMMENDED:

1. R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis (3^{rd} Edition), John Wiley and Sons (Asia) Pvt. Ltd., Singapore,2002.
2. G. Das and S. Pattanayak, Fundamentals of Mathematical Analysis, TMH Publishing Co.

BOOKS FOR REFERENCE:

1. S.C. Mallik and S. Arora-Mathematical Analysis, New Age International Publications.
2. A.Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014.
3. Brian S. *Thomson*, Andrew. M. *Bruckner*, and Judith B. *Bruckner*, *Elementary Real Analysis*, Prentice Hall,2001.
4. Gerald G. Bilodeau, Paul R. Thie, G.E. Keough, *An Introduction to Analysis*, Jones & Bartlett, Second Edition, 2010.

CORE PAPER-IV

DIFFERENTIAL EQUATIONS

Objective: Differential Equations introduced by Leibnitz in 1676 models almost all Physical, Biological, Chemical systems in nature. The objective of this course is to familiarize the students with various methods of solving differential equations and to have a qualitative applications through models. The students have to solve problems to understand the methods.

Expected Outcomes: A student completing the course is able to solve differential equations and is able to model problems in nature using Ordinary Differential Equations. This is also

prerequisite for studying the course in Partial Differential Equations and models dealing with Partial Differential Equations.

UNIT-I

Differential equations and mathematical models, General, Particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equations and Bernoulli's equation, special integrating factors and transformations.

UNIT-II

Introduction to compartmental models, Exponential decay radioactivity (case study of detecting art forgeries), lake pollution model (with case study of Lake Burley Griffin), drug assimilation into the blood (case study of dull, dizzy and dead), exponential growth of population, Density dependent growth, Limited growth with harvesting.

UNIT-III

General solution of homogeneous equation of second order, principle of superposition, Wronskian, its properties and applications, method of undetermined coefficients, Method of variation of parameters, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation.

UNIT-IV

Equilibrium points, Interpretation of the phase plane, predatory-pray model and its analysis, epidemic model of influenza and its analysis, battle model and its analysis.

Practical / Lab work to be performed on a computer:

Modeling of the following problems using *Matlab / Mathematica / Maple* etc.

1. Plotting of second & third order solution family of differential equations.
2. Growth & Decay model (exponential case only).
3. (a) Lake pollution model (with constant/seasonal flow and pollution concentration)/
   (b) Case of single cold pill and a course of cold pills.
   (c) Limited growth of population (with and without harvesting).

4. (a) Predatory- prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
   (b) Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
   (c) Battle model (basic battle model, jungle warfare, long range weapons).
5. Plotting of recursive sequences.

BOOKS RECOMMENDED:

1. J. Sinha Roy and S Padhy: A course of Ordinary and Partial differential equation Kalyani Publishers, New Delhi.
2. Belinda Barnes and Glenn R. Fulford, *Mathematical Modeling with Case Studies, A Differential Equation Approach using Maple and Matlab,* 2ndEd., Taylor and Francis group, London and New York,2009.

BOOKS FOR REFERENCE:

1. Simmons G F, Differential equation, Tata Mc Graw Hill, 1991.
2. Martin Braun, Differential Equations and their Applications, Springer International, Student Ed.
3. S. L. Ross, Differential Equations, 3rd Edition, John Wiley and Sons, India.
4. C.Y. Lin, Theory and Examples of Ordinary Differential Equations, World Scientific, 2011.

CORE PAPER-V THEORY OF REAL FUNCTIONS

Objective: The objective of the course is to have knowledge on limit theorems on functions, limits of functions, continuity of functions and its properties, uniform continuity, differentiability of functions, algebra of functions and Taylor's theorem and, its applications. The student how to deal with real functions and understands uniform continuity, mean value theorems.

Expected Outcome: On the completion of the course, students will have working

knowledge on the concepts and theorems of the elementary calculus of functions of one real variable. They will work out problems involving derivatives of function and their applications. They can use derivatives to analyze and sketch the graph of a function of one variable, can also obtain absolute value and relative extrema of functions. This knowledge is basic and students can take all other analysis courses after learning this course.

UNIT-I

L' Hospital's Rules, other Intermediate forms, Cauchy's mean value theorem, Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, Relative extreme, Taylor's series and Maclaurin's series, expansions of exponential and trigonometric functions.

UNIT-II

Riemann integration; inequalities of upper and lower sums; Riemann conditions of integrability. Riemann sum and definition of Riemann integral through Riemann sums; equivalence of two definitions; Riemann integrability of monotone and continuous functions; Properties of the Riemann integral; definition and integrability of piecewise continuous and monotone functions. Intermediate Value theorem for Integrals; Fundamental theorems of Calculus.

UNIT-III

Improper integrals: Convergence of Beta and Gamma functions. Pointwise and uniform convergence of sequence of functions, uniform convergence, Theorems on continuity, derivability and integrability of the limit function of a sequence of functions**.**

UNIT-IV

Series of functions; Theorems on the continuity and derivability of the sum function of a series of functions; Cauchy criterion for uniform convergence and Weierstrass M-Test Limit superior and Limit inferior, Power series, radius of convergence, Cauchy Hadamard Theorem, Differentiation and integration of power series; Abel's Theorem; Weierstrass Approximation Theorem.

BOOKS RECOMMENDED:

1. R.G. Bartle & D. R. Sherbert, Introduction to Real Analysis, John Wiley &Sons.
2. G. Das and S. Pattanayak, *Fundamentals of mathematics analysis*, TMH Publishing Co.

3. S. C. Mallik and S. Arora, *Mathematical analysis*, New Age International Ltd., New Delhi.

BOOK FOR REFERENCES:

1. A. Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014
2. K. A. Ross, *Elementary analysis: the theory of calculus*, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004A.Mattuck, Introduction toAnalysis, Prentice Hall
3. Charles G. Denlinger, *Elements of real analysis*, Jones and Bartlett (Student Edition), 2011.

CORE PAPER-VI
GROUP THEORY-I

Objective: Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce students to basic concepts of group theory and examples of groups and their properties. This course will lead to future basic courses in advanced mathematics, such as Group theory-II and ring theory.

Expected Outcomes: A student learning this course gets idea on concept and examples of groups and their properties . He understands cyclic groups, permutation groups, normal subgroups and related results. After this course he can opt for courses in ring theory, field theory, commutative algebras, linear classical groups etc. and can be apply this knowledge to problems in physics, computer science, economics and engineering.

UNIT-I

Symmetries of a square, Dihedral groups, definition and examples of groups including permutation groups and quaternion groups (illustration through matrices), elementary properties of groups, Subgroups and examples of subgroups, centralizer, normalizer, center of a group,

UNIT-II

Product of two subgroups, Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations, properties of permutations, even and odd permutations,

alternating group,

UNIT-III

Properties of·· cosets, Lagrange's theorem and consequences including Fermat's Little theorem, external direct product of a finite number of groups, normal subgroups, factor groups.

UNIT-IV

Cauchy's theorem for finite abelian groups, group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, first, second and third isomorphism theorems.

BOOKS RECOMMENDED:

1. Joseph A. Gallian, *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi
2. John B. Fraleigh, *A First Course in Abstract Algebra,* 7th Ed., Pearson, 2002.

BOOK FOR REFERENCES:

1. M. *Artin, Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. Joseph 1. Rotman, *An Introduction to the Theory of Groups,* 4th Ed., Springer Verlag, 1995.
3. I. N. Herstein, *Topics in Algebra,* Wiley Eastern Limited, India, 1975.

CORE PAPER-VII

PARTIAL DIFFERENTIAL EQUATIONS AND SYSTEM OF ODEs

Objective: The objective of this course is to understand basic methods for solving Partial Differential Equations of first order and second order. In the process, students will be exposed to Charpit's Method, Jacobi Method and solve wave equation, heat equation, Laplace Equation etc. They will also learn classification of Partial Differential Equations and system of ordinary differential equations.

Expected Outcomes: After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, non linear evolution equations etc. All these courses are important in engineering and industrial applications for solving boundary value problem.

UNIT-I

Partial Differential Equations - Basic concepts and Definitions, Mathematical Problems. First-Order Equations: Classification, Construction and Geometrical Interpretation. Method of Characteristics for obtaining General Solution of Quasi Linear Equations. Canonical Forms of First-order Linear Equations. Method of Separation of Variables for solving first order partial differential equations.

UNIT-II

Derivation of Heat equation, Wave equation and Laplace equation. Classification of second order linear equations as hyperbolic, parabolic or elliptic. Reduction of second order Linear Equations to canonical forms.

UNIT-III

The Cauchy problem, Cauchy problem of an infinite string. Initial Boundary Value Problems, Semi-Infinite String with a fixed end, Semi-Infinite String with a Free end. Equations with non-homogeneous boundary conditions, Non- Homogeneous Wave Equation. Method of separation of variables, Solving the Vibrating String Problem, Solving the Heat Conduction problem

UNIT-IV

Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients, Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions, The method of successive approximations.

LIST OF PRACTICALS (USING ANY SOFTWARE)

(i) Solution of Cauchy problem for first order PDE.

(ii) Finding the characteristics for the first order PDE.

(iii) Plot the integral surfaces of a given first order PDE with initial data.

(iv) Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c\frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions

(a) $u(x, 0) = \phi(x), u_t(x,0) = \psi(x), x \in R, t>0$

(b) $u(x,0)=\phi(X), u_t(x, 0) = \psi(x), u(0,t)=0, x \in (0, \infty), t>0$

(c) $u(x, 0)=\phi(x), u_t(x, 0) = \psi(x), u_x(0,t) = 0, x \in (O, \infty), t>0$

(d) $u(x, 0) = \phi(x), ut(x, 0) = \psi(x), u(0,t) = 0, u(l,t) = 0, 0<x<l, t>0$

(v) Solution of wave equation $\frac{\partial u}{\partial t} - \kappa \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions

$u(x, 0) = f(x), u(0,t) = a, u(l, t) = b, 0<x<l, t>0$ $u(x, 0) = \psi(x), x \in R, 0<t<T$

$u(x,O)= \phi(x), u(0,t)=a, x \in (O, \infty), t \in O$

BOOKS RECOMMENDED :

1. Tyn Myint-U and Lokenath Debnath, *Linear Partial Differential Equations for Scientists and Engineers*, 4th edition, Birkhauser, Indian reprint, 2014.
2. S.L. Ross, *Differential equations,* 3rd Ed., John Wiley and Sons, India,

BOOK FOR REFERENCES:

1. J Sinha Roy and S Padhy: A course of Ordinary and Partial differential equation Kalyani Publishers,New Delhi,
2. Martha L Abell, James P Braselton, *Differential equations with MATHEMATICA*, 3rd Ed., Elsevier Academic Press, 2004.
3. Robert C. Mc Owen: Partial Differential Equations, Pearson Education Inc.
4. T Amarnath: An Elementary Course in Partial Differential Equations, Narosa Publications.

CORE PAPER-VIII

NUMERICAL METHODS AND SCIENTIFIC COMPUTING

Use of Scientific Calculator is allowed.

Objective: Calculation of error and approximation is a necessity in all real life, industrial and scientific computing. The objective of this course is to acquaint students with various numerical

methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of systems of linear equations and differential equations, interpolation, differentiation, evaluating integration.

Expected Outcome: Students can handle physical problems to find an approximate solution. After getting trained a student can opt for advance courses in numerical analysis in higher mathematics. Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

UNIT-I

Rate of convergence, Algorithms, Errors: Relative, Absolute, Round off, Truncation. Approximations in Scientific computing, Error propagation and amplification, conditioning, stability and accuracy, computer arithmetic mathematical software and libraries, visualisation, Numerical solution of non-linear equations: Bisection method, Regula- Falsi method, Secant method, Newton- Raphson method, Fixed-point Iteration method.

UNIT-II

Rate of convergence of the above methods. System of linear algebraic equations: Gaussian Elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. Computing eigen-values and eigenvectors

UNIT-III

Polynomial interpolation: Existence uniqueness of interpolating polynomials. Lagrange and Newtons divided difference interpolation, Error in interpolation, Central difference & averaging operators, Gauss-forward and backward difference interpolation. Hermite and Spline interpolation, piecewise polynomial interpolation.

UNIT-IV

Numerical Integration: Some simple quadrature rules, Newton-Cotes rules, Trapezoidal rule, Simpsons rule, Simpsons *3/8th* rule, Numerical differentiation and integration, Chebyshev differentiation and FFT, Richard-son extrapolation.

PRACTICAL/LAB WORK TO BE PERFORMED ON A COMPUTER:

Use of computer aided software (CAS), for example *Matlab / Mathematica / Maple / Maxima* etc., for developing the following Numerical programs:

(i) Calculate the sum *1/1* + *1/2* + *1/3* + *1/4* + ---------- + 1/*N.*

(ii) To find the absolute value of an integer.

(iii) Enter- 100 integers into an array and sort them in an ascending' order.

(iv) Any two of the following

(a) Bisection Method

(b) Newton Raphson Method

(c) Secant Method

(d) Regular Falsi Method

(v) Gauss-Jacobi Method

(vi) SOR Method or Gauss-Siedel Method

(vii) Lagrange Interpolation or Newton Interpolation

(viii) Simpson's rule.

Note: For any of the CAS *Matlab / Mathematica / Maple / Maxima* etc., Data types-simple data types, floating data types, character data types, arithmetic operators and operator precedence, variables and constant declarations, expression, input/output, relational operators, logical operators and logical expressions, control statements and loop statements, Arrays should be introduced to the students.

BOOKS RECOMMENDED:

1. M. K. Jain, S. R. K. Iyengar and R. K. Jain, *Numerical Methods for Scientific and Engineering Computation,* New age International Publisher, India,
2. Michael Heath: Scientific Computing : An introductory Survey.

BOOK FOR REFERENCES:

1. B. Bradie, *A Friendly Introduction to Numerical Analysis,* Pearson Education, India, 2007.
2. Kendall E. Atkinson: An Introduction to Numerical Analysis
3. C. F. Gerald and P. O. Wheatley, *App.ied Numerical Analysis,* Pearson Education, India, 7th Edition, 2008
4. S. D. Conte & S. de Boor: Elementary Numerical Analysis: An Algorithmic Approach.

CORE PAPER-IX

TOPOLOGY OF METRIC SPACES

Objective: This is an introductory course in topology of metric spaces. The objective of this

course is to impart knowledge on open sets, closed sets, continuous functions, connectedness and compactness in metric spaces.

Expected Outcomes: On successful completion of the course students will learn to work with abstract topological spaces. This is a foundation course for all analysis courses in future.

UNIT-I

Metric spaces, sequences in metric spaces, Cauchy sequences, complete metric spaces, open and closed balls, neighborhood, open set, interior of a set, limit point of a set, closed set, diameter of a set, Cantor's theorem,

UNIT-II

Subspaces, Countability Axioms and Separability, Baire's Category theorem

UNIT-III

Continuity: Continuous mappings, Extension theorems, Real and Complex valued Continuous functions, Uniform continuity, Homeomorphism, Equivalent metrics and isometry, uniform convergence of sequences of functions.

UNIT-IV

Contraction mappings and applications, connectedness, Local connectedness, Bounded sets and compactness, other characterization of compactness, continuous functions on compact spaces,

BOOKS RECOMMENDED:

1. Satish Shirali & Harikishan L. Vasudeva, *Metric Spaces*, Springer Verlag London (2006) (First Indian Reprint 2009)

BOOK FOR REFERENCES:

1. S. Kumaresan, *Topology of Metric Spaces*, Narosa Publishing House, Second Edition 2011.

CORE PAPER-X
RING THEORY

Objective: This is a second course in modern algebra which deals with ring theory. Some

basics of ring theory like rings, subrings, ideals, ring homomorphisms and their properties and. This course is an integral part of any course on Modern algebra the ohers being Group theory and Field Theory.

Expected Outcomes: After completing this course, this will help students to continue more courses in advanced Ring theory modules, Galois groups.

UNIT-I

Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring, Ideals, ideal generated by a subset of a ring, factor rings, operations on ideals.

UNIT-II

Prime and maximal ideals. Ring homomorphisms, properties of ring homomorphisms, Isomorphism theorems I, II and III, field of quotients.

UNIT-III

Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion, Unique factorization in Z[x].

UNIT-IV

Divisibility in integral domains, irreducibles, primes, unique factorization domains, Euclidean domains.

BOOKS RECOMMENDED:

1. Joseph A. Gallian, *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi.
2. John B. Fraleigh, *A First Course in Abstract Algebra,* 7th Ed., Pearson, 2002.

BOOK FOR REFERENCES:

1. M. *Artin, Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. Joseph 1. Rotman, *An Introduction to the Theory of Groups,* 4th Ed., Springer Verlag, 1995.
3. I. N. Herstein, *Topics in Algebra,* Wiley Eastern Limited, India, 1975.

CORE PAPER - XI

MULTIVARIATE CALCULUS

Objective: The objective of this course to introduce functions of several variable to a student after he has taken a course in one variable calculus. The course will introduce partial derivatives and several of its consequences and will introduce double and triple integrals along with line integrals which are fundamental to all streams where calculus can be used.

Expected Outcomes: After reading this course a student will be able to calculate partial derivatives, directional derivatives, extreme values and can calculate double, triple and line integrals. He will have idea of basic vector calculus including green's theorem, divergence theorem.and stokes theorem. He can take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.

UNIT-I

Functions of several variables, limit and continuity of functions of two variables. Partial differentiation, total differentiability and differentiability, sufficient condition for differentiability. Chain rule for one and two independent parameters, directional derivatives, the gradient, maximal and normal property of the gradient, tangent planes.

UNIT-II

Extrema of functions of two variables, method of Lagrange multipliers, constrained optimization problems.

Definition of vector field, divergence and curl, Double integration over rectangular region, double integration over nonrectangular region. Double integrals in polar co-ordinates,

UNIT-III

Triple integrals, Triple integral over a parallelepiped and solid regions. Volume by triple integrals, cylindrical and spherical co-ordinates. Change of variables in double integrals and triple integrals.

UNIT-IV

Line integrals, Applications of line integrals: Mass and Work. Fundamental theorem for line integrals, conservativevector fields, independence of path. Green's theorem, surface integrals,

integrals over parametrically defined surfaces. Stokes' theorem, The Divergence theorem.

BOOKS RECOMMENDED:

1. M. J, Strauss, G. L. Bradley and K. J. Smith, Calculus (3rd Edition), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
2. S C Mallik and S Arora: Mathematical Analysis, New Age International Publications

BOOK FOR REFERENCES:

1. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi, 2005.
2. E. Marsden, A.J. Tromba and A. Weinstein, *Basic Multivariable Calculus*, Springer(SIE). Indian reprint, 2005.
3. James Stewart, *Multivariable Calculus, Concepts and Contexts*,2nd Ed., Brooks/*Cole*, Thomson Learning, USA, 2001.
4. S Ghorpade, B V Limaye, Multivariable calculus, Springer international edition

CORE PAPER –XII
LINEAR ALGEBRA

Objective: Linear algebra is a basic course in almost all branches of science. A full course in undergraduate program will help students in finding real life applications later.. The objective of this course is to introduce a student the basics of linear algebra and some of its application

Expected Outcomes: The student will use this knowledge wherever he/She goes after undergraduate program. It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics and what not.

UNIT-I

Vector spaces, subspaces, examples, algebra of subs paces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.

Linear transformations, null space, range, rank and nullity of a linear transformation.

UNIT-II

Matrix representation of a linear transformation, Algebra of linear transformations, Isomorphisms, Isomorphism theorems, invertibility and isomorphisms, change of coordinate

matrix, Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators, Basics of Fields.

UNIT-III

Eigenspaces of a linear operator, diagonalizability. Invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator, Inner product spaces and norms, Gram-Schmidt orthogonalization process,

UNIT-IV

Orthogonal complements, Bessel's inequality, the adjoint of a linear operator, Least Squares Approximation, minimal solutions to systems of linear equations, Normal and self-adjoint operators, Orthogonal projections and Spectral theorem.

BOOKS RECOMMENDED:

1. Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, *Linear Algebra* (4th Edition), Pearson, 2018.

BOOKS FOR REFERENCE:

1. Rao A R and Bhim Sankaram Linear Algebra Hindustan Publishing house.
2. Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.

CORE PAPER-XIII
COMPLEX ANALYSIS

Objectives: The objective of the courseis aimed to provide an introduction to the theories for functions of a complex variable. The concepts of analyticity and complex integration are presented. The Cauchy's theorem and its applications, the calculus of residues and its applications are discussed in detail.

Expected Outcomes: Students will be able to handle certain integrals not evaluated earlier and will know a technique for counting the zeros of polynomials. This course is prerequisite to many other advance analysis courses.

UNIT-I

Complex Numbers and Complex plane: Basic properties, convergence, Sets in the Complex plane, Functions on the Complex plane: Continuous functions, holomorphic functions, power series, Integration along curves.

UNIT-II

Cauchy's Theorem and Its Applications: Goursat's theorem, Local existence of primitives and Cauchy's theorem in a disc, Evaluation of some integrals, Cauchy's integral formulas.

UNIT-III

Morera's theorem, Sequences of holomorphic functions, Holomorphic functions defined in terms of integrals, Schwarz reflection principle, Zeros and poles.

UNIT-IV

Meromorphic Functions and the Logarithm: The residue formula, Examples, Singularities and meromorphic functions, The argument principle and applications, The complex logarithm.

BOOKS RECOMMENDED:

1. Elias M. Stein & Rami Shakarchi, Complex Analysis, Princeton University press, Princeton and Oxford, 2003.

BOOKS FOR REFERENCE:

1. James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications* (Eighth Edition), McGraw - Hill International Edition, 2009.
2. G. F. Simmons, *Introduction to Topology and Modern Analysis*, Mcgraw-Hill, Edition 2004.
3. Joseph Bak and Donald 1. Newman, *Complex analysis* (2ndEdition), Undergraduate Texts in Mathematics, Springer-Verlag New York, Inc., New York, 1997.

CORE PAPER-XIV
GROUP-THEORY-II

Objective: The objective of this course **i**s to be exposed to more advanced results in group theory after completing a basic course. The course introduces results on automorphism, commutator subgroup, group action Sylow theorems etc.

Expected Outcomes: The knowledge of automorphism helps to study more on field theory. Students learn on direct products, group actions, class equations and their applications with proof of all results . This course helps to opt for more advanced courses in algebra and linear classical groups.

UNIT-I

Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups. characteristic subgroups.

UNIT-II

Commutator subgroup and its properties, Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental Theorem of finite abelian groups.

UNIT-III

Group actions, stabilizers and kernels, permutation representation associated with a given group action, Application of group actions: Generalized Cayley's theorem, Index theorem.

UNIT-IV

Groupsactingonthemselvesbyconjugation, classequationandconsequences, conjugacyin S_n, p - groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of A_n for $n \neq 5$, non-simplicity tests.

BOOKS RECOMMENDED:

1. John B. Fraleigh, *A First Course in Abstract Algebra,* Narosa Publishing House, New Delhi.

2. Joseph A. Gallian *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi.

BOOK FOR REFERENCES:

1. M. Artin, *Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. David S. Dummit and Richard M. Foote, *Abstract Algebra,* 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2004.
3. J.R. Durbin, *Modern Algebra,* John Wiley & Sons, New York Inc., 2000.

Discipline Specific Elective Paper-1

LINEAR PROGRAMMING

Objective: The objective of this course is to familiarize industrial problems to students with various methods of solving Linear Programming Problems, Transportation Problems, Assignment Problems and their applications. Also, students will know the application of linear Programming method in Game Theory.

Expected Outcomes: More knowledge on this topic in higher studies will help students to deal industrial models. This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.

UNIT-I

Introduction to linear Programming problem, Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method, Big-M method and their comparison.

UNIT-II

Duality, formulation of the dual problem, primal-dual relationships, Fundamental Theorem of Duality, economic interpretation of the dual.

UNIT-III

Transportation problem and its mathematical formulation, northwest-corner method least cost method and Vogel approximation method for determination of starting basic solution, algorithm for solving transportation problem. Assignment problem and its mathematical formulation, Hungarian method for solving assignment problem.

UNIT-IV

Game theory: formulation of two person zero sum games, solving two person zero sum games, games with mixed strategies, graphical solution procedure, linear programming solution of games.

BOOKS RECOMMENDED:

1. Kanti Swarup, Operations Research, Sultan Chand & Sons, New Delhi. Books.

BOOKS FOR REFERENCE:

1. S. Hillier and G.J. Lieberman, *Introduction to Operations Research- Concepts and Cases* (9th Edition), TataMcGraw Hill, 2010.
2. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, *Linear Programming and Network Flows* (2nd edition), John Wiley and Sons, India, 2004.
3. G. Hadley, *Linear Programming*, Narosa Publishing House, New Delhi, 2002.
4. Hamdy A. Taha, *Operations Research: An Introduction* (10th edition), Pearson, 2017.

Discipline Specific Elective Paper-II

Probability and Statistics

Objective: The objective of the course is to expertise the student to the extensive role of statistics in everyday life and computation, which has made this course a core course in all branches of mathematical and engineering sciences.

Expected Outcome: The students shall learn probability and statistics for various random variables, multivariate distributions, correlations and relations. He shall learn law of large numbers and shall be able to do basic numerical calculations.

UNIT-I

Probability: Introduction, Sample spaces, Events, probability of events, rules of probability, conditional probability, independent events, Bayes's theorem,

Probability distributions and probability densities: random variables, probability distributions, continuous random variables, probability density functions, Multivariate distributions, joint distribution function, joint probability density function, marginal distributions, conditional distributions, conditional density, The theory in practice, data analysis, frequency distribution, class limits, class frequencies, class boundary, class interval, class mark, skewed data, multimodality, graphical representation of the data, measures of location and variability. Population, sample, parameters

UNIT-II

Mathematical Expectation: Introduction, expected value of random variable, moments, Chebyshev's theorem, moment generating functions, product moments, moments of linear combinations of random variables, conditional expectations, the theory in practice, measures of location, dispersion

UNIT-III

Special probability distributions: Discrete Uniform distribution, binomial distribution, Negative binomial, geometric, hypergeometric, poisson, multinomial distribution, multinomial. Special probability densities; Uniform distribution, gamma, exponential, gamma, chi-square, beta distribution, normal, normal approximation to binomial, bivariate normal, Functions of random variables, distribution function technique, transformation technique-one variable, several variables, moment generating function technique,

UNIT-IV

Sampling distributions: population distribution, random sample, sampling distribution of mean, Central Limit theorem, Sampling distribution of the mean: finite populations, chi-square, t, F distributions, regression and correlation: Bivariate regression, regression equation, Linear regression, method of least squares.

BOOKS RECOMMENDED:

1. Irwin Miller and Marylees Miller, *John E. Freund's Mathematical Statistics with Applications* (8thEdition), Pearson, Asia, 2014.

BOOK FOR REFERENCES:

l. Robert V. Hogg, Joseph W. McKean and Allen T. Craig, *Introduction to Mathematical Statistics,* Pearson Education, Asia, 2007.

2. Alexander M. Mood, Franklin A. Graybill and Duane C. Boes, *Introduction to the Theory of Statistics*, (3rd Edition), Tata McGraw- Hill, Reprint 2007.

3. Sheldon Ross, *Introduction to Probability Models* (9th Edition), Academic Press, Indian Reprint, 2007.

Discipline Specific Elective Paper-III

DIFFERENTIAL GEOMETRY

Objective: After learning methods on curve tracing and Analytic Geometry, the objective of this course is to teach Differential geometry of curves and surfaces which trains a student using tools in calculus to derive intrinsic properties of plain curves and space curves.
Expected Outcome: After completing this course a student will learn on serret-Frenet formulae, relation between tangent, normal and binormals, first and second fundamental forms and ideas on various curvatures. He has scope to take more advanced courses in surface theory and geometry.

UNIT-I

Theory of Space Curves: Space curves, Planer curves, Curvature, torsion and Serret-Frenet formulae. Osculating circles, Osculating circles and spheres. Existence of space curves.

UNIT-II

Evolutes and involutes of curves. Theory of Surfaces: Parametric curves on surfaces, surfaces of revolution, helicoids, Direction coefficients. First and second Fundamental forms.

UNIT-III

Principal and Gaussian curvatures. Lines of curvature, Euler's theorem. Rodrigue's formula, Conjugate and Asymptotic lines. Developables: Developable associated with space curves and curves on surfaces, Minimal surfaces.

UNIT-IV

Geodesics: Canonical geodesic equations. Nature of geodesics on a surface of revolution. Clairaut's theorem. Normal property of geodesics. Torsion of a geodesic. Geodesic curvature. Gauss-Bonnet theorem. Surfaces of constant curvature.

BOOKS RECOMMENDED:

1. T.J. Willmore, *An Introduction to Differential Geometry*, Dover Publications, 2012.

BOOK FOR REFERENCES:

1. A. Pressley, Elementary Differential Geometry, Springer Internationl Edition, 2014.
2. O'Neill, *Elementary Differential Geometry*, 2nd Ed., Academic Press, 2006.
3. C.E. Weatherburn, *Differential Geometry of Three Dimensions*, Cambridge University Press 2003.
4. D.J. Struik, *Lectures on Classical Differential Geometry*, Dover Publications, 1988.

Discipline Specific Elective Paper-IV
NUMBER THEORY

Objective: The main objective of this course is to build up the basic theory of the integers, prime numbers and their primitive roots, the theory of congruence, quadratic reciprocity law and number theoretic functions, Fermat's last theorem, to acquire knowledge in cryptography specially in RSA encryption and decryption.

Expected Outcomes: Upon successful completion of this course students will able to know the basic definitions and theorems in number theory, to identify order of an integer, primitive roots, Euler's criterion, the Legendre symbol, Jacobi symbol and their properties, to understand modular arithmetic number-theoretic functions and apply them to cryptography.

UNIT- I

Linear Diophantine equation, prime counting function, statement of prime number theorem, Goldbach conjecture, linear congruences, complete set of residues, Chinese remainder theorem, Fermat's little theorem, Wilson's theorem.

UNIT-II

Number theoretic functions, sum and number of divisors, totally multiplicative functions, definition and properties of the Dirichlet product, the Mobius inversion formula, the greatest integer function, Euler's phi-function, Euler's theorem, reduced set of residues, some properties of Euler's phi-function.

UNIT-III

Order of an integer modulo *n*, primitive roots for primes, composite numbers having primitive roots, Euler's criterion, the Legendre symbol, Jacobi symbol and their properties, quadratic reciprocity, quadratic congruences with composite moduli.

UNIT-IV

Affine ciphers, Hill ciphers, p vg h v g gv ublic key cryptography, RSA encryption and decryption, the equation $x^2+y^2=z^2$, Fermat's Last Theorem.

BOOKS RECOMMENDED:

1. David M.Burton, *Elementary Number Theory* (6thEdition), TataMcGraw-Hill Edition, Indian reprint, 2007.

BOOK FOR REFERENCES:

1. Thomas Koshy, *Elementary Number Theory with Applications (*2nd Edition),

Academic Press, 2007.
2. Neville Robinns, *Beginning Number Theory* (2ndEdition), Narosa Publishing House Pvt. Limited, Delhi,2007.

OR

Discipline Specific Elective Paper-IV

PROJECT

Guidelines for +3 (CBCS) Under Graduate(B.A./B.Sc.) Mathematics (Honours) Project

1. Any student registering for doing project is required to inform the HOD, Mathematics the name of his/her project supervisor(s) at the time of pre-registration.
2. By the last date of add and drop, the student must submit the "Project Registration Form'', appended as Annexure-I to this document, to the HOD, Mathematics. This form requires a project title, the signature of the student, signature(s) of the supervisor(s) and the signature of the HOD, Mathematics of the college/university.
3. The project supervisor(s) should normally be a faculty member(s) of the Department of Mathematics and the topic of the project should be relevant to Mathematical Sciences. If a student desires to have a Project Supervisor from another department of the institute, the prior approval for the same should be sought from the HOD, Mathematics.
4. A student may have at the most two Project Supervisors. If a student desires to have two supervisors, at least one of these should be from the Department of Mathematics.
5. The student(s) will be required to submit one progress report and a final report of the Project to the HOD, Mathematics. The progress report is to be submitted in the sixth week of the semester in which the project is undertaken. The hard copy and an electronic version of the final report of the project should be submitted two weeks before the end semester examination of the sixth semester. In addition the student will be required to make an oral presentation in front of a committee **(**Under Graduate (B.A./ B.Sc.) Mathematics (Honours) Project committee of the college in which supervisor is one of the members) constituted for this purpose by the Department of Mathematics of the college.
6. The student is expected to devote about 100 hours. The project will be evaluated by a committee of faculty members at the end of the sixth semester. The committee will be constituted by the Under Graduate (B.A./B.Sc.) Mathematics (Honours) Project committee of the college keeping in mind the areas of project they will cover.

7. In each semester the grade of a student will be awarded by the committee in consultation with his/her project supervisor(s). The project is evaluated on the basis of the following components: First Progress Reports: 20%; second/Final Report: 30%; Presentation: 30%; Viva: 20%.
8. Project progress reports should normally be no longer than 250 words and final report should not be longer than 40 A4 size pages in double spacing. Each final project report need to contain the following: (i) Abstract (ii) Table of contents (iii) Review of literature (iv) Main text(v) List of references. It may be desirable to arrange the main text as an introduction, the main body and conclusions.

GUIDELINES FOR STRUCTURING CONTENTS

Sequence of Contents:

The following sequence for the thesis organization should be followed:

(i) Preliminaries	Title Page
	Certificate
	Abstract/Synopsis
	Acknowledgement and/ or Dedication
	Table of Contents
	List of Figures, Tables, Illustrations,
	Symbols, etc (wherever applicable)
(ii) Text of Thesis	Introduction
	The body of the thesis, summary and conclusions
(iii) Reference Material	List of References, Bibliography
(iv) Appendices	

NOTE:

1. *Synopsis/Abstract* should be self-complete and contain no citations for which the thesis has to

be referred.

2. The Text of the Thesis

(a) Introduction:

Introduction may be the first chapter or its first major division. In either case, it should contain a brief statement of the problem investigated. It should outline the scope, aim, general character of the research and the reasons for the student's interest in the problem.

(b) The body of Thesis

This is the substance of the dissertation inclusive of all divisions, subdivisions, tables, figures, etc.

(c) Summary and conclusions

If required, these are given as the last major division (chapter) of the text. A further and final subdivision titled "*Scope* for Further Work" may follow.

(d) Reference material

The list of references should appear as a consolidated list with references listed either alphabetically or sequentially as they appear in the text of the thesis.

For referencing an article in a scientific journal the suggested format should contain the following information: authors, title, name of journal, volume number, page numbers and year. For referencing an article published in a book, the suggested format should contain, authors, the title of the book, editors, publisher, year, page number of the article in the book being referred to. For referencing a thesis the suggested format should contain, author, the title of thesis, where thesis was submitted or awarded, year.

ANNEXURE – I
DEPARTMENT OF MATHEMATICS
PROJECT REGISTRATION FORM

Name of the college/university: Name of the student:

Roll No. :

e-mail :

Name of the supervisor(s):

Department(s):

e-mail(s):

Title of the Project: Signature of the Student: Signature of supervisor(s): (i)

(ii) Signature of HOD, Mathematics:

GENERIC ELECTIVES (TWO PAPER CHOICE)

Generic Elective Paper I CALCULUS

AND DIFFERENTIAL EQUATIONS

Objective: Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.

Excepted Outcomes: After completing the course, students are expected to be able to apply knowledge of calculus and differential equations in the areas of their own interest.

UNIT-I

Curvature, Asymptotes, Tracing of Curves (Catenary, Cycloid, Folium of Descartes), Rectification, Quadrature, Elementary ideas about Sphere, Cones, Cylinders and Conicoids.

UNIT-II

Reviewoflimits,continuityanddifferentiabilityoffunctionsofonevariable and their properties, Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's theorem and Cauchy's form of remainder, Taylor's series, Maclaurin's series of $sinx$, $cosx$, e^x, $\log(1+x)$, $(1+x)^m$, L' Hospital's Rule, other Intermediate forms.

UNIT-III

Limitand Continuity of functions of several variables, Partial derivatives, Partial derivatives of higher orders, Homogeneous functions, Change of variables, Mean value theorem, Taylors theorem and Maclaurin's theorem for functions of two variables(statements &applications), Maxima and Minima of functions of two and three variables, Implicit functions, Lagrange's multipliers (Formulae & its applications), Concepts of Multiple integrals & its applications.

UNIT-IV

Ordinary Differential Equations of order one and degree one (variables separable, homogeneous, exact and linear). Equations of order one but higher degree. Second order linear equations with constant coefficients, homogeneous forms, Second order equations with variable coefficients, Variation of parameters.

BOOKS RECOMMENDED:

1. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
2. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.
3. S.C. Mallik and S. Arora-Mathematical Analysis, New Age International Publications.
4. J. Sinharoy and S. Padhy: A Course of Ordinary and Partial Differential Equations, Kalyani Publishers.

BOOK FOR REFERENCES:

1. H.Anton,I.Bivens and S.Davis,*Calculus*,10th Ed.,John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
2. Shanti Narayan and P.K. Mittal-Analytical Solid Geometry, S. Chand & Company Pvt. Ltd., New Delhi.
3. Martin Braun-Differential Equations and their Applications-Martin Braun, Springer International.
4. B. P.Acharya and D. C.Sahu: Analytical Geometry of Quadratic Surfaces, Kalyani Publishers.

Generic Elective Paper II

ALGEBRA

Objective: This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural

numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces, matrices are introduced here.

Expected Outcomes: The acquired knowledge will help students to study further courses in mathematics like, group theory, ring theory and field theory and linear algebra. It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.

UNIT-I

Sets, relations, Equivalence relations, partial ordering, well ordering, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments

UNIT-II

Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers, Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

UNIT-III

Matrices, algebra of matrices, determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix, Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems,.

UNIT-IV

Vector spaces and subspaces, examples, linear independence, linear dependence, basis, dimension, examples, Introduction to linear transformations, matrix representation of a linear transformation, Eigen values, Eigen vectors of amatrix.

BOOKS RECOMMENDED:

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
2. V Krishna Murthy, V P Mainra, J L Arora, An Introduction to Linear Algebra ,

Affiliated East-West Press Pvt. Ltd

BOOKS FOR REFERENCE:

1. David C. Lay, Linear Algebra and its Applications,3rd Ed., Pearson Education Asia, Indian Reprint,2007.
2. B S Vatsa and Suchi Vatsa Theory of Matrices New age International third edition 2010.
3. Ward Cheney, David kincaid. Linear algebra theory and applications, Jones and Bartlett , 2010.

OR

GENERIC ELECTIVES (FOUR PAPERS CHOICE)

Generic Elective Paper I CALCULUS AND

DIFFERENTIAL EQUATIONS

Objective: Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.

Excepted Outcomes: After completing the course, students are expected to be able to apply knowledge of calculus and differential equations in the areas of their own interest.

UNIT-I

Curvature, Asymptotes, Tracing of Curves (Catenary, Cycloid, Folium of Descartes), Rectification, Quadrature, Elementary ideas about Sphere, Cones, Cylinders and Conicoids.

UNIT-II

Reviewoflimits,continuityanddifferentiabilityoffunctionsofonevariable and their properties, Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's theorem and Cauchy's form of remainder, Taylor's series, Maclaurin's series of $\sin x$, $\cos x$, e^x, $\log(1+x)$, $(1+x)^m$, L' Hospital's Rule, other Intermediate forms.

UNIT-III

Limitand Continuity of functions of several variables, Partial derivatives, Partial derivatives of higher orders,

Homogeneous functions, Change of variables, Mean value theorem, Taylors theorem and Maclaurin's theorem for functions of two variables(statements &applications), Maxima and Minima of functions of two and three variables, Implicit functions, Lagranges multipliers (Formulae & its applications), Concepts of Multiple integrals & its applications.

UNIT-IV

Ordinary Differential Equations of order one and degree one (variables separable, homogeneous, exact and linear). Equations of order one but higher degree.Second order linear equations with constant coefficients, homogeneous forms, Second order equations with variable coefficients, Variation of parameters.

BOOKS RECOMMENDED:

1. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
2. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.
3. S.C. Mallik and S. Arora-Mathematical Analysis, New Age InternationalPublications.
4. J. Sinharoy and S. Padhy: A Course of Ordinary and Partial Differential Equations, Kalyani Publishers.

BOOKS FOR REFERENCE:

1. H. Anton, I. Bivens and S.Davis, *Calculus*, 10th Ed., John Wiley and Sons (Asia) P.Ltd., Singapore, 2002.
2. Shanti Narayan and P.K. Mittal-Analytical Solid Geometry, S. Chand & Company Pvt. Ltd., New Delhi.
3. Martin Braun-Differential Equations and their Applications-Martin Braun, Springer International.
4. B. P.Acharya and D. C. Sahu: Analytical Geometry of Quadratic Surfaces, Kalyani Publishers.

Generic Elective Paper II

ALGEBRA

Objective: This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces, matrices are introduced here.

Expected Outcomes: The acquired knowledge will help students to study further courses in mathematics like, group theory, ring theory and field theory and linear algebra. It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.

UNIT-I

Sets ,relations, Equivalence relations, partial ordering, well ordering, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments

UNIT-II

Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers, Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

UNIT-III

Matrices, algebra of matrices , determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix,

Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems,.

UNIT-IV

Vector spaces and subspaces, examples, linear independence, linear dependence, basis, dimension, examples, Introduction to linear transformations, ,matrix representation of a linear transformation, Eigen values, Eigen vectors of amatrix.

BOOKS RECOMMENDED:

1 Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.

2 V Krishna Murthy, V P Mainra, J L Arora, An Introduction to Linear Algebra , Affiliated East-West Press Pvt. Ltd

BOOKS FOR REFERENCE:

1. David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint,2007.

2. B S Vatsa and Suchi Vatsa Theory of Matrices New age International third edition 2010.

3. Ward Cheney, David Kincaid. Linear algebra theory and applications, Jones and Bartlett ,2010

Generic Elective Paper III

REAL ANALYSIS

Objective: The objective of the course is to have the knowledge on basic properties of the field of real numbers, studying Bolzano-Weiersstrass Theorem , sequences and convergence of sequences, series of real numbers and its convergence etc. This is one of the core courses essential to start doing mathematics.

Expected Outcome: On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real

analysis and understand limits and their use in sequences, series, differentiation and integration. Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

UNIT-I

Review of Algebraic and Order Properties of R, ε-neighborhood of a point in R, Idea of countable sets, uncountable sets and uncountability of R, Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima, The Completeness Property of R, The Archimedean Property, Density of Rational (and Irrational) numbers in R.

UNIT-II

Intervals, Interior point, Open Sets, Closed sets, Limit points of a set , Illustrations of Bolzano- Weierstrass theorem for sets, closure, interior and boundary of a set. Sequences, Bounded sequence, Convergent sequence, Limit of a sequence. Limit Theorems, Monotone Sequences, Monotone Convergence Theorem. Subsequences, Divergence Criteria, Monotone Subsequence Theorem (statement only). Bolzano Weierstrass Theorem for Sequences, Cauchy sequence, Cauchy's Convergence Criterion.

UNIT-III

Infinite series, convergence and divergence of infinite series, Cauchy Criterion, Tests for convergence: Comparison test, Limit Comparison test, Ratio Test, Cauchy's nth root test, Integral test, Alternating series, Leibniz test, Absolute and Conditional convergence.

UNIT-IV

Sequence and Series of functions, pointwise and uniform convergences, M_n test, M test, statement of results about uniform convergence, differentiability and integrability of function, power series and radius of convergence.

BOOKS RECOMMENDED:

1. S.C. Mallik and S. Arora- Mathematical Analysis, New Age InternationalPublications.
2. G. Das and S. Pattanayak, Fundamentals of Mathematical Analysis, TMH Publishing Co.

BOOKS FOR REFERENCE:

1. R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis (3rd Edition), John Wiley and Sons (Asia) Pvt. Ltd., Singapore,2002.
2. A. Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014.
3. Brian S. *Thomson*, Andrew. M. *Bruckner*, and Judith B. *Bruckner*, *Elementary Real Analysis*, Prentice Hall,2001.
4. Gerald G. Bilodeau, Paul R. Thie, G.E. Keough, *An Introduction to Analysis*, Jones & Bartlett, Second Edition, 2010.

Generic Elective Paper IV NUMERICAL

METHODS

Objective: Calculation of error and approximation is a necessity in all real life, industrial and scientific computing. The objective of this course is to acquaint students with various numerical methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of nonlinear equations, systems of linear equations, differential equations, Interpolation, differentiation, evaluating integration.

Expected Outcome: Students can handle physical problems to find an approximated solution. After getting trained a student can opt for advance courses in Numerical analysis in higher mathematics. Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

UNIT-I

Algorithms, Convergence, Bisection method, False position method, Fixed point iteration method, Newton's method, Secant method.

Gauss Elimination and Gauss Jordan methods, LU decomposition, Gauss-Jacobi, Gauss- Siedel.

UNIT-II

Lagrange and Newton interpolation: linear and higher order, finite difference operators.

UNIT-III

Numerical differentiation: forward difference, backward difference and central Difference.

UNIT-IV

Integration: trapezoidal rule, Simpson's rule, Euler's method, Runge-Kutta methods of orders two and four.

BOOKS RECOMMENDED:

1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, *Numerical Methods for Scientific and Engineering Computation*, 5th Ed., New age International Publisher, India, 2007.

BOOKS FOR REFERENCE:

1. S. S. Sastry, Introductory method for Numerical Analysis, PHI New Delhi,2012.
2. S. D. Conte and Carl De Boor, Elementary Numerical Analysis, Mc Graw Hill, 1980.

Course structure of UG Physics Honors

SEMESTER	COURSE OPTED	COURSE NAME	Credits
I 4 Papers (400 Marks)	Ability Enhancement Compulsory Course-I	AECC-1	4
	Core course-I	Mathematical Physics-I	4
	Core Course-I Practical/Tutorial	Mathematical Physics-I Lab	2
	Core course-II	Mechanics	4
	Core Course-II Practical/Tutorial	Mechanics Lab	2
	Generic Elective -1	GE-1	4
	Generic Elective -1	Practical/Tutorial	2
II 4 Papers (400 Marks)	Ability Enhancement Compulsory Course-II	AECC-II	4
	Core course-III	Electricity and Magnetism	4
	Core Course-III Practical/Tutorial	Electricity and Magnetism Lab	2
	Core course-IV	Waves and Optics	4
	Core Course-IV Practical/Tutorial	Waves and Optics Lab	2
	Generic Elective -2	GE-2	4
	Generic Elective -2	Practical/Tutorial	2
III 5 Papers (500 Marks)	Core course-V	Mathematical Physics-II	4
	Core Course-V Practical/Tutorial	Mathematical Physics-II Lab	2
	Core course-VI	Thermal Physics	4
	Core Course-VI Practical/Tutorial	Thermal Physics Lab	2
	Core course-VII	Analog Systems and Applications	4
	Core Course-VII Practical/Tutorial	Analog Systems & Applications Lab	2
	Skill Enhancement Compulsory Course - 1	SECC-1	4
	Generic Elective -3	GE-3	4
	Generic Elective -3	Practical/Tutorial	2
IV 5 Papers (500 Marks)	Core course-VIII	Mathematical Physics III	4
	Core Course-VIII Practical/Tutorial	Mathematical Physics-III Lab	2
	Core course-IX	Elements of Modern Physics	4
	Core Course-IX Practical/Tutorial	Elements of Modern Physics Lab	2
	Core course-X	Digital Systems and Applications	4
	Core Course-X Practical/Tutorial	Digital Systems & Applications Lab	2
	Skill Enhancement Compulsory Course - 2	SECC -2	4
	Generic Elective -4	GE-4	4
	Generic Elective -4	Practical/Tutorial	2
V	Core course-XI	Quantum Mechanics &	4

4 Papers **(400 Marks)**		**Applications**	
	Core Course-XI Practical/Tutorial	**Quantum Mechanics Lab**	**2**
	Core course-XII	**Solid State Physics**	**4**
	Core Course-XII Practical/Tutorial	**Solid State Physics Lab**	**2**
	Discipline Specific Elective -1	**DSE-1**	**5**
	Discipline Specific Elective -1	**Practical/Tutorial**	**1**
	Discipline Specific Elective -2	**DSE-2**	**5**
	Discipline Specific Elective- 2	**Practical/Tutorial**	**1**
VI **4 Papers** **(400 Marks)**	**Core course-XIII**	**Electro-magnetic Theory**	**4**
	Core Course-XIII Practical/Tutorial	**Electro-magnetic Theory Lab**	**2**
	Core course-XIV	**Statistical Mechanics**	**4**
	Core Course-XIV Practical/Tutorial	**Statistical Mechanics Lab**	**2**
	Discipline Specific Elective -3	**DSE-3**	**5**
	Discipline Specific Elective -3	**Practical/Tutorial**	**1**
	Discipline Specific Elective-4	**DSE-4**	**4/5**
	Discipline Specific Elective -4	**Practical/Tutorial**	**2/1**
	Alternative to Discipline Specific Elective-4	**(Eligible Students may do a Project in DSE-IV)**	**6**
		Total Credits	**148**

Generic Elective Papers (GE) (Minor-Physics) for other Departments/Disciplines: (Credit: 06 each)

Depending on their requirements, Universities may choose 2 (two)GE subjects with 2 papers from each subject or only one GE subject with 4 papers from it.

Two papers GE subject will be :

1. **GE-I** (Mechanics & Properties of matter, Oscillation & Waves, Thermal Physics, Electricity and Magnetism & Electronics) + Lab

2. **GE-II** (Optics, Special Theory of Relativity, Atomic Physics, Quantum Mechanics and Nuclear Physics)+ Lab

A student who chooses to read only Physics subject GE will take 4 DSC papers of the Pass Course as below

1. **GE-I** as **DSC-1**(Mechanics)+ Lab
2. **GE-II** as **DSC-2**,(Electricity, Magnetism & Emt))+ Lab
3. **GE-III** as **DSC-3**,(Thermal Physics & Statiscal Mechanics))+ Lab
4. **GE-IV** as **DSC-4** (Waves and Optics)+ Lab

(GE-I same paper as DSC-1,GE-II same as DSC-2 ,GE-III same as DSC-3,GE-IV same as DSC-4)

SEC papers can be chosen from the general pool or physics specific courses as indicated.

PHYSICS

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 5 papers suggested)

Generic Elective for non Physics students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper –

For practical paper: Mid term : 15 marks, End term : 60 marks, Practical- 25 marks

For non practical paper: Mid term : 20 marks, End term : 80 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper –

Practical paper-40 hours theory classes + 20 hours Practical classes

Non Practical paper-50 hours theory classes + 10 hours tutorial

CORE PAPER-1

MATHEMATICAL PHYSICS-I

The emphasis of course is on applications in solving problems of interest to physicists. The students are to be examined entirely on the basis of problems, seen and unseen.

UNIT-I

Calculus -I: Plotting of functions, Intuitive ideas of continuous, differentiable functions and plotting of curves, Approximation: Taylor and binomial series (statements only), First Order Differential Equations and Integrating Factor, Second Order Differential equations: Homogeneous Equations with constant coefficients, Wronskian and general solution, Statement of existence and Uniqueness Theorem for Initial Value Problems, Particular Integral.

UNIT-II

Calculus-II: Calculus of functions of more than one variable: Partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration, Constrained Maximization using Lagrange Multipliers,

Vector algebra: Recapitulation of vectors: Properties of vectors under rotations. Scalar product and its invariance under rotations, Vector product, Scalar triple product and their interpretation in terms of area and volume respectively, Scalar and Vector fields.

UNIT-III

Orthogonal Curvilinear Coordinates: Orthogonal Curvilinear Coordinates, Derivation of Gradient, Divergence, Curl and Laplacian in Cartesian, Spherical and Cylindrical Coordinate Systems, Comparison of velocity and acceleration in cylindrical and spherical coordinate system

Dirac Delta function and its properties: Definition of Dirac delta function. Representation as limit of a Gaussian function and rectangular Function, Properties of Dirac delta function.

UNIT-IV

Vector Differentiation: Directional derivatives and normal derivative, Gradient of a scalar field and its geometrical interpretation, Divergence and curl of a vector field, Del and Laplacian operators, Vector identities

Vector Integration: Ordinary Integrals of Vectors, Multiple integrals, Jacobian, Notion of infinitesimal line, surface and volume elements, Line, surface and volume integrals of Vector fields, Flux of a vector field, Gauss' divergence theorem, Green's and Stokes Theorems and their applications (no rigorous proofs)

Text Books:

1 Mathem•aticalMethodsforPhysicists,G.B.Arfken,H.J.Weber,F.E.Harris (2013,7th Edition., Elsevier)

2 Adva•nced Engineering Mathematics, Erwin Kreyszig (Wiley India) , 2008

Reference books:

1. Mathematical Physics C. Harper (Prentice Hall India), 2006
2. Complex Variable: Schaum's Outlines Series M. Spiegel (2nd Edition , Mc-Graw Hill Education)
3. Complex variables and applications, J. W. Brown and R.V.Churchill
   Mathematical Physics, Satya Prakash (Sultan Chand)
4. Mathematical Physics, B. D. Gupta (4th edition, Vikas Publication), 2009
5. Mathematical Physics and Special Relativity, M. Das, P.K. Jena and B.K.Dash (Srikrishna Prakashan) ,2009
6. Mathematical Physics–H.K.Dass, Dr. Rama Verma (S. Chand Publishing) , 2011

CORE PAPER I LAB:

The aim of this Lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- Highlights the use of computational methods to solve physical problems
- The course will consist of lectures(both theory and practical)in the Lab
- Evaluation done not on the programming but on the basis of formulating the problem
- Aim at teaching students to construct the computational problem to be solved
- Students can use any one operating system Linux or Microsoft Windows

Introduction and Overview: Computer architecture and organization, memory and Input/output devices.

Basics of scientific computing: Binary and decimal arithmetic, Floating pointnumbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow and overflow emphasize the importance of making equations in terms of dimension less variables, Iterative methods. Algorithm

Errors and error Analysis: Truncation and round off errors, Absolute and relative errors, Floating point computations. Systematic and Random Errors, Propagation of Errors, Normal Law of Errors, Standard and Probable Error.

Review of C and C++ Programming: Introduction to Programming, constants,

variables and Fundamentals data types, operators and Expressions, I/O statements, scanf and printf, c in and c out, Manipulators for data format- ting, Control statements (decision making and looping statements) (If Statement, Ifelse Statement, Nested If structure, Else If Statement, Ternary operator, Go to Statement. Switch Statement. Unconditional and Conditional Looping.While Loop. Do-While Loop. FOR Loop. Break and Continue Statements. Nested Loops), Arrays (1D and 2D) and strings, user defined functions, Structures and Unions, Idea of classes and objects

Programs: Sum and average of a list of numbers, largest of a given list of numbers and its location in the list, sorting of numbers in ascending descending order, Binary search,

Random number generation: Area of circle, area of square, volume of sphere, value of π and applications in physics lab.

Reference Books:

1. Introduction to Numerical Analysis, S.S. Sastry, 5th Edition., 2012, PHI Learning Pvt. Ltd.
2. Schaum's Outline of Programming with C++.J.Hubbard,2000, McGraw–Hill Pub.
3. Numerical Recipes in C:The Art of Scientific Computing, W.H. Pressetal, 3rd Edition. 2007, Cambridge University Press.
4. A first course in Numerical Methods, U.M. Ascher and C. Greif, 2012, PHI Learning.
5. Elementary Numerical Analysis, K.E. Atkinson, 3rd Edn. , 2007, Wiley India Edition.
6. Numerical Methods for Scientists and Engineers, R.W. Hamming, 1973, Courier Dover Pub.
7. An Introduction to computational Physics,T.Pang, 2nd Edn., 2006, Cambridge Univ. Press.

CORE II
MECHANICS

UNIT-I

Rotational Dynamics: Centre of Mass, Motion of CoM, Centre of Mass and Laboratory frames, Angular momentum of a particle and system of particles, Principle of conservation of angular momentum, Rotation about a fixed axis, Moment of Inertia, Perpendicular and Parallel Axis Theorems, Routh Rule, Calculation of moment of inertia for cylindrical and spherical bodies, Kinetic energy of rotation, Eulers Equations of Rigid Body motion, Motion involving both translation and rotation. Moment of Inertia of a Fly wheel.

Non-Inertial Systems: Non-inertial frames and fictitious forces, Uniformly rotating frame, Laws of Physics in rotating coordinate systems, Centrifugal force, Coriolis force and its applications.

UNIT-II Elasticity: Relation between Elastic constants, Twisting torque on a Cylinder or Wire, Bending of beams, External bending moment, Flexural rigidity, Single and double cantilever

Surface Tension: Excess pressure across a curved membrane, Quink's drop

Fluid Motion: Kinematics of Moving Fluids: Poiseuilles Equation for Flow of a Liquid through a Capillary Tube, Surface tension, Gravity waves and ripple

Viscocity: Poiseuilles Equation for Flow of a Liquid with corrections.

UNIT-III Gravitation and Central Force Motion: Law of gravitation, Gravitational potential energy, Inertial and gravitational mass, Potential and field due to spherical shell and solid sphere, Motion of a particle under a central force field, Two-body problem and its reduction to one-body problem and its solution, Differential Equation of motion with central force and its solution, The first Integrals (two), Concept of power Law Potentials, Keplers Laws of Planetary motion, Satellites:. Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS), Physiological effects on astronauts.

UNIT-IV

Oscillations: Simple Harmonic Oscillations. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Equation of motion and solution (cases of oscillatory, critically damped and over damped) Forced oscillations: Transient and steady states; Resonance, sharpness of resonance; power dissipation and Quality Factor, Bar Pendulum, Katers Pendulum

Special Theory of Relativity: Michelson-Morley Experiment and its out- come, Postulates of Special Theory of Relativity, Lorentz Transformations, Simultaneity and order of events, Lorentz contraction,Timedilation,Relativistic transformation of velocity, Frequency and wave number, Relativistic addition of velocities, Variation of mass with velocity, Massless Particles, Mass-energy Equivalence, Relativistic Doppler effect, Relativistic Kinematics, Transformation of Energy and Momentum.

Text Books:

1. Mechanics, D.S. Mathur, PS Hemne (S. Chand Publishing) ,2012
2. Introduction to Special Relativity, R. Resnick (John Wiley), 2007

Reference Books:

1. Introduction to Mechanics Daniel Klapnner and Robert Kolenkow, McgrawHill.2007
2. Mechanics by K.R Simon, 1971
3. Mechanics, Berkeley Physics, vol.1, C.Kittel, W. Knight, etal (Tata McGraw-Hill), 2007
4. Physics, Resnick, Halliday and Walker (8/e.2010,Wiley)
5. Theoretical Mechanics-M.R. Spiegel (Tata McGraw Hill), 2017
6. Feynman Lectures, Vol. I, R.P.Feynman, R.B.Leighton, M.Sands (Pearson),2012
7. Mechanics-M.Das, P.K.Jena and R.N. Mishra (Srikrishna Publications), 2009

CORE PAPER-II LAB

(minimum 5 experiments are to be done):

1. To study surface tension by capillary rise method

2 To determine the height of a building using a Sextant.

3 To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c) Modulus of rigidity.

4 To determine the Moment of Inertia of a Flywheel.

5 To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuilles method).

6 To determine the Modulus of Rigidity of a Wire by Maxwells needle.

7 To determine the value of g using Bar Pendulum.

8 To determine the value of g using Kater's Pendulum

Reference Books:

1 Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

3 A Text Book of Practical Physics, I.Prakash and Ramakrishna, 11thEdn, 2011, Kitab Mahal.

CORE PAPER-III

ELECTRICITY AND MAGNETISM

UNIT-I

Electric Field and Electric Potential

Electric field: Electric field lines, Electric flux, Gauss Law with applications to charge distributions with spherical, cylindrical and planar symmetry, Conservative nature of Electrostatic Field. Electrostatic Potential, Potential and Electric Field of a dipole, Force and Torque on a dipole placed in electric field, Potential calculation indifferent simple cases, Laplace and Poisson's equations, The Uniqueness Theorem, Method of Images and its application to (1) Plane Infinite Sheet and (2) Sphere.

Electrostatic energy of system of charges, Electrostatic energy of a charged sphere, Conductors in an electrostatic Field, Surface charge and force on a conductor.

UNIT-II

Magnetic Field: Magnetic Force, Lorentz Force, Biot Savarts Law, Current Loop as a Magnetic Dipole and its Dipole Moment (analogy with Electric Dipole), Amperes Circuital Law and its application to (1) Solenoid (2) Toroid (3) Helmhotz coil, Properties of B: curl and divergence, Vector Potential, Ballistic Galvanometer: Torque on a current Loop, Current and Charge Sensitivity, Electromagnetic damping, Logarithmic damping, CDR.

UNIT-III

Dielectric Properties of Matter: Electric Field in matter, Polarization, Polarization Charges, Electrical Susceptibility and Dielectric Constant, Capacitor (parallel plate, spherical, cylindrical) filled with dielectric, Displacement vector D, Relations between E, P and D, Gauss Law in dielectrics. Magnetic Properties of Matter: Magnetization vector (M), Magnetic Intensity (H), Magnetic Susceptibility and permeability, Relation between B, H, M, Ferromagnetism, B-H curve and hysteresis.

Electromagnetic Induction: Faradays Law, Lenzs Law, Self Inductance and Mutual Inductance, Reciprocity Theorem, Energy stored in a Magnetic Field, Introduction to Maxwell's Equations

UNIT-IV

Electrical Circuits: AC Circuits: Kirchhoff's laws for AC circuits, Complex Reactance and Impedance, Series LCR Circuit: (1) Resonance (2) Power Dissipation (3) Quality Factor, (4) Band Width, Parallel LCR Circuit.

Network theorems: Ideal Constant-voltage and Constant-current Sources, Network Theorems: Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem, Maximum Power Transfer theorem, Applications to DC and AC circuits. Transient Currents Growth and decay of current in RC and LR circuits.

Text Books:

1. Introduction to Electrodynamics – D.J. Griffiths (Pearson, 4thedition, 2015)
2. Foundations of Electromagnetic Theory-Ritz and Milford (Pearson) 4th Edition

Reference Books:

1. Classical Electrodynamics, J. D. Jackson (Wiley), 1998
2. Electricity and Magnetism D. C. Tayal (Himalaya Publishing house), 2014
3. Electricity, Magnetism and Electromagnetic Theory- S. Mahajan and Choudhury (Tata McGraw Hill)-2012
4. Feynman Lectures Vol.2, R. P. Feynman, R. B. Leighton, M. Sands (Pearson)-2008
5. Electricity and Magnetism, J. H. Fewkes and J. Yarwood. Vol. I (Oxford Univ. Press)

CORE PAPER-II1

(minimum of 6 experiments are to be done)

Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, c)DC Current, (d) Capacitances, and (e) Checking electrical fuses.

1. To study the characteristics of a series RC Circuit.
2. To determine an unknown Low Resistance using Potentiometer.
3. To determine an unknown Low Resistance using Carey Fosters Bridge.
4. And compare capacitances using DeSautys bridge.
5. Measurement of field strength B and its variation in a solenoid/ artificial coil (determine dB/dx)
6. To verify the Thevenin and Norton theorems.
7. To determine self inductance of a coil by Andersons bridge.
8. To study response curve of a Series LCR circuit and determine its (a) Reso- nant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width.
9. To study the response curve of a parallel LCR circuit and determine its (a) Antiresonance frequency and (b) Quality factor Q.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4. A Laboratory Manual of Physics for undergraduateclasses, D.P.Khandelwal, 1985, Vani Pub.

CORE PAPER-1V: WAVES AND OPTICS

UNIT - I

Geometrical Optics : Fermats principle, reflection and refraction at plane interface, Matrix formulation of geometrical Optics, Cardinal points and Cardinal planes of an optical system, Idea of dispersion, Application to thick Lens and thin Lens, Ramsden and Huygens eyepiece. Wave Optics : Electromagnetic nature of light. Definition and properties of wave front Huygens Principle. Temporal and Spatial Coherence.

UNIT - II

Wave Motion : Plane and Spherical Waves, Longitudinal and Transverse Waves, Plane Progressive (Traveling) Waves, Wave Equation, Particle and Wave Velocities, Differential Equation, Pressure of a Longitudinal Wave, Energy Transport, Intensity of Wave. Superposition of two perpendicular Harmonic Oscillations : Graphical and Analytical Methods, Lissajous Figures (1:1 and 1:2) and their uses, Superposition of N harmonic waves.

UNIT- III

Interference : Division of amplitude and wave front, Young's double slit experiment, Lloyds Mirror and Fresnels Bi-prism, Phase change on reflection: Stokes treatment, Interference in Thin Films: parallel and wedge-shaped films, Fringes of equal inclination (Haidinger Fringes), Fringes of equal thickness (Fizeau Fringes), Newton's

Rings: Measurement of wavelength and refractive index. Interferometer : Michelsons Interferometer-(1) Idea of form of fringes (No theory required), (2) Determination of Wavelength, (3) Wavelength Difference, (4) Refractive Index, and (5) Visibility of Fringes, Fabry-Perot interferometer.

UNlT - IV

Fraunhofer diffraction: Single slit, Circular aperture, Resolving Power of a telescope, Double slit, Multiple slits, Diffraction grating, Resolving power of grating. Fresnel Diffraction: Fresnels Assumptions, Fresnels Half-Period Zones for Plane Wave, Explanation of Rectilinear Propagation of Light, Theory of a Zone Plate: Multiple Foci of a Zone Plate, Fresnels Integral, Fresnel diffraction pattern of a straight edge, as lit and a wire.

Text Books:

1 OpticsP.K.Chakrabarty, New Central Agency 3rd Edition 2012

2.Optics - Ajoy Ghatak (McGraw Hill)-2017

Reference Books:

2 Optics-E.Hecht (Pearson)-2008

3 Fundamentals of Optics- F.A. Jenkins and H.E.White (McGraw-Hill)-2017

4 Geometrical and Physical Optics R.S. Longhurst (Orient Black swan)-1986

5 A text book of Optics N. Subrahmanyam and Brij Lal (S.Chand Publishing), 2006

6 The Physics of Vibrations and Waves- H.J. Pain (JohnWiley)-2013

7 Principles of Optics- Max Born and Emil Wolf(Pergamon Press) 7th Edition 1999

8 The Physics of Waves and Oscillations-N.K.Bajaj (McGraw Hill)-1998

CORE PAPER-IV LAB

(minimum 5 experiments are to be done)

1. To determine the frequency of an electric tuning fork by Meldes experiment and verify 2 T law.
2. To plot the I-D curve and to determine the refractive index of a prism
3. To determine refractive index of the Material of a prism using sodium source.

4. To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.
5. To determine wavelength of sodium light using Newton's Rings.
6. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
7. To determine dispersive power and resolving power of a plane diffraction grating.

Reference Books:

1 Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal

3 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

4 A Laboratory Manual of Physics for undergraduate classes, D.P. Khandelwal, 1985, Vani

CORE PAPER-V

MATHEMATICAL PHYSICS-II

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

UNIT-I

Fourier Series-I: Periodic functions, Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only), Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients, Complex representation of Fourier series, Expansion of functions with arbitrary period,

Expansion of non-periodic functions over an interval, Even and odd functions and their Fourier expansions and Application, Summing of Infinite Series, Term-by-Term differentiation and integration of Fourier Series, Parseval Identity.

UNIT-II

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance, Singularities of Bessel's and Laguerre Equations, Frobenius method and its applications to differential equations:LegendreandHermiteDifferentialEquations,LegendreandHermite Polynomials: Rodrigue's Formula, Generating Function, Orthogonality.

UNIT-III

Polynomials: Simple recurrence relations of Legendre and Hermite Polynomials, Expansion of function in a series of Legendre Polynomials, Associated Legendre Differential Equation, Associated Legendre polynomials, Spherical Harmonics

Some Special Integrals: Beta and Gamma Functions and relation between them, Expression of Integrals in terms of Gamma Functions, Error Function (Probability Integral).

UNIT-IV

Partial Differential Equations: Solutions to partial differential equations using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry. Conducting and dielectric sphere in an external uniform electric field. Wave equation and its solution for vibrational modes of a stretched string

Text Books:

1. MathematicalMethodsforPhysicists,G.B.Arfken,H.J.Weber,F.E.Harris (2013, 7th Edn., Elsevier)
2. Advanced Engineering Mathematics, Erwin Kreyszig (Wiley India) 9th Edition 2011

Reference Books:

1. Mathematical Physics and Special Relativity, M. Das, P.K. Jena and B.K. Dash (Srikrishna Prakashan)-2009
2. Mathematical Physics–H. K. Dass, Dr. Rama Verma (S. Chand Publishing) -2011

3 Mathematical Physics C. Harper (Prentice Hall India)-1978
4 Schaum's Outlines Series M. Spiegel (2nd Edition, McGraw Hill Education)-2004
5 Complex variables and applications J.W.Brown and R.V.Churchill-2017
6 Mathematical Physics, Satya Prakash (Sultan Chand)-2014
7 Mathematical Physics B.D. Gupta (4th edition, Vikas Publication-2009

CORE PAPER-V LAB

The aim of this Lab is to use the computational methods to solve physical problems. Course will consist of lectures (both theory and practical) in the Lab. Evaluation done on the basis of formulating the problem but not on the programming

Topics

Introduction to Numerical computation software Scilab: Introduction to Scilab, Advantages and disadvantages, Scilab computation software Scilab environment, Command window, Figure window, Edit window, Variables and arrays, Initialising variables in Scilab, Multidimensional arrays, Subarray, Special values, Displaying output data, data file, Scalar and array operations, Hierarchy of operations, Built in Scilab functions, Introduction to plotting, 2D and 3D plotting (2), Branching Statements and program design, Relational and logical operators, the while loop, for loop, details of loop operations, break and continue statements, nested loops, logical arrays and vectorization (2) User defined functions, Introduction to Scilab functions, Variable passing in Scilab, optional arguments, preserving data between calls to a function, Complex and Character data, string function, Multidimensional

arrays (2) an introduction to Scilab file processing, file opening and closing, Binary I/ o functions, comparing binary and formatted functions, Numerical methods and developing the skills of writing a program(2).

Curve fitting, Least square fit Goodness of fit, standard constant Deviation:

Ohms law to calculate R, Hooke's law to calculate spring constant

Solution of Linear system of equations by Gauss elimination Solution

method and Gauss Seidal method. Diagonalization matrices, Inverse of a matrix, Eigen vectors, problems: Solution of mesh equations of electric circuits(3meshes),Solution of coupled spring mass systems (3masses)

Solution of ODE :

First order Differential equation Euler, modified Euler, Runge- Kutta methods, Second order differential equation. Fixed difference method: First order differential equations

- Radioactive decay
- Current in RC and LC circuits with DC source
- Newton's law of cooling
- Classical equations of motion

Second order Differential Equation

- Harmonic oscillator (no friction)
- Damped Harmonic oscillator
- Over damped
- Critical damped
- Oscillatory
- Forced Harmonic oscillator
- Transient and Steady state solution
- Apply above to LCR circuits also

Reference Books:

1 Mathematical Methods for Physics and Engineers, K.FRiley, M.P.Hobson and S. J.20 Bence, 3rd ed., 2006, Cambridge University Press

2 Complex Variables, A.S. Fokas and M.J. Ablowitz, 8th Ed., 2011, Cambridge Univ. Press

3 First course in complex analys is with applications, D.G.Zill and P.D.Shanahan, 1940, Jones and Bartlett

4 Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A.V. Wouwer, P. Saucez, C.V. Fernndez. 2014 Springer

5 Scilab by example: M. Affouf 2012, ISBN: 978-1479203444

6 Scilab (A free software to Matlab):
H.Ramchandran,A.S.Nair.2011S.Chand and Company

7 Scilab Image Processing: Lambert M. Surhone. 2010 Beta script Publishing

CORE PAPER-VI

THERMAL PHYSICS

UNIT-I

Introduction to Thermodynamics Recapitulation of Zeroth and First law of thermodynamics,

Second Law of Thermodynamics: Reversible and Irreversible process with examples, Kelvin-Planck and Clausius Statements and their Equivalence, Carnots Theorem, Applications of Second Law of Thermodynamics: Thermodynamic Scale of Temperature and its Equivalence to Perfect Gas Scale.

Entropy: Concept of Entropy, Clausius Theorem. Clausius Inequality, Second Law of Thermodynamics in terms of Entropy, Entropy of a perfect gas, Principle of increase of Entropy, Entropy Changes in Reversible and Irreversible processes with examples, Entropy of the Principle of Increase of Entropy, Temperature Entropy diagrams for Carnot's Cycle, Third Law of Thermodynamics, Unattainability of Absolute Zero.

UNIT-II

Thermodynamic Potentials: Extensive and Intensive Thermodynamic Variables,

Thermodynamic Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibbs Free Energy, Their Definitions, Properties and Applications, Surface Films and Variation of Surface Tension with Temperature, Magnetic Work, Cooling due to adiabatic demagnetization

Phase Transitions: First and second order Phase Transitions with examples, Clausius Clapeyron Equation and Ehrenfest equations

Maxwell's Thermodynamic Relations: Derivations and applications of Maxwell's Relations, Maxwell's Relations: (1) Clausius Clapeyron equation (2) Relation

between C_p and C_v (3) TdS Equations,(4)Joule-Kelvin coefficient for Ideal and Van der Waal Gases (5) Energy equations (6) Change of Temperature during Adiabatic Process.

UNIT-III

Kinetic Theory of Gases

Distribution of Velocities: Maxwell-Boltzmann Law of Distribution of Velocities in an Ideal Gas and its Experimental Verification, Sterns Experiment, Mean, RMS and Most Probable Speeds, Degrees of Freedom, Law of Equipartition of Energy (No proof required), Specific heats of Gases.

Molecular Collisions: Mean Free Path, Collision Probability, Estimates of Mean Free Path,

Transport Phenomenon in Ideal Gases: (1) Viscosity, (2) Thermal Conductivity and (3) Diffusion. Brownian Motion and its Significance.

UNIT-IV

Real Gases: Behavior of Real Gases: Deviations from the Ideal Gas Equation, The Virial Equation, Andrews Experiments on CO_2 Gas. Critical Constants, Continuity of Liquid and Gaseous State. Vapour and Gas, Boyle Temperature, Van der Waals Equation of State for Real Gases, Values of Critical Constants, Law of Corresponding States, Comparison with Experimental Curves, P-V Diagrams, Joules Experiment, Free Adiabatic Expansion of a Perfect Gas, Joule- Thomson Porous Plug Experiment, Joule-Thomson Effect for Real and Van der Waal Gases, Temperature of Inversion, Joule-Thomson Cooling

Text Books:

1. Thermal Physics, A. B. Gupta (Books and allied Ltd)-2010
2. Heat and Thermodynamics, M.W. Zemansky, Richard Dittman (McGraw- Hill)-1981

Reference Books:

1. Theory and experiments on thermal Physics, P.K.Chakrabarty (New central book agency limited)-2017

2 Thermodynamics, Kinetic Theory and Statistical Thermodynamics- Sears and Salinger(Narosa)-1988

3 A Treatise on Heat- Meghnad Saha and B.N.Srivastava (The Indian Press) Heat, Thermodynamics and Statistical Physics, N.Subrahmanyam and Brij Lal (S.Chand Publishing)-2008

4 Thermal and Statistical Physics M.Das, P.K. Jena, S. Mishra, R.N.Mishra (Shri Krishna Publication)-2009

CORE PAPER-VI LAB

(minimum 5 experiments are to be done):

1 To determine Mechanical Equivalent of Heat, J, by Callender and Barnes constant flow method.

2 To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charltons disc method.

3 To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).

4 To study the variation of Thermo-emf of a Thermocouple with Difference of Temperature of its Two Junctions.

5 To determine the specific heat of liquid by the method of cooling

6 To determine the specific heat of solid by applying radiation correction.

Reference Books:

1 Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal

3 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

4 A Laboratory Manual of Physics for undergraduate classes, D.P. Khandelwal, 1985, Vani Publications.

CORE PAPER-VII

ANALOG SYSTEMS AND APPLICATIONS

UNIT-I

Semiconductor Diodes: P and N type semiconductors, energy level diagram, conductivity and Mobility, Concept of Drift velocity, PN junction fabrication (simple idea), Barrier formation in PN Junction Diode, Static and Dynamic Resistance, Current flow mechanism in Forward and Reverse Biased Diode, Drift velocity, derivation for Barrier Potential, Barrier Width and current Step Junction.

Two terminal device and their applications: (1) Rectifier Diode: Half-waveRectifiers.center-tappedandbridgetypeFull-waveRectifiers,Calculation of Ripple Factor and Rectification Efficiency, L and C Filters (2) Zener Diode and Voltage Regulation, Principle and structure of LEDS, (2) Photo diode(3) Solar Cell.

UNIT II

Bipolar Junction Transistors: n-p-n and p-n-p transistors, Characterstics of CB, CE and CC Configurations, Current gains a and b, Relation between a and b, Load line analysis of Transistors, DC Load line and Q-point, Physical mechanism of current flow, Active, Cut-off and Saturation Regions.

Transistors Biasing: Transistor Biasing and Stabilization circuits, Fixed Bias and Voltage Divider Bias.

Amplifiers: Transistors as 2-port network h-parameter Equivalent Circuit, Analysis of a single stage CE amplifier using Hybrid Model, Input and Output impedance, Current, Voltage and Power Gains, Classification of class A, B and C amplifiers, Push-pull amplifier (class B)

UNIT-III

Coupled Amplifier: RC-coupled amplifier and it's frequency response.

Feedback in Amplifiers: Effect of Positive and Negative Feedback on In- put Impedance, Output Impedance, Gain Stability, Distortion and Noise. Sinusoidal Oscillations: Barkhausen's Gaterian for self-sustained oscillations. RC Phase shift oscillator, determination of Frequency, Hartley and Colpitt's oscillators.

UNIT-IV

Operational Amplifiers (Black Box approach): Characteristics of an Ideal and Practical OP-AMP (IC741). Open-loop and Closed loop Gain. Frequency Response. CMRR, Slew Rate and concept of virtual ground.

Application of Op-Amps: (1) Inverting and non-inverting amplifiers (2) Adder

(3) Subtractor (4) Differentiator, (5) Integrator (6) Log amplifier, (7) Zero crossing detector (8) Wein bridge oscillator.

Text Books:

1. Foundations of Electronics-Raskhit and Chattopadhyay (New age International Publication), 15th Edition-2018

2. Concept of Electronics- D.C.Tayal (Himalay Publication)-2018

Reference Books:

1. Electronic devices and circuits R.L.Boylstad (Pearson India)-2009
2. Electronic Principles- A.P.Malvino (Tata McGraw Hill)-2008
3. Electronic Devices and Circuits- S.Salivahar and NS Kumar -(Tata McGraw Hill) 3rd Edition-2012
4. OP-Amps and Linear Integrated Circuit-R. A. Gayakwad (Prentice Hall) 4th Edition, 2000
5. Physics of Semiconductor devices, Donald A Neamen (Prentice Hall)
6.

CORE PAPER-VII LAB

(minimum 5 experiments are to be done)

1 To study the V-I characteristics of a Zener diode and its use as voltage regulator.

2 Study of V-I and power curves of solar cells, and find maximum power point and efficiency.

3 To study the characteristics of a Bipolar Junction Transistor in CE configuration and draw load line

4 To study the various biasing configurations of BJT for normal class A operation.

5 To study the frequency response of voltage gain of a RC-coupled transistor amplifier.

6 To design and study OP Amp-IC (741/351) as inverting and non inverting amplifier

7 To design and study OP Amp-IC (741/351) as integrator and differentiation and study frequency response.

8 To design and study OP Amp-IC (741/351) as adder and subtractor.

9 To design a Wien bridge oscillator for given frequency using a nop-amp.

10 To design a phase shift oscillator of given specifications using BJT.

1. To study the Colpitt's oscillator.

Reference Books:

1. Modern Digital Electronics, R.P. Jain, 4th Edition, 2010, Tata McGrawHill.
2. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.
3. Microprocessor Architecture Programming and applications with 8085, R.S. Goankar, 2002, Prentice Hall.
4. Microprocessor 8085:Architecture, Programming and interfacing, A. Wadhwa, 2010, PHI Learning.

CORE PAPER-VIII

MATHEMATICAL PHYSICS-III

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems; known or unknown.

UNIT-I

Complex Analysis: Brief Revision of Complex Numbers and their Graphical Representation Eulers formula, De Moivre's theorem, Roots of complex Numbers, Functions of Complex Variables, Analyticity and Cauchy-Riemann Conditions, Examples of analytic functions, Singular functions: poles and branch points, order of singularity, branch cuts, Integration of a function of a complex variable, Cauchys Inequality, Cauchys Integral formula, Simply and multiply connected region, Laurent and Taylors expansion, Residues and Residue Theorem, Application in solving simple Definite Integrals.

UNIT-II

Integral Transforms-I: Fourier Transforms: Fourier Integral theorem, Fourier Transform,Examples,FourierTransformoftrigonometric,Gaussian,finitewave train and other functions, Representation of Dirac delta function as a Fourier Integral,

Fourier transform of derivatives, Inverse Fourier Transform.

UNIT-III

Integral Transforms-II : Convolution theorem, Properties of Fourier Trans- forms (translation, change of scale, complex conjugation), Three dimensional Fourier transforms with examples, Application of Fourier Transforms to differential equations: One dimensional Wave and Diffusion/Heat flow Equations.

UNIT-IV

Laplace Transforms: Laplace Transforms (LT) of Elementary functions,

Properties of Laplace Transforms: Change of Scale Theorem, Shifting Theorem, LTs of Derivatives and Integrals of Functions, Derivatives and Integrals of Functions, Derivatives and Integrals of LTs. LT of Unit Step function, Dirac Delta function, Periodic Functions, Inverse LT, Application of Laplace Transforms to Differential Equations: Damped Harmonic Oscillator, Simple Electrical Circuits.

Text Books:

1 Mathemati•ca lMethods for Physicists, G.B.Arfken, H.J.Weber, F.E.Harris (2013,7th Edn., Elsevier)

2 Advanced Engineering Mathematics, Erwin Kreyszig (Wiley India) 10th Edition 2014

Reference Books:

1 Mathematic•al Physics and Special Relativity–M.Das, P.K. Jena and B.K. Dash (Srikrishna Prakashan)-2009

2 Mathem•atical Physics–H. K. Das, Dr. Rama Verma (S. Chand Publishing) 2011

3 Complex•Variable: Schaum's Outlines Series M. Spiegel (2nd Edition , Mc-Graw Hill Education)-2004

4 Complex variables and applications J.W.Brown and R.V.Churchill 7th Edition 2003

5 Mathematical Physics, Satya Prakash (Sultan Chand)-2014

6 Mathematical Physics B.D.Gupta (4th edition, Vikas Publication)-2009

CORE PAPER-VIII LAB

20 clasees (2 hrs. duration each)

Scilab based simulations (XCos) experiments based on Mathematical Physics problems like

- Solve Simple Differential Equations like

$\frac{dy}{dx} = e^x$, with $y(x=0) = 0$

$\frac{dy}{dx} + e^x = x$, with $y(x=0)=0$

$\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = -y$, with $y(x=0)=0$, $y'(x=0)=1$

$y'' + e^{-x}\frac{dy}{dx} = -y$, with $y(x=0)=0$, $y'(x=0)=1$

- Direct Delta Function

Evaluate $\int_{-3}^{3} dx \; \frac{(x+3)}{\sqrt{2\pi\sigma^2}} \; e^{-\frac{(x-2)^2}{2\sigma^2}}$, for $\sigma = 0.1, 0.01, 0.001$ and show that it tends to 5.

- **Fourier Series:**

Program to sum

Evaluate the Fourier coefficients of a given periodic function (square wave)

- **Frobenius method and Special functions:**

$\int_{-1}^{1} d\mu \; P_n(\mu) \; P_m(\mu) = \frac{2}{2n+1}\delta_{m,n}$

Plot $P_n(x)$, Legendre polynomial of degree n, and $J_n(x)$, Bessel function of first kind.

Show recursion relation

• Calculation of error for each data point of observations recorded in experiments done in previous semesters (choose any two).

• Calculation of least square fitting manually without giving weightage to error. Confirmation of least square fitting of data through computer program.

• Evaluation of trigonometric functions e.g. sin θ, Given Bessels function at N points find its value at an intermediate point.

Complex analysis: Calculate $\int \frac{dx}{(x^2+2)}$ and check it with computer integration.

• Integral transform: FFT of e^{-x^2}

Reference Books:

1. Mathematical Methods for Physics and Engineers, K.F Riley, M.P.Hobson and S. J. Bence, 3rd ed., 2006, Cambridge University Press
2. Mathematics for Physicists, P.Dennery and.Krzywicki,1967,Dover Publications
3. Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez. 2014 Springer ISBN: 978-3319067896
4. Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
5. Scilab(A free software to matlab):H.Ramchandran, A.S.Nair. 2011 S. Chand and Company
6. Scilab Image Processing: Lambert M. Surhone. 2010 Beta script Publishing

CORE PAPER-IX

ELEMENTS OF MODERN PHYSICS

UNIT- I

Atomic Spectra and Models: Inadequacy of classical physics, Brief Review of Black body Radiation, Photoelectric effect, Compton Effect, dual nature of radiation wave nature of particles, Atomic spectra, Line spectra of hydrogen atom, Ritz Rydberg combination principle, Alpha Particle Scattering, Ruther- ford Scattering Formula, Rutherford Model of atom and its limitations.

Atomic Model: Bohrs Model of Hydrogen atom, explanation of atomic spec- tra, correction for finite mass of the nucleus, Bohr correspondence principle, limitations of Bohr model, discrete energy exchange by atom, Frank Hertz Experiment, Sommerfelds modification of Bohr's Theory.

UNIT- II

Wave Packet: superposition of two waves, phase velocity and group velocity, wave packets, Gaussian Wave Packet, spatial distribution of wave packet, Localization of wave packet in time, Time development of a wave packet, Wave Particle Duality, Complemntarity.

Wave Particle Duality: de Broglie hypothesis, Experimental confirmation of matter wave, Davisson Germer Experiment, velocity of deBroglie wave, wave particle duality, Complementarity.

Uncertainty Principle: Heisenberg Uncertainty Principle, Illustration of the PrinciplethroughthoughtExperimentsofGammaraymicroscopeandelectron diffraction through a slit, Estimation of ground state energy of harmonic oscillator and hydrogen atom, non existence of electron in the nucleus, Uncertainty and complementarities.

UNIT- III

Nuclear Physics- I: Size and structure of atomic nucleus and its relation with atomic weight, Impossibility of an electron being in the nucleus as a con- sequence of the uncertainty principle, Nature of the nuclear force, NZ graph, Liquid Drop model: semi empirical mass formula and binding energy, Nuclear Shell Model and magic numbers.

UNIT- IV

Nuclear Physics- II: Radioactivity, stability of the nucleus, Law of radioactive decay, Mean life and Half life Alpha decay, Beta decay-energy released, spectrum and Paulis prediction of neutrino, Gamma ray emission energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus, Fission and fusion mass deficit, relativity and generation of energy, Fission- nature of fragments and emission of neutrons, Nuclear reactor: slow neutron interacting with Uranium 235, Fusion and thermo nuclear reactions driving stellar energy (brief qualitative discussion).

Text Books:

1. Concepts of Modern Physics Arthur Beiser (McGraw Hill)-2002
2. Modern Physics Murugeshan and Sivaprasad (S.Chand) 18th Edition 2016

Reference Books:

1. QuantumMechanics:TheoryandApplications,A.K.GhatakandS.Lokanathan, (Macmillan)-2004
2. Introduction to Quantum Theory, David Park (Dover Publications)-1974
3. Theory and Problems of Modern Physics, Schaum's outline, R.Gautreau and W.Savin- (Tata McGraw-Hill) 2nd Edition
4. Physics for scientists and engineer with Modern Physics-Jewell and Serway- (CENGAGE Learnings) 2010.
5. Modern Physics of Atoms and Molecules Bransden and Joachim (Pearson India)-2003
6. Atomic and Nuclear Physics-A.B.Gupta (New Central)-2009
7. Theoretical Nuclear Physics , J.M.Blatt and V.F. Weisskof (Springer)-2003

CORE PAPER-IX LAB

(minimum 4 experiments are to be done):

1. To show the tunneling effect in tunnel diode using I-V characteristics.
2. To determine the wavelength of laser source using diffraction of single slit.

3. To determine the wavelength of laser source using diffraction of double slits.
4. To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating.
5. To determine the Plancks constant using LEDs of at least 4 different colours.
6. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
7. To setup the Millikan oil drop apparatus and determine the charge of an electron.

Reference Books:

1 Adva•nced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 Adv•anced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

3 A Te•xt Books Book of Practical Physics, I. Prakashand Ramakrishna, 11th Edn, 2011,Kitab Mahal

CORE PAPER-X

DIGITAL SYSTEMS AND APPLICATIONS

UNIT-I

Integrated Circuits (Qualitative treatment only): Active and Passive Components, Discrete components, Wafer Chip, Advantages and Drawbacks of ICs, Scale of Integration: SSI, MSI, LSI and VLSI (basic idea and definitions only), Classification of ICs, Examples of Linear and Digital ICs.

Digital Circuits: Difference between Analog and Digital Circuits, Binary Numbers, Decimal to Binary and Binary to Decimal Conversation, BCD, Octal and Hexadecimal numbers, AND, OR and NOT. Gates (realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNOR Gates and application as Parity Checkers.

UNIT-II

Boolean algebra: De Morgans Theorems: Boolean Laws, Simplification of Logic

Circuit using Boolean Algebra, Fundamental Products, Idea of Minterms and Maxterms, Conversion of a Truth table into Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map.

Introduction to CRO: Block Diagram of CRO, Electron Gun, Deflection system and Time Base, Deflection Sensitivity,

Applications of CRO: (1) Study of Wave Form, (2) Measurement of Volt- age, Current, Frequency and Phase Difference.

UNIT-III

Data Processing Circuits: Basic Idea of Multiplexers, De-multiplexers, Decoders, Encoders.

Arithmetic Circuits: Binary Addition. Binary Subtraction using 2s complement. Half and Full Adders. Half and Full Subtractors, 4 bit binary Adder/ Subtractor.

Timers: IC 555: block diagram and application is Astable multivibrator and Monostable multivibrator.

UNIT-IV

Introduction to Computer Organization: Input/output Devices, Data storage (idea of RAM and ROM), Computer memory, Memory organization and addressing, Memory Interfacing, Memory Map.

Shift registers: Serial-in-serial-out, Serial-in-Parallel-out, Parallel-in-Serial- out and Parallel-in-Parallel-out. Shift Registers (only up to 4 bits)

Counters (4 bits): Ring Counter, Asynchronous counters, Decade Counter. Synchronous Counter.

Text Books:

1. Foundation of Electronics-Rakshit Chattopadhaya (New Age) -2015
2. Digital Circuits and Logic design: Samuel C. Lee(Printice Hall)-1976
3. Digital Principles and Applications - A.P. Malvino, D.P.Leach and Saha (Tata McGraw)- 7th Edition 2011

Reference Books:

1. The Art of Electronics by Paul Horowitz and Wilfield Hill ,Cambridge University -2006
2. Electronics by Allan R. Hambley, Prentice Hall - 1994
3. Digital Logic and Computer design M. Morris Mano (Pearson) -2016
4. Concepts of Electronics D.C.Tayal (Himalaya Publishing house) -2018

CORE PAPER--X LAB

(minimum 6 experiments are to be done):

1. Student should know how to measure (a) Voltage, and (b) Time period of a periodic waveform using CRO and to test a Diode and Transistor using a Millimeter.
2. To design a switch (NOT gate) using a transistor.
3. To verify and design AND, OR, NOT and XOR gates using NAND gates.
4. Half Adder, Full Adder and 4-bit binary Adder.
5. Half Subtractor, Full Subtractor, Adder- Subtractor using Full AdderI.C.
6. To build Flip-Flop(RS,Clocked RS,D- type and JK) circuits using NAND gates.
7. To design an stable multivibrator of given specifications using 555Timer.
8. To design a monostable multivibrator of given specifications using 555 Timer.

Reference Books:

1 Basic Electronics: A Text Books lab manual, P.B. Zbar, A.P. Malvino,

2 M.A. Miller, 1994, Mc-Graw Hill.

3 OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.

4 Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.

Electronic Devices and circuit Theory, R.L.Boylestad and L.D. Nashelsky, 2009, Pearson

CORE PAPER-XI

QUANTUM MECHANICS AND APPLICATIONS

UNIT-I

Schrodinger equation : Time dependent Schrodinger equation , Properties of Wave Function, Interpretation of wave function, Probability and probability current densities in three dimensions, Conditions for Physical Acceptability of Wave Function, Normalization, Linearity and Superposition Principles. Wave function of a free particle ,Wave Packet, Fourier Transform and momemtum space Wave function ,Spread of Gaussian Wave packet, Evolution with time, Position and Momentum Uncertainty.

UNIT-II

Operators: Operators, Commutator Algebra, Position, Momentum Angular Momentum and Energy operators, Hermitian Operators, Expectation values of position and momentum, Ehrenfest Theorem, Eigenvalues and Eigen functions of Hermitian Operator, Energy Eigen Spectrum, Degeneracy, Orthonormality of Eigen functions, Linear Dependance. Orthogonalisation.

UNIT-III

Time Independent Schrodinger equation in one dimension (1d), 2d and 3d, Hamiltonian, stationary states and energy eigen values, expansion of an arbitrary wave function as a linear combination of energy eigen functions, General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states. General Discussion of Bound states in an arbitrary potential: Continuity of wave function, Boundary condition and emergence of discrete energy levels, Application to one dimensional problem-Square well potential, Quantum mechanics of simple Harmonic Oscillator-Energy Levels and energy eigen functions, ground state, zero point energy and uncertainty principle, One dimensional infinitely rigid box energy eigen values and eigen functions, normalization, quantum dot as example, Quantum mechanical scattering and tunnelling in one dimension across a step potential and rectangular potential barrier.

UNIT-IV

Atoms in Electric and Magnetic Fields: Electron angular momentum. Space quantization, Electron Spin and Spin Angular Momentum, Larmors Theorem, Spin Magnetic Moment, Stern Gerlach Experiment,Vector Atom Model, L-S and J-J coupling, Zeeman Effect, Electron Magnetic Moment and Magnetic Energy, Gyro magnetic Ratio and Bohr Magnet on Atoms in External Magnetic Fields:- Normal and Anomalous Zeeman Effect, Paschenback and Stark Effect (qualitative Discussion only)

Text Books:

1. Introduction to Quantum Theory, D. J. Griffiths(Pearson)-2015
2. Introduction to Quantum Theory David Park (Dover Publications)-1974

Reference Books :

1. Quantum Mechanics, Theory and applications A. Ghatak and S. Lokanathan (McMillan India)-2004
2. Quantum Mechanics-G.Aruldhas (Printice Hall of India)-2008
3. Quantum Physics–S. Gasiorowicz (Wiley)-2007
4. Quantum Mechanics -J.L. Powell and B. Craseman (Narosa)-1998
5. Introduction to Quantum Mechanics M.Das and P.K.Jena (Shri Krishna Publication)-2006

CORE PAPER- XI LAB

Mechanics like (Use finite difference method,matrixmethod,ODE Solver method

1. Solva the s-nave 8elmxliqgar equation for the ground state and the first excited state of the hydrogen atom:

$$\frac{d^2y}{dr^2} = A(r)u(r),\ A(r) = \frac{2m}{\hbar^2}[V(r) - E],\ V(r) = -\frac{e^2}{r},$$

whera m é the reduced mass of the electron. Obtain the energy eigenvalues and pbt theoorr«spoadiag mive tiln‹nioas. Raneaber that thegroud ask e‹eportbe b@oga atoa b -13.&Y.Ibkee=3.795 1 kc= 1973(‹Fâ) aadm=D.511 x 1PeF/z?

2. 8olw the radial $thmdiager Ignition & an stm:

t*-9——4(r)u(r), A(r)= tP(r)- ,wheremiathereduwd xuus4 the sjaes›(w6icbczobe cttoea D& 4eazaa 4 soéetroa), fortbesctaaed ooulomb potential: F(r) = — e*' °

Sindtbeeaergy (iaeY) oftbegroi›adstateoftbeato‹atosoaccuracy af three sigpiâcaal digits. Also, plot the correspondigg nave function. e = 3.RS 7t)1 ' 19T3(«7â) aadm=0.511xlPeV/P, sada=3 1*A,1â. The ground state energy is expected to be above -l2 eV in ail thee ,

S. Soln the»a›e radid Mxofingn guation lor a p&ide oIaaum:
=fi(r)o{r), d(r)=;w(F(r)—£),forsllnanlarmoécozi&brpoential!

$V(r) = \frac{kr^2}{2} + \frac{br^3}{3}$. fe enup{é Me¥) of the puficle o an axuacy d thru st@leant digits, Aho, plot the arnponding cafe nnction, Ch‹xae ri = S4UeF/8,1 = l0OUeF//tn', h = 0,l0,34UeF//tn*. In thne Fék, c

110 M eV for all three cases.]

4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule: $\frac{d^2y}{dr^2} = A(r)u(r)$, $A(r) = \frac{2m}{\hbar^2}[V(r) - E]$, where m is the reduced mass of the two-atom system for the Morse potential $V(r) = D(e^{-2\alpha r} - e^{-\alpha r})$, where $r = r - r_0$ Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of three significant digits. Also plot the corresponding wave functions for the choices given below:

a) $m = 940x10^6 eV/c^2, D = 0.755501eV, \alpha = 1.44, r_0 = 0.131349\mathring{A}$

b) $m = 940x106eV/c^2, D = 0.755501eV, \alpha = 1.44, r_0 = 0.131349\mathring{A}$

Laboratory Based Experiments : (to be taken up depending on availability of equipment)

1. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
2. Study of Zeeman effect: with external magnetic field; Hyper fine splitting
3. To show the tunneling effect in tunnel diode using I-V characteristics.
4. Quantum efficiency of CCDs

Reference Books:

1 Scha•um's outline of Programming with C++. J.Hubbard,2000,McGraw– Hill Publication

2 Num•erical Recipes in C: The Art of Scientific Computing, W.H. Pressetal., 3rd Edition., 2007, Cambridge University Press.

3 An i•ntroduction to computational Physics, T. Pang, 2nd Edn.,2006, Cam- bridge Univ. Press

4 Simu•lation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez.2014 Springer.

5 Scila•b (A Free Software to Matlab): H. Ramchandran, A.S. Nair. 2011S. Chand and Co.

6 Scila•b Image Processing: L.M.Surhone.2010 Beta script Publishing ISBN:9786133459274

CORE PAPER-XII

SOLID STATE PHYSICS

UNIT-I

Crystal Structure: Solids, Amorphous and Crystalline Materials, Lattice translation Vectors, Lattice with a Basis. Central and Non-Central Elements. Unit Cell, Miller Indices, Types of Lattices, Reciprocal Lattice, Brillouin zones, DiffractionofX-raysbycrystals,BraggLaw,AtomicandGeometricalFactor

UNIT-II

Elementary Lattice Dynamics: Lattice Vibrations and Phonons: Linear, Monotomic and Diatomic Chains, Acoustical and Optical Phonons, Qualitative Description of the phonon spectrum in solids, Dulong and Petits Law, Einstein and Debye theories of specific heat of solids, T^3 Law

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials, Classical Langevins theory of dia and Paramagnetic Domains, Curies law, Weiss Theory of Ferro magnetism and Ferro magnetic Domains, Discussion of B-H Curve, Hysteresis and Energy Loss.

UNIT-III

Dielectric Properties of Materials: Polarization Local Electrical Field at an Atom, Depolarization Field, Electric Susceptibility, Polari ability, Clausius

Mosotti Equation, Classical theory of Electronic Polarizability.

Lasers: Einsteins A and B coefficients, Meta stable States, Spontaneous and Stimulated emissions, Optical Pumping and population Inversion, Three Level and Four Level Lasers, Ruby Laser and He-Ne Laser.

UNIT-IV

Elementary band theory: Kronig-Penny model of band Gap, Conductor, Semiconductor (P and N type) and insulator, Conductivity of Semiconductor, mobility, Hall Effect, Measurement of conductivity (04 problem method) and Hall Coefficient.

Superconductivity: Experimental Results, Critical Temperature, Critical magnetic field, Meissner effect, Type I and type II Superconductors, Londons Equation and Penetration Depth, Isotope effect, Idea of BCS theory (No derivation)

Text Books:

1. Introduction to Solid State Physics- Charles Kittel (Wiley India) 8th Edition 2012
2. LASERS: Fundamentals and Applications-Thyagarajan and Ghatak (McMillan India)-2011

Reference Books:

1. Solid State Physics-N. W. Ashcroft and N.D. Mermin(Cengage)-2003
2. Solid State Physics- R.K.Puri and V.K. Babbar (S.Chand Publication)-2010
3. Solid State Physics S. O. Pillai (New Age Publication)-2008
4. Lasers and Non linear Optics B.B.Laud (Wiley Eastern)-2011
5. Elements of Solid State Physics-J.P. Srivastava (Prentice Hall of India)-2014
6. Elementary Solid State Physics-Ali Omar (Addison Wiley)-2002

CORE PAPER-XII LAB

(minimum 4 experiments are to be done)

1. Measurement of susceptibility of paramagnetic solution (Quinck's Tube-Method)

2. To measure the Magnetic susceptibility of Solids.
3. To measure the Dielectric Constant of a dielectric Materials and variation with frequency
4. To determine the Hall coefficient of a semiconductor sample.
5. To draw the BH curve of Fe using solenoid and to determine the energy loss from Hysteresis
6. To measure the resistivity and band gap of a given semiconductor by four-problem method.
7. To study PE hysteresis loop of a ferroelectric crystal

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. A Text Books Book of Practical Physics, I. Prakash and Ramakrishna, 11 Ed., 2011, Kitab Mahal
4. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice- Hall of India.

CORE PAPER-XIII
ELECTROMAGNETIC THEORY

Maxwell Equations: Maxwell's equations, Displacement Current, Vector and Scalar Potentials, Gauge Transformations: Lorentz and Coulomb Gauge, Boundary Conditions at Interface between Different Media, Wave Equations, Plane Waves in Dielectric Media, Poynting Theorem and Poynting Vector, Electro- magnetic (EM) Energy Density, Physical Concept of Electromagnetic Field Energy Density

UNIT-II

EM Wave Propagation in Unbounded Media: Plane EM waves through vacuum and isotropic dielectric medium, transverse nature of plane EM waves,

refractive index and dielectric constant, wave impedance, Propagation through conducting media, relaxation time, skin depth, Electrical conductivity of ionized gases, plasma frequency, refractive index, skin depth, application to propagation through ionosphere.

UNIT-III

EM Wave in Bounded Media: Boundary conditions at a plane interface between two media, Reflection and Refraction of plane waves at plane interface between two dielectric media, Laws of Reflection and Refraction, Fresnel's Formulae for perpendicular and parallel polarization cases, Brewster's law, Reflection and Transmission coefficients, Total internal reflection, evanescent waves, Metallic reflection (normal Incidence)

UNIT IV

Polarization of Electromagnetic Waves: Description of Linear, Circular and Elliptical Polarization, Uniaxial and Biaxial Crystals, Light Propagation in Uniaxial Crystal, Double Refraction, Polarization by Double Refraction, Nicol Prism, Ordinary and extraordinary refractive indices, Production and detection of Plane, Circularly and Elliptically Polarized Light,

Phase Retardation Plates: Quarter-Wave and Half- Wave Plates. Babinets Compensator and its Uses, Analysis of Polarized Light.

Rotatory Polarization: Optical Rotation, Biots Laws for Rotatory Polarization, Fresnels Theory of optical rotation, Calculation of angle of rotation, Experimental verification of Fresnels theory, Specific rotation, Laurents half- shade polarimeter.

Text Books:

1. Introduction to Electrodynamics, D.J. Griffiths (Pearson)-2015
2. Principles of Optics- Max Born and E. Wolf- Cambridge University Press-1999

Reference Books:

1. Classical Electrodynamics by J.D. Jackson (Willey)-2007
2. Foundation of electromagnetic theory: Ritz and Milford (Pearson)-2008
3. Electricity and Magnetism : D C Tayal (Himalaya Publication)-2014
4. Optics : A.K.Ghatak (McGraw Hill Education)- 2017
5. Electricity and Magnetism: Chattopadhyaya, Rakhit (New Central)-2018

CORE PAPER XIII LAB

(minimum 4 experiments are to be done):

1. To verify the law of Malus for plane polarized light.
2. To determine the specific rotation of sugar solution using Polarimeter.
3. To analyze elliptically polarized Light by using a Babinets compensator.
4. To determine the refractive index of liquid by total internal reflection using Wollastonsair-film.
5. To determine the refractive Index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eye piece.
6. To study the polarization of light by reflection and determine the polarizing angle for air-glass interface.
7. To verify the Stefan's law of radiation and to determine Stefan's constant.
8. To determine the Boltzmann constant using V-I characteristics of PN junction diode.
9. To determine wavelength and velocity of ultrasonic wave in liquid.

Reference Books:

1. Adva•nced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Adva•nced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Te•xt Books Book of Practical Physics, I.Prakashand Ramakrishna, 11 Ed., 2011, Kitab Mahal Electromagnetic Field Theory for Engineers and Physicists, G. Lehner, 2010,Springer

CORE PAPER-XIV

STATISTICAL MECHANICS

UNIT- I

Classical Statistics-I: Macrostate and Microstate, Elementary Concept of Ensemble, Micro canonical, Canonical and Grand Canonical ensemble, Phase Space, Entropy and Thermodynamic Probability, Maxwell-Boltzmann Distribution Law, Partition Function.

UNIT- II

Classical Statistics-II : Thermodynamic Functions of an Ideal Gas, classical Entropy Expression, Gibbs Paradox, Sackur Tetrode equation, Law of equi partition of Energy (with proof)- Applications to Specific Heat and its Limitations, Thermodynamic Functions of a two energy levels system, Negative Temperature.

UNIT-III

Quantum Statistics: Identical particles, macrostates and microstates, Fermions and Bosons, Bose Einstein distribution function and Fermi- Dirac distribution function. Bose- Einstein Condensation, Bose deviation from Plancks law, Effect of temperature on Fermi-Dirac distribution function, degenerate Fermi gas, Density of States Fermi energy.

UNIT-IV

Radiation: Properties of Thermal Radiation, Blackbody Radiation, Pure Temperature dependence, Kirchhoffs law, Stefan Boltzmann law: Thermodynamic proof, Radiation Pressure, Weins Displacement law, Wiens distribution Law, Sahas Ionization Formula, Rayleigh Jeans Law, Ultra Violet catastrophe.

Plancks Law of Black body Radiation: Experimental verification, Deduction of (1) Wiens Distribution Law, (2) Rayleigh Jeans Law, (3) Stefan Boltzmann Law, (4) Weins Displacement Law from Plancks Law.

Text Books:

1. Introduction to Statistical Physics by Kerson Huang(Wiley).-2008
2. Statistical Physics ,Berkeley Physics Course, F.Reif (Tata McGraw-Hill)-2017

ReferenceBooks:

1. Statistical Mechanics, B.K.Agarwal and Melvin Eisner (New Age International)-2013
2. Thermodynamics, Kinetic Theory and Statistical Thermodynamics: Francis W.Sears and Gerhard L. Salinger (Narosa) 1998
3. Statistical Mechanics: R.K.Pathria and Paul D. Beale (Academic Press)-2011

CORE PAPER-XIV LAB

Use C/C++/ Sci lab for solving the problems based on Statistical Mechanics like

1. Plot Plancks law for Black Body radiation and compare it with Weins law and find Wein's constant and Stefan constant
2. plot Raleigh-Jeans Law at high temperature (room temperature) and low temperature.
3. Plot Specific Heat of Solids by comparing (a) Dulong-Petit law, (b) Einstein distribution function, (c) Debye distribution function for high temperature (room temperature) and low temperature and compare them for these two cases
4. Plot Maxwell-Boltzmann distribution function
5. Plot Fermi-Dirac distribution function
6. Plot Bose-Einstein distribution function.

Reference Books:

1. Elem•entary Numerical Analysis, K.E. Atkinson, 3rdEdn. 2007, Wiley India Edition
2. Statis•tical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Edition,

1996, Oxford University Press.

3. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears and Gerhard L. Salinger, 1986, Narosa.
4. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009,Springer
5. Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez. 2014 Springer ISBN: 978-3319067896
6. Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
7. Scilab Image Processing:L. M.Surhone. 2010, Betascript Pub., ISBN: 978-6133459274

Discipline Specific Elective Paper-1

CLASSICAL DYNAMICS

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

UNIT-I

Generalised co-ordinates and Velocities, Generalised Force, Principle of virtual work Derivation of Lagranges equation of motion from D Alemberts Principles, Lagrangian and its Application to Simple, Compound and Double Pendulums, Single Particle in Space, At woods Machine, Dumbbell, Linear harmonic oscillator.

UNIT-II

Hamiltons Principle, Calculus of Variation and derivation of Euler-Lagranges equation, Langranges Equations derived from Hamiltons Principles, Hamiltoian and its applications to Shortest Distance between two points in a plane, Geodesic

Problem, minimum surface of revolution, Brachistochrone problem, The Equations of motion and first integrals, The equivalent one-dimensional problem and classification of orbits, canonical momenta, Hamiltions equations of motion, Motion of charged particles in external electric and magnetic fields, Applications to central force motion and coupled oscillators.

UNIT- III

Special theory of Relativity (Postulates of special theory of relativity), Lorentz transformations, Minkowski space, The invariant interval, light cone and world lines, space time diagrams, Times-dilation, length contraction and Twin paradox, Variation of mass with velocity mass energy relation

UNIT- IV

Four Vectors: Space Like, Time-like and light-like. Four velocity and acceleration, Four momentum and energy-momentum relation. Doppler effects from a four vector perspective, Concept of four-force, Conservation of four momentum, Application to two body decay of anun stable particle

Text Books:

1. Classical Mechanics, H.Goldstein, C.P. Poole, J.L. Safko (Pearson) - 20112.Classical Mechanics N C Rana and P S Joag.-2017

Reference Books:

1. Mechanics-D.S.Mathur (Sultan Chand)-2000
2. Solved problems in Classical Mechanics, O.L. Delange and J.Pierrus (Oxford Press)(2010)
3. Classical Mechanics-M. Das, P.K. Jena, M. Bhuyan, R.N. Mishra(Srikrishna Prakashan)-2009
4. Mathematical Physics with Classical Mechanics-Satya Prakash (Sultan Chand and sons)-2014

5. Introduction to classical dynamics R.K.Takwale and S.Puranik (Tata McGraw Hill)-2017
6. Classical Mechanics J.C. Upadhyay (Himalayan Publisher)-2017
7. Classical Dynamics of particles and systems -S.T.Thorton and Marion (Cengage publication)-2012

Discipline Specific Elective Paper-1I

Nuclear and Particle Physics

UNIT-I

General properties of Nuclei: Constituents of nucleus and their intrinsic properties, Quantitative facts about mass, radius, charge density (matter density), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment electric moments, nuclear excites states.

Radioactivity decays: (a) Alpha decay: basics of alpha- decay processes, theory of alpha-emission, Gamow factor, Geiger Nuttall law (b) beta-decay: energy kinematics for beta-decay, positron emission, electron capture, neutrino hypothesis.

(c) Elementary idea of Gamma decay.

UNIT-II

Nuclear Models: Liquid drop model approach, semi empirical mass formula and significance of its various terms, conditions of nuclear stability, two nucleon separation energies, evidence for nuclear shell structure, nuclear magic number, basic assumption of shell models.

UNIT-III

Detector for nuclear radiations: Detector for nuclear radiations: Gas detectors: estimation of electric field, mobilityof particle, for ionization chamber and GM Counter. Basic Principle of Scintillation Detectors and Construction of photo-

multiplier tube (PMT). Semiconductor Detectors (Si and Ge) for charge Particle and photo detection (Concept of charge carrier and mobility), neutron detector.

Particle Accelerators: Van-de Graff generator (Tandem Accelerator), Lin- ear accelerator, Cyclotron, Synchrotrons

UNIT-IV

Particle Physics: Particle interactions, basic features, types of particles and its families,

Symmetries and conservation laws: Energy and momentum, angular momentum, parity, baryon number, Lepton number, Isospin, strangeness and charm, Elementary ideas of quarks and gluons.

Text Books:

1. Introduction to Nuclear Physics By Roy and Nigam-2014
2. Atomic and Nuclear Physics- N.Subramanyam, Brij Lal and Jivan Seshan (S. Chand Publishing)-2007

Reference Books:

1. Introduction to Modern Physics- H.S.Mani and G.K. Mehta(Affilated east and west) -2018
2. Introductory nuclear Physics-Kenneth S. Krane (Wiley India Pvt. Ltd)-1987
3. Introduction to Elementary Particles-D. Griffith (John Wiley and Sons)-2008
4. Concepts of Nuclear Physics - Bernard L. Cohen. (Tata Mcgraw Hill). -2017
5. Concepts of Modern Physics-Arthur Beiser (McGraw Hill)-2017

DisciplineSpecificElectivePaper- II1

Nano Materials and Applications

UNIT-I

Nanoscale Systems: Length scales in physics, Nanostructures: 1D, 2D and 3D

nanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, size effects in nano systems, Quantum confinement Applications of Schrodinger equation-infinite potential well, potential step, potential box, quantum confinement of carriers in 3D, 2D, 1D nanostructure and its consequences.

UNIT-II

Synthesis of Nanostructure Materials: Top down and bottoms up approach, Photo lithography Ball milling. Gas phase condensation, Vacuum deposition, Physical vapour deposition (PVT): Thermal evaporation, E-beam evaporation, Pulsed Laser deposition, Chemical vapour deposition (CVD), Sol-Gel Electrodeposition,Spraypyrolysis,Hydrothemalsynthesis,Preparationthrough colloidal methods, MBE growth of quantum dots.

UNIT-III

Characterization: X-Ray Diffraction, Optical Microscopy, Scanning Electron Microscopy, Transmission Electron Microscopy, Atomic Force Microscopy, Scanning Tunneling Microscopy

UNIT-IV

Applications: Applications of nano particles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron devices (no derivation). CNT based transistors. Nonmaterial Devices: Quantum dots hetero structure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots- magmetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS)

Text Books:

1. S.K. Kulkarni, Nanotechnology: Principles and Practices (Capital Publishing Company)-3rd Edition 2014

2. Nano science and nano technology, K.K. Choudhary (Narosa)-2016

Reference Books:

1. Nano Science and nano technology, Sundar Singh (Pragati Prakashan)-2017
2. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.)-2007
3. Richard Booker, Earl Boysen, Nanotechnology(John Wiley and Sons)-2005
4. M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama, Nanoparticle Technology Handbook (Elsevier, 2007)
5. K.K. Chattopadhya and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited)-2009

Discipline Specific Elective Paper-1V

Project

OR

Basic Instrumentation

Basic Instrumentation

UNIT-I

Basic of Measurement: Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects.

Multimeter: Principles of measurement of dc voltage and dc current, ac volt- age, ac current and resistance. Specifications of a multimeter and their significance.

Electronic Voltmeter: Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement (block diagramonly).Specifications of an electronic Voltmeter/ Multimeter and their significance.

AC mill voltmeter: Type of AC mill voltmeters: Amplifier- rectifier, and rectifier-amplifier. Block diagram ac mill voltmeter, specifications and their significance.

UNIT-II

Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only no mathematical treatment), brief discussion on screen phosphor, visual persistence and chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance.

Use of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle ofworking.

UNIT-III

Signal Generators and Analytical Instruments: Block diagram, explanation and specifications of low frequency signal generators, pulse generator, and function generator, Brief idea for testing, specifications, Distortion factor meter, wave analysis.

UNIT-IV

Digital Instruments: Principle and working of digital meters, Comparison of analog and digital instruments, Characteristics of a digital meter, Working principles of digital voltmeter.

Digital Multimeter: Block diagram and working of a digital multimeter, Working principle of time interval, frequency and period measurement using universalcounter/frequencycounter,time-basestability,accuracyandresolution.

The test of lab skills will be of the following test items:

1. Use of an oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment,
4. Use of Digital multimeter /VTVM for measuring voltages
5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil /transformer.

7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

Laboratory Exercises:

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. To measure Q of a coil and its dependence on frequency, using a Q-meter.
4. Measurement of voltage, frequency, time period and phase angle using CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.
8. Measurement of R, L and C using a LCR bridge/universal bridge.

Open Ended Experiments:

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

More emphasis should be given on hands-on experiments.

Text Books:

1. A Text Books book of electrical technology-B.L.Theraja and A.K. Theraja (S. Chand Publishing)-2014
2. Digital circuits and systems Venugopal (Tata McGraw Hill)-2011

Reference Books :

1. Digital Electronics-Subrata Ghoshal (Cengage Learning)-2017
2. Electronic Devices and circuits - S. Salivahanan and N. S.Kumar (Tata Mc-Graw Hill)-2012
3. Electronic Devices-Thomas L. Floyd (Pearson)-2015

Additional Reference Books for Practical papers:

1. An advanced course in Practical Physics- Chattopadhayay, Rakshit-

Central-2013
2. Practical Physics-B.B.Swain (Kitab Mahal)-2014
3. Advanced practical Physics-B.Ghosh and KG Majumdar (Vol. I and II)-Shreedhar Publication-2004
4. ALaboratoryManualofPhysicsforUndergraduateClasses,D.P.Khandelwal (Vani Publication)-1985
5. B.Sc. Practical Physics- C.L.Arora (S.Chand Publishing)-2010
6. B.Sc. Practical Physics H. Singh and P.S. Hemne (S. Chand Publishing)-2002

GENERIC ELECTIVE (GE)

Generic Elective Paper I

(Mechanics and Properties of matter, Oscillation and Waves, Thermal Physics, Electricity and Magnetism and Electronics

UNIT-I

Mechanics and Properties of Matter

Moment of Inertia Parallel axis and perpendicular axis theorem, M.I. of a Solid sphere and Solid cylinder, Gravitational potential and field due to a thin spherical shell and a solid sphere at external points and internal points, Relation among elastic constants, depression at free end of a light cantilever, Surface tension,pressure,differenceacrossacurvedmembrane,viscousflow,Poiseulles formula.

UNIT-II

Oscillation and Waves

Simple harmonic motion, damped harmonic motion, under damped, over damped and critically damped motion, Forced vibration, Resonance, Wave equation in a medium, Velocity of Longitudinal waves in an elastic medium and velocity of transverse wave in a stretched string, Composition of SHM, Lissajous figures for

superposition of two orthogonal simple harmonic vibrations (a) with same frequency, (b) frequency with 2:1.

UNIT-III

Thermal Physics

Entropy, change in entropy in reversible and irreversible process, Carnot engine and its efficiency. Carnot Theorem, Second law of thermodynamics, Kelvin-Planck, Clausius formula. Thermal conductivity, differential equation for heat flow in one dimension, Maxwell thermodynamic relation (statement only), Clausius Clapeyron equation, Black body radiation, Planck radiation formula (No derivation).

UNIT-IV

Electricity and Magnetism

Gauss law of electrostatics, use of Gauss law to compute electrostatic field due to a linear charge distribution, Magnetic induction B, Lorentz force law, Biot Savarts law, Magnetic induction due to long straight current carrying conductor, and in the axis of a current carrying circular coil, Amperes Circuital law,itsdifferentialform,Thelawofelectromagneticequations,itsdifferential and integral form, Maxwells electro-magnetic equations and their physical significance, Growth and decay of currents in LR and RC circuits, time constant, alternating currents in RC, RL and LCR circuits, impedance, power factor, resonance.

P-type and N-type semiconductors, PN-Junction as rectifier, Half wave and Full wave rectifiers (Bridge type), efficiency, ripple factor, use of RC, LC, and filters, working of PNP and NPN transistors, transistor configurations in CE and CB circuits and relation between α and β. JFET, its operation and characteristics of V-Icurve.

Text Books:

1. Elements of Properties of Matter D.S. Mathur (S. Chand Publication)-2010
2. Heat and Thermodynamics A.B. Gupta and H.B. Ray (New Central

Book Agency)-2010

3. A Text Books book of oscillations, waves and acoustics(5thed.)M. Ghosh and D. Bhattacharya (S. Chand Publication)-2018
4. Electricity and magnetism- R. Murugeshan (S.Chand publishing)-2017
5. Fundamentals of Electronics-Raskhit and Chattopadhyay (New age International Publication)-2018

Reference Books:

1. Physics of Degree students Vol.I M. Das, P.K. Jena etal (Sri krishna Prakashan)-2006
2. Physics of Degree students Vol.II M. Das, P.K. Jena etal (Sri krishna Prakashan)-2006
3. Waves and Oscillations (2nd ed) N. Subramaniyam and Brij Lal (Vikas Publications)-1994
4. A Text Books book of Sound (2nd ed) - N. Subramaniyam and Brij Lal (S. Chand Publications)-1999

Generic Elective Paper I Lab-

(minimum 6 experiments are to be done)

1. To determine the moment of inertia of a fly wheel.
2. To determine the Young's modulus Y of a wire by Searl's method.
3. To determine the modulus of rigidity of a wire by Maxwell's needle/Torsion Pendulum (Dynamic method).
4. To determine g by bar pendulum.
5. To determine the value of Y of a rubber by using travelling microscope.
6. To determine the Rigidity of modulus by static method.
7. To determine the frequency of a telescope by using Sonometer.
8. Verification of Laws of Vibration of a string by using Sonometer.
9. To compare capacitances using De Sauty bridge.
10. To determine the Law of resistance by using Foster bridge.
11. Compare the specific heat of two liquids by method of Cooling.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flintand H.T.Worsnop, 1971, Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, NewDelhi

Generic Elective Paper -II

(Optics, Special Theory of Relativity, Atomic Physics, Quantum Mechanics and Nuclear Physics)

UNIT-I

Optics-I: Elementary ideas of monochromatic aberrations and their minimization, chromatic aberration, achromatic combination, Theory of formation of primary and secondary rainbow, condition of interference, coherent sources, Youngs double slit experiment, biprism and measurement of wave length of light of by it, color of thin films and Newton's rings, Fresnel and Fraunhoffer diffraction, diffraction by single slit plane transmission grating.

Optics-II : Electromagnetic nature of light, polarized and unpolarized light, polarization by reflection and refraction, Brewster's Law, Mauls Law, Double refraction, Ordinary and extraordinary rays.

UNIT-II Atomic Physics

Inadequacy of classical physics, brief outline of Rayleigh Jeans theory and Planck's quantum theory of radiation, particle nature of electromagnetic radiation photo electric effect, Compton effect, dual nature of radiation, wave nature of particles, de- Broglie hypothesis, matter wave, wave-particle duality, Davisson- Germer experiment.

Bohr's theory of Hydrogen atom, explanation of Hydrogen Spectra, correction for finite mass of the nucleus, Bohrs correspondence principle, limitations of Bohr's

theory, Discrete energy, exchange by atom Frank Hertz experiment.

UNIT-III

Quantum Mechanics : Heisenberg's Uncertainty relation, Time dependent Schrodinger's wave equation in one dimension and three dimensions, The physical interpretation of the wave function, Probability density and probability current density, Equation of continuity, Normalization of the Wave function, Expectation value of an observable, Ehrenfest's theorem. Time independent Schrodinger's wave equation in one dimension particle in a box, energy eigen values and eigen functions.

UNIT-IV

Nuclear Physics : Properties of the nucleus Charge, Size, Spin, Magnetic Moment, Mass, Mass defect, Binding energy, Packing fraction, Nuclear force and its characteristics features, Radioactive decay laws, average life, half life, nuclear fission, nuclear fusion, Linear accelerators, and cyclotron.

Relativity: Galilean transformation, Newtonian relativity and its limitation, Michelson Morley experiment and it's consequence, postulates of special theory of relativity. Lorentz transformation, length contraction, time dilation, relativistic mass and momentum, mass energy relation.

Text Books:

1. University Physics, H. D. Young, R. A. Freedman (Person)-2017
2. Fundamentals of Physics, Resnick, Halliday, Walker (WIley)-2015

Reference Books:

1. A Text Books book of Optics N. Subrahmanyam and Brij Lal (S.Chand Publishing)-2006
2. Introduction to Special Relativity-R. Resnick (John Wiley)-2007
3. Concepts of Modern Physics Arthur Beiser (McGraw Hill)-2017
4. Modern Physics H.S. Mani and G.K.Mehta-2018.

Generic Elective Paper II LAB (minimum 6 experiments are to be done):

1. Determination of E.C.E. of a Copper by taking 3readings.
2. Determination of Refractive index of the material of a prism using Sodium light.
3. To determine the wavelength of light using plane diffraction grating.
4. To determine the wavelength of light using Newton's ring.
5. Determination of refractive index of (a) glass and (b) liquid by using travelling microscope.
6. To plot the I-D curve and to determine the refractive index of a prism
7. Determination of radius of curvature of a convex/concave mirror by using Kohlrausch's method.
8. T o determine the magnifying power of a giventelescope.
9. To Obtain the static characteristics of a P-N-P/N-P-N transistor/ Triode Valve.
10. To determine the reduction factor of a tangent Galvanometer.
11. To study the Variation of magnetic field along the axis of a circular coil carrying current.

Reference Books:

1. Advanced Practical Physics for students, B.L.Flint and H.T. Worsnop, (1971), Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P.Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, New Delhi

Faculty Training to be imparted in the following Topics

Computational Physics Lab—C, C++,

Scilab Programming for Core I,C-V,C-VIII,C-XI and C-XIII Practicals.

2. Digital Electronics. Theory and Practicals.

3. Quantum Mechanics Problem Solving

4. Solid State Physics- Elementary Band Theory and Superconductivity

5. Statistical Mechanics.-Quantum Distribution

6. Nanotechnology.

ESSENTIAL LABORATORY EQUIPMENT RECOMMENDED :

Every college must have CRO, Function generator, Laser and Logic Gate packages.

Course Structure of U.G. Zoology Honours				
Semester	**Course**	**Course Name**	**Credit**	**Total marks**
Semester-I	AECC I	AECC I	4	100
	Core I (Theory)	Non-chordates I: Protista to Pseudocoelomates	4	75
	Core I (Practical)	Non-chordates I: Protista to Pseudocoelomates	2	25
	Core II (Theory)	Principles of Ecology	4	75
	Core II (Practical)	Principles of Ecology	2	25
	GE 1 (Theory)	GE 1 (Theory)	4	75
	GE I (Practical)	GE I (Practical)	2	25
Semester-II	AECC 2	AECC 2	4	100
	Core III (Theory)	Non chordates II: Coelomates	4	75
	Core III (Practical)	Non chordates II: Coelomates	2	25
	Core IV (Theory)	Cell biology	4	75
	Core IV (Practical)	Cell biology	2	25
	GE II (Theory)	GE II (Theory)	4	75
	GE II (Practical)	GE II (Practical)	2	25
Semester-III	Core V (Theory)	Diversity of Chordates	4	75
	Core V (Practical)	Diversity of Chordates	2	25
	Core VI (Theory)	Physiology: Controlling and Coordinating systems	4	75
	Core VI (Practical)	Physiology: Controlling and Coordinating systems	2	25
	Core VII (Theory)	Fundamentals of Biochemistry and microbiology	4	75
	Core VII (Practical)	Fundamentals of Biochemistry and microbiology	2	25
	SEC 1	SEC 1	4	100
	GE III (Theory)	GE III (Theory)	4	75
	GE III (Practical)	GE III (Practical)	2	25
Semester-IV	Core VIII (Theory)	Comparative anatomy of Vertebrates	4	75

	Core VIII (Practical)	Comparative anatomy of Vertebrates	2	25
	Core IX (Theory)	Physiology: Life Sustaining Systems	4	75
	Core IX (Practical)	Physiology: Life Sustaining Systems	2	25
	Core X (Theory)	Biochemistry of Metabolic Processes	4	75
	Core X (Practical)	Biochemistry of Metabolic Processes	2	25
	SEC 2	SEC 2	4	100
	GE IV (Theory)	GE IV (Theory)	4	75
	GE IV (Practical)	GE IV (Practical)	2	25
Semester-V	Core XI (Theory)	Molecular Biology	4	75
	Core XI (Practical)	Molecular Biology	2	25
	Core XII (Theory)	Principles of Genetics	4	75
	Core XII (Practical)	Principles of Genetics	2	25
	DSE I (Theory)	DSE 1	4	75
	DSE I (Practical)	DSE 1	2	25
	DSE II (Theory)	DSE II	4	75
	DSE II (Practical)	DSE II	2	25
Semester-VI	Core XIII (Theory)	Developmental Biology	4	75
	Core XIII (Practical)	Developmental Biology	2	25
	Core XIV (Theory)	Evolutionary Biology	4	75
	Core XIV (Practical)	Evolutionary Biology	2	25
	DSE III (Theory)	DSE III	4	75
	DSE III (Practical)	DSE III	2	25
	DSE IV (Theory with Practical /Project)	Project/ Economic Zoology	6	100
		Total	**148**	**2600**

ZOOLOGY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (Out of 9 suggested papers)

Generic Elective for Non Zoology students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 15 marks, End term: 60 marks (Theory) + 25 marks (Practical), Total – 100 marks

Credit per paper – 6

Teaching hours per paper – 40 hours (theory) + 10 hours (practical)

Core Paper I

Non-Chordates I: Protista to Pseudocoelomates

Unit 1: Protista, Parazoa, Metazoa and Porifera

General characteristics and Classification up to classes. Study of *Euglena*, *Amoeba*. Life cycle and pathogenicity of *Plasmodium vivax* and *Entamoeba histolytica*. Locomotion and Reproduction in Protista.General characteristics and Classification up to classes, Canal system and spicules in sponges.

Unit 2: Cnidaria & Ctenophora

General characteristics and Classification up to classes, Metagenesis in *Obelia*, Polymorphism in Cnidaria, Corals and coral reefs. General characteristics and Evolutionary significance of Ctenophora.

Unit 3: Platyhelminthes

General characteristics and Classification up to classes. Life cycle and pathogenicity of *Fasciola hepatica* and *Taenia solium.*

Unit 4: Nemathelminthes

General characteristics and Classification up to classes. Life cycle, and pathogenicity of *Ascaris lumbricoides* and *Wuchereria bancrofti*. Parasitic adaptations in helminthes.

Note: Classification to be followed from "Barnes, R.D. (1982). Invertebrate Zoology, V Edition"

PRACTICAL

1. Study of whole mount of *Euglena*, *Amoeba* and *Paramecium*, Binary fission and Conjugation in *Paramecium*.

2. Examination of pond water collected from different places for diversity in protista.

3. Study of *Sycon* (T.S. and L.S.), *Hyalonema*, *Euplectella, Spongilla*.

4. Study of *Obelia, Physalia, Millepora, Aurelia, Tubipora, Corallium, Alcyonium, Gorgonia*,

Metridium, Pennatula, Fungia, Meandrina, Madrepora.

5. One specimen/slide of any ctenophore.

6. Study of adult *Fasciola hepatica*, *Taenia solium* and their life cycles (Slides/microphotographs).

7. Study ofadult *Ascaris lumbricoides* and its life stages (Slides/micro-photographs).

8. To submit a Project Report on any related topic onlife cycles/coral/ coral reefs.

Note: Classification to be followed from "Ruppert and Barnes (2006) Invertebrate Zoology, 8th edition, Holt Saunders International Edition"

TEXT BOOKS

1. Kotpal RL; Modern Textbook of Zoology – Invertebrates; Rastogi Publications - Meerut; 2016 edition
2. Richard Busca, W. Moore, Stephen M. Shuster. Invertebrates; OUP USA; 3rd edition (19 January 2016)

SUGGESTED READINGS

1. Richard Fox , Robert D. Barnes, Edward E. Ruppert, Invertebrate Zoology: A Functional Evolutionary Approach, Brooks/Cole; 7th edition 2003
2. Barrington, E.J.W.Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson.
3. Hyman, L.H. Invertebrate Series (Recent edition)
4. Verma P. S. A Manual of Practical Zoology: Invertebrates. S Chand Publication
5. Parker JJ and WA Haswel Textbook of Zoology. Vol I and II

Core Paper II Principles of Ecology

Unit 1: Ecosystem and Applied Ecology

Ecology: Autecology and synecology, Types of ecosystems with one example in detail, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids Nutrient and biogeochemical cycle with one example of Nitrogen cycle. Ecology in Wildlife Conservation and Management. Laws of limiting factors, Study of physical factors- (Light, temperature).

Unit 2: Population

Attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion Exponential and logistic growth, equation and patterns, r and K strategies. Population regulation - density-dependent and independent factors, Population interactions, Gause's Principle with laboratory and field examples.

Unit 3: Community

Community characteristics: species richness, dominance, diversity, abundance,vertical stratification, Ecotone and edge effect; Ecological succession with one example. Theories pertaining to climax community.

Unit – 4: Biometry

Biological data, graphical representation of data (frequency polygon and histogram), sampling techniques, measures of central tendency (Mean, median and mode), Measures of dispersion (range, quartile deviation, mean deviation and standard deviation), Hypothesis and hypothesis testing (Chi-square test, t- test)

PRACTICAL

1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.
2. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.
3. Study of an aquatic ecosystem: Phytoplankton and zooplankton collection, preservation and mounting, Measurement of temperature, turbidity/penetration of light, determination of pH, Dissolved Oxygen content (Winkler's method), BOD, COD, Free CO_2, Hardness, TDS.
4. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary.
5. Chi-square analysis using seeds/beads/*Drosophila*.
6. Problems on standard deviation.
7. Graphical representation of data (Frequency polygon and Histogram).

Text Book

1. Odum, E.P. and Barrett, G.W., (2018). Fundamentals of Ecology, 5th Edition
2. Smith and Smith, Elements of Ecology, Global Edition; Pearson Education India; ninth edition (14 May 2015)
3. Myra Samuels, J. Witmer,A. Schaffner, Statistics for the life sciences, Prentice Halls, Boston, 4th edition, 2012

Suggested Readings

1. Kormondy, (2017). Concepts of Ecology, Updated 4/e, Pearson
2. Colinvaux, P. A. (1993). Ecology. II Edition. Wiley, John and Sons, Inc. Krebs, C. J. (2001). Ecology. VI Edition. Benjamin Cummings.
3. Ricklefs, R.E., (2000). Ecology. 5th Edition. Chiron Press
4. Dash M.C., Fundamentals of Ecology. Mc GrawHill
5. Smith TM and Smith RL, Elements of Ecology, 8th Edition,Pearson education INC, USA
6. Miller, G.T. and Spoolman, S.E. (2017) Environmental Science, 14th Edition. Cengage Publication, New Delhi.
7. Baneerjee Pranab Kumar, Introduction to biostatistics, S Chand & Company; 3rd Rev. Edn. 2006 edition
8. Chainy GBN, Mishra G, Mohanty PK, 2016, Basic Biostatistics, Kalyani Publisher 3rd edition

Core Paper III

Non- Chordates II: Coelomates

Unit 1: Coelomates and Annelids

Evolution of coelom and metamerism. General characteristics and Classification up to classes; Excretion in Annelida.

Unit 2: Arthropoda and Onychophora

General characteristics and Classification up to classes. Vision and Respiration in

Arthropoda. Metamorphosis in Insects. Social life in bees and termites. Onychophora: General characteristics and Evolutionary significance.

Unit 3: Mollusca

General characteristics and Classification up to classes. Respiration in Mollusca. Torsion and detorsion in Gastropoda. Evolutionary significance of trochophore larva.

Unit 4: Echinodermata

General characteristics and Classification up to classes. Water-vascular system in Asteroidea, Larval forms in Echinodermata, Affinities with Chordates.

Note: Classification to be followed from "Ruppert and Barnes (2006)Invertebrate Zoology,8th edition, Holt Saunders International Edition"

PRACTICAL

1. Study of following specimens:
2. Annelids - *Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria*
3. Arthropods – *Tachypleus,Carcinoscorpious, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina*, Cancer, *Eupagurus, Scolopendra, Julus, Bombyx, Periplaneta*, termites and honey bees
4. Onychophora –*Peripatus*
5. Molluscs - *Chiton, Dentalium, Pila, Doris, Helix, Unio, Ostrea, Pinctada, Sepia, Octopus, Nautilus*
6. Echinodermates - *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria and Antedon*
7. Study of digestive system, nephridia of earthworm (Virtual).
8. T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm.
9. Mount of mouth parts and dissection of digestive system and nervous system of *Periplaneta.*
10. To submit a Project Report on any related topic to larval forms (crustacean, mollusc and echinoderm)

Text Books

1. Kotpal RL (2014) Text book of Zoology, Invertebrate, Rastogi Publication
2. Jordan and Verma PS (2009) Invertebrate Zoology. S Chand publication.

Suggested Readings

1. Barrington, E.J.W. (1979). Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson.
2. Barnes, R.S.K., Calow, P., Olive, P. J. W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
3. Verma P S. (2010) A Manual of Practical Zoology: Non-chordates. S Chand Publication

Core Paper IV Cell biology

Unit 1: Overview of cells and plasma membrane

Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions, Various models of plasma membrane structure. Transport across membranes: Active and Passive transport, Facilitated transport. Cell junctions: Tight junctions, Desmosomes, Gap

junctions.

Unit 2: Cytoskeleton & Endomembrane System

Structure and Functions: Microtubules, Microfilaments and Intermediate filaments; Structure and Functions: Endoplasmic Reticulum, Golgi apparatus, Lysosomes.

Unit 3: Mitochondria and Peroxisomes

Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis; Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis. Peroxisomes.

Unit 4: Nucleus, Cell Division and Cell signalling

Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus; Chromatin: Euchromatin and Hetrochromatin and packaging (nucleosome); Mitosis, Meiosis, Cell cycle and its regulation; GPCR and Role of second messenger (cAMP)

Practical

1. Preparation of temporary stained squash of onion root tip to study various stages of mitosis.
2. Study of various stages of meiosis.
3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.
4. Preparation of permanent slide to demonstrate:
   i. DNA by Feulgen reaction
   ii. DNA and RNA by MGP
   iii. Mucopolysaccharides by PAS reaction
   iv. Proteins by Mercuric bromophenol blue/Fast Green
5. Demonstration of osmosis (RBC/ Egg etc.).

Text Books

1. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). Cell and Molecular Biology. VIII Edition. Lippincott Williams and Wilkins, Philadelphia.
3. S Harisha (2007) Biotechnology procedures and experiments handbook., Infinity Science Press, Hingham

Suggested Readings

1. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008). MolecularBiology of the Cell, V Edition, Garland publishing Inc., New York and London.
2. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
3. Suvarna S, Lyton C, Bancroft JD (2013) Theory and practice of histological techniques, Churchill Livingstone, Elsevier, UK
4. Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. V Edition. ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA.

Core Paper V

Diversity and distribution of Chordates

Unit 1: Protochordates and Origin of Chordates

Protochordata: General characteristics of Hemichordata, Urochordata and Cephalochordata;
Study of larval forms in protochordates; Retrogressive metamorphosis in Urochordata. General characteristics and outline classification Chordata. Dipleurula concept and the Echinoderm theory of origin of chordates.

Unit 2: Agnantha, Pisces & Amphibia

General characteristics of Agnatha: General characteristics and classification of cyclostomes up to class Chondrichthyes and Osteichthyes: classification up to order, Migration, Parental care in fishes, Accessory respiratory organs in pisces, Evolutionary significance of Dipnoi.
Amphibian: Origin of Tetrapoda (Evolution of terrestrial ectotherms); General characteristics and classification up to order. Parental care in Amphibia.

Unit 3: Reptilia& Aves

General characteristics and classification up to order in reptiles; Affinities of *Sphenodon*; Poison apparatus and Biting mechanism in snakes. General characteristics and classification up to order in Aves *Archaeopteryx* - a connecting link; Flight adaptations and Migration in birds.

Unit 4: Mammals & Zoogeography

General characters and classification up to order; Affinities of Prototheria; Adaptive radiation with reference to locomotory appendages. Zoogeographical realms, Theories pertaining to distribution of animals, Plate tectonic and Continental drift theory, distribution of vertebrates in different realms.

PRACTICAL

1. Protochordata: *Balanoglossus, Herdmania, Branchiostoma,* Colonial Urochordata, Sections of *Balanoglossus* through proboscis and branchio-genital regions, Sections of *Amphioxus* through pharyngeal, intestinal and caudal regions. Permanent slides of Herdmania spicules.
2. Agnatha: *Petromyzon* and *Myxine*.
3. Fishes*: Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/ Diodon, Anabas,* Flat fish.
4. Amphibia*: Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamander.*
5. Reptilia: *Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus*. Key for Identification of poisonous and non-poisonous snakes
6. Aves: Study of six common birds from different orders. Types of beaks and claws. Study of feathers.
7. Mammalia: *Sorex*, Bat (Insectivorous and Frugivorous), *Funambulus,* Loris, *Herpestes, Erinaceous*.
8. Power point presentation on study of any two animals from two different classes by students. Submission of album of local species.

TEXT BOOKS

1. Kotpal RL; Modern Textbook of Zoology –Vertebrates; Rastogi Publications - Meerut; 2016 edition
2. Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford University Press.
3. Tiwari SK (2006) Fundamentals of World Zoogeography, Sarup & Sons

SUGGESTED READINGS

1. Pough H. Vertebrate life, VIII Edition, 2007 Pearson International.
2. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
3. Hickman CP, Roberts LS, Keen S, Larson A, I'AnsonH, Isenhour DJIntegrated Principle of Zoology, 14th edition, 2008, McGrawHill publication
4. Verma PS and Srivastava PC. (2011)Advanced Practical Zoology. S Chand Publication.

Core Paper VI

Physiology: Controlling and Coordinating Systems

Unit 1: Tissues & Tissue system

Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue. Structure and types of bones and cartilages, Ossification, bone growth and resorption.

Unit 2: Muscle & Nervous System

Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction. Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types of synapse, Synaptic transmission and, Neuromuscular junction; Reflex action and its types - reflex arc; Physiology of hearing and vision.

Unit 3: Reproductive System

Histology of testis and ovary; Physiology of male and female reproduction; Hypothalamus-Pituitary & Gonadal axis. Puberty, Ovarian Cycle, Methods of contraception in male and female, Placental hormones.

Unit 4: Endocrine System

Histology of endocrine glands – Hypothalamus (Neuroendocrine gland) pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action; Classification of hormones and mechanism of hormone action, (steroidal and non- steroidal hormones).

PRACTICAL

1. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex).
2. Study of permanent slides- Squamous epithelium, Striated muscle fibres and nerve cells.
3. Study of permanent slides-Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid.
4. Microtomy: Preparation of permanent slides/photographs/computer models of any five types of mammalian (Goat/rat,etc) tissues

TEXT BOOKS

1. Marieb EN and Hoehn K, Human Physiology,(2013), 9th edition, Pearson Education,

USA.

2. Endocrinology, Hadley ME and Levine JE (2009), Pearson Education India; 6 edition
3. Textbook of Medical Physiology, Guyton & Hall, Elsevier, 12th edition, 2016

SUGGESTED BOOKS

1. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition., Lippincott W. & Wilkins
2. Martini F H, Nath J L and Bartholomew E F.(2015) Fundamentals of Anatomy and Physiology. Pearson Education Publication,
3. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. /W.B.Saunders Company.
4. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.

Core Paper VII

Fundamentals of Biochemistry and microbiology

Unit 1: Carbohydrates & Lipids

Structure and Biological importance: Monosaccharides, Disaccharides, Polysaccharides andGlycoconjugates; Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Tri-acylglycerols, Phospholipids, Glycolipids, Steroids.

Unit 2: Proteins

Amino acids: Structure, Classification and General properties of α-amino acids; Physiological importance of essential and non-essential α-amino acids.
Proteins: Bonds stabilizing protein structure; Levels of organization in proteins; Renaturation, Denaturation; Introduction to simple and conjugate proteins
Immunoglobulins: Basic Structure, Classes and Function, Antigenic Determinants.

Unit 3: Enzymes

Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Factors affecting rate of enzyme-catalyzed reactions; Derivation of Michaelis-Menten equation, Concept of Km and Vmax, Lineweaver- Burk plot; Multi-substrate reactions; Enzyme inhibition; Allosteric enzymes and their kinetics; Regulation of enzyme action.

Unit 4: Microbiology

Bacteria: Classification, structure and reproduction

Virus: classification, structure and reproduction, bacteriophages, viriods, prions, microbes of food, agriculture and industry

Bacterial (typhoid, cholera and tuberculosis) and viral (swine flu, zika fever and AIDS) diseases of human

PRACTICAL

1. Qualitative tests of functional groups in carbohydrates, proteins and lipids.
2. Paper chromatography of amino acids.
3. Action of salivary amylase under optimum conditions.
4. Effect of pH, temperature and inhibitors on the action of salivary amylase./Urease/acid or

alkaline phosphatase

5. Demonstration of proteins separation by SDS-PAGE.
6. Identification of different bacteria and viruses through slide/photographs

TEXT BOOKS

1. Satyanarayan and Chakrapani , (2017) Biochemistry, Elsevier; Fifth edition
2. Cox, M.M and Nelson, D.L. (2008). Lehninger's Principles of Biochemistry, V Edition, W.H. Freeman and Co., New York.
3. Jeremy M. Berg, Lubert Stryer, John L. Tymoczko, Gregory J. Gatto, Biochemistry, 8th edition, 2015.
4. Victor W., Rodwell, David A., Bender, Kathleen M., Botham, Peter J., Kennelly, P. Anthony,Harper's Illustrated Biochemistry, 31st edition.
5. Tortora GJ, Funke BR and Case CL (2016) Microbiology: An introduction, Pearson India Education Services Pvt.Ltd.11th edition

SUGGESTED READING

1. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.
2. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008). Molecular Biology of the Gene, VI Edition, Cold Spring Harbor Lab. Press, Pearson Publication.
3. Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.
4. Devasena T. (2010). EnzymologyOxford University Press; 1 edition
5. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007). Biochemistry, VI Edition, W.H. Freeman and Co., New York.
6. Pelezar Jr.MJ,Chan E.C.S. and Krieg NR (2001) Microbiology, Mc-Graw Hill Education

Core Paper VIII Comparative Anatomy of Vertebrates

Unit 1: Integumentary & Skeletal System

Structure, functions and derivatives of integument (Scale, claw, nail, hair, feather and dentition). Axial and appendicular skeleton, Jaw suspensorium, Visceral arches.

Unit 2: Digestive & Respiratory System

Alimentary canal and associated glands; Respiration through skin, gills, lungs and air sacs; Accessory respiratory organs.

Unit 3: Circulatory and Urinogenital system

General plan of circulation, evolution of heart and aortic arches; Succession of kidney, Evolution of urinogenital ducts, Types of mammalian uteri.

Unit 4: Nervous System & Sense Organs

Comparative account of brain;Nervous system, Spinal cord, Cranial nerves in mammals. Classification of receptors: Brief account of visual and auditory receptors in man. Chemo and mechano receptors

PRACTICAL

1. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs

2. Disarticulated skeleton of Frog, *Varanus*, Fowl, Rabbit.
3. Carapace and plastron of turtle /tortoise (Photographs, charts etc).
4. Mammalian skulls: One herbivorous and one carnivorous animal.
5. Study of structure of any two organs (heart, lung, kidney, eye and ear) from video recording (may be included if dissection not permitted).
6. Project on skeletal modifications in vertebrates (may be included if dissection not permitted).

TEXT BOOKS

1. Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education
2. Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies
3. R. K. Saxena and Sumitra Saxena (2016). Comparative Anatomy of Vertebrates 2nd edition.

SUGGESTED READINGS

1. Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate tructure, John Wiley and Sons
2. Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House

Core Paper IX Physiology: LifeSustaining Systems

Unit 1: Physiology of Digestion

Structural organization and functions of gastrointestinal tract and associated glands; Mechanical and chemical digestion of food; Absorptions of carbohydrates, lipids, proteins, water, minerals and vitamins; Hormonal control of secretion of enzymes in gastrointestinal tract.

Unit 2: Physiology of Respiration

Histology of trachea and lung; Mechanism of respiration, Pulmonary ventilation; Respiratory volumes and capacities; Transport of oxygen and carbon dioxide in blood; Respiratory

pigments, Dissociation curves and the factors influencing it; Carbon monoxide poisoning; Control of respiration.

Unit 3: Renal Physiology and Blood

Structure of kidney and its functional unit; Mechanism of urine formation; Regulation of water balance; Regulation of acid-base balance. Components of blood and their functions; Structure and functions of haemoglobin haemostasis: Haemopoiesis, Blood clotting system, Blood groups: Rh factor, ABO and MN.

Unit 4: Physiology of Heart

Structure of mammalian heart; Coronary circulation; Structure and working of conducting myocardial fibers. Origin and conduction of cardiac impulses Cardiac cycle; Cardiac output and its regulation, Frank-Starling Law of the heart, nervous and chemical regulation of heart rate. Electrocardiogram, Blood pressure and its regulation.

PRACTICAL

1. Determination of ABO Blood group
2. Enumeration of red blood cells and white blood cells using haemocytometer
3. Estimation of haemoglobin using Sahli's haemoglobinometer

4. Preparation of haemin and haemochromogen crystals
5. Recording of blood pressure using a sphygmomanometer
6. Examination of sections of mammalian slides: oesophagus, stomach, duodenum, ileum, rectum liver, trachea, lung, kidney.

TEXT BOOKS

1. Marieb E.N. and Hoehn K.N. (2009) Human Physiology. Pearson Education Publication , 9th edition
2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.
3. Guyton & Hall, (2016) Textbook of Medical Physiology. Elsevier, 12th edition,

SUGGESTED READINGS

1. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
2. Vander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills.
3. Moyes C.D., Schulte PM (2016), Principles of physiology, 2nd edition, Pearson education, 3rd.
4. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. W.B. Saunders Company.

Core Paper X Biochemistry of Metabolic Processes

Unit 1: Overview of Metabolism

Catabolism vs Anabolism, Stages of catabolism, Compartmentalization of metabolic pathways, Shuttle systems and membrane transporters; ATP as "Energy Currency of cell"; coupled reactions; Use of reducing equivalents and cofactors; Intermediary metabolism and regulatory mechanisms.

Unit 2: Carbohydrate Metabolism

Sequence of reactions and regulation of glycolysis, Citric acid cycle, Phosphate pentose pathway, Gluconeogenesis, Glycogenolysis and Glycogenesis.

Unit 3: Lipid and protein Metabolism

β-oxidation and omega -oxidation of saturated fatty acids with even and odd number of carbon atoms; Biosynthesis of palmitic acid; Ketogenesis
Catabolism of amino acids: Transamination, Deamination, Urea cycle; Fate of C-skeleton of Glucogenic and Ketogenic amino acids.

Unit 4: Oxidative Phosphorylation

Redox systems; Review of mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System

PRACTICAL

1. Estimation of total protein in given solutions
2. Detection of SGOT and SGPT or GST and GSH in serum/ tissue
3. To study the enzymatic activity of Trypsin/ Lipase.
4. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
5. Dry Lab (Virtual): To trace the labelled C atoms of Acetyl-CoA till they evolve as CO_2 in the TCA cycle.

TEXT BOOKS

1. Satyanarayan and Chakrapani , (2017) Biochemistry, Elsevier; Fifth edition.
2. Cox, M.M and Nelson, D.L. (2008). Lehninger Principles of Biochemistry, VEdition, W.H. Freeman and Co., New York.

SUGGESTED READINGS

1. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw-Hill Companies Inc.
2. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007).Biochemistry, VI Edition, W.H. Freeman and Co., New York.
3. Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.

Core Paper XI Molecular Biology

Unit 1: Nucleic Acids, DNA Replication & Repair

Salient features of DNA and RNA, Watson and Crick model of DNA.,Nucleic acids cot curves, denaturation and renaturation of DNA, DNA Replication in prokaryotes and eukaryotes, mechanism of DNA replication, Semi-conservative, bidirectional and semi-discontinuous replication, RNA priming, Replication of circular and linear ds-DNA, replication of telomeres, Pyrimidine dimerization and mismatch repair.

Unit 2: Transcription & Translation

RNA polymerase and transcription Unit, mechanism of transcription in prokaryotes and eukaryotes, synthesis of rRNA and mRNA, transcription factors and regulation of transcription.

Genetic code, Degeneracy of the genetic code and Wobble Hypothesis; Process of protein synthesis in prokaryotes: Ribosome structure and assembly in prokaryotes, fidelity of protein synthesis, aminoacyl tRNAsynthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Inhibitors of protein synthesis; Difference between prokaryotic and eukaryotic translation.

Unit 3: Post Transcriptional Modifications and Processing of Eukaryotic RNA

Structure of globin mRNA; Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing, Processing of tRNA.

Unit 4: Gene Regulation & Regulatory RNAs

Transcription regulation in prokaryotes: Principles of transcriptional regulation with examples from lac operon and trp operon; Transcription regulation in eukaryotes: Activators, repressors, enhancers, silencer elements; Gene silencing, RNA interference, miRNA, siRNA.

PRACTICAL

1. Study of Polytene chromosomes from *Chironomous / Drosophila* larvae
2. Preparation of liquid culture medium (LB) and raise culture of E. coli
3. Estimation of the growth kinetics of E. coli by turbidity method
4. Preparation of solid culture medium (LB) and growth of E. coli by spreading and streaking
5. Quantitative estimation of Salmon sperm/calf thymus DNA using colorimeter (Diphenylamine reagent) or spectrophotometer (A_{260}nm measurement)

6. Quantitative estimation of RNA using Orcinol reaction
7. Study and interpretation of electron micrographs/ photograph showing
(a) DNA replication, (b) Transcription and (c) Split genes.

TEXT BOOKS

1. Karp, G. (2010) Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. Lewin B. (2013). Gene XI, Jones and Bartlett.
3. De Robertis E.D.P. (2017) Cell and Molecular Biology 8Ed.
4. Arnold Berk , Chris A. Kaiser, Harvey Lodish , Angelika Amon , Hidde Ploegh, Anthony Bretscher, Monty Krieger Kelsey C. Martin(2016) Molecular Cell Biology. 8th edition.

SUGGESTED READINGS

1. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
2. Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter: Molecular Biology ofthe Cell, IV Edition.
3. Cooper G. M. and Robert E. Hausman R. E. The Cell: A Molecular Approach**,** V Edition, ASM Press and Sinauer Associates.
4. McLennan A., Bates A., Turner, P. and White M. (2015). Molecular Biology IV Edition. GS, Taylor and Francis Group, New York and London.

Core Paper XII

Principles of Genetics

Unit 1: Mendelian Genetics, Linkage, Crossing Over and Chromosomal Mapping Principles of inheritance, Incomplete dominance and co-dominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Sex-linked, sex-influenced and sex-limited characters inheritance. Polygenic inheritance with suitable examples; simple numericals based on it.

Linkage and crossing over, Cytological basis of crossing over, Molecular mechanisms of crossing over including models of recombination, Recombination frequency as a measure of linkage intensity, Two factor and three factor crosses, Interference and coincidence, Somatic cell hybridization.

Unit 2: Mutations

Types of gene mutations (Classification), Types of chromosomal aberrations (Classification, figures and with one suitable example of each), Molecular basis of mutations in relation to UV light and chemical mutagens; Detection of mutations: CLB method, attached X method.

Unit 3: Sex Determination & Extra-chromosomal Inheritance

Chromosomal mechanisms of sex determination in *Drosophila* and Man; Criteria for extra-chromosomal inheritance, Antibiotic resistance in *Chlamydomonas*, Mitochondrial mutations in *Saccharomyces*, Infective heredity in *Paramecium* and Maternal effects.

Unit 4: Recombination in Bacteria and Viruses & Transposable Genetic Elements

Conjugation, Transformation, Transduction, Complementation test in Bacteriophage. Transposons in bacteria, Ac-Ds elements in maize and P elements in Drosophila, Transposons in human.

PRACTICAL

1. Study of Mendelian laws and geneinteractions.
2. Linkage maps based on data from conjugation, transformation and transduction.
3. Linkage maps based on data from *Drosophila* crosses.
4. Study of human karyotype (normal and abnormal).
5. Pedigree analysis of some human inherited traits.

TEXT BOOKS

1. Benjamin Pierce, (2015) Genetics- A Conceptual Approach, 5th edition, WH Freeman publication
2. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition.

SUGGESTEDREADINGS

1. Benjamin Cummings. Russell, P. J. (2009). Genetics- A Molecular Approach.III Edition.
2. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.
3. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B.Introduction to Genetic Analysis. IX Edition. W. H. Freeman and Co.
4. Fletcher H. and Hickey I. (2015). Genetics. IV Edition. GS, Taylor and Francis Group, New York and London.

Core Paper XIII

Developmental Biology

Unit 1: Introduction to Developmental Biology, Gametogenesis & Fertilization

Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division. Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy.

Unit 2: Early Embryonic Development

Cleavage: Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers.

Unit 3: Late Embryonic Development

Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta).

Unit 4: Post Embryonic Development & Implications of Developmental Biology

Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories. Teratogenesis: Teratogenic agents and their effects on embryonic development; In vitro fertilization, Stem cell (ESC), Amniocentesis.

PRACTICAL

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages).
2. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages).
3. Study of the developmental stages and life cycle of *Drosophila* from stock culture.
4. Study of different sections of placenta (photomicropgraph/ slides).
5. Project report on *Drosophila* culture/chick embryo development.
6. Study of developmental stages by raising chick embryo in thelaboratory

TEXT BOOKS

1. Lewis Wolpert (2010). Principles of Development. II Edition, Oxford University Press.
2. Gilbert, S. F. (2017). Developmental Biology, XI Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.

SUGGESTED READINGS

1. Carlson, R. F. Patten's Foundations of Embryology.
2. Kalthoff (2008). Analysis of Biological Development, II Edition, McGraw-Hill Publishers.
3. Verma PS and Agrawal VK, Chordata Embryology (2010) (S Chand Publication).

Core Paper XIV

Evolutionary Biology

Unit 1: Theories, Evidences of Evolution and Extinction

Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of eukaryotes. Historical review of evolutionary concept: Lamarckism, Darwinism, Neo- Darwinism.Evidences of Evolution: Fossil record (types of fossils, transitional forms, geological time scale, evolution of horse, Sources of variations: Heritable variations and their role in evolution. Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction.

Unit 2: Process of Evolutionary changes

Population genetics: Hardy-Weinberg Law (statement and derivation of equation, application of law to human Population); Evolutionary forces upsetting H-W equilibrium; Natural selection (concept of fitness, selection coefficient, derivation of one unit of selection for a dominant allele, genetic load, mechanism of working, types of selection, density-dependent selection, heterozygous superiority, kin selection, adaptive resemblances, sexual selection). Genetic Drift (mechanism, founder's effect, bottleneck phenomenon); Role of Migration and Mutation in changing allele frequencies.

Unit 3: Species concept and Speciation

Product of evolution: Micro evolutionary changes (inter-population variations, clines, races, Species concept, Isolating mechanisms, modes of speciation—allopatric, sympatric, Parapatric. Adaptive radiation / macroevolution (exemplified by Galapagos finches);

Unit 4: Concept of Origin and Evolution of man

Origin and evolution of man, Unique hominin characteristics contrasted with primate characteristics, primate phylogeny from *Dryopithecus* leading to *Homo sapiens*, molecular analysis of human origin. Phylogenetic trees, Multiple sequence alignment, construction and interpretation of phylogenetic trees.

PRACTICAL

1. Study of fossils from models/ pictures
2. Study of homology and analogy from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Demonstration of role of natural selection and genetic drift in changing allele frequencies using simulation studies
5. Graphical representation and interpretation of data of height/ weight of a sample of 100 humans in relation to their age and sex.
6. Construction of phylogenetic trees with the help of bioinformatics tools (Clustal X, Phylip, NJ) and its interpretation.

TEXT BOOKS

1. Campbell, N.A. and Reece J.B (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
2. Rastogi B.B., (2018). Organic Evolution, MedTech; 3rd edition

SUGGESTED READINGS

1. B.K. and Hallgrimson, B. (2008). Evolution IV Edition. Jones and Barlett Publishers.
2. Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates. Snustad. S Principles of Genetics.
3. Ridley,M (2004) Evolution III Edition Blackwell publishing Hall.

Discipline Specific Elective Paper-1 Animal

Behaviour and Chronobiology

Unit 1: Animal Behaviour

Origin and history of Ethology; Brief profiles of Karl von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen; Proximate and ultimate behavior; Objective of behaviour, Behaviour as a basis of evolution; Behaviour as a discipline of science; Innate behaviour, Instinct, Stimulus filtering, Sign stimuli and Code breakers.

Unit 2: Patterns of Behaviour

Stereotyped Behaviours (Orientation, Reflexes); Individual behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and operant conditioning, Habituation, Imprinting.

Unit 3: Social and Sexual Behaviour

Social Behaviour: Concept of Society; Communication and the senses; Altruism; Insects' society with Honey bee as example; Foraging in honey bee and advantages of the waggle dance.

Sexual Behaviour: Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in

parental care.

Unit 4: Chronobiology

Historical developments in chronobiology; Biological oscillation: the concept of Average, amplitude, phase and period. Adaptive significance of biological clocks, Relevance of biological clocks, Types and characteristics of biological rhythms: Short- and Long-term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin.

PRACTICAL

1. To study nests and nesting habits of the birds and social insects.
2. To study the behavioural responses of wood lice in dry and humid condition.
3. To study geotaxis behaviour in earthworm.
4. To study the phototaxis behaviour in insectlarvae.
5. Study and actogram construction of locomotor activity of suitable animal models.
6. Study of circadian functions in humans (daily eating, sleep and temperature patterns).
7. Visit to Forest/ Wild life Sanctuary/Biodiversity Park/Zoological Park to study behavioral activities of animals and prepare a short report.

TEXT BOOKS

1. John A (2009) Animal Behaviour.9th edition, Sinauer Associate Inc., USA.
2. Vinod Kumar (2002) Biological Rhythms: Narosa Publishing House, Delhi/ Springer-Verlag, Germany.

SUGGESTED READINGS

1. AK Pati. Chronobiology: The Dimension of Time in Biology and Medicine. PINSA (Bilogical Sciences). Part B 67 (6). 323-372, Dec., 2001.
2. David McF. Animal Behaviour. Pitman Publishing Limited, London, UK.
3. Manning A and Dawkins MS. An Introduction to Animal Behaviour. Cambridge University Press, USA.
4. Paul WS and John A (2013) Exploring Animal Behaviour. 6th Edition. Sinauer Associate Inc., Massachusetts, USA.
5. Jay. C. Dunlap, Jennifer. J. Loros, Patricia J. DeCoursey (ed). 2004, Chronobiology Biological Timekeeping: J, Sinauer Associates, Inc. Publishers, Sunderland, MA, USA.

OR

Animal Biotechnology

Unit 1. Introduction to Animal Biotechnology

Concept and scope of biotechnology, Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC and Expression vectors (characteristics).
Restriction enzymes: Nomenclature, detailed study of Type II, Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Transformation techniques: Calcium chloride method and electroporation

Unit 2. Molecular Techniques

Southern, Northern and Western blotting, DNA sequencing: Sanger method Polymerase Chain Reaction, DNA Finger Printing and DNA microarray

Unit 3. Genetically Modified Organisms

Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection, Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock-out mice.

Unit 4. Culture Techniques and Applications

Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Thalassemia, Haemophilia and Sickle cell anemia),Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy.

PRACTICAL

1. Genomic DNA isolation from *E. coli* / Animal tissue
2. Plasmid DNA isolation (pUC 18/19) from *E. coli*
3. Restriction digestion of plasmid DNA / Lambda Phage DNA
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from the data provided.
6. To study following techniques through photographs
    a. Southern Blotting
    b. Northern Blotting
    c. Western Blotting
    d. DNA Sequencing (Sanger's Method)
    e. PCR
    f.DNA fingerprinting

TEXT BOOKS

1. BD Singh, (2014) Biotechnology: Expanding Horizons, Kalyani Publishers
2. U.Satyanarayan and U Chakrapani, (2014) Biotechnology, Books & Allied Ltd

SUGGESTED READINGS

1. Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). An Introduction to GeneticAnalysis. IX Edition. Freeman and Co., N.Y.,USA.
2. Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007). Recombinant DNA- Genes and Genomes- AShort Course. III Edition, Freeman and Co., N.Y.,USA.
3. Brown, T.A. (2015). Gene Cloning and DNA Analysis. 7th Edition, Academic Press, California, USA.

OR

ENDOCRINOLOGY

Unit 1: **Introduction to Endocrinology**

History of endocrinology, Types of endocrine glands and hormones, Characteristic and Transport of Hormones, Neurosecretions and Neurohormones.

Unit 2: Epiphysis, Hypothalamo-hypophysial Axis

Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction. Structure of hypothalamus, Hypothalamic nuclei and their functions, Regulation of neuroendocrine glands, Feedback mechanisms Structure of pituitary gland, Hormones and their functions, Hypothalamohypophysial portal system, Disorders of pituitary gland.

Unit 3: Peripheral Endocrine Glands

Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Adrenal, Pancreas. Structure, Hormones, Functions and Regulation of Ovary and Testis. Hormones in homeostasis, Disorders of endocrine glands.

Unit 4: Regulation of Hormone Action

Hormone action at Cellular level: Hormone receptors, transduction and regulation Hormone action at Molecular level: Molecular mediators, Genetic control of hormone action.

PRACTICAL

1. Dissect and display of Endocrine glands in laboratory bredrat*
2. Study of the permanent slides of all the endocrine glands
3. Compensatory ovarian/ adrenal hypertrophy in vivo bioassay in laboratory bredrat*
4. Demonstration of Castration/ ovariectomy in laboratory bred rat*
5. Estimation of plasma level of any hormone using ELISA
6. Designing of primers of any hormone
7. Report on endocrine disorders in human

(*Subject to UGC guidelines)

TEXT BOOKS

1. C. Donnell Turner (2012) General Endocrinology Pub- Affiliated East-West press Pvt. Ltd.-New Delhi; 6th Edition
2. Hadley, M.E. and Levine J.E. (2007). Endocrinology, 6th Edition. Pearson Prentice-Hall, Pearson Education Inc., New Jersey

SUGGESTED READINGS

1. Stephen Nussey and Saffron Whitehead (2001). Endocrinology: An Integrated Approach; Oxford: BIOS Scientific Publishers

Discipline Specific Elective Paper-

1I Basics of Neuroscience

Unit 1: Introduction to Neuroscience & Nervous System

Origins of Neuroscience; Neuroanatomy, Neurophysiology, and Systems Neurobiology. Introduction to the structure and function of the nervous system: Cellular components: Neurons; Neuroglia; Neuron doctrine; The prototypical neuron – axons and dendrites as unique structural components of neurons.

UNIT 2: Cellular and Molecular Neurobiology

Molecular and cellular approaches used to study the CNS at the level of single molecules, The ionic bases of resting membrane potential; The action potential- its generation and properties; The action potential conduction. Synapse: Synaptic transmission, Types of synapses; synaptic function; Principles of chemical synaptic transmission; Principles of synaptic integration; EPSPs and IPSPs. Ion channels, Neural transmission.

Unit 3. Neurotransmitters

Different types of neurotransmitters– catecholamines, amino acidergic and peptidergic neurotransmitters; Transmitter gated channels; G-protein coupled receptors and effectors,

neurotransmitter receptors; Ionotropic and metabotropic receptors.

UNIT 4: Neurobiology and Neuropharmacology of Behaviour

The principles of signal transduction and information processing in the vertebrate central nervous system, and the relationship of functional properties of neural systems with perception and behavior; sensory systems, molecular basis of behavior including learning and memory. Molecular pathogenesis of pain and neurodegenerative diseases such as Parkinson's, Alzheimer's, psychological disorders, Addiction.

PRACTICAL

1. Dissection and study of *Drosophila* nervous system using GFPreporter.
2. Observation and quantitation of *Drosophila* photoreceptor neurons in healthy and diseased condition.
3. Nerve Cell preparation from the spinal cord.
4. Study of neurons and/ or myelin by Nissl, Giemsa or Luxol Fast Blue staining.
5. Study of olfaction in Drosophila.
6. Study of novelty, anxiety and spatial learning in mice.

TEXT BOOKS

1. Kandel, Schwartz and Jessell (2000) Principles of Neural Science-4th Edn-Eds. - McGraw- Hill Companies
2. Mark F. Baer; Barry W. Connors,(2015) Neuroscience: Exploring the brain . Lippincott Williams and Wilkins

SUGGESTED READINGS

1. From Molecules to Networks: An Introduction to Cellular and Molecular Neuroscience by John H. Byrne. Ruth Heidelberg and M. Neal Waxham.
2. Neuroscience-Eds. Dale Purves (3rd Edn)-Sinauer Associates, Inc.-2004.
3. Nerve Cells and Animal Behaviour-2nd Edn-Peter J Simmons and David Young-CUP-2003.
4. Essential Psychopharamacology- Neuroscientific Basis and Practical Applications-2nd Edn.-Stephan M. Stahl-CUP-2000.
5. Phantoms in the Brain - Vilayanur S. Ramachandran and Sandra Blakeslee-1998 The Human Brain Book - Rita Carter-2009

OR

Reproductive Biology

Unit 1: Reproductive System and Endocrinology

Reproductive System: Development and differentiation of gonads, genital ducts, external genitalia,mechanism of sex differentiation.

Gonadal hormones and mechanism of hormone action, steroids, glycoprotein hormones, and prostaglandins, hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in male and female.

Unit 2: Functional anatomy of male reproduction

Outline and histology of male reproductive system in rat and human; Testis: Cellular functions, germ cell, system cell renewal; Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism; Epididymal function and sperm maturation; Accessory glands functions; Sperm transportation in male tract

Unit 3: Functional anatomy of female reproduction

Outline and histology of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (rat and human) and their regulation, changes in the female tract; Ovum transport in the fallopian tubes; Sperm transport in the female tract, fertilization, prevention of polyspermy; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto- maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation

Unit 4: Reproductive Health

Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning.

PRACTICAL

Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.

1. Examination of vaginal smear rats from live animals.
2. Surgical techniques: principles of surgery in endocrinology. Ovarectomy, hysterectorny, castration and vasectomy in rats.
3. Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
4. Human vaginal exfoliate cytology.
5. Sperm count and sperm motility in rat
6. Study of modern contraceptive devices.

TEXT BOOKS

1. Austin, C.R. and Short, R.V. (1982) Reproduction in Mammals. Cambridge University Press.
2. C. Donnell Turner (2012) General Endocrinology Pub- Affiliated East-West press Pvt. Ltd.-New Delhi; 6th Edition
3. Tandulwadkar Sunita R (2015) The Art & Science of Assisted Reproductive Technology,Jaypee Brothers Medical Publishers

SUGGESTED READINGS

1. Tony M. Plant and Anthony J. Zeleznik (2015) Knobil and Neill's Physiology of Reproduction, Academic Press

OR

Immunology

Unit 1: Innate and Adaptive Immunity

Historical perspective of Immunology, Early theories of Immunology, Cells and organs of the Immune system. Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral), Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune dysfunctions (brief account of autoimmunity with reference to Rheumatoid Arthritis and tolerance, AIDS).

Unit 2: Antigens and Immunoglobulins

Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes, Immunoglobulins: Structure and functions of different classes of immunoglobulins, Antigen antibody interactions, Immunoassays (ELISA- Direct, Indirect, Competitive, Sandwich and RIA)

Unit 3: Major Histocompatibility Complex, Cytokines and Complement system

Structure and functions of MHC molecules. Endogenous and exogenous pathways of antigen processing and presentation; Cytokines -Properties and functions of cytokines, Therapeutics Cytokines Complement System -Components and pathways of complement activation.

Unit 4: Hypersensitivity and Vaccines

Gell and Coombs' classification and brief description of various types of hypersensitivities Vaccines -**v**arious types of vaccines, Advances in vaccine production.

PRACTICAL

1. Study of lymphoid organs.
2. Histological study of spleen, thymus and lymph nodes through slides/ photographs
3. Preparation of stained blood film to study various types of White blood cells.
4. ABO blood group determination.
5. Total WBC counting.
6. Demonstration of ELISA.
7. Demonstration of Bone marrow smears to study Immune cells.

TEXT BOOKS

2. Abbas K. Abul and Lechtman H. Andrew (2017) Cellular and Molecular Immunology. V Edition. Saunders Publication.
3. Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2017). Immunology, VI Edition. W.H. Freeman and Company.

SUGGESTED READINGS

1. Peter J. Delves and Seamus J. Martin (2017) Roitt′s Essential Immunology, Wiley-Blackwell; 13th edition

Discipline Specific Elective Paper-

III Fish and Fisheries

Unit 1: Systematics, Morphology and Physiology

Systematic classification of native/exotic fishes (upto classes), Types of fins and their modification; Locomotion in fishes; Hydrodynamics; Types of scales, Use of scales in classification and determination of age of fish; Gills and gas exchange; Swim bladder; Reproductive strategies (Special reference to Indian fishes); Electric organs; Bioluminescence; Mechanoreceptors; Schooling; Migration

Unit 2: Fisheries

Inland fisheries; Marine fisheries; Environmental factors influencing the seasonal variation in fish; Fishing crafts and Gears; Depletion of Fisheries resources; Fisheries laws and regulations.

Unit 3: Aquaculture

Sustainable aquaculture; Extensive, semi-intensive and intensive culture of fish; Polyculture; Composite fish culture; brood stock management; Induced breeding of fish; Management of fin fish hatcheries; Preparation and maintenance of fish aquarium. Factors affecting aquaculture.

Unit 4:Fish Pathology and Transgenesis

Fish diseases: bacterial, viral and parasites; Preservation, diagnosis and treatment, Processing of harvested fish, Fishery byproducts; Transgenic fish, zebrafish as a model organism in research.

PRACTICAL

1. Study of *Petromyzon, Myxine, Pristis, Chimaera, Exocoetus, Hippocampus, Gambusia, Labeo, Heteropneustes, Anabas*
2. Study of different types of scales (Through permanent slides and photographs)
3. Study of crafts and gears used in fisheries.
4. Water quality criteria for aquaculture: assessment of pH, conductivity, total solids and total dissolve solids.
5. Study of air breathing organs in *Channa, Heteropneustes, Anabas and Clarias*.
6. Demonstration of induced breeding in fishes (Virtual).
7. Demonstration of parental care in fishes (Virtual).
8. Project report on a visit to any fish farm/ pisciculture unit/ zebra fish rearing lab

TEXT BOOKS

1. Q Bone and R Moore (2008), Biology of fishes, Taylor and Francis group, CRC Press, UK
2. S.S. Khanna and H.R. Singh (2014) A textbook of fish biology and fisheries, Narendra Publishing House, 3rd edition.

SUGGESTED READINGS

1. D H Evans and J D Claiborne, The Physiology of fishes, Taylor and Francis group, CRC, UK
2. R J Mogdans and B G Kapoor, The senses of fish: Adaptations for the reception of natural stimuli, Springer, Natherland
3. C B L Srivastava, Fish biology, Narendra Publishing House
4. J R Norman, A History of fishes, Hill and Wang Publishers.

OR

Wildlife Conservation And Management

Unit 1:

Wildlife

Values of wild life - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies, Conservation and protection Laws, wild animal of India and Odisha.

Habitat analysis, Physical parameters: Topography, Geology, Soil and water; Biological Parameters: food, cover, forage, browse and cover estimation; Standard evaluation procedures: remote sensing and GIS.

Unit 2: Management of habitats

Setting back succession; Grazing logging; Mechanical treatment; Advancing thesuccessional process; Cover construction; Preservation of general genetic diversity;Restoration of degraded habitats, In situ and Ex situ conservation, Wild life Protection act, wildlife trade and related laws.

Unit 3: Population estimation

Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, Hair identification, Census methods; Bio- telemetry; Care of injured and diseased animal; Quarantine; Common diseases of wild animals.

Unit 4: Management planning of wildlife in protected areas

Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence; Ecology of perturbence, National parks & sanctuaries, Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.

PRACTICAL

1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna India and Odisha.
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System,Various types of Cameras and lenses).
3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, animal sounds.
4. Demonstration of different field techniques for flora and fauna.
5. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences)
6. Submission of field study report (national park/ reserve forest/ sanctuary)

TEXT BOOKS

1. Gopal Rajesh (2011) Fundamentals of Wildlife Management, Natraj Publishers.
2. Caughley, G., and Sinclair, A.R.E. (1994). Wildlife Ecology and Management. Blackwell Science.

SUGGESTED READINGS

1. Woodroffe R., Thirgood, S. and Rabinowitz, A. (2005). People and Wildlife, Conflict or Co-existence? Cambridge University.
2. Bookhout, T.A. (1996). Research and Management Techniques for Wildlife and Habitats, 5 th edition. The Wildlife Society, Allen Press.
3. Sutherland, W.J. (2000). The Conservation Handbook: Research, Management and Policy. Blackwell Sciences.
4. Hunter M.L., Gibbs, J.B. and Sterling, E.J. (2008). Problem-Solving in Conservation Biology and Wildlife Management: Exercises for Class, Field, and Laboratory.Blackwell Publishing.

Discipline Specific Elective Paper-

IV Economic Zoology

Unit 1: Bee-keeping and Bee Economy (Apiculture)

Varieties of honey bees and Bee pasturage; Setting up an apiary: Langstroth's/Newton's hive, bee veil, brood and storage chambers, iron frames and comb sheets, drone excluder, rearing equipments, handling of bees, artificial diet; Honey extraction techniques; Physico-chemical analysis of honey; Other beneficial products from bee.

Unit 2: Silk and Silk Production (Sericulture)

Different types of silk and silk worms in India; Rearing of *Bombyx mori*, Rearing racks and trays, disinfectants, rearing appliances, black boxing, Chawki rearing, bed cleaning, mountages, harvesting of cocoons; Silkworm diseases: Pebrine, Flacherie, Grasserie, Muscardine and Aspergillosis, and their management; Silkworm pests and parasites: Uzi fly, Dermestid beetles and their management; Silk reeling techniques and Quality assessment of silk fibre.

Unit 3: Aquaculture

Induced breeding of fish; Management of hatchery of fish; Management of nursery, rearing and stocking ponds; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases: Bacterial, viral and parasitic; Preservation and processing of harvested fish; Fishery by-products. Prawn farming; Culture of crab; Pearl culture.

Unit 4: Dairy and Poultry Farming

Introduction; Indigenous and exotic breeds; Rearing, housing, feed and rationing; Commercial importance of dairy and poultry farming; Varietal improvement techniques; Diseases and their management; Dairy or poultry farm management and business plan; Visit to any dairy farm or Poultry farm.

PRACTICAL

1. Submission of report on anyone field visits related to Aquaculture/Apiculture/ Sericulture/Poultry/ Dairy farm.
2. Study of different types of bees (Queens, Drones and Worker bees).
3. Study of different types of silk moths.
4. Study of different types of pearls.
5. Study of different types of fish diseases.

6. Identification of different types of scales in fishes.
7. Study of different types of fins.
8. Study of different modified structures of fishes (Saw of sawfish, Hammer of hammer head fish, tail of sharks etc.)
9. Identification of various types of natural silks.

TEXT BOOKS

1. Sarkar, Kundu and Chaki. (2014) Introduction to Economic Zoology. NCBA Publisher.
2. T.V.R. Pillay (Author), M.N. Kutty (2011) Aquaculture: Principles and Practices, Wiley India Pvt Ltd; Second edition

SUGGESTED READINGS

1. Dhyan Singh Bisht, Apiculture, ICAR Publication.
2. Dunham RA (2004) Aquaculture and Fisheries Biotechnology – Genetic Approaches. CABI publications, U.K.
3. Hafez ESE (1962) Reproduction in Farm Animals. Lea and Fabiger Publishers.
4. Knobil E and Neill JD (2006) The Physiology of Reproduction. Vol.2. Elsevier Publishers, USA.
5. Prost PJ (1962) Apiculture. Oxford and IBH, New Delhi.
6. Singh S. Beekeeping in India, Indian council of Agricultural Research, New Delhi.
7. Srivastava CBL (1999) Fishery Science and Indian Fisheries. Kitab Mahal publications, India.

OR

Project Work

Each student has to undertake a project work under the guidance of a teacher and submit the project report in the form of a thesis. There will be a presentation of the project work before an external examiner.

Generic Elective Paper

I Animal Diversity

Unit 1: Protista, Porifera, Radiata, Aceolomates and Pseudocoelomates

General characters of Protozoa; Life cycle of *Plasmodium,* General characters and canal system in Porifera, General characters of Cnidarians and polymorphism, General characters of Helminthes; Life cycle of *Taenia solium*, General characters of Nemethehelminthes; Parasitic adaptations

Unit 2: Coelomate Protostomes, Arthropoda, Mollusca and Coelomate Deuterostomes

General characters of Annelida, Metamerism, General characters, Social life in insects,General characters of mollusca, torsion in gastropod, pearl formation, General characters of Echinodermata, larval form in Echinodermata.

Unit 3: Protochordata , Pisces, Amphibia

Salient features, Osmoregulation, Migration of Fishes, General characters, Adaptations for terrestrial life, Parental care in Amphibia.

Unit 4: Reptiles, Aves and Mammals

Amniotes, Origin of reptiles, Terrestrial adaptations in reptiles, Origin of birds; Flight adaptations, early evolution of mammals; Primates; Dentition in mammals.

PRACTICAL

1. Study of following specimens:

Non Chordates*: Euglena, Noctiluca, Paramecium, Sycon, ,Physalia, Tubipora,*

Metridium, Taenia, Ascaris, Nereis, Aphrodite, Leech, Peripatus, T. gigas, Limulus, Hermitcrab, Daphnia, Millipede, Centipede, Beetle, *Chiton, Dentalium, Octopus, Asterias* and *Antedon*.

Chordates: *Balanoglossus, Amphioxus, Petromyzon, Pristis, Hippocampus, Labeo, Icthyophis/Uraeotyphlus, Salamander, Rhacophorus Draco, Uromastix, Naja, Viper*, model of *Archaeopteryx*, any three common birds-(Crow, duck, Owl), Squirrel and Bat.

2. Study of following Permanent Slides:

Cross section of *Sycon*, Sea anemone and *Ascaris* (male and female). T. S. of Earthworm passing through pharynx, gizzard, and typhlosolar intestine. Bipinnaria and Pluteus larva

3. Temporary mounts of Septal & pharyngeal nephridia of earthworm.

Unstained mounts of Placoid, cycloid and ctenoid scales.

TEXT BOOKS

1. Kotpal RL. (2016) Modern Textbook of Zoology –Vertebrates; Rastogi Publications – Meerut.
2. Kotpal RL.(2016) Modern Textbook of Zoology –Invertebrates; Rastogi Publications – Meerut.

SUGGESTED READINGS

1. Barnes, R.D. (1992). Invertebrate Zoology. Saunders College Pub. USA.
2. Campbell & Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.
3. Raven, P.H. and Johnson, G. B. (2004). Biology, 6th edition, Tata McGraw Hill Publications, New Delhi.
4. Kardong, K.V. (2002). Vertebrates Comparative Anatomy. Function and Evolution. Tata McGraw Hill Publishing Company. New Delhi.

OR

Insect Vectors and Diseases

Unit 1: Insects, Concept of Vectors, Insects as Vectors

General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth parts with reference to. feeding habits, Brief introduction of Carrier and Vectors (mechanical and biological vector),Reservoirs, Host-vector relationship, Vectorial capacity, Adaptations as vectors, Host Specificity, Classification of insects up to orders, detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera

Unit 2: Dipteran as Disease Vectors

Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies; Study of mosquito- borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis; Control of mosquitoes Study of sand fly-borne diseases – Visceral Leishmaniasis, Cutaneous Leishmaniasis, Phlebotomus fever; Control of Sand fly, Study of house fly as important mechanical vector, Myiasis, Control of house fly

Unit 3: Siphonaptera and Siphunculata as Disease Vectors

Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas, Human louse (Head, Body and Pubic louse) as important insect vectors; Study of louse-borne diseases –Typhus fever, Relapsing fever, Trench fever, Vagabond's disease, Phthiriasis; Control of human louse

Unit 4: Hempitera as Disease Vectors

Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures

PRACTICAL

1. Study of different kinds of mouth parts of insects
2. Study of following insect vectors through permanent slides/ photographs: *Aedes, Culex, Anopheles, Pediculushumanuscorporis, Phithirus pubis, Xenopsylla cheopis, Cimexlectularius, Phlebotomus argentipes, Musca domestica* through permanent slides/ photographs
3. Study of different diseases transmitted by above insect vectors.
4. Submission of a project report on any one of the insect vectors and disease transmitted.

TEXT BOOKS

1. Mathews, G. (2011). Integrated Vector Management: Controlling Vectors of Malaria and Other Insect Vector Borne Diseases. Wiley-Blackwel
2. Chapman, R.F. (1998). The Insects: Structure and Function. IV Edition, Cambridge University Press, UK

SUGGESTED READINGS

1. Mike Service (2012) Medical Entomology for StudentsCambridge University Press; 5th edition.
2. Pedigo L.P. (2002). Entomology and Pest Management. Prentice Hall Publication

5

UNIT 1: Aquatic Biomes

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, Streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs

UNIT 2: Freshwater Biology

Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification,
Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes-Nitrogen, Sulphur and Phosphorous

Streams: Different stages of stream development, Physico-chemical, environment, Adaptation of hill-stream fishes.

UNIT 3: Marine Biology

Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

UNIT 4: Management of Aquatic Resources

Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD.
015

PRACTICAL

1. Determine the area of a lake using graphimetric and gravimetricmethod.
2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, Free, Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from nearby lake/ water body.
4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
5. A Project Report on a visit to a Sewage treatment plant/Marine bioreserve/ Fisheries Institutes.

TEXT BOOKS

1. Wetzel RG (2001)Limnology: Lake and River Ecosystems, Academic Press; 3rd edition

SUGGESTED READINGS

1. Anathakrishnan : Bioresources Ecology 3rd Edition
2. Odum and Barrett : Fundamentals of Ecology, 5th Edition
3. Pawlowski: Physicochemical Methods for Water and Wastewater Treatment, 1st Edition
4. Trivedi and Goyal : Chemical and biological methods for water pollution studies
5. Welch : Limnology Vols. I-II

OR

Food, Nutrition And Health

Unit 1: Basic concept of food and nutrition

Food Components and food-nutrients, Concept of a balanced diet, nutrient needs and dietary
pattern for various groups, adults, pregnant and nursing mothers, infants, school children, adolescents and elderly

Unit 2: Nutritional Biochemistry:

Carbohydrates, Lipids, Proteins- Definition, Classification, their dietary source and role Vitamins- Fat-soluble and Water-soluble vitamins- their dietary source and importance Minerals- Iron, calcium, phosphorus, iodine, selenium and zinc: their biological functions

Unit 3: Health

Introduction to health- Definition and concept of health, Major nutritional Deficiency diseases- Protein Energy Malnutrition (kwashiorkor and marasmus), Vitamin A deficiency disorders, Iron deficiency disorders, Iodine deficiency disorders- their causes, symptoms, treatment, prevention and government programmes, if any. Life style related diseases- hypertension, diabetes mellitus, and obesity- their causes and prevention through dietary and lifestyle modifications, Social health problems- smoking, alcoholism, drug dependence and Acquired Immuno Deficiency Syndrome (AIDS) - their causes, treatment and prevention, Common ailments- cold, cough, and fevers, their causes and treatment

Unit 4: Food hygiene:

Potable water- sources and methods of purification at domestic level Food and Water borne infections: **Bacterial infection**: Cholera, typhoid fever, dysentery; **Viral infection**: Hepatitis, Poliomyelitis, **Protozoan infection**: amoebiasis, giardiasis; **Parasitic infection**: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention. Brief account of food spoilage: Causes of food spoilage andtheir preventive measures

01

PRACTICAL

1. To detect adulteration in a) Ghee b) Sugars c) Tea leaves and d) Turmeric
3. Estimation of Lactose in milk
4. Ascorbic acid estimation in food by titrimetry
5. Estimation of Calcium in foods by titrimetry
6. Study of the stored grain pests from slides/ photograph (*Sitophilus oryzae*, *Trogoderma granarium*, *Callosobruchus chinensisand Tribolium castaneum*): their identification, habitat and food sources, damage caused andcontrol. Preparation of temporary mounts of the above stored grain pests.
7. Project- Undertake computer aided diet analysis and nutrition counseling for different age groups. OR Identify nutrient rich sources of foods **(fruits and vegetables),** their seasonal availability and price OR Study of nutrition labeling on selected foods

TEXT BOOKS

1. Mudambi, SR and Rajagopal, MV (2018). Fundamentals of Foods, Nutrition and Diet Therapy; Sixth Ed; New Age International Publishers.
2. Bamji MS, Rao NP, and Reddy V.(2017) Text Book of Human Nutrition; Oxford &

IBH Publishing Co. Pvt Ltd., 4th edition

SUGGESTED READINGS

1. Srilakshmi B. Nutrition Science; 2002; New Age International (P) Ltd.
2. Srilakshmi B. Food Science; Fourth Ed; 2007; New Age International (P) Ltd.
3. Swaminathan M. Handbook of Foods and Nutrition; Fifth Ed; 1986; BAPPCO

Generic Elective Paper III Human Physiology

Unit 1: Digestion and Respiratory Physiology

Structure and function of digestive glands; Digestion and absorption of carbohydrates, fats and proteins; Nervous and hormonal control of digestion (in brief), Ventilation, External and internal Respiration, Transport of oxygen and carbon dioxide in blood, Factors affecting transport of gases.

Unit 2: Functioning of Excitable Tissue (Nerve and Muscle)

Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fiber); Structure of skeletal muscle, Mechanism of muscle contraction (Sliding filament theory), Neuromuscular junction

Unit 3: Renal Physiology and Cardiovascular Physiology

Functional anatomy of kidney, Mechanism and regulation of urine formation, Structure of heart, Coordination of heartbeat, Cardiac cycle, ECG

Unit 4: Endocrine and Reproductive Physiology

Structure and function of endocrine glands (pituitary, thyroid, parathyroid, pancreas, adrenal, ovaries, and testes), Brief account of spermatogenesis and oogenesis, Menstrual cycle.

PRACTICAL

1. Preparation of temporary mounts: Neurons and Blood film.
2. Preparation of haemin and haemochromogen crystals.
3. Estimation of haemoglobin using Sahli's haemoglobinometer.
4. Examination of permanent histological sections of mammalian oesophagus, stomach, duodenum, rectum, lung, kidney, thyroid, pancreas, adrenal, testis, ovary.

TEXT BOOKS

1. Marieb EN and Hoehn K, (2015) Human Physiology, 10th global edition, Pearson Education, USA.
2. Guyton, A.C. and Hall, J.E. (2011). Textbook of Medical Physiology, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.

SUGGESTED READINGS

1. Widmaier, E.P., Raff, H. and Strang, K.T. (2008). Vander's HumanPhysiology, XI Edition, McGraw Hill.
2. Kesar, S. and Vashisht, N. (2007). Experimental Physiology, Heritage Publishers.
3. Prakash, G. (2012). Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Company Ltd.

4. Tortora, G.J. and Derrickson, B.H. (2009). Principles of Anatomy and Physiology,

XII Edition, John Wiley and Sons, Inc.

OR

Environment and Public Health

UNIT 1: Environmental hazards

Sources of Environmental hazards, hazard identification and accounting, fate of toxic and persistent substances in the environment, dose Response Evaluation, exposure Assessment.

UNIT 2: Pollution

Air, water, noise pollution sources and effects, Pollution control; Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health

Unit 3: Waste Management Technologies

Sources of waste, types and characteristics, Sewage disposal and its management,
Solid waste disposal, biomedical waste handling and disposal, nuclear waste handling and disposal, Waste from thermal power plants, Case histories on Bhopal gas tragedy, Chernobyl disaster, Seveso disaster and Three Mile Island accident and their aftermath

Unit 4 Diseases

Causes, symptoms and control of: Tuberculosis, Asthma, Cholera, Typhoid, Malaria and AIDS

PRACTICAL (Credits 2)

1. To determine pH, Cl, SO_4, NO_3 in soil and water samples from different locations.

TEXT BOOKS

1. Cutter, S.L. (1999) Environmental Risk and Hazards, Prentice-Hall of India Pvt. Ltd., New Delhi.
2. Park K (2017) Parks Text Book Of Preventive & Social Medicine, Banarsidas Bhanot Publishers

SUGGESTED BOOKS

1. Kolluru Rao, Bartell Steven, Pitblado R and Stricoff 1996. "Risk Assessment and Management Handbook", McGraw Hill Inc., New York.
2. Kofi Asante Duah 1998 "Risk Assessment in Environmental management", John Wiley and sons, Singapore.
3. Kasperson, J.X. and Kasperson, R.E. and Kasperson,R.E., 2003. Global Environmental Risks, V.N.University Press, New York,
4. Joseph F Louvar and B Diane Louver 1997 Health and Environmental Risk Analysis fundamentals with applications, Prentice Hall, New Jersey.
5. Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
6. Lakra P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence.
7. Manay MS, Shadaksharaswamy. Food-Facts and Principles; 1998; New Age International (P) Ltd.

Generic Elective Paper IV Animal Biotechnology

UNIT 1: Introduction and Techniques in Gene manipulation

Concept and Scope of Biotechnology, Outline process of genetic engineering and recombinant DNA technology, Isolation of genes, Concept of restriction and modification: Restriction endonucleases, DNA modifying enzymes, Cloning Vectors: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, HAC. Shuttle and Expression Vectors**,** Construction of Genomic libraries and cDNA libraries, Transformation techniques: microbial, plants and animals: Cloning in mammalian cells, Integration of DNA into mammalian genome- Electroporation and Calcium, Phosphate Precipitation method.

UNIT2: Animal cell Culture

Basic techniques in animal cell culture and organ culture, Primary Culture and Cell lines, Culture media- Natural and Synthetic, Stem cells, Cryopreservation of cultures.
Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, DNA sequencing: Sanger method, Polymerase chain reaction, DNA Fingerprinting and DNA microarrays

UNIT 3: Fermentation

Different types of Fermentation: Submerged & Solid state; batch, Fed batch & Continuous; Stirred tank, Air Lift, Fixed Bed and Fluidized, Downstream Processing: Filtration, centrifugation, extraction, chromatography, spray drying and lyophilization

UNIT 4: Transgenic Animal Technology and Application in Health

Production of transgenic animals: nuclear transplantation, retroviral method,
DNA microinjection method, Dolly and Polly, Development of recombinant Vaccines, Hybridoma technology, Gene Therapy, Production of recombinant Proteins: Insulin and growth hormones.

PRACTICAL

1. Packing and sterilization of glass and plastic wares for cell culture.
2. Preparation of culture media.
3. Preparation of genomic DNA from *E. coli*/animals/ human.
4. Plasmid DNA isolation (pUC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard).
5. Restriction digestion of lambda (λ) DNA using EcoR1 and Hind III.
6. Preparation of competent cells and Transformation of E. coli with plasmid DNA using CaCl2, Selection of transformants on X-gal and IPTG (Optional).
7. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays.

TEXTBOOKS

1. BD Singh, (2014) Biotechnology: Expanding Horizons, Kalyani Publishers
2. U.Satyanarayan and U Chakrapani, (2014) Biotechnology, Books & Allied Ltd

SUGGESTED READINGS

1. T.A. Brown (2008): Gene cloning and DNA analysis: An Introduction, Blackwell Science.
2. Animal Cell Culture Methods Academic Press
3. P.K. Gupta: Biotechnology and Genomics, Rastogi publishers (2017).

4. B.D. Singh: Biotechnology, Kalyani publishers, 1998 (Reprint 2001).
5. Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). An introduction to genetic analysis, IX Edition, Freeman & Co., N.Y., USA
6. Verma S A, Das S and Singh (2014) A. Laboratory Manual for Biotechnology. S Chand Publication.

OR

Cell and Molecular Biology

Unit 1: Cells and Plasma Membrane

Prokaryotic and Eukaryotic cells, Various models of plasma membrane; Transport across membranes, The Endoplasmic Reticulum; Golgi apparatus; Lysosomes; Structure and function of mitochondria

Unit 2: Nucleus, cell division

Ultra structure of nucleus; Mitosis, Meiosis, Cell cycle and its regulation

Unit 3: Nucleic Acids and DNA Replication

Salient features of DNA double helix; Watson and Crick model of DNA, Structure of RNA, tRNA, DNA Replication in prokaryotes and eukaryotes; Mechanism of DNA replication

Unit 4: Transcription and Translation

Mechanism of transcription in prokaryotes and Eukaryotes, Process of protein synthesis in prokaryotes and translation

PRACTICAL

1. Study of prokaryotic and eukaryotic cell types through permanent slides.
2. Study of mitosis and meiosis through squashing in Grasshopper.
3. Demonstration of transport through cell membrane.
4. Preparation of DNA and RNA models.
5. Demonstration of protein synthesis through models.

TEXT BOOKS

1. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). Cell and Molecular Biology. VIII Edition. Lippincott Williams and Wilkins, Philadelphia.

SUGGESTED READINGS

1. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008) Molecular Biology of the Cell. 5th Edition. Garland publishing Inc., New York.
2. Becker WM, Kleinsmith LJ, Hardin J and Bertoni G P (2009) The World of the Cell. 7th Edition. Pearson Benjamin Cummings Publishing, San Francisco.
3. Cooper GM and Hausman RE (2009) The Cell: A Molecular Approach. 5 th Edition. ASM Press, Washington D.C.
4. S Harisha (2007) Biotechnology procedures and experiments handbook., Infinity Science Press, Hingham

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Part of syllabus (ZOOLOGY B.Sc.) to be covered in Refresher Course

Theory

1. Linear and Y-shaped food chains
2. Energy flow through the ecosystem
3. Ecology in Wildlife Conservation and Management.
4. Laws of limiting factors
5. Gause's Principle with laboratory and field examples
6. Hypothesis and hypothesis testing (Chi-square test, t-test)
7. Global warming and Climate change
8. Impacts of environmental disturbances
9. Biodiversity patterns and global biodiversity hot spots; India as a mega-biodiversity nation
10. Solid waste management: Control measures of urban and industrial wastes
11. Convention on Biological Diversity (CBD)
12. Mitochondrial Respiratory Chain
13. Chemi-osmotic hypothesis
14. Cell signaling
15. Origin of chordates and Tetrapoda (Evolution of terrestrial ectotherms)
16. Adaptive radiation in mammals
17. Plate tectonic and Continental drift theory
18. Distribution of vertebrates in different realms
19. Ossification, bone growth and resorption
20. Neural receptors and transmission
21. Hypothalamus-Pituitary & Gonadal axis
22. Mechanism of hormone action
23. Structural organization of Proteins
24. Hypo-Hyperchromaticity of DNA
25. Enzyme kinetics
26. Respiratory pigments
27. Regulation of water and acid-base balance
28. Haemoglobin and haemopoiesis
29. Cardiac cycle
30. Biological oxidation reduction reactions
31. Oxidative Phosphorylation
32. Electron Transport System
33. DNA Damage & Repair
34. Regulation of transcription and translation
35. RNA editing
36. Operon concept
37. Gene silencing
38. RNA interference
39. Polygenic inheritance
40. Chromosome mapping

41. Molecular mechanisms of recombination
42. Detection of mutations
43. Molecular mechanism of sex determination in *Drosophila* and Man
44. Transposons
45. Cell-Cell interaction
46. Pattern formation
47. Differential gene expression
48. Metamorphosis and Regeneration
49. Teratogenesis
50. *In vitro* fertilization
51. Stem cell
52. Natural selection
53. Genetic drift
54. Species concept and Speciation
55. Phylogenetic trees
56. Insect vectors borne diseases and their control
57. RNA world & origin of life
58. Extinctions
59. Hardy-Weinberg Law
60. Coral reefs diversity and their role inecosystem
61. Origin and morphometry of lakes
62. Adaptation of hill-stream fishes.
63. Eutrophication and management of aquatic resources and conservation (legislations), Sewage
64. Nutritional Biochemistry
65. Life style related diseases
66. Social health problems
67. Food spoilage and their preventive measures
68. Environmental hazards
69. Effect of climate change on public health
70. Biomedical waste handling and disposal
71. Nuclear waste handling and disposal
72. Waste from thermal power plants
73. Cloning Vectors
74. Genomic libraries and cDNA libraries
75. Cloning in mammalian cells, Integration
76. Animal cell culture and organ culture
77. DNA sequencing
78. DNA Fingerprinting and DNA microarrays
79. Ttransgenic animals
80. Development of recombinant Vaccines
81. Gene Therapy
82. Artificial beehives and cross pollination
83. Aquarium Fish Industry
84. Hypertension

85. Commercial diagnostic kits
86. Research Design
87. Technical Reports and Thesis writing
88. Intellectual property Rights and Patent law
89. Plagiarism
90. Entrepreneurship in Sericulture
91. Behaviour as a basis of evolution
92. Social Behaviour in Honey bee
93. Biological clocks, and Circadian rhythms
94. Restriction enzymes
95. DNA Finger Printing
96. Transgenic animals
97. Molecular diagnosis of genetic diseases
98. Cells of the Nervous system
99. Neurotransmitters
100. Neurodegenerative diseases
101. Psychological disorders
102. MHC molecules
103. Therapeutics Cytokines
104. Complement System
105. Hypersensitivity
106. Advances in vaccine production
107. Sustainable aquaculture
108. Census methods in wildlife
109. Common diseases of wild animals 110. Eco tourism
111. Bee Economy
112. Dairy or poultry farm management and business plan
113. Developing Projects for students

Practical

1. Examination of pond water collected from different places for diversity inprotista.
2. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.
3. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.
4. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.
5. Preparation of permanent slide to demonstrate: DNA by Feulgen reaction; DNA and RNA by MGP; Mucopolysaccharides by PAS reaction; Proteins by Mercuric bromophenol blue/Fast Green
6. Microtomy: Preparation of permanent slides/photographs/computer models of any five types of mammalian (Goat/rat,etc) tissues
7. Paper chromatography of amino acids.
8. Effect of pH, temperature and inhibitors on the action of salivary amylase./Urease /acid or alkaline phosphatases
9. Demonstration of proteins separation by SDS-PAGE.

10. Determination of ABO Blood group
11. Estimation of total protein in given solutions
12. Detection of SGOT and SGPT or GST and GSH in serum/ tissue
13. To study the enzymatic activity of Trypsin / Lipase.
14. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
15. Study of Polytene chromosomes from *Chironomous* / *Drosophila* larvae
16. Preparation of liquid culture medium (LB) and raise culture of *E. coli*
17. Study of Mendelian laws and geneinteractions.
18. Linkage maps based on data from conjugation, transformation andtransduction.
19. Linkage maps based on data from *Drosophila* crosses.
20. Study of human karyotype (normal and abnormal).
21. Pedigree analysis of some human inherited traits.
22. Study of homology and analogy from suitable specimens
23. Study and verification of Hardy-Weinberg Law by chi square analysis
24. Demonstration of role of natural selection and genetic drift in changing allele frequencies using simulation studies
25. Determine the area of a lake using graphimetric and gravimetric method.
26. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
27. Estimation of Lactose in milk
28. Ascorbic acid estimation in food by titrimetry
29. Estimation of Calcium in foods by titrimetry
30. Preparation of temporary mounts: Neurons and Blood film.
31. Preparation of genomic DNA from *E. coli*/animals/ human.
32. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays.
33. Study of mitosis and meiosis through squashing in Grasshopper.
34. Plasmid DNA isolation (pUC 18/19) from *E. coli*
35. Restriction digestion of plasmid DNA / Lambda Phage DNA
36. Construction of circular and linear restriction map from the data provided.
37. Estimation of plasma level of any hormone using ELISA
38. Observation and quantitation of *Drosophila* photoreceptor neurons in healthy and diseased condition.
39. Nerve Cell preparation from the spinal cord.
40. Study of neurons and/ or myelin by Nissl, Giemsa or Luxol Fast Blue staining.
41. Human vaginal exfoliate cytology.
42. Sperm count and sperm motility in rat
43. Demonstration of ELISA.
44. Demonstration of Bone marrow smears to study Immune cells.
45. Demonstration of different field techniques for flora and fauna.
46. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences)

List of instruments/equipments

SL No	Name of the equipment
1	Students' Compound Microscope
2	Stereo Microscope
3	Haemocytometer
4	pH Meter
5	UV-Visible Spectrometer
6	Bench Top Centrifuge
8	Paper Chromatography Unit
9	Digital Weighing balance
10	Laminar Airflow
11	BOD Incubator
12	Refrigerator
13	Hot Air Oven
14	Autoclave
15	Magnetic Stirrer with Hot Plate
16	Microtome
17	Gel electrophoresis unit with accessories
18	Trans illuminator
19	Water bath

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN ARTS (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

Course structure of UG Economics Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Introductory Microeconomics	06	100
	C-II	Mathematical Methods for Economics I	06	100
	GE-I	Indian Economy	06	100
			22	
II	AECC-II	AECC-II	04	100
	C-III	Introductory Macroeconomics	06	100
	C-IV	Mathematical Methods for Economics II	06	100

	GE-II	Indian Economy II	06	100
			22	
III	C-V	Microeconomics I	06	100
	C-VI	Macroeconomics I	06	100
	C-VII	Statistical Methods for Economics	06	100
	GE-III	Introductory Microeconomics	06	100
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	Microeconomics II	06	100
	C-IX	Macroeconomics II	06	100
	C-X	Research Methodology	06	100
	GE-IV	Introductory Macroeconomics	06	100
	SECC-II	SECC-II	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI	Indian Economy I	06	100
	C-XII	Development Economics I	06	100

	DSE-I	1. Economic History of India (1857-1947) or 2. Public Economics	06	100
	DSE-II	1. Introductory Econometrics or 2. Odisha Economy or 3. Money and Banking	06	100
			24	
VI	C-XIII	Indian Economy II	06	100
	C-XIV	Development Economics II	06	100
	DSE-III	1. Environmental Economics or 2. History of Economic Thought	06	100
	DSE-IV	1. International Economics or 2. Agricultural Economics or 3. Project/Dissertation	06	100
			24	

ECONOMICS

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers (out of the 9 papers suggested)
Generic Elective for non Public Administration students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial
Dissertation : (content : 50; Seminar : 30; Viva Voce : 20)l

Core Paper I INTRODUCTORY MICROECONOMICS

Introduction:

This course is designed to expose the students to the basic principles of microeconomic theory. The

emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations.

Unit I: Exploring the Subject Matter of Economics, Markets and Welfare

The Ten Principles of Economics: How people make decisions; Working of the economy as a whole; Thinking Like an Economist: The economist as Scientist – The scientific method: Observation, Theory and more observation; Role of Assumptions; Economic Models; Why economists disagree; Graphs in Economics

The Market Forces; Markets and Competition; The Demand and Supply curves – Market vs Individual curves, Shifts in Demand and Supply Curves; Market Equilibrium and changes there in; Price Elasticity of Demand – determinants and computation; Income and Cross Elasticity of Demand; The Price Elasticity of Supply – determinants and computation; Consumer and Producer Surplus.

Unit II: Theory of Consumer Choice

The Budget Constraint; Preferences – representing preferences with indifference curves; Properties of Indifference Curves; Two extreme examples of indifference curves; Optimization – Equilibrium; Change in equilibrium due to changes in income, changes in price; Income and Substitution Effect; Derivation of Demand Curve; Three applications – Demand for Giffen goods, Wages and Labour Supply, Interest rate and Household saving.

Unit III: The Firm and Market Structures

Cost concepts; Production and Costs; The various measures of cost – Fixed and Variable cost, Average and Marginal cost; Cost curves and their shapes; Costs in the short run and in the long run; Economies and diseconomies of scale. Firms in Competitive Markets – What is a competitive market; Profit maximization and the competitive firm's supply curve; The marginal cost curve and the firm's supply decision; Firm's short-run decision to shut down; Firm's long-run decision to exit or enter a market; The supply curve in a competitive market – short run and long run.

Unit IV: The Input Markets

The Demand for Labour – The production function and the marginal product of labour; Value of the marginal product of labour and demand for labour; Shifts in labour demand curve; The supply of labour – the trade-off between work and leisure; Shifts in the labour supply curve; Equilibrium in the Labour Market; Other factors of production: Land and Capital; Linkages among factors of production.

Text Book:

- Principles of Economics, Gregory N Mankiw, 6e Cengage Learning India Private Limited, New Delhi

Reference Book:

- Karl E. Case and Ray C. Fair (2007): *Principles of Economics*, 8th Edition, Pearson Education Inc.

Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc

Core Paper II

MATHEMATICAL METHODS FOR ECONOMICS I

Introduction:

This is the first of a compulsory two-course sequence. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Unit I: Preliminaries and Functions of one Real Variable

Sets and set operations; Cartesian product; relations; functions and their properties; Number systems

Types of Functions- constant, polynomial, rational, exponential, logarithmic; Graphs and graphs of functions; Limit and Continuity of functions; Limit theorems.

Unit II: Derivative of a Function

Rate of change and derivative; Derivative and slope of a curve; Continuity and differentiability of a function; Rules of differentiation for a function of one variable; Application- Relationship between total, average and marginal functions.

Unit III: Functions of two or more Independent Variables

Partial differentiation techniques; Geometric interpretation of partial derivatives; Partial derivatives in Economics; Elasticity of a function – demand and cost elasticity, cross and partial elasticity.

Unit IV: Matrices and Determinants

Matrices: concept, types, matrix algebra, transpose, inverse, rank; Determinants: concept, properties, solving problems using properties of determinants, solution to a system of equations - Crammer's rule and matrix inversion method.

Text Book:

- A. C. Chiang and K. Wainwright (2005): *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition.

Reference Book:

- K. Sydsaeter and P. J. Hammond (2002): *Mathematics for Economic Analysis*. Pearson Educational Asia

Core Paper III INTRODUCTORY MACROECONOMICS

Introduction:

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variable like savings, investment, GDP, money, inflation, and the balance of payments.

Unit I: Basic Concepts in Macroeconomics

Macro vs. Micro Economics; Limitations of Macroeconomics; Stock and Flow variables, Equilibrium and Disequilibrium, Partial and General Equilibrium Statics – Comparative Statics and Dynamics; National Income Concepts – GDP, GNP, NDP and NNP at market price, factor cost, real and nominal; Disposable personal Income.

Unit II: Measurement of Macroeconomic Variables

Output, Income and Expenditure Approaches; Difficulties of Estimating National Income; National Income Identities in a simple 2-sector economy and with government and foreign trade sectors; Circular Flows of Income in 2, 3 and 4-sector economies; National Income and Economic Welfare; Green Accounting.

Unit III: Money and Changes in its Value

Evolution and Functions of Money, Quantity Theory of Money – Cash Transactions, Cash Balances and Keynesian Approaches, Value of Money and Index Number of Prices

Inflation – Meaning, Causes, and Anti-Inflationary Measures; Classical, Keynesian, Monetarist and Modern Theories of Inflation, Inflationary Gap, Deflation- Meaning, Causes, and Anti-Deflationary Measures, Depression and Stagflation; Inflation vs. Deflation.

Unit IV: Determination of National Income

The Classical Approach - Say's Law, Theory of Determination of Income and Employment with and without saving and Investment; Basics of Aggregate Demand and Aggregate Supply and Consumption-Saving– Investment Functions, The Keynesian Approach– Basics of Aggregate Demand and Aggregate Supply and Consumption, Saving, Investment Functions; The Principle of Effective Demand; Income Determination in a Simple 2-Sector Model; Changes in Aggregate Demand and Income- The Simple Investment Multiplier

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.

Core Paper IV MATHEMATICAL METHODS FOR

ECONOMICS II

Introduction:

This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Unit I: Linear models:

Input- Output Model: Basic concepts and structure of Leontief's open and static Input-Output model; Solution for equilibrium output in a three industry model; The closed model.

Unit II: Second and Higher Order Derivatives and Integration:

Technique of higher order differentiation; Interpretation of second derivative; Second order derivative and curvature of a function; Concavity and convexity of functions; Points of inflection, Derivative of Implicit Function; Higher Order Partial Derivative.

Indefinite Integrals; Rules of Integration; Techniques of Integration: Substitution Rule, Integration by parts, and Partial Fractions; Definite Integral – Area Interpretation.

Unit III: Single and Multivariable Optimization:

Optimum values and extreme values; Relative maximum and minimum; Necessary versus sufficient conditions - First and Second derivative tests (using Hessian Determinants); Economic applications thereof, First and second order condition for extrema of multivariable functions; Convex functions and convex sets.

Unit IV: Optimization with Equality Constraints:

Effects of a constraint; Finding stationary value – Lagrange-Multiplier method (Two variable single constraint case only): First and second order condition; The Bordered Hessian determinant.

Text Book:

- A. C. Chiang and K. Wainwright (2005): *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition.

Reference Book:

- K. Sydsaeter and P. J. Hammond (2002): *Mathematics for Economic Analysis*. Pearson Educational Asia

Core Paper V MICROECONOMICS I

Introduction:

The course is designed to provide a sound training in microeconomic theory to formally analyze the behavior of individual agents. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts; this course looks at the behavior of the consumer and the producer and also covers the behavior of a competitive firm.

Unit I: Consumer Theory I

Preferences and Utility, Axioms of Rational Choice, Utility, Trades and Substitutions, Indifference curves; Mathematics of Indifference curves, Utility functions for specific preferences, the many good case; Utility Maximization and choice: the 2-good case (graphical analysis), the n-good case, Indirect utility function, the Lump sum principle, Expenditure minimization, properties of expenditure function.

Unit II: Consumer Theory II

The Income and Substitution Effects: Demand function, changes in income, changes in a goods price-Direct and Indirect Approaches (Slutsky), the Individual's Demand Curve, Compensated (Hicksian) demand curves and functions, demand elasticity, Consumer Surplus, Demand relationships among goods, the 2-good case, substitutes and complements, Net (Hicksian) substitutes, and Complements, Substitutability with many goods.

Unit III: Production Theory and Costs

Production Functions: Marginal productivity, Production with One Variable Input (labour) and with Two-Variable Inputs, Isoquant Maps and the Rate of Technical Substitution, Returns to Scale, Elasticity of Substitution, Some Simple Production Functions: Linear, Fixed Proportions, Cobb-Douglas; Technical Progress.

Definition of Cost and its properties, Cost minimizing input choices (Optimization principles, Expansion Path), Cost Functions and Shift in Cost Curves, Long-Run versus Short-Run Cost Curves.

Unit IV: Profit Maximization

The Nature and Behavior of Firms, Marginal Revenue – Relationship between Average and marginal revenue, Short-Run Supply by a Price-Taking Firm, Profit Functions and its Properties, Profit maximization – General conditions, Input demands.

Text Book:

- C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India.

Reference Books:

- H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition, W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems.

Core Paper VI MACROECONOMICS I

Introduction:

This course introduces the students to formal modeling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context. It also introduces the students to various theoretical issues related to an open economy.

Unit I: Consumption and Investment

Consumption – Income Relationship, Propensities to Consume and the Fundamental Psychological Law of Consumption; Implications of Keynesian Consumption Function; Factors Influencing

Consumption Function; Measures to Raise Consumption Function; Absolute, Relative, Permanent and Life – Cycle Hypotheses

Autonomous and Induced Investment, Residential and Inventory Investment, Determinants of Business Fixed Investment, Decision to Invest and MEC, Accelerator and MEI, Theories of Investment.

Unit II: Demand for and Supply of Money

Demand for Money – Classical, Neoclassical and Keynesian Approaches, The Keynesian Liquidity Trap and its Implications, Supply of Money, The Theory of Money Supply Determination and Money Multiplier, Measures of Money Supply in India.

Unit III: Aggregate Demand and Aggregate Supply

Derivation of Aggregate Demand and Aggregate Supply Curves in the IS-LM Framework; Nature and Shape of IS and LM curves; Interaction of IS and LM curves and Determination of Employment, Output, Prices and Investment; Changes in IS and LM curves and their Implications for Equilibrium.

Unit IV: Inflation, Unemployment and Expectations, and Trade Cycles

Inflation – Unemployment Trade off and the Phillips Curve – Short run and Long run Analysis; Adaptive and Rational Expectations; The Policy Ineffectiveness Debate; Meaning and Characteristics of Trade Cycles; Hawtrey's Monetary Theory, Hayek's Over-investment Theory and Keynes' views on Trade Cycles.

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi.

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.

Core Paper VII

STATISTICAL METHODS FOR ECONOMICS

Introduction:

This is a course on statistical methods for economics. It begins with some basic concepts and terminology that are fundamental to statistical analysis and inference. It is followed by a study and measure of relationship between variables, which are the core of economic analysis. This is followed by a basic discussion on index numbers and time series. The paper finally develops the notion of probability, followed by probability distributions of discrete and continuous random variables and introduces the most frequently used theoretical distribution, the Normal distribution.

Unit I: Data Collection and Measures of Central Tendency and Dispersion

Basic concepts: population and sample, parameter and statistics; Data Collection: primary and secondary data, methods of collection of primary data; Presentation of Data: frequency distribution; cumulative frequency; graphic and diagrammatic representation of data; Measures of Central Tendency: mean, median, mode, geometric mean, harmonic mean, their relative merits and demerits; Measures of Dispersion: absolute and relative - range, mean deviation, standard deviation, coefficient of variation, quartile deviation, their merits and demerits; Measures of skewness and kurtosis.

Unit II: Correlation and Regression Analysis

Correlation: scatter diagram, sample correlation coefficient - Karl Pearson's correlation coefficient and its properties, probable error of correlation coefficient, Spearman's rank correlation coefficient. Two variable linear regression analysis - estimation of regression lines (Least square method) and regression coefficients - their interpretation and properties, standard error of estimate.

Unit III: Time Series and Index Number

Time Series: definition and components, measurement of trend- free hand method, methods of semi-average, moving average and method of least squares (equations of first and second degree only), measurement of seasonal component; Index Numbers: Concept, price relative, quantity relative and value relative; Laspeyer's and Fisher's index, family budget method, problems in construction and limitations of index numbers, test for ideal index number.

Unit IV: Probability Theory and Sampling

Probability: Basic concepts, addition and multiplication rules, conditional probability; Meaning of Sampling, Types of Sampling: Probability Sampling versus Non-Probability Sampling; Simple Random Sampling and its selection, Systematic Sampling, Multi-stage Sampling, Quota Sampling; Error: Sampling and Non-sampling.

Text books:

- S. C. Gupta (2017): *Fundamentals of Statistics*, Himalaya Publishing House, Delhi

Reference Book:

- Murray R. Speigel (2017): *Theory & Problems of Statistics*, Schaum's publishing Series.

Core Paper VIII MICROECONOMICS II

Introduction:

This course is a sequel to Microeconomics I. The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers Market, general equilibrium and welfare, imperfect markets and topics under information economics.

Unit I: Firm Supply and Equilibrium

Market Environments; Pure competition; Supply decision of a competitive firm and Exceptions; Inverse Supply Function; Profits and Producer's Surplus; Long Run Supply Curve of a Firm; Long Run Average Costs; Short Run and Long Run Industry Supply; Industry Equilibrium in Short and Long Run; Meaning of Zero Profits; Economic Rent.

Unit II: General Equilibrium, Efficiency and Welfare

The Edge worth Box; Trade; Pareto Efficient Allocations; Existence of equilibrium and efficiency; The Welfare Theorems and their implications; The Firm; Production and the Welfare Theorems ; Production possibilities, comparative advantage and Pareto efficiency.

Unit III: Market Imperfections: Monopoly and Oligopoly

Barriers to Entry, Profit Maximization and Output Choice, Monopoly and resource Allocation, Monopoly, Product Quality and Durability, Price Discrimination, Second Degree Price Discrimination through Price Schedules, Regulation of Monopoly, Dynamic Views of Monopoly. Monopolistic competition; Price output determination; excess capacity under monopoliostic competition .

Unit IV: Game Theory

The Payoff Matrix of a Game; Nash Equilibrium; Mixed Strategies ;The Prisoner's Dilemma; Repeated Games; Enforcing a cartel; Sequential Games; A Game of entry deterrence.
Oligopoly – Choosing a strategy; Quantity and price leadership; Simultaneous Quantity Setting; Example of Cournot Equilibrium; Simultaneous Price Setting; Collusion.

Text Book:

- H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition, W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems.

Reference Book:

- C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India.
- Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc.

Core Paper IX MACROECONOMICS II

Introduction:

This course is a sequel to Macroeconomics I. In this course, the students are introduced to the long run dynamic issues like growth and technical progress. It also provides the micro-foundations to the various aggregative concepts used in the previous course.

Unit I: Modeling Economic Growth

Accumulation of Capital in the basic Solow Model; supply and demand for goods, growth in the capital stock and the steady state, Golden rule level of capital: Comparing steady states, transition to the golden rule steady state with too much and too little capital, Population Growth, Technological Progress- Solow version, Beyond Solow Model and Endogenous Growth.

Unit II: Open Economy and Macroeconomic Policy

Balance of payments- concept; meaning of equilibrium and disequilibrium in balance of payments; Determination of foreign exchange rate- the balance of payments theory; Fixed versus flexible exchange rates; Short-run open economy model- the basic Mundell-Fleming model; Macroeconomic Policies – Fiscal policy, Crowding –out and Crowding – in; Monetary policy and instruments, the Transmission Mechanism; Effectiveness of macroeconomic policies in open and closed economies.

Unit III: Classical and Keynesian Macroeconomics Thoughts

Keynes verses classics: Classical macroeconomics, Employment and output determination, Say's law, the quantity theory of money, Keynes's General theory: Keynes's main propositions; analysis of the labour market, Keynes's critique of Say's law and Quantity theory of money, the orthodox Keynesian school, underemployment equilibrium in the Keynesian model, the Phillips curve and orthodox Keynesian school.

Unit IV: Monetarist and New Classical Macroeconomic Thoughts

The orthodox monetarist school, the Quantity Theory of Money approach, the expectations augmented Phillips curve analysis, the orthodox monetarist school and stabilization policy. New Classical Economics: The influence of Robert e Lucas Jr, the structure of new classical models: the Rational Expectations hypothesis; and policy implications.

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Brian Snowdon and Howard R Vane (2005): Modern Macroeconomics: Its Origins, Development and Current State, Edward Elgar

Core Paper X Research Methodology

Introduction:

The course is to develop a research orientation among the students and to acquaint them with fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific social research methods and their approach. It includes discussions on sampling techniques, research designs and techniques of analysis.

Unit I: Basics of Research

Introduction to Research: Meaning, Objectives, Motivation, Types, Approaches, Significance, Research Process, Criteria of Good Research; Qualities of a Good Researcher, Research as a Career.

Unit II: Research Problem

Defining the Research Problem: What is a Research Problem? Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem; Research Design: Meaning, Need, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs.

Unit III: Issues in Research

Measurement in Research, Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Techniques of Measurement Tools, Scaling and Important Scaling Technique Research Ethics: codes and ethics, permissions to research, responsibilities, confidentiality, feedback, participatory research; Research Proposal and literature review: research proposal, review of literature, levels of analysis, using the library and internet, abstracting, word processing, plagiarism, Concept of IPR.

Unit IV: Actions in Research

English in report writing: words, sentences, paragraph, writing style; The Report: improving quality, sections, drawing conclusions, evaluation checklists, persistence; Common Citation Styles

Text Book:

- Kothari, C. R. (2004): Research Methodology: Methods and Techniques, New Age International Private Limited Publishers, New Delhi.

Reference Books:

- Guthrie, G. (2010): Basic Research Methods, Sage Publications India Private Limited, New Delhi.

Core Paper XI INDIAN ECONOMY I

Introduction:

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points. Given the rapid changes taking place in India, the reading list will have to be updated annually.

Unit I: Basic Characteristics of Indian Economy as a Developing Economy

Indian Economy in the Pre-British Period; The Structure and Organization of Villages and Towns; Industries and Handicrafts in Pre-British India; Colonialism; Economic Consequences of British Rule; Decline of Handicrafts and Progressive Ruralization; The Land System and Commercialization of Agriculture; Industrial Transition; Colonial Exploitation and Impacts – Underdevelopment; Colonization and Modernization; State Policies and Economic Underdevelopment; The Current State of Indian Economy

Unit II: Population and Human Development

Population Growth and Economic Development – size, growth and future of population; Causes of rapid population growth; Population and economic development; Population policy; Demographic issues– Sex and Age Composition of population; Demographic Dividend; Urbanization and Migration; Human Resource Development – Indicators and importance of Human Resource Development; Education policy; Health and nutrition.

Unit III: National Income in India – The Growth Story and Current Challenges

Trends in national and per capita income; Changes in sectoral composition of national income; Regional disparities in Growth and Income; Savings and Investment and Economic Growth – The Linkage; Poverty – Estimation and Trends, Poverty Alleviation Programs– MGNREGA, NRLM, SJSRY; Inequality –Measures and trends in India; Unemployment– Nature, Estimates, Trends, Causes and Employment Policy.

Unit IV: Economic Planning in India

Rationale, Features, Objectives, Strategies, Achievements and Assessment of Planning in India; Eleventh Five Year Plan– Objectives, Targets and Achievements; Twelfth Five Year Plan – Vision and Strategy; From Planning to NITI– Transforming India's Development Agenda.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Books:

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Indian Economy Datt and Sundharam, GauravDatt and AshwaniMahajan, S Chand Publications, 7th Revised Edition
- Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, Revised Nineteenth Edition 2008-09
- Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi

Core Paper XII

DEVELOPMENT ECONOMICS I

Introduction:

This is the first part of a two-part course on economic development. The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored. The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Unit I: Study of Economic Development

Development Economics as subject; economic growth and economic development; Characteristics of underdeveloped countries – vicious cycle of poverty and cumulative causation; obstacles to economic development; measures of economic development – national and per capita income, basic needs approach, capabilities approach, three core values of development, PQLI, HDI, HPI, MDPI, GDI; capital formation and economic development.

Unit II: Theories of Economic Growth and Development

Classical theory, Marxian theory; Schumpeterian theory; Rostow's stages of economic growth; Solow model and convergence with population growth and technical progress.

Unit III: Poverty, Inequality, Agriculture, Industry and Development

Measuring poverty: Head Count Ratio, Poverty Gap Ratio, Squared Poverty Ratio, FGT Ratio; Measuring Inequality – Lorenz curve and Kuznets' inverted U hypothesis; Growth, poverty and inequality; Policy options – some basic considerations.

Agriculture, Industry and Economic Development: Role of agriculture; Transforming traditional agriculture; Barriers to agricultural development; Role of industrialization; Interdependence between agriculture and industries – A model of complementarities between agriculture and industry; terms of trade between agriculture and industry; functioning of markets in agrarian societies; interlinked agrarian markets.

Unit IV: Institutions and Economic Development:

Role of institutions in economic development; Characteristics of good institutions and quality of institutions; The pre-requisites of a sound institutional structure; Different measures of institutions – aggregate governance index, property rights and risk of expropriation; The role of democracy in economic development; Role of markets and market failure; Institutional and cultural requirements for operation of effective private markets; Market facilitating conditions; Limitations of markets in LDCs; Corruption and economic development – tackling the problem of corruption.

Text book:

- Todaro, Michael P and Stephen C Smith (2006): *Economic Development*, 8th Edition, Pearson

Reference Books:

- Debraj Ray (2009): *Development Economics,* Oxford University Press.
- Thirlwall, A P (2011): *Economics of Development*, 9th Edition, Palgrave Macmillan

Core Paper XIII INDIAN ECONOMY II

Introduction:

This course examines sector-specific polices and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list will have to be updated annually.

Unit I: Agricultural Development in India

Indian Agriculture: nature, importance, trends in agricultural production and productivity, factors determining production, land reforms, new agricultural strategies and green revolution, rural credit; Agricultural marketing and warehousing.

Unit II: Industrial Development in India

Trends in industrial output and productivities; Industrial Policies of 1948, 1956, 1977 and 1991; Industrial Licensing Policies – MRTP Act, FERA and FEMA; Growth and problems of SSIs, Industrial sickness; Industrial finance; Industrial labour.

Unit III: Tertiary Sector, HRD and the External Sector

Tertiary Sector: growth and contribution of service sector to GDP of India, share of services in employment; Human development – concept, evolution, measurement; HRD: indication, importance, education in India, Indian educational policy; Health and Nutrition.

Foreign Trade: role, composition and direction of India's foreign trade, trends of export and import in India, export promotion verses import substitution; Balance of Payments of India; India's Trade Policies; Foreign Capital – FDI, Aid and MNCs.

Unit IV: Indian Economy and Environment

Environmental Policies in India: The Environment (Protection) Act 1986, The Environment (Protection) Rules 1986, The National Forest Policy 1988, Policy statement for Abatement of Pollution 1992, National Conservation Strategy and Policy Statement on Environment and Development 1992, The National Environment Appellate Authority Act 1997, National Environmental Policy 2006; Global deal with Climate Change: Introduction, Intergovernmental Panel for Climate Change (IPCC), Impact of Climate Change on India, Global Response on Climate Change, Possible Role of India.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Books:

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Indian Economy Datt and Sundharam, GauravDatt and AshwaniMahajan, S Chand Publications, 7th Revised Edition
- Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, Revised Nineteenth Edition 2008-09
- Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi

Core Paper XIV DEVELOPMENT ECONOMICS II

Introduction:

This is the second unit of the economic development sequence. It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of communities and organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development.

Unit I: Population and Development

Demographic concepts : birth and death rates, age structure, fertility and its determinants, the Malthusian population trap and the microeconomic household theory of fertility; costs and benefits of population growth and the model of low level equilibrium trap; rural-urban migration – the Harris Todaro migration model and policy implications.

Unit II: Dualism and Economic Development

Dualism – geographic, social and technological; the theory of cumulative causation (Myrdal); the regional inequalities in the context of economic development; the inverted U relationship; international inequality and the centre periphery thesis; dependency, exploitation and unequal exchange; the dualistic development thesis and its implications.

Unit III: Environment and Development

Basic issues of environment and development – Development and environment inter-linkage; Poverty, environmental degradation and externalities; common property resources, renewable and non-renewable resources; concept of sustainable development; basics of climate change.

Unit IV: International Trade and Economic Development and Financing Economic Development

Trade and economic development; export led growth; terms of trade and economic growth – the Prebisch Singer Hypothesis; trade strategies for development – import substitution vs. export promotion; international commodity agreements; trade vs aid.

Saving, capital formation and economic development; financial sector and economic development; taxation, public borrowing and economic development; inflation, foreign finance, investment and foreign aid – controversies and opportunities.

Text Book:

- Todaro, Michael P and Stephen C Smith (2006): *Economic Development*, 8th Edition, Pearson

Reference Book:

- Thirlwall, A P (2011): *Economics of Development*, 9th Edition, Palgrave Macmillan.

DSE Group I

Discipline Specific Elective Paper-1

ECONOMIC HISTORY OF INDIA 1857-1947

Introduction:

This course analyses key aspects of Indian economic development during the second half of British colonial rule. In doing so, it investigates the place of the Indian economy in the wider colonial context, and the mechanisms that linked economic development in India to the compulsions of colonial rule. This course links directly to the course on India's economic development after independence in 1947.

Unit I: Introduction: Colonial India: Background and Introduction and Macro trends;

Overview of colonial economy**,** National Income; population; occupational structure.

Unit II: Agriculture

Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.

Unit III: Railways and Industry

Railways; the de-industrialization debate; evolution of entrepreneurial and industrial structure; nature of industrialization in the interwar period; constraints to industrial breakthrough; labor relations.

Unit IV: Economy and State in the Imperial Context

The imperial priorities and the Indian economy; drain of wealth; international trade, capital flows and the colonial economy – changes and continuities; government and fiscal policy.

Text Book:

- Tirthankar Roy, *The Economic History of India 1857-1947*, Oxford University Press, 3rd edition, 2011.

Discipline Specific Elective Paper-2

INTRODUCTORY ECONOMETRICS

Introduction:

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

Unit I: Introduction

Definition, Nature and scope of econometrics; Theoretical Probability Distributions: Binomial, Poisson and Normal distributions: their properties

Theory of Estimation: Estimation of parameters; properties of estimators – small sample and asymptotic properties; point and interval estimation.

Unit II: Hypothesis Testing

Testing of hypotheses: defining statistical hypotheses; Simple and composite hypotheses; Null and alternative hypothesis; Type I and Type II errors, Critical region; Neyman-Pearson lemma; Power of a test; Test statistics: z, chi square, t and F.

Unit III: Linear Regression Analysis

Two variable linear regression model – Assumptions; Least square estimates, Variance and co-variance between Least square estimates; BLUE properties; Standard errors of estimates; Co-efficient of determination; Inference in a two variable linear regression model; ANOVA; Forecasting. Introduction to multiple regression models.

Unit IV: Violation of Classical Assumptions

Heteroscedasticity, Multicollinearity and Auto-correlation: Meaning, consequences, tests and remedies.

Text Book:

- Gujarati, D & Sangeetha (2007); "Basic Econometrics", McGraw Hill Book Co.

Discipline Specific Elective Paper-3 ODISHA ECONOMY

Introduction:

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in Odisha in pre- and post-Independence period, with particular emphasis on

paradigm shifts and turning points. Given the rapid changes taking place in Odisha, the reading list will have to be updated annually.

Unit I: Odisha Economy before 1947

Orissa's Economy in the Nineteenth Century: Benevolence or Exploitation, Forces of Nature, Animal Power, The Company Steps in, Public Works and Public Health, Education, Disintegration of Village Economy, New Social Environment, Changing Position of Social Classes, The Moneylenders, The Borrowers, Money-flows from Village to Metropolis, Pauperization of Peasantry, The Wage Earners, Demographic Changes, Profiting from Rural Adversity; Diarchy in 1919 and Separation of Provincial Finances from Central Government in 1937; Emergence of Federal Finance (Ref.: Das 1976a and 1976b, GoO 2016).

Unit II: Macro Economy of Odisha

A macro glance of Odisha economy: aggregate income, broad sectoral decomposition, performance of districts, employment, child labour and bonded labour, employment programmes, consumption expenditure, cost of living; Odisha State public finances (Chapter 14 and 15 of Ref 1; & Chapter 2 and 9 of Ref 2).

Unit III: Agriculture, Industry, Infrastructure and Environment in Odisha\

Agriculture: land ownership and land tenure, agricultural wages and rural unemployment, production and productivity of major crops, agricultural inputs, agricultural policy; Animal Husbandry; Fisheries (Chapter 1 to 3 of Ref 1; & Chapter 3 of Ref 2)

Industry: Investment, industrial policy, and the growth of large industries, mining and quarrying; Construction; tertiary sector: tourism, transport and power; Water Resources, Forest Resources (Chapter 4 to 8 of Ref 1; & Chapter 4 & 5 of Ref 2).

Unit IV: Social Sector in Odisha

Poverty: income poverty and inequality; health sector: outcomes, infrastructure, finance, public health, NRHM; education: Literacy, Primary education, secondary education, higher education, SSA; human development (Chapter 9 to 13 of Ref 1; & Chapter 7 & 8 of Ref 2).

Text Book:

- Nayak, P., Panda, S. C., Pattanaik, P. K. (2016): The Economy of Odisha: A Profile, Oxford University Press, New Delhi.

Reference Book:

- GoO (Latest): Odisha Economic Survey, Planning and Convergence Department, Directorate of Economics and Statistics, Government of Odisha, Bhubaneswar.
- GoO (2004): *Human Development Report 2004 Orissa,* Planning and Coordination

Department, Government of Odisha, Bhubaneswar.

- GoO (2018): 80 Years Odisha Budget: Commemorative Volume, Department of Finance, Bhubaneswar.

Discipline Specific Elective Paper-4

MONEY, BANKING AND FINANCIAL MARKET

Introduction:

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control.

Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Unit I: Money

Definition and functions of money; Types of money: legal tender money and bank money, near money; Value of money and index number; construction of index number; WPI, CPI, PPI, GDP deflator, Cost of living index

Demand for money- Classical and Keynesian approaches, Patinkin and the Real Balance Effect; Friedman's Quantity theory of money. Supply of Money- Measures of money supply: M_1,M_2, M_3 and M_4; High powered money and money multiplier.

Unit II: Commercial Banking

Meaning and types; Functions of commercial banks; the process of credit creation and its limitations**;** Balance sheet and portfolio management, Banking sector reforms in India; Lessons from Global Financial Crisis and Policy Response in India.

Unit III: Central Banking

Functions of a central bank; Quantitative and qualitative methods of credit control; Central Bank's Supervision and prudential measures for Financial stability; current monetary policy of India, liquidity adjustment facility (LAF) through Repo and reverse repo operation, MSF.

Unit IV: Financial Markets

Financial Market, Meaning, Types , Money market and Capital Market, Primary and Secondary Market, Stock Exchanges, SEBI; Role of Financial Markets for Economic Development.

Text Book

- L. M. Bhole and J. Mahukud, *Financial Institutions and Markets,* Tata McGraw Hill, 5th edition, 2011.

Discipline Specific Elective Paper-5 PUBLIC ECONOMICS

Introduction:

Public economics is the study of government policy from the points of view of economic efficiency and equity. The paper deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The subject encompasses a host of topics including public goods, market failures and externalities.

Unit I: Introduction to Public Finance and Public Budgets

Public Finance: meaning and scope, distinction between public and private finance; public good verses private good; Principle of maximum social advantage; Market failure and role of government; Public Budget: kinds of budget, economic and functional classification of the budget; Balanced and unbalanced budget; Balanced budget multiplier; Budget as an instrument of economic policy.

Unit II: Public Expenditure

Meaning, classification, principles, cannons and effects, causes of growth of public expenditure, Wagner's law of increasing state activities, Peacock-Wiseman hypotheses.

Unit III: Public Revenue

Sources of Public Revenue; Taxation - meaning, cannons and classification of taxes, impact and incidence of taxes, division of tax burden, the benefit and ability to pay approaches, taxable capacity, effects of taxation, characteristics of a good tax system, major trends in tax revenue of central and state governments in India.

Unit IV: Public Debt

Sources, effects, debt burden – Classical/ Ricardian views, Keynesian and post-Keynesian views; shifting - intergenerational equity, methods of debt redemption, debt management, tax verses debt.

Text Books:

- J. Hindriks and G. Myles (2006): *Intermediate Public Economics*, MIT Press.

Reference Book:

- R. A. Musgrave and P. B. Musgave(1989): *Public Finance in Theory and Practices.* McGraw Hill
- Bhatia H L (2018): *Public Finance.* Vikas Publishing House.

DSE Group II

Discipline Specific Elective

Paper- 1 Environmental

Introduction:

This course introduces the students to the basics of environmental economics to understand the fundamentals of environmental concerns and develop insights into valuation of environment.

Unit I: Economy and Environment

Nature and Scope of Environmental Economics- Environment and Economy interaction; Environment as a public good- Serious environmental problems of Developing Countries – Air pollution, water pollution and deforestation.

Global environmental problems, trade and environment, International Cooperation for Environmental Protections, Montreal and other protocols.

Unit II: The Economics of Pollution and Climate change

Pollution as externality, The market Approach to optimal pollution, Property rights and market bargain theorems, Coase theorem; Pigouvian Taxation, Subsidies and optimal pollution; Climate change – concept, causes, effects and management.

Unit III: Valuation of Environmental Damage

Methods and difficulties of environmental valuation, Economic value, Use value, Option value, Existence value; Direct and Indirect Valuation of Environmental Goods: The hedonic price approach, Contingent valuation, Travel cost approach.

Unit IV: Natural Resources and Sustainable Development

Natural resources- Renewable and exhaustible; Tragedy of commons, People's Participation in the management of common property resources; Sustainable Development Concepts, Sustainability rules, Indicators of sustainability, Solow/Hartwick, Natural capital stock, Safe Minimum Standard.

Text Book:

- Bhattacharya, R. N. (2002): Environmental Economics: An Indian Perspectives, OUP, New Delhi

Reference Book:

- Kolstad, C.D (1999); Environmental Economics Oxford University Press, New Delhi

Discipline Specific Elective Paper-2

INTERNATIONAL ECONOMICS

Introduction:

This course introduces the students to international trade and finance to understand the theories of international trade and develop insights into trade policy and balance of payments. The course

also develops insight into international financial system and the trade policy of India.

UNIT I: Importance of Trade and Trade Theories

Importance of the study of International Economics; Inter-regional and international trade; Theories of Trade-absolute advantage (Adam Smith), comparative advantage (David Ricardo) and opportunity cost (Haberler); Heckscher-Ohlin theory of trade — its main features, assumptions and limitations (Leontief Paradox) Factor Price Equalization theorem.

UNIT II: Trade Policy and International Economic Institutions

Concepts of terms of trade and their importance; Doctrine of reciprocal demand – Offer curve technique; Gains from trade ;Trade as an Engine of Growth and Concept of immiserizing growth, Tariffs and quotas – their impact in partial equilibrium analysis; General Equilibrium analysis of tariff and the concept of optimum tariff, Functions of IMF (Conditional Clause), Role of IMF in international liquidity, Reforms for the emergence of international monetary system; World Bank and WTO; Their achievements and failures; Their Role from the point of view of India.

UNIT III: Exchange Rate

Concept and Types of Exchange Rate (bilateral vs. trade-weighted exchange rate, cross exchange rate, spot, forward, futures), Demand for and Supply of foreign exchange, Exchange Rate Determination: Mint Parity Theory, Purchasing-Power Parity Theory, Fixed versus Flexible exchange rate.

UNIT IV: Balance of Trade and Payments

Concepts and components of balance of trade and balance of payments; Disequilibrium in balance of payments; Various measures to correct deficit in BOPs (Expenditure switching and expenditure reducing policies, Direct control), Depreciation Vs. Devaluation; Elasticity approach to devaluation, Foreign trade multiplier- Concept and implications.

Text Book:

- Mannur H. G (Recent Edition) *International Economics*, Vikash Publishing

Reference Books:

- SalvatoreDominick, *InternationalEconomics*,WileIndia.
- SoderstenBo andReedJ, *InternationalEconomics*, McMillanPublisher

Discipline Specific Elective Paper-3 AGRICULTURAL ECONOMICS

Course description

This course introduces students to the significance of agriculture in the Indian economy and helps

to understand the role agriculture in economic development. It is designed to develop insights into changing agricultural practices in India and assess the significance of agriculture in the era of liberalization.

UNIT I: Agriculture and Economic Growth

Role of Agriculture in Economic Development, sectoral changes and agriculture, agriculture in rural development, farm and non-farm employment issues, inter-linkages between agriculture and industry; empirical evidence of inter-dependence between agriculture and industry; Schultz's hypothesis on traditional agriculture – its criticisms; Mechanization of Indian Agriculture; Case for and against farm mechanization; Green revolution and trends of mechanization in India.

UNIT II: Agricultural Price and Marketing

Agricultural price policy for a developing economy – objectives and effectiveness of agricultural price policy, elements of agricultural price policy, features of an ideal agricultural price policy, agricultural price policy in India and public distribution system

Agricultural marketing – need and criteria for assessing efficiency, agricultural marketing system in India, development of a national agricultural marketing platform.

UNIT III: Risk and Uncertainty in Agriculture

Difference between risk and uncertainty, types of uncertainty in agriculture, measures for mitigating risk and uncertainty in agriculture, new agricultural insurance scheme of India

Rural credit in India, importance and estimates, agencies for rural credit, review of progress of institutional finance in rural India since independence.

UNIT IV: Agriculture in India

Agriculture in Indian Planning, Globalization and Indian agriculture, Case for and against privatization of agriculture, WTO and India's trade in agricultural commodities.

Text Book

- Sony, R. N. (2006), Leading Issues in Agricultural Economics, Vishal Publishing, Jalandhar.

Reference Book:

- Sadhu, A N and A Singh (2008), Fundamentals of Agricultural Economics, Himalaya Publishing House, Mumbai.

Discipline Specific Elective Paper-4

HISTORY OF ECONOMIC THOUGHT

Introduction:

This course provides a perspective to our intellectual history, development of economic thought and helps relate this thought to the current thinking. It introduces the students to the philosophers and economists who developed economic reasoning and modeling of economic activities. It also

helps create critical abilities and attitudes.

UNIT I: Introduction and Early Economic Thought

Mercantilism-main characteristics, Thomas Mur's views ; Physiocracy- main features, Tableau Economique, taxation; Early Classicism: Adam Smith- Theory of Value, Division of labour, capital accumulation, distribution, views on trade and economic progress; David Ricardo-theory of value, theory of rent, distribution, ideas on international trade and development.

UNIT II: Classicism Vs Marxism

Thomas Malthus- population theory, glut theory; Karl Marx-dynamic of social change, theory of value, surplus value, theory of profit, crisis of capitalism, Johns Stuart Mill- ideas on value, distribution, views as a synthesizer.

UNIT III: The Marginalists' Revolution

Economic ideas of Jevons, Walras and Menger, Bohm-Bowerk, Wicksell ; Marshall – Role of time element in price determination, ideas on consumer surplus, Marshal as a synthesizer.

UNIT IV: Indian Economic Thought

Main themes of Kautilya's Arthasashtra; Modern Economic Ideas: Dada Bhai Naoroji, M.K. Gandhi, village swaraj, non-violence, machines and labour, cottage industries; Comparison of Indian Economic thought with western Economic thought.

Text Book

- Gide, Charles and Rist, Charles (1973): A History of Economic Doctrines, Oxford University Press.
- Dasgupta, A K (1986): Epochs of Economic Theory, Oxford University Press, New Delhi.

Reference Book:

- O'Brien, D P (1975): Classical Economists, Oxford, Clarendon Press.
- Ekelund, Robert B. and Robert F. Hebert (1990): A History of Economic Theory and Method, third edition, New York: McGraw Hill.
- Henry W. Spiegel (1991): The Growth of Economic Thought, 3rd ed. Durham: Duke University Press.
- Tom Bottomore (1980): Dictionary of Marxist Thought, Basic Blackwell Publishers.
- Roll, Eric, History of Economic Thought, Faber and Faber Ltd.
- L N Rangarajan (1992): Kautilya: The Arthasastra, edited, rearranged, translated and introduced; Penguine books, New Delhi.

DSE Paper –4
DISSERTATION / RESEARCH PROJECT

(College can give this choice only for students with above 60% aggregate marks)

Introduction : The project is intended to establish the connection between Economics as confined to the text books and class rooms and Economics at play in the ground. It is expected to give an empirical content to the subject. Economics is defined as the study of mankind in the ordinary business of life. It studies individual as well as group behavior.

Project work at the undergraduate level is an in-depth study on a topic chosen by the student. The objective of the project work for the students at undergraduate level is to expose students to the social and real world contexts in which the subjects taught in the classroom have applications. Therefore, the topic must be related to the field of study the student is enrolled. It is undertaken with the guidance of a faculty supervisor, and involves a prolonged period of investigation and writing. The supervisor is supposed to help the student and mentor him/her throughout, from selection of the topic to submission of the project report.
The project output will be a project report written on the topic, chosen by the student and approved by the guide, in about 10000 words.

The process of project preparation typically comprises of an investigation of a particular topic, based on the application of philosophical and theoretical knowledge available in the already existing scientific literature and other published sources of information. The student may use already available data (texts, documents, artworks or existing data sets) or she may go for collection of data from the field. The final report should ideally have the following sections.
(1) Abstract (in about 500 words) containing a summary of the entire report.
(2) Introduction of the topic, arguments for choosing such a topic and the key investigation propositions.
(3) A review of the existing knowledge on the topic
(4) Information on the data and data treatment tools used in the study
(5) An analysis of data and findings
(6) Conclusions
(7) References

A good research project requires sincere efforts and honest dedication from students. Moreover, it requires an engagement of the student with an issue under probe for a fairly long period of time compared to their preparations of subjects for the examination.

A successful completion of the project report has several positive learning outcomes for the student. It empowers the student with the life skill of patience and persistence. It also helps the student to locate her theoretical understandings in the context of socio-economic and political realities.

Generic Elective Paper I INDIAN ECONOMY

Introduction: This paper introduces the students to the essentials of Indian economy with an intention of understanding the basic feature of the Indian economy and its planning process. It also aids in developing an insight into the agricultural and industrial development of India. The students will understand the problems and policies relating to the agricultural and industrial sectors of India and current challenges of Indian economy.

Unit I: Introduction to Indian Economy and Current Challenges

Colonialism & British Rule: Exploitation and under-development in India; Basic features of India Economy; Indian Economy as a developing economy; Demographic trends in India - Size and growth of population, Occupational structure, Sex composition, Age structure and demographic dividend; Causes of population growth and population policy; The problem of unemployment and recent policies for employment generation; The problem of inequality in income distribution and its causes, Policies to address inequality.

Unit II: Indian Agriculture

Role of Agriculture in Indian Economy; Cause of low productivity, Green Revolution and Land Reforms, Agricultural Finance-Sources and Problems; Agricultural Marketing in India.

Unit III: Industrial Development in India

Role of Industrialization in Indian Economy; Small Scale & Cottage Industries: Meaning, Role, Problems and Remedies; Industrial Policies of 1948, 1956, 1977 and1991; Problems of Industrial Development in India; Industrial Sickness.

Unit IV: Service Sector in India

Growth & Contribution to GDP; Composition and relative importance of service sector; Factors determining growth of the sector; ICT and IT – Spread and Policy; Sustainability of services led growth.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Book

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.

Generic Elective Paper II INDIAN ECONOMY II

Introduction: : This paper is the part II of Indian economy deals with the external sector, financial markets in India, Indian Public Finances and Economic Reforms. This paper also throws some light on current challenges of Indian Economy.

Unit I: External Sector in India

Trends, Composition & Direction in exports from and imports of India; Problems of Balance of Payment: Causes of deficit in BOP & measures to correct it; Trade Policy- Export Promotion Vs Import Substitution; Foreign Trade Policy of India; WTO and India.

Unit II: Financial Markets in India

Commercial Banking in India- Nationalization of Banks; Lead bank scheme and branch expansion; RBI - Functions, Monetary Policy; Development Banking- IFCI,IDBI, SIDBI and NABARD

Unit III: Indian Public Finance

Public Expenditure-Growth and Composition, Causes of Growth of Public Expenditure in India: Tax Revenue of Central and State Governments; Concept of VAT; Deficit Financing in India-Revenue, Budget, Fiscal and Primary Deficits; Purpose and Effects of Deficit Financing; India's Fiscal Policy-Objectives.

Unit IV: Current Challenges Facing Indian Economy

Inflation – Causes, Consequences and Anti-inflationary Policy; Poverty – Poverty line and Estimates, Major Poverty Alleviation Programmes; Environmental Degradation – Growth and Environment; Population Growth and Environment; Environment Policy; Economic Reforms-Globalization, Macroeconomic Stabilization, Structural Reforms, and their impact on the Indian Economy; Foreign capital and MNCs-Role and consequences.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai.

Reference Book

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Basu, Kaushik (2016): An Economist in the Real World: The Art of Policy Making in India,
  enguin.

Generic Elective Paper III INTRODUCTORY

MICROECONOMICS

Introduction:

This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situation.

Unit I: Exploring the Subject Matter of Economics, Markets

and Welfare

The Ten Principles of Economics: How people make decisions; Working of the economy as a whole; Thinking Like an Economist: The economist as Scientist – The scientific method: Observation, Theory and more observation; Role of assumptions; Economic Models; Why economists disagree; Graphs in Economics.

The market forces; Markets and competition; The demand and supply curves – Market vs. individual curves, Shifts in demand and supply curves; Market equilibrium and changes there in; Price elasticity of demand – determinants and computation; Income and cross elasticity of demand; The price elasticity of supply – determinants and Computation; Consumer and Producer Surplus.

Unit II: Theory of Consumer Choice

The Budget Constraint; Preferences – representing preferences with indifference curves; Properties of indifference curves; Two extreme examples of indifference curves; Optimization – Equilibrium; Change in equilibrium due to changes in income, changes in price; Income and substitution effect; Derivation of demand curve; Three applications – Demand for Giffen goods, Wages and Labour Supply, Interest rate and Household saving.

Unit III: The Firm and Market Structures

Cost concepts; Production and costs; The various measures of cost – Fixed and variable cost, average and marginal cost; Cost curves and their shapes; Costs in the short run and in the long run; Economies and diseconomies of scale. Firms in competitive markets – What is a competitive market; Profit maximization and the competitive firm's supply curve; The marginal cost curve and the firm's supply decision; Firm's short-run decision to shut down; Firm's long-run decision to exit or enter a market; The supply curve in a competitive market – short run and long run.

Unit IV: The Input Markets

The demand for labour – The production function and the marginal product of labour; Value of the marginal product of labour and demand for labour; Shifts in labour demand curve; The supply of labour – the trade-off between work and leisure; Shifts in the labour supply curve; Equilibrium in the labour market; Other factors of production: Land and capital; Linkages among factors of production.

Text Book:

- Principles of Economics, Gregory N Mankiw, 6e Cengage Learning India Private Limited, New Delhi.

Reference Book:

- Karl E. Case and Ray C. Fair (2007): *Principles of Economics*, 8th Edition, Pearson Education Inc.
- Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc.

Generic Elective Paper IV INTRODUCTORY

MACROECONOMICS

Introduction:

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts

associated with the determination and measurement of aggregate macroeconomic variable like savings, investment, GDP, money, inflation, and the balance of payments.

Unit I: Basic Concepts in Macroeconomics

Macro vs. Micro Economics; Limitations of Macroeconomics ; Stock and Flow variables, Equilibrium and Disequilibrium, Partial and General Equilibrium Statics – Comparative Statics and Dynamics ; National Income Concepts – GDP, GNP, NDP and NNP at market price, factor cost, real and nominal; Disposable personal Income.

Unit II: Measurement of Macroeconomic Variables

Output, Income and Expenditure Approaches ; Difficulties of Estimating National Income; National Income Identities in a simple 2- sector economy and with government and foreign trade sectors; Circular Flows of Income in 2, 3 and 4-sector; economies; National Income and Economic Welfare; Green Accounting.

Unit III: Money and Changes in its Value

Evolution and Functions of Money, Quantity Theory of Money – Cash Transactions, Cash Balances and Keynesian Approaches, Value of Money and Index Number of Prices. Inflation – Meaning, Causes, and Anti-Inflationary Measures; Classical, Keynesian, Monetarist and Modern Theories of Inflation, Inflationary Gap, Deflation- Meaning, Causes, and Anti-Deflationary Measurers, Depression and Stagflation; Inflation vs. Deflation.

Unit IV: Determination of National Income

The Classical Approach - Say's Law, Theory of Determination of Income and Employment with and without saving and Investment; Basics of Aggregate Demand and Aggregate Supply and Consumption- Saving – Investment Functions, The Keynesian Approach – Basics of Aggregate Demand and Aggregate Supply and Consumption, Saving, Investment Functions; The Principle of Effective Demand; Income Determination in a Simple 2-Sector Model; Changes in Aggregate Demand and Income- The Simple Investment Multiplier.

Text Book:

- N. Gregory Mankiw (2010):*Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.
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Course structure of UG Education Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Educational Philosophy	04	75
	C-I Practical		02	25
	C-II	Educational Psychology	04	75
	C-II Practical		02	25
	GE-I	GE-I	04	75
	GE-I Practical		02	25
			22	
II	AEC-II	AEC-II	04	100
	C-III	Educational Sociology	04	75
	C-III Practical		02	25
	C-IV	Changing Pedagogical Perspective	04	75
	C-IV Practical		02	25
	GE-II	GE-II	04	75
	GE-II Practical		02	25
			22	
III	C-V	Educational Assessment and Evaluation	04	75
	C-V Practical		02	25
	C-VI	Educational Research	04	75
	C-VI Practical		02	25
	C-VII	Statistics in Education	04	75
	C-VII Practical		02	25
	GE-III	GE-III	04	75
	GE-III Practical		02	25
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	History of Education in India	04	75
	C-VIII Practical		02	25
	C-IX	Curriculum Development	04	75
	C-IX Practical		02	25

	C-X C-X Practical	Guidance and Counseling	04 02	75 25
	GE-IV GE-IV Practical	GE-IV	04 02	75 25
	SEC-II	SEC-II	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI C-XI Practical	Development of Education in Odisha	04 02	75 25
	C-XII C-XII Practical	Information and Communication Technology in Education	04 02	75 25
	DSE-I DSE-I Practical	A. Pedagogy of language (English) B. Pedagogy of language (Odia)	04 02	75 25
	DSE-II DSE-II Practical	A. Pedagogy of Social Sciences B. Pedagogy of Mathematics	04 02	75 25
			24	
VI	C-XIII C-XIII Practical	Contemporary Trends and Issues in Indian Education	04 02	75 25
	C-XIV C-XIV Practical	Educational Management and Leadership	04 02	75 25
	DSE-III DSE-III Practical	A. Policy and Practices in School Education in India B. Policy and Practices in Higher Education in India	04 02	75 25
	DSE-IV DSE-IV Practical	Inclusive Education (Theory)	04 02	75 25
	OR			
	DSE-IV	Dissertation	06	100*
			24	

EDUCATION

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non Education students – 4 papers. Universities where 2 subjects of two paper each are offered can offer GE1 and GE2

Marks per paper – Mid term : 15 marks, End term : 60 marks, Practical : 25 marks
Total – 100 marks
Credit per paper – 6

Core Paper I EDUCATIONAL PHILOSOPHY

Learning Objectives:

On completion of this course, the learners shall be able to:

- State and analyze the meaning of education and form own concept on education
- Explain philosophy as the foundation of education
- Analyze aims of education
- Describe the essence of different formal philosophies and draw educational implications
- Compare and contrast Indian and western philosophies of education

UNIT 1: Education in Philosophical Perspective

(i) Etymological meaning of education
(ii) Narrower and broader meaning of education, Lifelong education
(iii) Aims of Education- Individual and Social aims of education
(iv) Meaning and nature of philosophy
(v) Branches of Philosophy- Metaphysics, Epistemology and Axiology, and its educational implications
(vi) Functions of Philosophy in relation to education

UNIT 2: Formal Schools of Philosophy and Educational Implications

(i) Idealism, Naturalism, Pragmatism with reference to: Aims of education, curriculum, methods of teaching, role of teacher, discipline

UNIT 3: Indian Schools of Philosophy and their Educational Implications

(i) Common characteristics of Indian philosophy

(ii) Sankhya, Vedanta, , Buddhism, Jainism with reference to:

Philosophical tenets, aims of education, curriculum, methods of teaching, role of

teacher

UNIT 4: Educational Thought of Western and Indian Thinkers

i. Plato

ii. Dewey

iii. Gopabandhu Das

iv. Gandhi

v. Tagore

vi. Aurobindo

PRACTICAL

- Field visit to a seat of learning in the locality and prepare report.

NB: It will be evaluated by both the internal core -1 internal and External examiners.

Text Books

- Safaya, R.N. & Shaida, B.D. (2010). *Modern Theory and Principles of Education*. New Delhi: Dhanpatrai Publishing Company Pvt. Ltd. (Nayak, B.K. (2018).
- Ravi, Samuel.S. (2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Taneja, V.R. (2000). *Educational thought and practice*. New Delhi: Sterling Publishers Pvt. Limited.

Reference Books

- Aggrawal, J.C. (2013). *Theory and principle of education*. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. *et.al*. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT.
- Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dash, B.N. (2011) Foundation of education, New Delhi; Kalyani Publishers.
- Dewey, John (1916/1977). Democracy and education. New York: MacMillan.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Govt. of India (1986/'92). National policy on education. New Delhi: MHRD.
- Krishnamurthy, J. (1953). Education and significance of life. New Delhi: B.I. Publications
- Kumar Krishna (1996). Learning from conflict. New Delhi: Orient Longman.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson. Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Peters, R.S. (1967). The Concept of education. London: Routledge Kegan & Paul. Radhakrishnan, S. Indian philosophy Vol. I and Vol. II

- Ross, James S.(1981). Ground work of educational theory.Delhi: Oxford University Press
- Rusk, Robert R., Philosophical bases of education, London: Oxford University Press.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
- Srinivas, M.N., (1986). Social changes in modern India. Bombay: Allied Publishers.
- Wingo, G. Max (1975). Philosophies of education. New Delhi: Sterling Publisher Pvt. Limited.

Core Paper II EDUCATIONAL PSYCHOLOGY

Learning Objectives:

On completion of this course, the learners shall be able to:

- Explain the concept of educational psychology and its relationship with psychology.
- Understand different methods of educational psychology.
- Describe the theoretical perspectives of educational psychology.
- Explain the concepts of growth and development of child and adolescence, and underlined general principles of growth and development.
- Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.
- Specify the contexts and factors influencing development.
- Explain the theory of cognitive development and its educational implications.
- State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.
- Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

UNIT 1: Educational Psychology in Developmental Perspective

(i) Meaning, nature, scope and relevance of educational psychology
(ii) Methods of educational psychology- observation, experimentation, and case study
(iii) Application of educational psychology in understanding learner
(iv) Growth and Development-Concept, difference between growth and development, and principles of growth and development
(v) Characteristics of development during adolescence in different areas: Physical, social, emotional and intellectual (with reference to Piaget)

UNIT 2: Intelligence, Creativity and Individual difference

(i) Individual difference-concept, nature, factors and role of education
(ii) Intelligence- meaning and nature of intelligence, concept of I.Q, theories of intelligence- Two factor theories, Guildford's structure of intelligence (SI) model, Gardner's multiple theory of intelligence.
(iii) Measurement of intelligence- individual and group test, verbal, non-verbal test
(iv) Creativity- meaning, nature and stages of creative thinking, strategies for fostering creativity

UNIT 3: Learning and Motivation

(i) Learning- meaning, nature and factors of learning

(ii) Theories of learning with experiment and educational implications-

(iii) Classical conditioning, operant conditioning, insightful learning and constructivist approach to learning

(iv) Motivation – concepts, types, and techniques of motivation

UNIT 4: Personality and Mental health

(i) Personality- meaning and nature of personality

(ii) Theories- type theory and trait theory

(iii) Assessment of personality- subjective, objective and projective techniques

(iv) Mental health-concept, factors affecting mental health and role of teacher, mental health of teacher.

(v) Adjustment mechanism: Concept and Types

PRACTICAL

- Administration and interpretation of any psychological test relating to intelligence or personality

: It will be evaluated by both the Internal and External examiners.

Text Books

- Woolfolk, A. (2015). *Educational psychology (9th Ed.).* New Delhi: Pearson Publication
- Chauhan, S.S. (2010). *Advanced educational psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.
- Mangal, S.K. (2002). *Advanced educational psychology*. New Delhi: Prentice Hall of India.

Reference Books

- Arnett, J. (2007). Adolescence and emerging adulthood: A cultural approach. (3rd Edn.). Upper Saddle River, N.J.: Pearson.
- Berk, Laura E. (2011). Child development (9th Edn.). New Delhi: Prentice Hall of India.
- Flavell, J.H. (1963). The developmental psychology of Jean Piaget. New York: Van Nostrand
- Hurlock, E. B. (1980). Developmental psychology: All span approach. New York: McGraw Hill Book.
- Hurlock, E.B. (1980). Child development (6th Edn.). Tokyo: McGraw-Hill, Kogakusha Ltd.
- Hurlock, E.B. (2007). Child growth and development. New York: McGraw Hill.
- Kail, Robert V (2011). Children and their development (6th Edition). Englewood Cliffs, N.J: Prentice Hall.
- Stephens, J. M.; Evans, E. D.(1973). Development and classroom learning: An introduction to educational psychology. New York: Holt, Rinehart and Winston

CORE PAPER III
EDUCATIONAL SOCIOLOGY

Learning Objectives:

On completion of this course, the students shall :

- State the relationship between education and society.
- Understand the meaning of Educational Sociology and function of education as a social system.
- State different agencies of education and their functions.
- Justify the importance of education for social change.
- Describe the role of education in modernization and globalization.
- Describe the function of education to ensure equality and equity.

UNIT 1: Education and Society

(i) Relationship between education and society, school as a miniature society
(ii) Educational Sociology- Concept, nature, scope and importance;
(iii) Relationship between education and sociology.
(iv) Education as a process of socialization.
(v) Education and politics, education and economic development

UNIT 2: Agencies of Education

(i) Family- Importance, functions and role for education and socialization of the children
(ii) School - Importance, functions and role for education and socialization of the children
(iii) Society- Importance, functions and role for education and socialization of the children
(iv) Mass Media- Importance, functions and role for education and socialization of the children

UNIT 3: Education, Social change and Modernization

(i) Concept of social change and factors affecting Social Change
(ii) Education as an instrument of social change and social control
(iii) Concept and attributes of modernization
(iv) Education for accelerating the process of modernization
(v) Impact of globalization on education

UNIT 4: Equalization of Educational opportunities for ensuring equity and Inclusion

(i) Concept of equality, equity and inclusion: its educational implication
(ii) Ensuring equality in the education of SC and ST
(iii) Education for women empowerment
(iv) Inclusive education with reference to children with special needs (CWSN)

PRACTICAL

Field Visit: Study of a social unit (Home/School/Village/slum) and reporting.

NB: It will be evaluated by both the internal and external examiners

Text Books

- Mathur, S. S. (2000). *A sociological approach to Indian education.* Agra : Vinod Pustak Mandir.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson.
- Bahttacharya**,** S. (2006). Sociological Foundation of Education. New Delhi: Atlantic

Reference Books

- Ravi, Samuel.S.(2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Safaya, R.N. & Shaida, B.D. (2010), *Modern theory and principles of education*. New Delhi: Dhanpati Publising Company Pvt. Ltd.
- Aggrawal, J.C.(2013). Theory and principle of education. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. et.al. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT. Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dewey, John (1916/1977). Democracy and education. New York: MacMillan.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Govt. of India (1986/'92). National policy on education. New Delhi: MHRD.
  Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
  Saraswati, T.S. (Ed.) (1999).Culture, socialization and human development. Theory, research and applications in India. New Delhi: Sage Publication.
- Taneja, V.R. (2000). Educational thought and practice, New Delhi: Sterling Publishers Pvt. Limited.

Core Paper IV

CHANGING PEDAGOGICAL PERSPECTIVE

Learning Objectives:

On completion of this course, the students shall:

- Explain the concept of pedagogy

- Differentiate pedagogy from other allied concepts
- Explain different teaching task with example
- Establish relationship between teaching and learning
- List out different approaches and methods of teaching
- Prepare a lesson plan following different designs

UNIT 1: Concept of Teaching and Learning

(i) Meaning and definition of teaching and learning
(ii) Relationship between teaching and learning
(iii) Variables involved in teaching task: independent, dependent and intervening
(iv) Phases of teaching: Pre- active, inter- active and post- active
(v) Levels of teaching: memory, understanding and reflective
(vi) Lesson plan design- The Herbartian steps, 5 E and ICON design model

UNIT 2: Theories of Teaching

(i) Meaning and nature of teaching theory
(ii) Types of teaching theories:
(iii) Formal theories of teaching- communication theory of teaching
(iv) Descriptive theories of teaching– Gagne's hierarchical theory of instruction and Bruner's cognitive theory of instruction
(v) Normative theories of teaching - Mitra's psychological theory of teaching and Clarke's general theory of teaching

UNIT 3: Principles and maxims of teaching

(i) General principles of teaching
(ii) Psychological principles of teaching
(iii) Maxims of teaching
(iv) Core teaching skills: Introducing the lesson, explaining, illustrating with examples, stimulus variation, and reinforcement, questioning, probing questions, closure.

UNIT 4: Approaches and methods of Teaching

(i) Concept of approach, method, strategy and techniques
(ii) Methods of teaching: inductive-deductive, analytic- synthetic, problem solving and project
(iii) Shift in focus from teaching to learning- constructivist approach to learning

PRACTICAL

- Preparation of rating scale/ checklist /observation schedule to evaluate classroom teaching and reporting.

NB: It will be evaluated by both the internal and external examiners

Text Books

- Kochar, S.K.(2011). *Methods and Techniques of teaching*. Sterling Publisher Pvt. Ltd., New Delhi
- Chauhan, S.S.(1995). *Innovations of teaching learning process*. Vikash Publishing House, New Delhi
- Sharma, R.A.(1986).*Technology of Teaching*. International Publishing House, Meerut.

Reference Books

- Aggarwal, J.C.(1995). *Essentials of Educational Technology*. Vikash Publishing House, New Delhi
- Walia, J.S. (2013). *Educational Technology*. Jalandhar, Punjab: Ahim Publications.
- Mangal, S.K. and Mangal, U.(2010) *Essentials of Educational Technology*, New Delhi, PHI Learning Pvt. Limited
- Mangal, S.K.(1988) *Foundations of Educational Technology,* Ludhiana, Tandan Publications
- Nageswar Rao, S., Sreedhar, P. & Rao, B.(2007). *Methods and techniques of teaching*, Sonali Publications, New Delhi
- Oliver,R.A. (1963) *Effective teaching*, JM Dent & Sons
- Pathak, R.P. & Chaudhary, J. (2012) *Educational Technology*, Pearson, New Delhi
- Ryburn, W.M.(1955) *Principles of Teaching*, Geoffrey Cembridge, OUP
- Sampath,K, Pannir Salvam,A.,& Santhanam, S.(1981) *Introduction to Educational Technology*, Sterling Publisher, New Delhi

Core Paper V

EDUCATIONAL ASSESSMENT AND EVALUATION

Learning Objectives:

On completion of this course, the students will.

- State the nature, purpose and types of educational assessment and evaluation.
- Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.
- Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.
- Describe the characteristic of a good test.
- Analyze the trends and issues in learning and learner assessment.
- Analyze and interpret results of the assessment using standard score.
- Illustrate the principles of test construction in education.

UNIT 1: Assessment and Evaluation in Education

(i) Understanding the meaning and purpose of test, measurement, assessment and evaluation

(ii) Scales of measurement- nominal, ordinal, interval and ratio

(iii) Types of test- teacher made and standardized

(iv) Approaches to evaluation- placement, formative, diagnostic and summative

(v) Types of evaluation- norm referenced and criterion referenced
(vi)Concept and nature of continuous and compressive evaluation

UNIT 2: Instructional Learning Objectives

(i) Taxonomy of instructional learning objectives with special reference to cognitive domain
(ii) Criteria of selecting appropriate learning objectives, and stating of general and specific instructional learning objectives
(iii) Relationship of evaluation procedure with learning objectives
(iv) Difference between objective based objective type test and objective based essay type test

UNIT 3: Tools and Techniques of Assessment and construction of Test

(i) Steps of test construction: planning, preparing, trying out and evaluation
(ii) Principles of construction of objective type test items- matching, multiple choice, completion and true – false
(iii) Principles of construction of essay type test
(iv) Non- standardized tools: Observation schedule, interview schedule, rating scale, check list, portfolio and rubrics .

UNIT 4: Characteristics of a good Test

(i) Validity-concept, types and methods of validation
(ii) Reliability- concept and methods of estimating reliability
(iii) Objectivity- concept and methods of estimating objectivity
(iv)Usability- concept and factors ensuring usability

PRACTICAL

- Construction of Unit test on a school subject based on blueprint and reporting.

  NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C. (1997). *Essentials of examination system, evaluation, tests and measurement*. New Delhi: Vikas Publishing House Pvt Ltd.
- Goswami, M. (2011). *Measurement and evaluation in psychology and education*. Hyderabad: Neelkamal Publishers
  Gronlund, N.E. (2003). *Assessment of student Achievement*. Boston: Allyn & Bacon
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Anastasi, A.(1976). Psychological testing. New York: Macmillan Publishing Co.
- Anderson, L.W. (2003). Classroom assessment: Enhancing the quality of teacher decision making.
- Banks, S.R. (2005). *Classroom assessment: issues and PRACTICES*. Boston: Allyn & Bacon.

- Blooms, B.S.(1956). *Taxonomy of educational Learning Objectives*. New York: Longman Green and Company
- Cohen, R.J., Swerdlik, M.E., & Phillips, S.M. (1996). *Psychological testing and assessment. an introduction to the tests and measurement*. California: Mayfield Publishing Co.
- Earl, L.M. (2006). *Assessment as learning: using classroom assessment to maximize student learning*. Thousand Oaks, California: Corwin Press
- Hopkins, KD. (1998). *Educational and psychological measurement and evaluation.* Boston: Allyn and Bacon.
- Linn, R.L. & Gronlund, N.E. (2000). *Measurement and assessment in teaching.* London: Merrill Prentice Hall.

  Macmillan, J.H. (1997). *Classroom assessment, principles and practice for effective instruction.* Boston: Allyn and Bacon

- Mohan, R. (2016). *Measurement evaluation and assessment in education*. Delhi: PHI Learning Pvt. Ltd.
- National Council of Educational Research and Training (2006). *Position paper: Examination Reforms.* New Delhi: NCERT
- Noll, N.H. S cannell, D.P. & Craig, RC. (1979). *Introduction to educational measurement.* Boston: Houghton Miffin.

Core Paper VI
Educational Research

Learning Objectives: On completion of this course, the student will:

- Describe nature, scope and limitation of educational research.
- Understand different types and methods of educational research.
- Explain sources from where knowledge could be obtained.
- Describe the process of research in education.
- Analyze research design in education.
- Illustrate procedure of collecting and analyzing data.
- Prepare the research report.

UNIT 1: Concept and Types of Educational Research

(i) Concept and nature of research
(ii) Meaning, nature and scope of educational research
(iii) Types of research by purpose- fundamental, applied and action
(iv)Types of research by approach- quantitative and qualitative

UNIT 2: Design of Research and preparation of research proposal

(i) Steps of Research
(ii) Review of Related Literature; and identification of problem
(iii) Hypothesis: meaning, types, sources and characteristics of hypothesis
(iv)Concept of population and sample
(v) Sampling procedures- probability and non-probability
(vi)Tools and techniques for data collection(i.e. questionnaire, interview, observation and procedure of data collection , preparation of research proposal

UNIT 3: Methods of Research

Meaning nature and steps of:

(i) Survey method
(ii) Case-study method
(iii) Historical research
(iv)Experimental research

UNIT 4: Writing Research Report

(i) Data analysis and interpretation in research.
(ii) Steps for reporting research
(iii) Reporting style (APA Style)
(iv)Plagiarism checking
(v) Referencing Style (APA Style): Bibliography, Webliography

PRACTICAL

- Preparation of a Research Proposal on any Educational Topic (Issues/ Trends/ Problems/ Psychological Topics)

  NB: It will be evaluated by both Internal and External examiners.

Text Books

- Best J.W. and Kahn, J. V. (2006). *Research in education (*9th Ed.) New Delhi: Pearson Education Inc.
- Kaul, L. (1984). *Methodology of educational research.* New Delhi: Vikas Publication
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Nanda, G.C. & Khatoi, P.K. (2012). *Fundamentals of Educational Research and Statistics.* New Delhi: Ludhiana.
- Gay, L.R. (1990). *Educational research-competencies for analysis and application* (3rd Ed.), Macmillan Publishing Company, New York
- Ary, D., Jacobs, L. C., &Razavieh, A. (2002). *Introduction to research in education* (6th Ed.). Belmont, CA: Wadsworth/Thomson Learning.
- Bhandarkar, P.L. and Wilkinson,T.S. (2010). *Methodology and techniques of social research*. Himalaya Publishing House, New Delhi.
- Creswell, J.W. (2014). *Educational research-planning, conducting and evaluating quantitative and qualitative research (4th Ed.).* New Jersey, USA: Pearson Education Inc. (Indian Reprint available at PHI Learning Pvt.Ptd.)
- Kerlinger, F.N. (1973). *Foundation of behavioral research.* New York: Holt Rinehart & Winston.
- Rao, U. (2007). *Action research.* Himalaya Publishing House, New Delhi.
- Borg, W.R. & Gall, M.D. (1989). *Educational research: An introduction*. New York: Longman.
- Corey, S. M. (1953), *Action research to improve school practice*, New York: Teachers College Press
- Johnson, B. & Christensen, L. (2008). *Educational research: quantitative, qualitative, and mixed approaches*. London: Sage Publication
- McMillan, J.H. & Schumacher, S. (1989). *Research in Education- a Conceptual Introduction.* New York: Harper Collins.
- Mertler, C.A. (2006). *Action research: teachers as researchers in the classroom.*

London: Sage Publication

Core Paper VII STATISTICS IN EDUCATION

Learning Objectives:

On completion of this course, the students will:

- Describe the importance of statistics in education.
- Organise and represent educational data in tabular and graphical form.
- Compute and use various statistical measures of average, variation and bi-variate distribution to in analysis and interpretation of educational data.
- Describe the concept and importance of normal probability curve and interpret test scores in using normal probability curve.
- Understand the divergence of data from normality.

UNIT 1: Educational Statistics

(i) Educational Statistics-meaning, nature, scope and uses
(ii) Organization of Data: frequency distribution, cumulative frequency distribution
(iii) Graphical representation of data (histogram, frequency polygon , ogive and pie-diagram)

UNIT 2: Measures of Central Tendency and Variability

Mean, Median and Mode- concept, computational process, uses and limitations
(i) Range, Average Deviation, Quartile Deviation and Standard Deviation- Concept, computational process, uses and limitations

UNIT 3: Co-relational Statistics

(i) Meaning and types of correlation
(ii) Computation of coefficient of correlation by rank difference method; product moment method

UNIT 4: Normal Probability Curve and Divergence from Normality

(i) Normal Probability Curve- concept, properties and applications
(ii) Skewness and Kurtosis
(iii) Interpretation of derived scores: Z- score and T- score

PRACTICAL

- Analysis of Achievement Data of a particular class and Reporting

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggarwal,Y.P.(2009).*Statistical methods: concepts, application and computation*.New Delhi: Sterling Publishers Pvt. Ltd**.**
- Garrett, H.E. (1971). *Statistics in psychology and education.* New Delhi: Paragon International Publisher
- Mangal, S.K. (2008). *Statistics in education and psychology*. New Delhi: Prentice-

Hall of India Private Limited

Reference Books

- Ferguson, G.A.(1971). *Statistical analysis in psychology and education.* Kogakusha, Tokyo: McGraw-Hill
- Guilford, J.P. &Fruchter, B. (1981). *Fundamental statistics in psychology and education.* New York: McGraw Hill
- McCall, R. (1993). *Fundamental statistics for the behavioral Science.* New York: Harcourt Brace
- Ravid, Ruth. (2000). *Practical statistics for education*. New York: University Press of America.
- Seigel. S. & Castel Ian N.J. (1988). *Non-parametric statistics for the Behavioral Science.* Singapore: Graw- Hill Book Co.

Core Paper VIII

HISTORY OF EDUCATION IN INDIA

Learning Objectives:

On completion of this course, the student will

- Understand the development of education in India during ancient period, medieval period and pre-independence period.
- Describe the development of education in India during post-independence period.
- Describe major recommendations of different policies and committee reports on education in India.

UNIT 1: Education during Ancient Period

(i) Features of Vedic period with special reference to aims, curriculum and methods of teaching
(ii) Features of Buddhist period with special reference to aims, curriculum and methods of teaching
(iii) Relevance of Gurukul system and Buddhist centers of learning
(iv)Ancient seats of learning

UNIT 2: Education during Medieval Period

(i) Features of education during medieval period with special reference to aims, curriculum and methods of teaching
(ii) Educational institutions during Muslim period, important centers of education.
(iii) Relevance of Islamic period

UNIT 3: Education during pre-independence period

(i) Charter's Act(1813)
(ii) Maculay's Minute(1835)
(iii) Wood's Despatch (1854)
(iv)Indian Education Commission(1882)

(v) Calcutta University Commission(1917)

(vi)Hartog committee(1929)

UNIT 4: Education during post-independence period

Major recommendations of the following commissions and committees relating to the aims of education and curriculum:

(i) University Education Commission (1948-49)
(ii) Major recommendations of Secondary Education Commission (1952-53)
(iii) Major recommendations of Education Commission (1964-66)
(iv)National Policy on Education (1986), revised in 1992 and beyond

PRACTICAL

- Study on implementation of NPE(1986) in respect of recommendations for elementary level

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C.(2010). *Landmarks in the history of modern Indian education*. New Delhi: Vikash Publishing Pvt Ltd.
- Dash, B.N. (1911). *Development of education in India*. New Delhi: Ajanta Prakashan
- Das, K.K. (1993). *Development of education in India*. New Delhi: Kalyani Publishers.

Reference Books

- Naik, J.P. & Narullah, S. (1996). *A student's history of education in India.*New Delhi: Mc Millan India Ltd

  Rawat, P.L. (1989). *History of Indian education* New Delhi: Ram Prasad & Sons.

- Govt. of India. (1992, 1998). National policy on education, 1986 (As modified in 1992). Retrieved from http://mhrd.gov.in/sites/upload_files/mhrd/files/NPE86- mod92.pdf
- Keay, F.E. & Mitra, Sukumar (1978). A history of education in India. New Delhi: Oxford University Press.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ministry of Human Resource Development (2004).Learning without Burden: Report of the National Advisory Committee. New Delhi: Min. of HRD.
- Mookharjee, R.K. (1989). The Gupta Empire. Delhi: Motilal Banarsi Dass Publishers Pvt Ltd. Mukherji, S.M., (1966). History of education in India. Vadodara: Acharya Book Depot.
- Naik, J.P. and Syed, N., (1974). A student's history of education in India. New Delhi: MacMillan.
- Rawat, P.L.(1989). History of Indian education. New Delhi: Ram Prasad & Sons. Website, www.mhrd.gov.in

Core Paper IX CURRICULUM DEVELOPMENT

Learning Objectives:

On completion of this course, the students will

- Differentiate curriculum from courses of study, text book.
- Analyse bases and sources of curriculum.
- Describe different types of curriculum.

- Critically examine National curriculum framework- 2000 and 2005.
- Describe process of curriculum development and differentiate different models of curriculum development.
- Evaluate curriculum using different evaluation models.

UNIT 1: Curriculum

(i) Concept of syllabus, courses of study, text book and curriculum
(ii) Bases of curriculum- philosophical, sociological and psychological
(iii)Components of curriculum: learning objectives, contents, methods and evaluation
(iv)Concept of curriculum design

UNIT 2: Types of Curriculum

(i) Subject centered curriculum
(ii) Learner centered curriculum
(iii) Experience centered curriculum
(iv)Core curriculum

UNIT 3: Curriculum Organization

(i) Principles of curriculum construction
(ii) Selection and organization of content
(iii) Selection and organization of learning experiences
(iv)National curriculum framework- 2005 and its guiding principles

UNIT 4: Curriculum Development and Evaluation

(i) Curriculum development- its process, role of local authority, state level agencies like SCERT, BSE and National Agencies like CBSE, NCERT
(ii) Tyler and Taba Model of curriculum development
(iii) Meaning and nature of curriculum evaluation

PRACTICAL

- Content Analysis of any text book of elementary level

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Ornstein, A.C. & Hunkins, E (1998). *Curriculum. Foundations, Principles and Issues*. Boston: Allyn & Bacon, Boston.
- Oliva, P.F. (2001). *Developing the curriculum* (Fifth Ed.). New York, NY: Longman.
- Talla, M. (2012). *Curriculum Development: Perspectives, Principles and Issues.* New Delhi: Pearson Publications.

Reference Books

- Beane, J.A. ,Conrad, E.P. Jr. and Samuel JA, Jr. (1986). Curriculum planning and development, Boston: Allyn & Bacon.

- Brady, L. (1995). Curriculum development, New Delhi: Prentice Hall.
- Doll, R.C. (1996).Curriculum development: decesion-making and process, Boston: Allyn & Bacon. Krug, E.A.(1956). Curriculum planning. New York: Harper and Row Publishers.
- Oliva, P.F. (2001). *Developing the curriculum* (Fifth Ed.). New York, NY: Longman.
- Pratt, D.(1980). Curriculum design and development. New York: Macmillan Publishing Co. Inc.
- Popham, W.J. (1993). Modern educational measurement. Englewood Cliffs, N.J.: Prentice Hall.
- Saylor, J.G., Alexander, W.M. and Lewis, A.J.(1981). Curriculum planning for better teaching and learning. New York: Holt Rienehart & Winston.
- Taba, H. (1962). Curriculum development-theory and practice. New York: Harcourt Brace, Jovanoich. Tanner, D. and Tanner, L.(1975) Curriculum development- theory and practice. New York: Macmillan Publishing Co. Inc.
- Tyler, R.W.(1941). Basic principles of curriculum and instruction .Chicago: University of Chicogo Press.

Core Paper X GUIDANCE AND COUNSELLING

Learning Objectives:

On completion of this course, the students will

- State the concept, need, principles and bases of guidance.
- Use various tools and techniques of guidance in appropriate contexts.
- Explain the role of school in organizing different guidance programmes.
- State the concept, scope and type of counseling.
- Narrate the process, tools and techniques of counseling.
- Explain the qualities and role of a counselor.
- Describe different programmes for with differently abled children.
- Explain the role of teacher and head master in organizing different guidance programmes.

UNIT 1: CONCEPT OF GUIDANCE

(i) Meaning, nature and scope of guidance
(ii) Philosophical, psychological and sociological bases of guidance
(iii) Need, importance, purpose and scope of educational guidance in schools
(iv)Need, importance, purpose and scope of vocational guidance

UNIT 2: EDUCATIONAL GUIDANCE

(i) Basic data necessary for educational guidance
(ii) Basic principles and main types of pupil personnel records
(iii) Cumulative records in a guidance programme
(iv)Case study procedure in guidance

UNIT 3: CONCEPT OF COUNSELLING

(i) Meaning, nature and scope of counseling

(ii) Relationship between guidance and counselling
(iii) Different types of counseling
(iv)Steps and techniques of counseling
(v) Necessary qualities of a good counselor
(vi)Role of a counselor in secondary schools

UNIT 4: ORGANISATION OF GUIDANCE SERVICE

(i) Placement service
(ii) Follow-up service
(iii) Individual inventory service
(iv)Occupational information service
(v) Launching school guidance programme

PRACTICAL

- Case Study of a Child with Special Needs or a child coming from socially disadvantaged background

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Goswami, Marami (2016). *Essentials of Guidance and Counselling*. New Delhi: Lakshi Publishers And Distributors.
- Kochhar. S.K. (2017). *Educational and Vocational Guidance in Secondary Schools*. New Delhi: Sterling Publishers
- Siddiqui, M.H. (2009). *Guidance And Counselling*. New Delhi: APH Publishing Corporation

Reference Books

- Sharma, R. N., & Sharma, R. (2013). *Guidance and counselling in India*. New Delhi: Atlantic Publishers and Distributors (P) Ltd.
- Bhatnagar, Asha Gupta, Nirmala (Eds) (1999). Guidance and counseling: A theoretical perspective (Vol.I). New Delhi: Vikas
- Bhatnagar, Asha and Gupta, Nirmala (Eds) (1999).Guidance and counseling:A practical approach(Vol.II). New Delhi: Vikas.
- Dave, Indu (1984). The basic essentials of counseling. New Delhi: Sterling Pvt. Ltd.
- Gazda George R.M.(1989). Group counseling: A development approach. London: Allyn and Bacon. Gibson, R.L. & Mitchell, M.H. (1986). Introduction to guidance. New York: McMillan.
- Nugent, Frank A. (1990). An Introduction to the profession of counseling. Columbus: Merrill publishing Co.
- Pietrofesa, J.J., Bernstein, B.,and Stanford,S.(1980). Guidance: An introduction. Chicago: Rand McNally.
- Rao, S.N. (1981). Counseling psychology. New Delhi: Tata McGraw Hill.
- Saraswat, R.K. & Gaur, J.S.(1994). Manual for guidance counselors. New Delhi: NCERT.

Core Paper XI DEVELOPMENT OF EDUCATION IN ODISHA

Learning Objectives

On completion of the course the students will:

- Grasp the structure of educational system of Odisha
- State the function of institutions/units at the state and district levels
- Appreciate the contribution of Utkalmani Gopabandhu Das to the thoughts and
- Practices of Indian education narrate the learning objectives and implementation process of the major education
- Schemes of central as well as state government being implemented in the state of Odisha
- Explain the role of various state and district level institutions in education
- Analyze the scenario of higher and technical education of Odisha
- Establish linkage between higher education and development of the state

UNIT 1: Status of Elementary Education

(i) History of primary education in Odisha
(ii) Efforts to Universalize Elementary Education: DPEP, SSA and Right to Education Act, 2009
(iii) Indicator wise position in terms of provision, enrolment, retention and achievement for elementary level programmes: NPEGEL and KGBV
(iv) Problem and issues in elementary education

UNIT 2: Status of Secondary and Higher Secondary Education

(i) History of secondary education in Odisha
(ii) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and its implementation in Odisha.
(iii) Role of BSE, Odisha- Problems and issues
(iv) Status of Higher Secondary Education and Role of CHSE; Problems and Issues
(v) Status of Higher Secondary Vocational Education-Problems and Issues

UNIT 3: Status of Higher Education

(i) History of collegiate education
(ii) Organization of higher education at the under graduation level and university level-present status
(iii) RUSA and its implementation
(iv) Autonomous colleges and their functioning
(v) Problems and issues relating to higher education

UNIT 4: Status of Teacher Education

(i) History of teacher education in Odisha
(ii) Pre-service and In-service teacher education for elementary schools teachers
(iii) Pre-service and In-service teacher education for secondary school teachers
(iv) Role of DIET, CTE, IASE and SCERT
(v) Problems and issues in teacher education

Practical: 25 Marks

- Seminar Presentation (Each student has to present minimum two papers during this semester related to themes based on Core-11)

NB: It will be evaluated by both the Internal and External Examiners.

Text & Reference Books

- Govt. of Odisha, Department of S & ME (2011). *School Education at a Glance-2011-12*, Bhubaneswar
- Samal, J.K.(1984). History of Education in Odisha: 1905-1936, Sankar Bhattacharya, Punthi Pustak, 136/4B, Bidhan Sarani, Calcutta -700004 ;p-171
- Samal, J.K.(1989). History of Modern Orissa, Firma KLM private limited, 257B,B.B.Ganguly Street, Calcutta;p-188

Websites to be visited:

- www.shodhganga.inflibnet.ac.in/bitstream/10603/.../08_chapter%202.pdf: Education in Odisha- *1850-1900: Retrieved on dt.25.07.2012*
- ***www.en.wikipedia.org/wiki/Odisha:*** *Odisha - Wikipedia, the free encyclopedia/Retrieved on dt.25.07.2012*
- ***www.newkerala.com/states-of-india/Odisha.php:*** Odisha: Info on geography, history, government, districts, business *..: Retrieved on dt.25.07.2012*
- *www.Odisha.gov.in/e-magazine/Odishareview/2011/Jan/engpdf/57-61.pdf:*
- Gopabandhu Das:The National Education Planner of Odisha*: Retrieved ondt.25.07.2012*
- www.dheOdisha.in/ *Higher Education Department - Online Admission - e-Admission for ...*: Retrieved on dt.25.07.2012
- www.Odisha.gov.in/highereducation/index.htm: *Higher Education Department.... - Government of Odisha*: Retrieved on dt.25.07.2012
- *www.Odisha2020.org/home/Odisha-higher-education-task-force:Odisha Higher Education Vision 2020*: Retrieved on dt.25.07.2012
- http://www.scertodisha.nic.in/
- http://www.chseodisha.nic.in/
- http://bseodisha.nic.in/
- http://mhrd.gov.in/rusa
- http://mhrd.gov.in/rmsa

Core Paper XII

INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION

Learning Objectives

On completion of this course, the student will:

- Explain the concept, nature and scope of ICT in education
- Explore ICT resources for Teaching and learning.
- Differentiate between Web1.0 and Web2.0
- Describe the importance of free and open source software in education
- Demonstrate the use of various application software in education.
- Develop the ability to use various tools connect the world
- Explain the content by using various subject tools.
- Explore tools and techniques of ICT for evaluation.

UNIT 1: Educational technology

(i) Meaning , nature and scope

(ii) Approaches to educational Technology: hardware, software and system approach
(iii)Innovations in Educational Technology: Open Educational Resources (OER), Massive Open Online Course (MOOC) Learning Management System (LMS)
(iv)Importance of Educational Technology for the teacher and the student.

UNIT 2: ICT in Education

(i) Conceptual understanding: Information Technology; Communication Technology; and Information and Communication Technology (ICT)
(ii) Relevance of ICT in Education
(iii) Nature and scope of ICT in Education.
(iv) Content, pedagogy and technology integration
(v) Challenges in Integrating ICT in Education
(vi) Use of computers in education- Computer Aided Learning

UNIT 3: Application of software and ICT assessment Tools in Education

(i) Word Processing Application
(ii) Spread sheet Application
(iii) Presentation Application
(iv)Free and Open Source Software (FOSS)
(v) Subject Tools: Digital Storytelling, Concept Map Software (C-Map)
(vi)Assessment Tools: Rubistar, Hot potatoes, E- portfolios

UNIT 4: Connecting with the World

(i) Use of browsers and search engines; choosing appropriate sites; search and retrieval of information and resources; Downloading, uploading and sharing information and resources;
(ii) Use and importance of Web 2.0 Tools: E-mail, Wikis, Social networking (WhatsApp, Twitter, Facebook and Blogging)
(iii) Use and importance of e-library, e-books, e-journals, Inflibnet.

PRACTICAL

- Development of an objective test using any assessment tool or development of a Rubric using Rubistar.

NB: It will be evaluated by both Internal and External examiners.

Text Books

- UNESCO (2002). *Information and communication technology in education: A curriculum for schools and programme of teacher development.* Paris: UNESCO.
- Kanvaria, V.K. (2014). *A Comprehension on Educational Technology and ICT for Education*. New Delhi: GBO.
- Vanaja and Rajasekar, S. (2016). *Information & Communication Technology (ICT) In*

Education. New Delhi: Neelkamal

Reference books

- Senapaty, H.K. (2011). *Pedagogy-Technology Integration for the Professional Development of Teacher Educators.* Bhubaneswar: Regional Institute of Education, NCERT (Monograph).
- NCERT (2006). National Curriculum Framework 2005 Position Paper National Focus Group on Educational Technology. New Delhi: Author.
- Senapaty, H.K. (2009). *ICT Integrated Learning Materials on Basic School Subjects from Constructivist Perspectives*. Bhubaneswar: Regional Institute ofEducation, NCERT (Monograph).
- Singh, L. C. (Ed.) (2010). *Educational Technology for Teachers and Educators.* New Delhi: Vasunandi Publication.
- UNESCO (2008).*ICT Competency Standards for Teachers: Policy Framework.* Retrieved from http://portal.unesco.
- UNESCO (2002). Information and Communication Technologies in Teacher Education A Planning Guide. Paris: Author
- UNESCO (2005). How ICT can create new, open learning environments: Information and communication technologies in schools: A handbook for teachers. Paris: UNESCO.
- Mishra, S. (2008). Developing E-Learning Materials: Some Pedagogical Concerns. *Indian Journal of Open Learning,* 17 (2).

Core Paper XIII

CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

Learning Objectives

On completion of this course the students will:

- Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- Analyze emerging concerns in Indian education.

UNIT 1: Pre-school and Elementary School Education

(i) Meaning, nature and importance of ECCE, problems and issues with regard to ECCE
(ii) Universalisation of Elementary Education: efforts to achieve UEE, SSA
(iii) Problems and issues in implementing Right to Education Act 2009.
(iv)Problems and issues in bringing the community to school, role of SMC
(v) Problems in ensuring equity and quality of elementary education

UNIT 2: Secondary and Higher Secondary Education

(i) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and ensuring secondary education for all.
(ii) Role of School Management and Development Committee (SMDC)
(iii) Shifting the teaching learning process from teacher centered to learner centered and activity based classroom –problems and issues
(iv) Problems and issues with regard to vocationalisation of secondary and higher secondary education
(v) Examination reforms at the secondary level
(vi) Widening the access to secondary education through National Open School

UNIT 3: Higher Education and Teacher Education

(i) Challenges in Higher education- expansion, quality and inclusion
(ii) Role of RUSA and NAAC for quality assurance in Higher education
(iii) Higher education through open and distance learning mode
(iv) Elementary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009
(v) Secondary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009

UNIT 4: Emerging Concerns

(i) Examination system: defects and reforms for making examination system flexible (internal assessment and semester system , grading, open book examination, online examination)
(ii) Choice Based Credits System (CBCS): concept, learning objectives, importance, problems and issues.
(iii) Human Rights Education: concept, learning objectives, importance, problems and issues.
(iv) Life-Skill Education: concept, learning objectives, importance, problems and issues.
(v) Peace Education: concept, learning objectives, importance, problems and issues.

PRACTICAL

- Study of perception of Stakeholder's of Education on any of the current issues and concerns, and reporting.

NB: It will be evaluated both by the Internal and External Examiners.

Text Books

- Kumar, Chanchal & Sachedeva, M.S. (2017). *Vision of Secondary Education In India in the context of 21st century*. Twentyfirst Century Publications; First Edition edition (2015)
- Pathak, K. R. (2007). *Education in the Emerging* India. New Delhi: Atlantic Publishers.
- Saxena, V. (2011). *Contemporary trends in education: A handbook for educators*. New

- Delhi: Pearson.

Reference Books

- Broudy, H.S. (1977) *Types of knowledge and purposes of education*. In R.C. Anderson, R.J., Spiro and W.E. Montanaque (Eds.) Schooling and the acquisition of knowledge (PP. Hillsdale, NJ: Erlbaum.
- Bruner, J.S. (1996). *The culture of education*. Cambridge, M.A.: Harvard University Press.
- Butchvarov, P. (1970). *The concept of knowledge*. Evanston, Illinois, North Western University Press.
- Dearden R. F. (1984). *Theory and practice in Education*. Routledge K Kegan & Paul.
- Delors, Jacques, et al; (1996). *Learning: the Treasure within report of the international commission on education for 21st century*, UNESCO.
- Illich, I. (1996). *Deschooling society*. Marion Boyers, London.
- Matheson, David (2004). *An Introduction to the study of education* (2 Ed.). David Fulton Publish.
- MHRD (2008). *Framework for implementation of Rashtriya Madhyamik Shiksha Abhiyan: A scheme for universalisation of access to and improvement of quality at the secondary stage.* New Delhi: Department of School Education and Literacy.
- MHRD (2011). *Sarva Shiksha Abhiyan: Framework for implementation based on the Right of Children to Free and Compulsory Education Act, 2009*. New Delhi: Department of School Education and Literacy.
- MHRD, (1992). *Programme of action*. Govt. of India, New Delhi.
- MHRD, Gov. of India (1992). *National policy on education* (revised) New Delhi: MHRD.
- Ministry of Law and Justice (2009). *Right to education Act 2009*. New Delhi: Govt of India.
- Naik, J.P. (1975). *Equality, quality and quantity: The elusive triangle of Indian education.* Allied Publications, Bombay.
- NCERT (2005). *National curriculum framework 2005*. New Delhi: NCERT.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- Slatterry, P. and Dana R. (2002). *Ethics and the foundations of education-Teaching Convictions in a postmodern world*. Allyn & Bacon.
- UN (2015). *The sustainable development goals (SDGs) – UNDP*. United Nations
- UNESCO (1998). *Educating for a sustainable future: A transdisciplinary vision for concerted action*. Paris: UNESCO.
- UNICEF (2000). *Defining quality in education*. New York: Programme Division (Education), Unicef.
- Wall, Edmund (2001). *Educational theory: philosophical and political Perspectives*. Prometheus Books.
- WHO (1991). *Comprehensive school health programme*. New Delhi: World Health Organization Regional Office.
- Winch, C. (1996). *Key concepts in the philosophy of education*. Routledge.
- Yadav, M. S. & Lakshmi, T. K. S. (1995). Education: Its disciplinary identity. *Journal of Indian Education,* XXI (*1*), 01-21.

Core Paper XIV

EDUCATIONAL MANAGEMENT AND LEADERSHIP

Learning Objectives

On completion of this course, the students will

- Describe the concept, types and importance of educational management.
- Spell out the structure of educational management at different levels - from national to institution level
- Describe different aspects and importance of educational management.
- Describe the concept, theories and style of leadership in educational management.
- Analyze the concept, principles and structures of total quality management approach in education.

UNIT 1: Educational Management

(i) Concept of educational management- meaning, nature, scope and principles
(ii) Process of educational management- planning, execution, staffing, control, supervision, monitoring, evaluation and feedback
(iii) Types of Management:
(iv) Centralized and decentralized
(v) Authoritarian, democratic, dynamic/creative and laissez-faire
(vi) Educational management in Odisha- structure and function with reference to school and mass education, and higher education

UNIT 2: Aspects of Institutional Management

(i) Human, material and financial resource management
(ii) Management of curricular and co curricular programmes
(iii) Management of students' welfare, auxiliary services including students' health services
(iv) School development plan
(v) Working with SMC and SMDC

UNIT 3: Leadership in Education

(i) Leadership- meaning, nature and importance in education
(ii) Leadership : Functions and skills
(iii) Theories of leadership- Redden's 3-D theory, and Hersey and Blanchard's situational theory
(iv) Styles of leadership-participating style, delegating style, selling style and telling style, Hersey and Blanchard)

UNIT 4: Total Quality Management

(i) Total Quality Management(TQM)- meaning, nature and importance
(ii) Principles of TQM- Demming's and Jurana's
(iii) Planning for TQM in school and higher education
(iv) Quality Assurance in Higher Education

PRACTICAL

- Studying the role of SMC/SMDC in school management and reporting

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kochar, S.K (2011). *School Administration and Management*. New Delhi: Sterling Publishers Private Limited.
- Bhatnagar, R. P. & Aggrawal V (2015). Educational Administration, Supervision, Planning and financing. Meerut: R Lal Book Depot.
- Mukhopadhyay, M. (2005). New Delhi: Sage

Reference Books

- Adolph and Turner Harold, E. *Supervision for change & Innovation*. Houghton Miffin Company.
- Anderson, C.A & Bowman, M.J (1971).*Educational management*, London, U.K: Frankas
- Ashima V, Deshmukh & Naik A.P (2010). *Educational management*. Girgaon, Mumbai: Himalaya Publishing House.
- Bhatnagar, R.P & Verma, I.B (1978). *Educational administration*. Meerut, India: Loyal Book Depot.
- Chau, Ta-Ngoc (2003): *Demographic aspects of educational planning.* Paris: International Institute for Educational Planning.
- Hariss, B. M (1963).*Supervisory behaviour in education*.USA: Englewood Cliffs.
- Kimbrough, S.Ralph, Michall & Nunnery. *Educational administration*. New York: Mc Millan Company.
- Livack, et al (1998).*Rethinking Decentralization in developing countries.* Washington, D.C, USA: World Bank.
- Mukerji, S.N. *Administration of educational planning and financ*e. Baroda, India: Acharya Book Depot.
- Naik, J.P. (1965): *Educational planning in India*. New Delhi, India: Allied.
- Naik, J.P. (1982): *The educational commission & after*. New Delhi, India: Allied.
- Newman and summer. *The process of management: concept, behaviour and practice*. New Delhi, India: Prentice Hall of India Pvt. Ltd.
- Oliva, O (19760. *Supervision for today's school*. New York, USA: Harper & Row.
- Ramani, K.V (2004). *A text book of educational management*. New Delhi, India: Dominant Publisher
- Safya, R & Saida, B.D *(1964). School administration and organisation.* Jalandhar, India: Dhanpat Rai & Sons
- Shukia, P.O (1983). *Administration in India*. New Delhi, India: Vikas Publication.
- Simon, Herbart A. *Administrative behaviour*. New York,USA :McMillan Company.
- Tilak, J.B.G. (1992). *Educational planning at grassroots*. New Delhi: India.
- Waber, Clarence A. *Fundamentals of educational leadership*. New York ,USA: Exposition Press.Buch, T. et al. (1980). Approaches to school management. London: Harper and Row.
- Chalam K.S. (2003): Introduction to Educational Planning and Management: New Delhi, Anmol Publications Pvt. Ltd.
- Chandrasekharan P. (1997): Educational Planning and Management. New Delhi: Sterling Publishers Pvt. Ltd.
- Deshmukh, A.V. & Naik, A.P.(2010). School administration and management. Mumbai.
- Glasser, William(1990). The quality school. New York, NY: Harper Collins Publishers, Inc.
- Government of India (1986/92). National policy on education. New Delhi: MHRD.
- Government of India (1992). Programme of action. New Delhi: MHRD.
- Gupta, S.K. & Gupta, S.91991). Educational administration and management. Indore: Manorama Prakashan.
- Hallak, J.(1990).Investing in the future:Setting educational priorities in the developing world. Paris: UNESCO.
- Kalra, Alka (1977). Efficient school management and role of principals. New Delhi: APH Publishing Corporation.
- Kochar, S.K. (2011). School administration and management. New Delhi: Sterling

Mukhopadhyay, M. (2001). Total quality management in education. New Delhi: NIEPA.
- Shaeffer, S. (1991). Collaborating for educational change: The role of parents and the community in school improvement. Paris: UNESCO.
- Tyagi R.S. and Mahapatra P.C. (2000), Educational Administration in Orissa : New Delhi, National Institute of Educational Planning and Administration (NIEPA)
- Vashist, Savita(ed.) (1998). Encyclopaedia of school education and management. New Delhi: Kamal Publishing House.

Discipline Specific Elective Paper-I

(A student has to choose any one from Pedagogy of English and Odia under DSE-1)

A.PEDAGOGY OF LANGUAGE (ENGLISH)

Learning Objectives

On completion of this course, the student will
- Analyze the issues relating to place of English in school curriculum, acquisition of skills in English, realization of aims and Learning Objectives of learning English and language policy as conceived in NPE, 1986 and NCF – 2005
- Use various methods, approaches and strategies for teaching-learning English and transact various types of lesson plans covering all aspects of English language following different approaches
- Develop test items to assess learning in English and provide feedback as well as prepare enrichment materials
- Use the understanding of phonetics for facilitating students' speaking in English
- Plan appropriate pedagogical treatment of the prescribed contents for effective classroom transaction

UNIT 1: English in School Curriculum

(i) Language policy in India with reference to NPE 1986 and NCF 2005
(ii) Place of English as a compulsory subject in school curriculum (both at elementary and secondary levels)
(iii) Learning Objectives of learning English at elementary and secondary levels
(iv)English language skills –components, their independence and interdependence

UNIT 2: Approaches, Methods and Strategies of Teaching English

(i) Understanding of different methods and strategies: Bi-lingual Method, Translation Method, Direct Method, Structural Approach, Communicative Approach.
(ii) Listening Skill: Tasks for developing Listening Comprehension
(iii) Speaking Skill: Tasks for developing Speaking skills
(iv) Reading skill: Types of Reading, Strategies to develop reading comprehension
(v) Writing Skill: Strategies to improve writing skill, Qualities of good writing (simplicity, logicality and organization in writing)

UNIT 3: Transaction of Contents

(i) Teaching of Prose (detailed and non-detailed), poetry, grammar and composition – Approaches, Methods and Strategies
(ii) Pedagogic analysis :Content analysis- analysis of topics of English text book for identification of language items(new vocabulary, structural words, grammar components),learning learning objectives, methods and strategies, teaching learning materials including ICT materials
(iii) Preparing lesson plan following 5E and Interpretation Construction Design Model(ICON)
(iv) Preparation of lesson plans following Herbartian approach.

UNIT 4: Lesson Delivery Strategies and Assessment

(i) Lesson delivery strategies: lecturing, role play and dramatization, collaborative approach, ability grouping, group work; learning through narratives and discourses; concept mapping and brain storming
(**i**) Techniques of assessment in English : continuous assessment of learners performance in English, preparation of different types of objective-based test items (Extended Response Type, Restrictive

PRACTICAL

- School Internship (Delivery of 5 Lessons following Herbatian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kohli, A.L (2010) *Techniques of teaching english.* New Delhi: Dhanpat Rai publishing Company
- Jain, R.K (1994). *Essentials of English teaching*, Agra: Vinod Pustak Mandir
- Sharma, K.L(1970) .*Methods of teaching English in India*. Agra : Laxmi Narayan Agrawal

Reference Books

- Agnihotri R. K. and Khanna A. L. (1994). *Second language acquisition: socio-cultural and linguistic aspects of English in India.* New Delhi: Sage Publications.
- Allen, H.B. (1965). *Teaching English as a second language: A book of readings*. New York: McGraw-Hill.
- Baruah, T.C (1984). *The English teacher's handbook.* New Delhi: Sterling Publishers Pvt.Ltd,
- Billows, F. L. (1975). *The techniques of language teaching.* London: Longman
- Bista, A.R(1965). *Teaching of English (Sixth Edition)*. Agra: Vinod Pustak Mandir
- Bright, J.A(1976). *Teaching English as second language.* London: Long Man Group
- Catarby, E. V (1986) *Teaching English as a foreign language in school curriculum India*, New Delhi: NCERT
- Hudelson, Sarah. (1995). *English as a second language teacher resource handbook. A practical guide for K-12 ESL programs.* California.: Corwin Press, Inc.
- Joyce , Bruce and Weil, Marsha (2003). *Models of teaching*. New Delhi: Prentice Hall of India Pvt. Ltd.
- Krishna Swamy, N. and Sri Raman, T. (1994). English teaching in India. Madras : T.R. Publication.

Mukalel, Joseph C. (2009). *Approaches to English language teaching.* New Delhi:

Discovery Publishing House Pvt Ltd.
- Pal, H.R and Pal, R(2006). *Curriculum – yesterday, today and tomorrow*, New Delhi: Shipra Publications
- Sachdeva, M.S. (1973). A new approach to teaching of english in India. Ludhiana : Prakash Brothers
- Shrivastava, B.D(1968). *Structural approach to the teaching of English*. Agra: Ramprasad and Sons

Discipline Specific Elective Paper-I

(A student has to choose ANY ONE from Pedagogy of English and Odia under DSE-1)

B. PEDAGOGY OF LANGUAGE (ODIA)

Learning Objectives

On completion of this course, the student will:

- State the importance and place of Odia as mother tongue in school curriculum.
- Develop the strategies to address the problems of Odia language acquisition in multilingual context.
- Use various strategies for facilitating the acquisition of language skills in Odia.
- Decide appropriate pedagogic approaches to transact different types of lessons in Odia.
- Prepare appropriate tools for comprehensive assessment of learning in Odia.
- Explain the fundamentals of Odia linguistics and their relevance in teaching learning Odia.
- Plan appropriate pedagogic treatment of the prescribed textual contents (in Odia) of classes IX and X.

UNIT 1: Odia as Mother Tongue in School Curriculum

(i) Importance of mother tongue in the life and education of an individual
(ii) Place of Odia as mother tongue in school curriculum in Odisha (both at elementary and secondary levels) in the context of language policy recommended by NPE, 1986 (three language formula) and NCF-2005
(iii) Learning objectives of teaching-learning Odia at elementary and secondary levels
(iv) Inter-dependence of language skills in Odia and strategies for facilitating acquisition of four-fold language skills in Odia

UNIT 2: Pedagogic Approaches to Teaching-Learning Odia

(i) Psychology of language learning and acquisition with reference to Odia as mother tongue.
(ii) Problems and issues related to acquisition of Odia language in multi-lingual context
(iii) Traditional versus modern methods of teaching-learning Odia.
(iv) Different approaches and strategies to the teaching-learning of : − Odia prose (detailed and non- detailed) , Odia poetry , Odia composition , Odia grammar .

UNIT 3: Curricular Activities in Odia

(i) Pedagogic analysis :
(ii) Content analysis- analysis of topics of Odia text book for identification of language items(new vocabulary, structural words, grammar components), learning objectives.
(iii) Methods and strategies, teaching learning materials lncluding ICT materials, assessment strategies
(iv) Preparing Lesson Plans following Herbartian, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Assessment

(i) Types of Assessment-self assessment, peer assessment, teacher assessment, internal assessment and external assessment
(i) Techniques of Assessment in Odia : Continuous assessment of learners performance in Odia, preparation of different types of objective-based test items (Extended Response Type, Restrictive Response Type and Objective Type), preparation of check list, rating scale and rubric, Portfolio assessment in Odia

PRACTICAL

- School internship (delivery of 5 Lessons following Herbartian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Barik, N. (2014). Odia shikshyadana paddhati. Cuttack: A.K.Mishra Publishers Pvt. Ltd.
- Kocchar, S.K. (2012). Teaching of Mother Tongue. Sterling Publishers, New Delhi.
- Mohanty, J., Barik, N. & Khandai, U. (1983). Odia sikshadana paddhati. Cuttack : Nalanda.
- Nayak, B.; Mohanty, J.(1999): Odia bhasa O Sahityara Bhitibhumi O Shikshyadan Padhati. Cuttack: Jagannath Process, Toni Road, Cutack-2.

Reference Books

- Daswani, C. J. Language Education in Multilingual India. New/Delhi (UNESCO)
- Dhal, G.B. (1974). Dhwani bijanana. Bhubaneswar : Odisha Rajya Pathya Pustaka Pranayana Sanstha.
- Dhal, G.B. (1972). English uchharana siksha. Cuttack : Friends Publisher.
- Mathur, S.A. Sociological Approach to Indian Education. Vinod Pustak Bhandar, Agra.
- Mohanty, B. (1970). Odia bhasara utpati O 65arma bikasha. Cuttack : Friends Publishers.
- Mohapatra, D. (1976). Odia Dhwani tattwa O sabdha sambhar. Cuttack : Grantha Mandir.
- Mohapatra, N. & Das, S. (1943). Sarbasara vykarana. Cuttack : New Student's Store
- Palmer, H.P. Principles of Language Teaching. George G. Harrep and Co. Ltd.
- Rybum, W.M.(1926). Suggestions for the Teaching of Mother Tongue. OUP.
- Saiyadain, K.G. Education and Social Order. Asia Publishing House, Bombay.

Discipline Specific Elective Paper-II

(A student has to choose ANY ONE from Pedagogy of Social Science and Mathematics under DSE-2)

A. PEDAGOGY OF SOCIAL SCIENCES

Learning Objectives

On completion of this course, the student will:

- State the meaning, scope and importance of Social science
- Specify the skills and competencies to formulate specific LEARNING OBJECTIVES for different History and Political Science lessons
- Identify the different methods and skills of teaching History and Political Science for transacting the contents effectively.
- Explain the importance of time sense and prepare / utilize timelines for effecting teaching of History
- Prepare Unit Plans and Lesson Plans in History and Political science
- Develop diagnostic achievement test, administer them and analyse the results for providing feedback

UNIT 1: Concept, Learning Objectives and Values Of Teaching Social Science

(i) Meaning, nature and scope of Social Science as NCF-2005
(ii) Learning objectives of teaching Social Science at elementary and secondary levels
(iii) Importance of teaching Social Science in school education
(iv) Identification of values/ competencies/ skills to be developed through Social Sciences

UNIT 2: Methods and Approaches to Teaching-Learning Social Science

(i) Story-telling
(ii) Narration-cum-discussion
(iii) Dramatization
(iv) Source method
(v) Project method
(vi) Field trips
(vii) Observation

UNIT 3: Curricular Activities in Social Sciences Pedagogic analysis:

(i) Content analysis- analysis of topics of social science text book .
(ii) Learning objectives,
(iii) Methods and strategies,

(iv) Teaching learning materials including ICT materials
(v) Learning activities including student and teacher activities
(vi) Assessment strategies
(vii) Preparing lesson plan following Herbart, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Development of Resource Materials and Assessment in Social Science

(i) Teaching-learning materials – Maps, Atlas, Globes, Charts, Graphs, Models, Filmstrips, T.V. Video, OHP, and Computer
(ii) Timeline – concept, aspects, type and use
(iii) Types of Assessment-self assessment, peer assessment, teacher assessment, internal assessment and external assessment
(iv) Techniques of Assessment in history and political science: Continuous Assessment of learners performance in history and political science, preparation of different types of objective-based test-
(v) Items (Extended Response Type, Restrictive Response Type and Objective Type

PRACTICAL

- School internship (delivery of 5 Lessons following Herbatian /5E/ ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kochhar, S.K. (1970). *Methods of Teaching Social Studies.* New Delhi, India: Sterling Publication.
- Mamgal, S.K. & Mangal, U. (2008). *Teaching of Social Studies*. New Delhi: PHI Learning Pvt, Ltd.
- Sharma, R.A. (2014). *Teaching of Sociaal Sceince*. Meerut: R Lal Book Depot.

Reference Books

- Kochhar, S.K. (1970). *Teaching of History*. New Delhi, India: Sterling Publishers Pvt. Ltd.
- Banks James, A. (1997). *Teaching Strategies for the Social Studies Enquiry, Valuing and Decision Making* . Massachusets,USA: Addition- Westely Publishing Co. Reading.
- Bining & Binning.(1952). *Teaching of Social Studies in Secondary Schools*. New York,USA: Mc Graw Hills.
- Burston,W.H.(1963). *Principles of History Teaching.* New Fetter Lance : Methuen & Co. Ltd.II.
- Burton W.H. (1972). Principles of history teaching, London: Methuen.
- Carretero, Mario, & Voss, James F. (Eds.) (1994). Cognitive and instructional processes in history and the social sciences. Hillsdale: Lawrence Erlbaum Associate.
- Choudhury, K.P. (1975).*The effective Teaching of History*. New Delhi,India: NCERT.
- Dhamiaja Neelam.(1993). *Multimedia Approaches in Teaching Social Studies*. New Delhi,India:Harmer Publishing House.
- Drake, Frederick D. & Lynn, R. Nelson (2005). Engagement in teaching history: Theory and practices for middle and secondary teachers. Columbus, OH: Pearson.

- Ghate, V.D. (1956). Teaching of history. Bombay: Oxford University Press.
- Gunnin, Dennis (1978). The teaching of history. Goom Helm Ltd. London.
- James H. (1953). *The Teaching of Social Studies in Secondary Schools*. . London,UK: Longman Green & Co.
- James, T. H., Arthur,J. and Hunt, M. (2001). Learning to teach history in the secondary school: A companion to school experience. London: Routledge Falme.
- Kochhar, S.K.(1970). *Teaching of political science*. New Delhi: Sterling Publishers
- NCERT. (1970). *Teaching of History of Secondary Schools*.New Delhi,India: Author.
- NCERT.(1966). *A Handbook for History Teachers*.Bombay:India: Allied Publishers.
- Taneja,V.R.(1970). *Fundamentals of Teaching Social Studies*. Mahendra Capital Publishers.
- Verma, O.P.(1984). New Delhi, India: Sterling Publishers Pvt. Ltd.
- Verma,O.P. & Vedanayagam E.G. *Geography Teaching.* New Delhi,India: Sterling Publishers Pvt. Ltd .
- Yagnik, K.S.(1966). *The Teaching of Social Studies in India*. Bombay,India: Orient Longman Ltd.

Discipline Specific Elective Paper-II

(A student has to choose ANY ONE from Pedagogy of Social Science and Mathematics under DSE II)

B. Pedagogy of Mathematics

Learning Objectives

On completion of this course, the students will

- Narrate the evolution and nature of Mathematics and its importance in the school curriculum in the context of the recent curricular reforms.
- Use various methods and approaches of teaching and learning mathematics especially suitable for the secondary school classes.
- Plan lessons in Mathematics using traditional and constructivist approaches for effective classroom transactions.
- Develop and collect activities and resource materials for their use in enhancing the quality of learning Mathematics at the secondary level.
- Conduct continuous and comprehensive assessment for enhancing the quality of Mathematics learning.
- Explain the concepts in Mathematics included in the secondary school curriculum and make pedagogical analysis of those concepts

UNIT 1: Foundations of Mathematics Education

(i) Nature and Scope of Mathematics,

(ii) Learning of Mathematics: Importance of Mathematics at elementary and secondary level, Learning Objectives of teaching-learning Mathematics at the two levels,

(iii) Curriculum reforms in school mathematics: rationale, learning objectives, principles, designs and materials in Mathematics, recent curricular reforms at the National and State levels (NCF 2005).

UNIT 2: Methods of Teaching-learning Mathematics

(i) Learning by Discovery: Nature and purpose of learning by discovery; guided discovery strategies in teaching Mathematical concepts.
(ii) Teaching for understanding proof: Proof by induction and deduction; proof by analysis and synthesis.
(iii) Problem Solving in Mathematics: Importance of problem solving in Mathematics, Steps of problem solving in Mathematics.
(iv) Constructivist approaches: Self-learning and peer learning strategies, collaborative strategies; 5E and ICON Models.

UNIT 3: Curricular Activities in Mathematics

(i) Pedagogic analysis :
(ii) Content analysis- analysis of topics of mathematics text book .
(iii) Learning objectives,
(iv) Methods and strategies,
(v) Teaching learning materials including ICT materials
(vi) Learning activities including student and teacher activities
(vii) Assessment strategies
(viii) Process of preparing lesson plan following Herbatian, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Assessment In Mathematics

(i) Assessment of Mathematics learning: Unit test – Designing blue print, item construction, marking schemes.
(ii) Assessment for Mathematics learning: Assignments, Projects and portfolios in Mathematics, group and collaborative assessment in Mathematics,
(iii) Non-testing methods of assessment of/for Mathematics Learning: Observation of learners in action, rating of participation in various Mathematics tasks and activities,
(iv) Diagnosis of difficulties in learning Mathematics concepts, Remediation of the difficulties, enrichment programmes in Mathematics learning –National Mathematics Talent Search, Mathematics Olympiad.
(v) Planning for continuous assessment of classroom learning in Mathematics.

PRACTICAL

- School internship (Delivery of 5 Lessons following Herbatian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Sidhu, K.S (1985).*Teaching of mathematics*. New Delhi: Sterling publication.
- James, A. (2003). *Teaching of mathematics*. Neel Kamal Publication: Hyderabad.
NCERT (2011). *Pedagogy of mathematics for two year B.Ed. course*. New Delhi:

Reference Books

- Cooney, Thomas J. et al. (1975). Dynamics of Teaching Secondary School Mathematics. Boston: Houghton Mifflin.
- Cooper, B. (1985). *Renegotiating secondary school mathematics*. The Hamer Press: East Sussex.

- Michel. (1982). *Teaching mathematics*. Nicholos Publication Co: New York.
- NCF (2005). *National curriculum framework*. NCERT: New Delhi
- NCERT (2006). *Position paper: National focus group (NFG) on teaching Mathematics*. NCERT: New Delhi.
- NCERT (2005). *Position paper: national focus group (NFG) on examination reform*. NCERT: New Delhi.

Scopes, P.G. (1973). *Mathematics in secondary schools- a teaching approach*. Cambridge: Cambridge University Press

- Driscoll,M., Egan, M., Nikula, J., & DiMatteo, R. W. (2007). Fostering geometric thinking: A guide for teachers, grades 6-10. Portsmouth, NH: Heinemann.
- Driscoll,M.(1999). Fostering algebraic thinking: A guide for teachers, grades 5-10. Portsmouth, NH: Heinemann.
- Grouws, D.A. (ed) (1992). Handbook of research on mathematics teaching and learning. New York: Macmillan Publishing.
- Malone, J. and Taylor, P. (eds) (1993). Constructivist interpretations of teaching and learning mathematics.
- Perth: Curtin University of Technology.
- Marshall, S.P. (1995). Schemes in problem-solving. New York: Cambridge University Press.
- Moon, B. & Mayes, A.S. (eds.) (1995). Teaching and learning in secondary school. London: Routledge.
- NCERT (1998). A textbook of content-cum-methodology of teaching mathematics. New Delhi: NCERT.
- NCERT (2005). National curriculum framework 2005. New Delhi: NCERT.
- NCERT (2006). Position paper: National focus group on teaching mathematics. New Delhi:NCERT.
- TESS India (2015). Key resources. The Open University U.K.(http//creativecommons.org/licences/ and http//www.tess-india.edu.in/)

Discipline Specific Elective Paper-III

(A student has to choose any one from A & B under DSE-III)

A. POLICY AND PRACTICES IN SCHOOL EDUCATION IN INDIA

Learning Objectives

On completion of this course, the student will:

- Analyse various policies on education for school education in India
- Evaluate progress of schools education
- Examine the problems in implementation of the policies on school education
- Explore status of women education and education for SC, ST and Minorities in Indian

UNIT 1: Policies in School Education

(i) National Education Policy, 1986, revised in 1992 and its corresponding document Programme of Action with reference to Elementary Education and Secondary Education.

(i) Implementation of Elementary Education with reference to RTE Act-2009 and Policy issues.

(ii) Implementation of Secondary Education with reference to Rashtriya Madhyamik

Siksha Abhiyan (RMSA) and policy issues

(iv) Guiding principles of NCF-2005 and curriculum revision at the school level.

UNIT 2: Policies for Vocationalisation of Education

(i) Vocationalisation of education- A policy analysis with reference to the report of Patel Committee (1977), Adisheshia Committee (1978) and National Policy on Education (1986) revised NPE (1992)
(ii) Vocational Education at Higher Secondary level: Policy challenges
(iii) Work education in schools –concept to implementation

UNIT 3: Policies for Inclusive Education

(i) Education of Children with Special Needs (CWSN): Policy perspectives with reference to NPE,1986, 1992, Mental Health Act, 1987, Persons with Disabilities Act, 1995, Rehabilitation Council of India Act, 1992, National Trust Act,1999
(ii) Inclusive education- Policies, Progress and Problems.

UNIT 4: Policy on Access and equity in Education

(i) Women's education and empowerment of women with reference to National Policy on Women Empowerment, , NPE-1986
(ii) Progress of Women Education and Problems.
(iii) Access and Equity in Education with focus to SC, ST and Minorities
(iv) Policy for SC children- Implementation, Progress and Problems.
(v) Policy for ST children- Implementation, Progress and Problems with reference to Mother Tongue based Multilingual Education
(vi) Policy for Minority Children- Implementation, Progress and Problems.

PRACTICAL

- Analysis of any Policy documents being implemented at School Education level

NB: It will be evaluated by both Internal and External examiners

Text Books

- Aggarwal, J.C. (2010). Landmarks in the history of modern Indian education (7th Ed) New Delhi: Vikash Publishing Pvt. Ltd.
- Rawat, P.L. (1989). History of Indian education New Delhi: Ram Prasad & Sons.

Reference Books

- Das, K.K. (1993). *Development of education in India*. New Delhi: Kalyani Publishers
- Dash,B.N. (1991). *Development of education in India*. New Delhi: Ajanta Prakashan
- Keay, F. E. & Mitra, Sukumar (1978). A history of education in India. New Delhi: Oxford University Press
- Mukherjee, R.K. (1988). Ancient Indian education. New Delhi: Motilal Banarsidass
- Mukherjee, R.K. (1989). The Gupta Empire. New Delhi: Motilal Banarsidass
- Naik, J.P. & Narullah, S. (1996). A student's history of education in India.New Delhi: Mc Millan India Ltd
- Ghosh, S.C. (1989). Education policy in India since warren Hastings, Calcutta: N-Prakashan.
- Reference Books
- Altekar, A.S. (1934), Education in ancient India, Banaras: Indian book Shop.
- Das Gupta, S.N. (1988). A history of Indian philosophy. (5 Vols.) Delhi: Motilal Banarasi Dass.
- MHRD, GOI (1986). National policy on education. New Delhi: The Author

- MHRD, GOI (1993). Learning without burden. Yashpal Committee Report (1993). New Delhi: The Author
- Ministry of Education, GOI (1964-66). Education and national development. (Report of education commission (1964-66). New Delhi: The Author
- Sen, Bimal (1989). Development of technical education in India and state policy-a historical perspective. Indian Journal of History of Science, 24 (2): 224-248, Indian National Science Academy.
- Sen, S.N. (1988). Education in ancient and medieval India. Indian Journal of History of Science, 23 (1): 1-32.
- Shanker, Uday (1984). Education of Indian teachers. New Delhi: Sterling Publishers Pvt. Ltd.
- Singh. R.P. (1970). Education in ancient and medieval India. Delhi: Arya Book Depot.Rao, K.Sudha (Ed.) (2002). Educational policies in India: Analysis and review of promise and performance. New Delhi: NUEPA.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- MHRD, Gov. of India (1986). *National policy on education.* New Delhi: GoI.
- MHRD, Gov. of India (1992), *National policy on education (*revised) New Delhi: GoI. MHRD, (1992), *Programme of action*., New Delhi: Govt. of India.
- NCTE (1998b). *Curriculum Framework for Quality Teacher Education.* New Delhi:NCTE.
- NCTE (2009). *National Curriculum Framework for Teacher Education TowardsPreparing Professional and Humane Teacher.* New Delhi:NCTE.
- Ministry of Law Justice (2009). The Right of Children to Free and Compulsory Education Act, 2009. *The Gazette of India*, Ministry of Law Justice, Govt. of India.
- Kurrien, J (1983). *Elementary Education in India*. New Delhi: Vikas. MHRD (). *Report to the People on Education 2011-12.* New Delhi: Author. MHRD (1986): *National Policy on Education*. New Delhi: MHRD.
- MHRD (2000). *Sarva Shiksha Abhiyan: A program for Universal Elementary Education A framework for implementation.* New Delhi: Author.
- Government of India, Ministry of Human Resource Development (2005), Report of the CABE Committee on Autonomy of Higher Education Institutions, Department of Secondary and Higher Education, New Delhi, June.

Websites to be referred:

- http://www.rehabcouncil.nic.in/
- writereaddata/RCI_Amendments_ACT.pdf
- http://socialjustice.nic.in/pwdact1995.php
- http://mhrd.gov.in/rmsa

Discipline Specific Elective Paper-III

(A student has to choose ANY ONE from A & B under DSE-III)

B. POLICY AND PRACTICES IN HIGHER EDUCATION IN INDIA

Learning Objectives

On completion of this course, the student shall:

- Analyse various policies on education for Higher education in India
- Evaluate progress of Higher education
- Examine the problems in implementation of the policies on higher education
- Explore status of higher education.
- Analyse role of various agencies of higher education in India.

UNIT 1: Policies in Higher Education

(i) NPE-1986, revised in 1992 and its corresponding document Programme of Action (POA) with reference to Higher Education.
(ii) Recommendations of National Knowledge Commission-2006.
(iii) Implementation of Policies, progress and problems.

UNIT 2: Future of Higher Education

(i) Rashtriya Uchattar Shiksha Abhiyan (RUSA)- goals, features, strategies and implementation- problems and issues.
(ii) Progress Higher Education in Odisha.
(iii) Autonomy and Accountability in Higher Education

UNIT 3: Curriculum and Assessment

(i) Curriculum issues in higher education
(ii) Choice Based Credits System, Semester system, Grading.
(iii) Role of UGC, NAAC and Accreditation
(iv) Quality Assurance in Higher Education
(v) ICT in Higher Education

UNIT 4: Educational Management System

(i) Funding and management of Higher Education
(ii) Open and Distance Learning System: Policy and Development-Role of IGNOU.
(iii) Research in higher education-problems and issues- Role of ICSSR, UGC, Association of Indian Universities
(iv) Capacity Building of Teachers in Higher Education.

PRACTICAL

- Analysis of any Policy Document being implemented in the field of Higher Education in India

NB: It will be evaluated by both Internal and External examiners

Text Books

- Rao, K.Sudha (Ed.) (2002). Educational policies in India: Analysis and review of promise and performance. New Delhi: NUEPA.

Reference Books

- Government of India, Ministry of Human Resource Development. 2011a. 'Indian Institutes of Development'. Available at http://mhrd.gov. in/itt_higher_english.
- Government of India, Ministry of Statistics and Programme Implementation. No date. NSS Survey Reports. Available at http:// mospi.nic.in/Mospi_New/site/inner. aspx? status=3&menu_id=31.
- Cheney, G. R., with B. B. Ruzzi and K. Muralidharan. 2005. India Education Report. NCEE (National Center on Education and the Economy). Available at http://www.ncee. org/wp-content/uploads/ 2013/10/ IndiaEducation-Report.pdf.
- UCG (University Grants Commission). 2008. Higher Education in India: Issues Related to Expansion, Inclusiveness, Quality and Finance. New Delhi: University Grants Commission. Available at http://www.ugc.ac.in/oldpdf/pub/report/12. pdf.
- Agarwal, P. 2006. 'Higher Education in India: The Need for Change'. ICRIER Working Paper No. 180, June. Delhi: Indian Council for Research on International Economic Relations.

- BhallaVeena& et al (1998), Accountability and Autonomy in Higher Education, AIU.
- Country paper (1998), Higher Education in India: Vision & Action, presented in UNESCO world conference of Higher Education in the Twenty-first century, Paris 5-9th Oct 1998, National Commission for Cooperation with UNESCO.
- UNESCO (1998), report on Higher Education in the Twentieth First Century Vision & Actions held at Paris 5-9th Oct 1998, UNESCO.
- Meek, V Lynn (2000), Diversity and marketisation of higher education: incompatible concepts? Higher Education Policy, 13 (2000), p-25 & 26.
- Government of India, Ministry of Human Resource Development (2005), Report of the CABE Committee on Autonomy of Higher Education Institutions, Department of Secondary and Higher Education, New Delhi, June.
- Tilak, J.B.G. (1996), "Higher Education under Structural Adjustment", Journal of Indian School of Political Economy 8 (2) (April-June): 266-93.
- UGC (2005), University Development in India: Basic Facts and Figures (1995-96 to 2001-02), University Grants Commission, Information & Statistics Bureau, New Delhi, November

Discipline Specific Elective Paper-IV INCLUSIVE EDUCATION

Learning Objectives

On completion of the course the students shall be able to:

- Define meaning and scope of inclusive education.
- identify the assumptions of disability underlying current general and special education practices
- understand the various suggestions given by different recent commissions on education of children with disabilities for realizing the concept of "Universalization of Education";
- explore and utilize pedagogical approaches that can support students with a variety of learning profiles in respectful ways
- explain the meaning and implications of universal design in learning (UDL) for classroom pedagogy
- examine the different support services and collaboration for inclusive education

UNIT 1: Meaning, Genesis and Scope Inclusive Education

(i) Special education and inclusive education: concept and principles
(ii) Historical developments of special and inclusive education in India.
(iii) Medical and social models of disability
(iv) Examining the practice of labeling
(v) Social, psychological and educational contexts of inclusion

UNIT 2: Polices & Frameworks Facilitating Inclusive Education

(i) International Declarations: Universal Declaration of Human Rights (1948), World Declaration for Education for All (1990)
(ii) International Conventions: United Nations Convention of Rights of Persons with Disabilities (UNCRPD) (2006)
(iii) International Frameworks: Salamanca Framework (1994), Biwako Millennium Framework of Action (2002)
(iv) Constitutional Obligations; RCI Act 1992; PwD 1995 and NTA 1999; RTE-SSA and

RPD Act. 2016.

UNIT 3: Understanding and Support Needs of Students with Disability

(i) Understanding and support needs of students with different labels of disability including: autism, learning disabilities, speech & hearing disability, blindness, and intellectual disabilities in inclusive classroom.

UNIT 4: Frameworks, Support and Collaboration for Inclusive Education

(i) Universal Design for Learning: Multiple Means of Access, Expression, Engagement & Assessment
(ii) Principles of Differentiated Instruction and Assessment
(iii) Capacity Building of Teachers for Inclusive Education
(iv) Assistive Technology & Devices for Inclusive Education

PRACTICAL

- Visit to a centre for students with special needs (special school/special institute). Observe the process of teaching learning and write a report.

NB: It will be evaluated by both Internal and External examiners

Text Books

- Panda, K.C. (nd). *Education of Exceptional Children*
- Daniels, H. (1999) . *Inclusive education.* London: Kogan.
- Mangal, S.K. (2013). Exceptional Childred. New Delhi: PHI Learning Pvt. Ltd.

Reference Books

- Bartlett, L. D., & Weisentein, G. R. (2003). *Successful inclusion for educational leaders*. New Jersey: Prentice Hall.
- Deiner, P. L. (1993). *Resource for Teaching Children with Diverse Abilities*. Florida: Harcourt Brace and Company.
- Dessent, T. (1987). *Making Ordinary School Special*. Jessica Kingsley Pub.
- Gargiulo, R.M. *Special Education in Contemporary Society: An Introduction to Exceptionality*. Belmont: Wadsworth.
- Gartner, A., & Lipsky, D.D. (1997). *Inclusion and School Reform Transferring America's Classrooms.* Baltimore: P. H. Brookes Publishers.
- Giuliani, G.A. & Pierangelo, R. (2007). *Understanding, Developing and Writing IEPs*. Corwin press:Sage Publishers.
- Gore, M.C. (2004) . *Successful Inclusion Strategies for Secondary and Middle School Teachers,* Crowin Press, Sage Publications.
- Hegarthy, S. & Alur, M. (2002). *Education of Children with Special Needs: from Segregation to Inclusion*. Corwin Press, Sage Publishers.
- Karant, P., & Rozario, J. ((2003). *Learning Disabilities in India*. Sage Publications.
- Karten, T. J. (2007). *More Inclusion Strategies that Work*. Corwin Press, Sage Publications.
- King-Sears, M. (1994). *Curriculum-Based Assessment in Special Edcuation.* California: Singular Publications.
- Kluth, P. (2009). *The autism checklist: A practical reference for parents and teachers.* San Francisco, CA: Jossey-Bass.
- Lewis, R. B., & Doorlag, D. (1995). *Teaching Special Students in the Mainstream*.

4th Ed. New Jersey: Pearson.
- Rayner, S. (2007). *Managing Special and Inclusive Education*, Sage Publications.
- Rose, D. A., Meyer, A. & Hitchcock, C. (2005). *The Universally Designed Classroom: Accessible Curriculum and Digital Technologies.* Cambridge, MA: Harvard Education Press.
- Ryandak, D. L. & Alper, S. (1996). Curriculum Content for Students with Moderate and Severe Disabilities in Inclusive Setting. Boston, Allyn and Bacon.
- Thousand, J., Villa, R., & Nevin, A. (2007). *Differentiating instruction: Collaborative planning and teaching for universally designed learning*. Thousand Oaks, CA: Corwin Press.
- Turnbull, A., Turnbull, R., Turnbull, M., & Shank, D.L. (1995). *Exceptional Lives: Special Education in Today's Schools*. 2nd Ed. New Jersey: Prentice-Hall.Inc
- Udvari-Solner, A. & Kluth, P. (2008). *Joyful Learning: Active and collaborative learning in inclusive classrooms*. Thousand Oaks, CA: Corwin Press.

DSE Paper – IV

DISSERTATION/ RESEARCH

PROJECT

(College can give this choice only for students with above 60% aggregate marks)

The students will select a research project on any Educational issue or problem or topic and prepare a report. The project will be prepared based on proposal already developed in Semester-III, Core-6.

Distribution of Marks will be as follows:

Item	**Total**
Report	75
Viva-voce	25
Total	**100**

The assessment of students' performance will be made jointly by the external and internal examiners.

Generic Elective Paper I

EDUCATIONAL PHILOSOPHY

Learning Objectives

On completion of this course, the learners shall be able to:

- State and analyse the meaning of education and form own concept on education
- Explain philosophy as the foundation of education
- Analyse aims of education
- Describe the essence of different formal philosophies and draw educational implications
- Compare and contrast Indian and western philosophies of education

UNIT 1: Education in Philosophical Perspective

(i) Etymological meaning of education

(ii) Narrower and broader meaning of education, lifelong education

(iii) Aims of Education- Individual and Social aims of education

(iv) Meaning and nature of philosophy

(v) Branches of Philosophy- Metaphysics, epistemology and axiology, and its educational implications

(vi) Functions of Philosophy in relation to education

UNIT 2: Formal Schools of Philosophy and their Educational Implications

(i) Idealism, Naturalism, Pragmatism with reference to:

Aims of Education, curriculum, methods of teaching, role of teacher, discipline

UNIT 3: Indian Schools of Philosophy and their Educational Implications

(i) Common characteristics of Indian philosophy

(ii) Sankhya, Vedanta, , Buddhism, Jainism with reference to: Philosophical tenets, Aims of education, curriculum, methods of teaching, role of teacher.

UNIT 4: Educational Thought of Western and Indian Thinkers

(i) Plato

(ii) Dewey

(iii) Gopabandhu Das

(iv)Gandhi

(v) Tagore

(vi)Aurobindo

PRACTICAL

- Field visit to a seat of learning in the locality and prepare report.

NB: It will be evaluated by both the internal and External examiners.

Text Books

- Safaya, R.N. & Shaida, B.D. (2010). *Modern Theory and Principles of Education*. New Delhi: Dhanpatrai Publishing Company Pvt. Ltd.
- Ravi, Samuel.S. (2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Nayak, B.K . . *Text Book of Foundation of Education.* Cuttack, Odisha: Kitab Mhal.

Reference Books

- Aggrawal, J.C. (2013). Theory and principle of education. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. *et.al*. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT. Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dash, B.N. (2011) Foundation of education, New Delhi; Kalyani Publishers.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Krishnamurthy, J. (1953). Education and significance of life. New Delhi: B.I. Publications
- Kumar Krishna (1996). Learning from conflict. New Delhi: Orient Longman.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson. Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Peters, R.S. (1967). The Concept of education. London: Routledge Kegan & Paul. Radhakrishnan, S. Indian philosophy Vol. I and Vol. II
- Ross, James S.(1981). Ground work of educational theory.Delhi: Oxford University Press Rusk, Robert R., Philosophical bases of education, London: Oxford University Press.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
- Srinivas, M.N., (1986). Social changes in modern India. Bombay: Allied Publishers.
- Taneja, V.R. (2000). Educational thought and practice, New Delhi: Sterling Publishers Pvt. Limited.
- Wingo, G. Max (1975). Philosophies of education. New Delhi: Sterling Publisher Pvt.

Limited.

Generic Elective Paper II

EDUCATIONAL PSYCHOLOGY

Learning Objectives

On completion of this course, the students will:

- Explain the concept of educational psychology and its relationship with psychology.
- Understand different methods of educational psychology.
- Explain the concepts of growth and development of child and adolescence, and underlined general principles of growth and development.
- Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.
- Explain the theory of cognitive development and its educational implications.
- State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.
- Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

UNIT 1: Educational Psychology in Developmental Perspective

(i) Meaning, nature, scope and relevance of educational psychology
(ii) Methods of educational psychology- observation, experimentation, and case study
(iii) Application of educational psychology in understanding learner
(iv) Growth and Development-Concept, difference between growth and development, and principles of growth and development
(v) Characteristics of development during adolescence in different areas:
(vi) Physical, social, emotional and intellectual (with reference to Piaget)

UNIT 2: Intelligence, Creativity and Individual difference

(i) Individual difference-concept, nature, factors and role of education
(ii) Intelligence- meaning and nature of intelligence, concept of I.Q, theories of intelligence- Two factor theories, Guildford's structure of intelligence (SI) model, Gardner's multiple theory of intelligence.
(iii) Measurement of intelligence- individual and group test, verbal, non-verbal test
(iv) Creativity- meaning, nature and stages of creative thinking, strategies for fostering creativity

UNIT 3: Learning and Motivation

(i) Learning- meaning, nature and factors of learning
(ii) Theories of learning with experiment and educational implications-
(iii) Classical conditioning, operant conditioning, insightful learning and constructivist approach to learning
(iv) Motivation – concepts, types, and techniques of motivation

UNIT 4: Personality and Mental health

(i) Personality- meaning and nature of personality
(ii) Theories- type theory(Jung), trait theory(Allport)
(iii) Assessment of personality- subjective, objective and projective techniques
(iv)Mental health-concept, factors affecting mental health and role of teacher, mental health of teacher.
(v) Adjustment mechanism: concept and types

PRACTICAL

- Case study of an exceptional child and reporting

: It will be evaluated by both the Internal and External examiners**.**

Text Books

- Chauhan, S.S. (1978). *Advanced educational psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.
- Mangal, S.K. (2002). *Advanced educational psychology*. New Delhi: Prentice Hall of India.
- Woolfolk, A. (2015). *Educational psychology (9th Ed.).* New Delhi: Pearson Publication

Reference Books

- Aggarwal, J.C. (2014). Essentials of Educational Psychology. New Delhi: Vikas Publishing House Pvt. Ltd.
- Attri, A.K. (2015). *Psychology of development and learning*. New Delhi: APH Publishing Corporation.
- Bernard, P.H. (1970). *Mental Health in the class room*. New York: McGraw Hill.
- Biehier, R.F. & Snowman, J., (1997). *Psychology applied to teaching*. New York: Houghton MIflin.
- Bigge, M.L., *Psychological foundations of education*, Harper and Row, New York, 1985.
- Chandraiah,K.(2011). *Emotional intelligence*. New Delhi: APH Publishing Corporation.
- Dececco, J.P. & Crawford, W.R. (1997). *Psychology of learning and institution*. New Delhi: Prentice Half of India.
- Good T., (1990). *Educational psychology*. Longman, New York, 1990.
- Lindgren, H.C. (1980). *Educational psychology in the classroom*. New York: Oxford University Press.
- Mouly, G.J. (1982). *Psychology for teaching*. Allyn & Bacon, Boston.
- Rothstein, P.R. (1990). *Educational psychology*. New York: McGraw Hill..
- Salvin, R, (1990). *Educational psychology: theory into practice,* N.J.: Prentice hall, Englewood Cliffs,
- Snowman and Biehler **(---).** *Psychology applied to teaching*……..
- Sprint hall, RC. & Sprint hall, NA, (1990). *Educational psychology, development approach,* New York: McGraw Hill.

Generic Elective Paper III

CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

Learning Objectives

On completion of this course the students will

- Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- Analyze emerging concerns in Indian education.

UNIT 1: Pre-school and Elementary School Education

(i) Meaning, nature and importance of ECCE, problems and issues with regard to ECCE
(ii) Universalization of Elementary Education: efforts to achieve UEE, SSA
(iii) Problems and issues in implementing Right to Education Act 2009.
(iv)Problems and issues in bringing the community to school, role of SMC
(v) Problems in ensuring equity and quality of elementary education

UNIT 2: Secondary and Higher Secondary Education

(i) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and ensuring secondary education for all.
(ii) Role of School Management and Development Committee (SMDC)
(iii) Shifting the teaching learning process from teacher centered to learner centered and activity based classroom –problems and issues
(iv) Problems and issues with regard to vocationalisation of secondary and higher secondary education
(v) Examination reforms at the secondary level
(vi) Widening the access to secondary education through National Open School

UNIT 3: Higher Education and Teacher Education

(i) Challenges in Higher education- expansion, quality and inclusion
(ii) Role of RUSA and NAAC for quality assurance in Higher education
(iii) Higher education through open and distance learning mode
(iv)Elementary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009
(v) Secondary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009

UNIT 4: Emerging Concerns

(i) Examination system: defects and reforms for making examination system flexible (internal assessment and semester system , grading, open book examination, online examination)

(ii) Choice Based Credits System (CBCS): Concept, learning objectives, importance, problems and issues.
(iii) Human Rights Education: Concept, learning objectives, importance, problems and issues.
(iv) Life-Skill Education: Concept, learning objectives, importance, problems and issues.
(v) Peace Education: Concept, learning objectives, importance, problems and issues.

PRACTICAL

- Study of Perception of Stakeholder's of Education on any of the current issues and concerns, and reporting.

NB: It will be evaluated both by the Internal and External Examiners.

Text Books

- Kumar, Chanchal & Sachedeva, M.S. (2017). *Vision of Secondary Education In India in the context of 21st century*. Twentyfirst Century Publications; First Edition edition (2015)
- Pathak, K. R. (2007). *Education in the Emerging* India. New Delhi: Atlantic Publishers**.**

Saxena, V. (2011). Contemporary trends in education: A handbook for educators. New Delhi: Pearson.

Reference Books

- Broudy, H.S. (1977) *Types of knowledge and purposes of education*. In R.C. Anderson, R.J., Spiro and W.E. Montanaque (Eds.) Schooling and the acquisition of knowledge (PP. Hillsdale, NJ: Erlbaum.
- Bruner, J.S. (1996). *The culture of education*. Cambridge, M.A.: Harvard University Press.
- Butchvarov, P. (1970). *The concept of knowledge*. Evanston, Illinois, North Western University Press.
- Dearden R. F. (1984). *Theory and practice in Education*. Routledge K Kegan & Paul.
- Delors, Jacques, et al; (1996). *Learning: the Treasure within report of the international commission on education for 21st century,* UNESCO.
- Illich, I. (1996). *Deschooling society*. Marion Boyers, London.
- Matheson, David (2004). *An Introduction to the study of education* (2 Ed.). David Fulton Publish.
- MHRD (2008). *Framework for implementation of Rashtriya Madhyamik Shiksha Abhiyan: A scheme for universalisation of access to and improvement of quality at the secondary stage.* New Delhi: Department of School Education and Literacy.
- MHRD (2011). *Sarva Shiksha Abhiyan: Framework for implementation based on the Right of Children to Free and Compulsory Education Act, 2009*. New Delhi: Department of School Education and Literacy.
- MHRD, (1992). *Programme of action*. Govt. of India, New Delhi.
- MHRD, Gov. of India (1992). *National policy on education* (revised) New Delhi: MHRD.
- Ministry of Law and Justice (2009). *Right to education Act 2009*. New Delhi: Govt of India.
- Naik, J.P. (1975). *Equality, quality and quantity: The elusive triangle of Indian education.* Allied Publications, Bombay.
- NCERT (2005). *National curriculum framework 2005*. New Delhi: NCERT.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- Slatterry, P. and Dana R. (2002). *Ethics and the foundations of education-Teaching*

Convictions in a postmodern world. Allyn & Bacon.

- UN (2015). *The sustainable development goals (SDGs) – UNDP*. United Nations
- UNESCO (1998). *Educating for a sustainable future: A transdisciplinary vision for concerted action*. Paris: UNESCO.
- UNICEF (2000). *Defining quality in education*. New York: Programme Division (Education), Unicef.
- Wall, Edmund (2001). *Educational theory: philosophical and political Perspectives*. Prometheus Books.
- WHO (1991). *Comprehensive school health programme*. New Delhi: World Health Organization Regional Office.
- Winch, C. (1996). *Key concepts in the philosophy of education*. Routledge.
- Yadav, M. S. & Lakshmi, T. K. S. (1995). Education: Its disciplinary identity. *Journal of Indian Education,* XXI (*1*), 01-21.

Generic Elective Paper IV

EDUCATIONAL ASSESSMENT AND EVALUATION

Learning Objectives

On completion of this course, the students will.

- State the nature, purpose and types of educational assessment and evaluation.
- Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.
- Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.
- Describe the characteristic of a good test.
- Analyze the trends and issues in learning and learner assessment.
- Analyze and interpret results of the assessment using standard score.
- Illustrate the principles of test construction in education.

UNIT 1: Assessment and Evaluation in Education

(i) Understanding the meaning and purpose of test, measurement, assessment and evaluation
(ii) Scales of measurement- nominal, ordinal, interval and ratio
(iii) Types of test- teacher made and standardized
(iv) Approaches to evaluation- placement, formative, diagnostic and summative
(v) Types of evaluation- norm referenced and criterion referenced
(vi) Concept and nature of continuous and compressive evaluation

UNIT 2: Instructional Learning Objectives

(i) Taxonomy of instructional learning objectives with special reference to cognitive domain
(ii) Criteria of selecting appropriate learning objectives, and stating of general and specific instructional learning objectives
(iii) Relationship of evaluation procedure with learning objectives
(iv) Difference between objective based objective type test and objective based essay type test

UNIT 3: Tools and Techniques of Assessment and construction

of Test

(i) Steps of test construction: planning, preparing, trying out and evaluation
(ii) Principles of construction of objective type test items- matching, multiple choice, completion and true – false
(iii) Principles of construction of essay type test
(iv) Non- standardized tools: Observation schedule, interview schedule, rating scale, check list, portfolio and rubrics.

UNIT 4: Characteristics of a good Test

(i) Validity-concept, types and methods of validation
(ii) Reliability- concept and methods of estimating reliability
(iii) Objectivity- concept and methods of estimating objectivity
(iv) Usability- concept and factors ensuring usability

PRACTICAL

- Construction of Unit test on a school subject based on Blueprint and Reporting.

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C. (1997). *Essentials of examination system, evaluation, tests and measurement*. New Delhi: Vikas Publishing House Pvt Ltd.
Gronlund, N.E. (2003). *Assessment of student Achievement*. Boston: Allyn & Bacon
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Anastasi, A.(1976). Psychological testing. New York: Macmillan Publishing Co.
- Anderson, L.W. (2003). Classroom assessment: Enhancing the quality of teacher decision making.
- Banks, S.R. (2005). *Classroom assessment: issues and PRACTICES*. Boston: Allyn & Bacon.
- Blooms, B.S.(1956). *Taxonomy of educational Learning Objectives*. New York: Longman Green and Company
- Cohen, R.J., Swerdlik, M.E., & Phillips, S.M. (1996). *Psychological testing and assessment. an introduction to the tests and measurement*. California: Mayfield Publishing Co.
- Earl, L.M. (2006). *Assessment as learning: using classroom assessment to maximize student learning*. Thousand Oaks, California: Corwin Press
- Hopkins, KD. (1998). *Educational and psychological measurement and evaluation.* Boston: Allyn and Bacon.
- Linn, R.L. & Gronlund, N.E. (2000). *Measurement and assessment in teaching.* London: Merrill Prentice Hall.
- Macmillan, J.H. (1997). *Classroom assessment, principles and practice for effective instruction.* Boston: Allyn and Bacon
- Mohan, R. (2016). *Measurement evaluation and assessment in education*. Delhi: PHI Learning Pvt. Ltd.
- National Council of Educational Research and Training (2006). *Position paper: Examination Reforms.* New Delhi: NCERT
- Noll, N.H. S cannell, D.P. & Craig, RC. (1979). *Introduction to educational measurement.* Boston: Houghton Miffin.

Course structure of UG English Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	British Poetry and Drama: 14th to 17th Centuries	06	100
	C-II	British Poetry and Drama: 17th and 18th Century	06	100
	GE-I	Academic Writing and Composition	06	100
			22	
II	AECC-II	AECC-II	04	100
	C-III	British Prose: 18th Century	06	100
	C-IV	Indian Writing in English	06	100
	GE-II	Gender and Human Rights	06	100
			22	
III	C-V	British Romantic Literature	06	100
	C-VI	British Literature 19th Century	06	100
	C-VII	British Literature: Early 20th Century	06	100
	GE-III	Nation, Culture, India	06	100
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	American Literature	06	100
	C-IX	European Classical Literature	06	100
	C-X	Women's Writing	06	100
	GE-IV	Language and Linguistics	06	100
	SEC-II	SEC-II	04	100
			28	
Semester	Course	Course Name	Credits	Total marks
V	C-XI	Modern European Drama	06	100
	C-XII	Indian Classical Literature	06	100
	DSE-I	Literary Theory	06	100

	DSE-II	World Literature	06	100
			24	
VI	C-XIII	Postcolonial Literatures	06	100
	C-XIV	Popular Literature	06	100
	DSE-III	Partition Literature	06	100
	DSE-IV	Writing for Mass Media	06	100
	OR			
	DSE-IV	Dissertation	06	100*
			24	

ENGLISH

HONOURS PAPERS:

Core Course -14 papers
Discipline Specific Elective - 4 papers (3+1 Paper or Project)
Generic Elective for Non English students- 4 Papers. In case the University offers 2 subjects with two papers each in GE, then papers 1 and 2 will be the GE paper

Marks per paper – Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Project (Hard Copy-80, Presentation-20)

Core Paper I

BRITISH POETRY AND DRAMA: 14TH TO 17TH CENTURIES

Introduction:

The paper seeks to introduce the students to British poetry and drama from the 14th to the 17th century. It helps students sample and explore certain seminal texts from the early modern period, covering the genesis of modern English poetry and the Renaissance that set British poetry and drama on their glorious course to greatness.

UNIT 1: Historical overview

(i) The period is remarkable in many ways: 14th century poetry evokes an unmistakable sense of "modern" and the spirit of Renaissance is marked in the Elizabethan Drama. The Reformation brings about sweeping changes in religion and politics. A period of expansion of horizons: intellectual and geographical.

UNIT 2: Geoffrey Chaucer

(i) *The Pardoner's Tale*

UNIT 3: Spenser: "Sonnet 34 (Amoretti)"

(i) Shakespeare: 'That time of the year…" (Sonnet 73)
(ii) Ben Jonson: "Song to Celia"
(iii) John Donne: "Sunne Rising"

UNIT 4: Shakespeare

(i) *Macbeth*

Text Books

- Texts as prescribed in Units 2,3,4

Reference Books

- *The Pelican Guide to English Literature*. Ed. Boris Ford. Vol 1
- *The Age of Chaucer English Literature in Context*. Paul Poplawski. Cambridge UP, 2008
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- *Shakespeare for Beginners* by Brandon Toropov
- *English Literature* by Jonathan Bate (Ch. 7 "Shakespeare and the Dramatic Literature")

Core Paper II

BRITISH POETRY AND DRAMA: 17TH AND 18TH CENTURY

Introduction:

The Introduction of this paper is to acquaint students with the Jacobean and the 18th century British poetry and drama, the first a period of the acid satire and the comedy of humours, and the second a period of supreme satiric poetry and the comedy of manners.

UNIT 1: Historical overview

(i) 17th C: Period of the English Revolution (1640–60); the Jacobean period; metaphysical poetry; cavalier poetry; comedy of humors; masques and beast fables
(ii) 18th C: Puritanism; Restoration; Neoclassicism; Heroic poetry; Restoration comedy; Comedy of manners

UNIT 2: Milton: "Lycidas"

(i) Andrew Marvell: 'To His Coy Mistress"
(ii) Alexander Pope: "Ode On Solitude"
(iii) Aphra Behn: "I Led my Silvia to a Grove"

(iv)Robert Herrick: “His Return to London”

UNIT 3: Ben Jonson

(i) *Volpone*

UNIT 4: Dryden

(i) *All For Love*

Text Books

- Texts prescribed in units 2, 3, 4 (All the texts are freely available on the sites such as www.poetryfoundation.org, www.bartleby.com, http://www.poemhunter.com etc. In addition, the following anthologies may be consulted.)

Reference Books

- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Black, Joseph (Ed). : *The Broadview Anthology of British Literature* Concise Edition, Vol. A. Broadview Press, London, 2007.
- Corns, T N(ed.) *The Cambridge Companion to English Poetry*. Cambridge: University Press, 1973
- Ford, Boris ed. *The Pelican Guide to English* Literature. Vol 3. From *Donne to Marvell* in. Harmondsworth: Penguin Books, 1976.
- Parry, G.: *The Seventeenth Century: The Intellectual and Cultural Context of English Literature*. Harlow: Longman, 1989.
- Sherwood, T. G: *Fulfilling the Circle: A Study of John Donne's Thought*, Toronto, Toronto Press, 1984.

Core Paper III

BRITISH PROSE: 18TH CENTURY

Introduction:

The Introduction of the paper is to acquaint the students with a remarkable, newly evolved form of literature: the essay. The period is also known for its shift of emphasis from reason to emotion

UNIT 1: Historical overview: Restoration, Glorious Revolution, Neo-classicism, And Enlightenment.

UNIT 2: Mary Wollstonecraft

(i) "The Rights and Involved Duties of Mankind Considered" (Chapter 1, *A Vindication of the Rights of Women*)

UNIT 3: Joseph Addison: Essays

(i) "Friendship," "Good Nature," "Six Papers on Wit"

(From *Joseph Addison: Essays and Tales*, <http://www.biblioteca.org.ar/libros/167707.pdf>)

UNIT 4: Samuel Johnson

(i) "Narratives of Travellers Considered," and "Obstructions of Learning" from *Samuel Johnson's Essays* < http://www.johnsonessays.com/>

Text Books

- Texts prescribed in Units 2, 3, 4. Web sources are indicated against the texts in brackets.

Reference Books

- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *English Literature* by Jonathan Bate (Ch. 4 "The Study of English")
- *Pelican Guide to English Literature*. Ed. Boris Ford. Vol 4. *From Dryden to Johnson*

O.M. Myres, "Introduction" to *The Coverley Papers*

Core Paper IV

INDIAN WRITING IN ENGLISH

Introduction:

Indian writing in English has been the fastest growing branch of Indian literature in the last one hundred years. It has produced a rich and vibrant body of writing spanning all genres. As a 'twice born' form of writing, it partakes of both the indigenous and the foreign perspectives and has an inherent tendency to be postcolonial. This paper seeks to introduce the students to the field through a selection of representative poems, novel and play.

UNIT 1: Historical overview

(i) Indian writing in English, the key points of which are East India Company's arrival in India, Macaulay's 1835 Minutes of Education, India's first war of independence and the establishment of colleges to promote Western education and the evolution of Indian writing in English in 20th century.

UNIT 2:

(i) Sarojini Naidu "The Bangle Sellers",

(ii) A.K.Ramanujan "Obituary",

(iii) Jayanta Mahapatra "Grandfather",

(iv)Nissim Ezekiel "Night of the Scorpion"

UNIT 3: R.K Narayan

(i) *The Guide*

UNIT 4: Mahesh Dattani

(i) *Final Solutions*

Text Books

- Texts prescribed in Units 2, 3, 4.

Reference Books

- Mehrotra, Arvind Krishna. *Concise History of Indian Literature in English*, Permanent Black, 2010.
- K. Srinivas Ayenger. *A History of Indian Writing in English*
- M.K. Naik. *History of Indian Writing in English*
- Vinay Dharwadker. "The Historical Formation of Indian English Literatrue" in Sheldon Pollock (ed) *Literary Cultures in History*
- *Modern Indian Drama: Issues and Interventions* (ed) Lakshmi Subramanyam

Core Paper V

BRITISH ROMANTIC LITERATURE

Introduction:

The paper aims at acquainting the students with the Romantic period and some of its representative writers. The students will be able to sample some seminal works of the Romantic age which gave expression to the key ideas of the period such as return to nature, subjectivity, desire for personal freedom and the defiance of classicism-imposed restrictions on poetic form.

UNIT 1: Historical overview

(i) The period otherwise known as The Romantic Revival; The Age of Revolution as it owes its origin to the epoch making French Revolution of 1789. The emphasis on the organic relationship between man and Nature, individual liberty and unbridled desire free from the shackles of classicism made this period unique—Romanticism vs Classicism

UNIT 2:

(i) Thomas Gray: "Elegy Written in a Country Churchyard,"
(ii) William Blake: "A Poison Tree" and "Chimney Sweeper"

UNIT 3:

(i) William Wordsworth's "Tintern Abbey"
(ii) S. T. Coleridge: "Kubla Khan,"
(iii) John Keats: "Ode to a Nightingale,"

(iv)P. B. Shelley: “Ode to the West Wind,”

UNIT 4:

(i) William Wordsworth's *Preface* to the 2nd edition of *Lyrical Ballads*

Text Books

- Texts prescribed in Units 2, 3, 4

Reference Books

- Paul Poplawski, *English Literature in Context*, "The Romantic Period"
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *Pelican Guide to English Literature*. *Vol 5*. *From Blake to Byron*. Ed. Boris Ford
- Maurice Bowra, *The Romantic Imagination*
- *English Literature*. Jonathan Bate (Ch. 5 "Periods and Movements")

Core Paper VI

BRITISH LITERATURE 19TH CENTURY

Introduction:

This paper seeks to introduce the students to the exploits of the 19th century British Literature in prose, especially fiction and cultural criticism. It also includes samples of Victorian poetry.

UNIT 1: Historical overview

(i) The 19th century British literature though mainly famous for the Romantic Movement, was also a witness to major socio-political developments like industrialization, technological advancements and large scale mobilization of people from the rural to the urban centers.

UNIT 2: Poetry

(i) Tennyson; "Break, Break, Break", Robert Browning, "My Last Duchess"
(ii) Criticism: Matthew Arnold: "The Study of Poetry"

UNIT 3: Jane Austen

(i) *Pride and Prejudice*

UNIT 4: Charles Dickens

(i) *Hard Times*

Text Books:

- Texts prescribed in Units 2, 3, 4

Reference Books:

- *English Literature in Context*. Paul Poplawski. Cambridge UP, 2008
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *English Literature*. Jonathan Bate (Ch. 4 "The Study of English", Ch. 5 "Periods and Movements")
- Terry Eagleton, *The English Novel*

Core Paper VII

BRITISH LITERATURE: EARLY 20TH CENTURY

Introduction:

The paper aims at acquainting the students with the literature of Britain in the early 20th century, focusing on the modernist canon in poetry, novel, and literary criticism.

UNIT 1: Historical overview

(i) Developments in society and economy, leading to a crisis in western society known as the First World War and the resultant change in the ways of knowing and perceiving. Marx's concept of class struggle, Freud's theory of the unconscious are to be discussed.

UNIT 2: Poetry

(i) T.S. Eliot "Love Song of J. Alfred Prufrock",
(ii) Yeats: "Second Coming",
(iii) Wilfred Owen: "Strange Meeting",
(iv)Siegfried Sassoon, "Suicide in the Trenches"
(v) Criticism: T.S. Eliot: "Tradition and the Individual Talent"

UNIT 3:

(i) Virginia Woolf: *Mrs. Dalloway*

UNIT 4:

(i) J M Synge *Ryders to the Sea*

Text Books

- Texts prescribed in Units 2, 3, 4

Reference Books:

Pelican Guide to English Literature: *Vol. 7*. *The Modern Age* (ed.) Boris Ford

Routledge History of Literature in English. Ronald Carter & John Mc Rae. London:

Routledge, 1997

- *English Literature*. Jonathan Bate (Ch. 5 "Periods and Movements")
- *Modernism*. Critical Idiom. By Peter Faulkner
- *Modernism*. New Critical Idiom. By Peter Childs

Core Paper VIII

AMERICAN LITERATURE

Introduction:
This is a survey paper providing an overview of canonical authors from American Literature in the established genres.

UNIT 1: Historical overview

(i) Genesis and evolution, and the defining myths of American Literature—city on a hill, the frontier spirit, the American Dream, manifest destiny, *epluribusunum*

UNIT 2:

(i) Walt Whitman: "Out of the Cradle Endlessly Rocking",
(ii) Robert Frost: "Stopping by the Woods in a Snowy Evening",
(iii) Emily Dickinson: "Because I could not stop for death"
(iv) Maya Angelou: "I Know Why the Caged Birds Sing"

UNIT 3:

(i) Arthur Miller: *The Death of a Salesman*

UNIT 4:

(i) Ernest Hemingway: *A Farewell to Arms*

Text Books

- Texts prescribed in Units 2, 3, 4 (All texts are available on the Internet.)

Reference Books:

- *Pelican Guide to English Literature*. Vol. 9. *American Literature*. Ed. Boris Ford
- *Highlights of American Literature*. Dr. Carl Bode (USIS)
- *A Short History of American Literature*, Krishna Sen and Ashok Sengupta. Orient BlackSwan, 2017
- *The Story of American Literature*. By Ludwig Lewisohn

Norton Anthology of American Literature. (Head notes on authors and periods to be read)

Core Paper IX

EUROPEAN CLASSICAL LITERATURE

Introduction:

This paper seeks to introduce the students to European Classical literature, commonly considered to have begun in the 8th century BC in ancient Greece and continued until the decline of the Roman Empire in the 5th century AD. The paper seeks to acquaint the students with the founding texts of the European canon.

UNIT 1: Historical Review

(i) Classical Antiquity: ancient Greece, the rise and decline of the Roman Empire; Geographical space: cultural history of the Greco-Roman world centered on the Mediterranean Sea

UNIT 2: Epic poetry

(i) Homer: *Odyssey* (Book I)

UNIT 3: Tragedy:

(i) Sophocles: *Oedipus the King*

UNIT 4: Criticism:

(i) Aristotle: *Poetics* (Chapters: 6,7,8)

Text Books

- Texts prescribed in Units 2, 3, 4(All texts are available for free access on Project Gutenberg https://www.gutenberg.org/)

Reference Books:

- H.D.F. Kitto, *Form and Meaning in Greek Drama*
- H.D.F. Kitto, *The Greeks*
- Eric Auerbach, *Mimesis*: *The Representation of Reality in Western Literature*
- Gilbert Murray, *A History of Ancient Greek Literature*, Andesite Press, 2017.
- *Classicism*: *A Very Short Introduction* OUP

Core Paper X

WOMEN'S WRITING

Introduction:

The paper seeks to acquaint the students with the works of women writers from different cultures and nations in various genres. Further, it seeks to make them critically aware of the

issues relating to the workings of patriarchy, issues of gender, and relations of desire and power.

UNIT 1: Virginia Woolf

(i) "Chapter 1" from *A Room of One's Own*

UNIT 2: Charlotte Bronte

(i) *Jane Eyre*

UNIT 3:

(i) Kamala Das, 'An Introduction', 'The Sunshine Cat'
(ii) Sylvia Plath, 'Mirror', 'Barren Woman'
(iii) Eunice de Souza, 'Women in Dutch Painting', 'Remember Medusa'
(iv) Shanta Acharya, 'Homecoming', 'Shringara'

UNIT 4:

(i) Ashapurna Devi, *The Distant Window*

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- Toril Moi, *Sexual/Textual Politics*
- Elaine Showalter, *A Literature of Their Own*
- Sandra Gilbert and Susan Guber, *The Mad Woman in the Attic*
- *The Distant Window,* Prachi Prakashan, Tr. Anima Bose, 1997
- Helen Carr, 'A History of Women's Writing' in *A History of Feminist Literary Criticism* by Gill Plain and Susan Sellers
- Mary Eagleton, 'Literary Representations of Women' in *A History of Feminist Literary Criticism* by Gill Plain and Susan Sellers

Core Paper XI

MODERN EUROPEAN DRAMA

Introduction:
The aim of this paper is to introduce the students to the best of experimental and innovative dramatic literature of modern Europe.

UNIT 1: Historical Review

(i) Politics, social change and the stage; text and performance; European Drama: Realism and Beyond; Tragedy and Heroism in Modern European Drama; The Theatre of the Absurd

UNIT 2: Henrik Ibsen

(i) *Ghosts*

UNIT 3: Eugene Ionesco

(i) *Chairs*

UNIT 4: Bertolt Brecht

(i) *Life of Galileo*

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Web Resources

- Ionesco: http://www.kkoworld.com/kitablar/ejen-ionesko-kergedan-eng.pdf
- Ibsen: http://www.gutenberg.org/files/8121/8121-h/8121-h.htm

Reference Books:

- Constantin Stanislavski, *An Actor Prepares*, Chap. 8,
- 'Faith and the Sense of Truth', tr. Elizabeth Reynolds Hapgood (Harmondsworth: Penguin, 1967) sections 1,2, 7,8,9, pp. 121-5, 137-46.
- Bertolt Brecht, 'The Street Scene', 'Theatre for Pleasure or Theatre for Instruction', and 'Dramatic Theatre vs Epic Theatre', in *Brecht on Theatre:The Development of an Aesthetic*, ed. And tr. John Willet (London: Methuen, 1992) pp.68-76, 121-8.
- George Steiner, 'On Modern Tragedy', in *The Death of Tragedy* (London: Faber, 1995) pp. 303-24.
- Raymond Williams, *Drama from Ibsen to Brecht*
- Jean Genet, Reflections on Theatre (London:Faber & Faber) Chapter 2: "The Strange World Urb…" pp. 63-74.
- *Theatre of Absurd*. Martin Esslin

Core Paper XII

INDIAN CLASSICAL LITERATURE
(Training of teachers essential for teaching this course)

Introduction:

This paper seeks to create awareness among the students of the rich and diverse literary and aesthetic culture of ancient India.

UNIT 1: Introduction to the history and genesis of Indian

Classical Literature UNIT 2: Sanskrit Drama –1

(i) Kalidasa, *Abhijnanasakuntalam*, Act IV, tr. M.R Kale, Motilal Banarasi Dass, New Delhi

UNIT 3: Sanskrit Drama-2

(i) *Mrcchakatika* by Sudraka, Act I, tr. M.M. Ramachandra Kale (New Delhi: Motilal Banarasidass, 1962)

UNIT 4: Aesthetics and Maxims

(i) Bharata's *Natyasastra*, Chapter VI on Rasa theory

Text Books

- Texts prescribed in units II,III, IV

Reference Books:

- Kalidasa. Critical Edition. Sahitya Akademi
- Bharata's Natyashastra. English Translation by M.M. Ghosh. Vol 1. 2nd edition. Asiatic Society, Kolkata, 1950. Ch. 6 "Sentiments". Pp. 158-95
- J.A.B. Van Buitenen, "Dharma and Moksa" in Roy W. Perrett. Ed. *Indian Philosophy*. Vol 5, *Theory of Value*: *A Collection of Readings*. New York: Garland, 2000. Pp. 33-40
- Vinay Dharwadkar, "Orientalism and the Study of Indian Literature", Orientalism and the Postcolonial Predicament: Perspectives on South Asia. Ed. Carol A. Breckenridge and Peter Van der Veer. New Delhi: OUP, 1994. Pp. 158-95
- Haldhar Panda, *Universals of Poetics*

Core Paper XIII

POSTCOLONIAL LITERATURES

Introduction:

This paper seeks to introduce the students to postcolonial literature —a body of literature that responds to European colonialism and empire in Asia, Africa, Middle East, the Pacific and elsewhere. The paper aims to provide the students with the opportunity to think through the layered response – compliance, resistance, mimicry, subversion – that is involved in the production of post-independence literature

UNIT 1:

(i) Postcolonialism: Elleke Boehmer (From *Literary Theory and Criticism* Ed. Patricia Waugh)
(a) The post in Postcolonial,
(b) Movements and theories against Empire
(c) Leading Postcolonial Thinkers (Frantz Fanon, Edward Said, Gayatri Spivak, Homi Bhabha)

UNIT 2: Raja Rao

(i) *Kanthapura*

UNIT 3: Jean Rhys

(i) *Wide Sargasso Sea*

UNIT 4: Athol Fugard

(i) Blood Knot

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- Chinua Achebe: "English and the African Writer" (Available online)
- Ngugi wa Thiong'o: "The Quest for Relevance" from *Decolonizing the Mind: The Politics of Language in African Literature*
- Leela Gandhi, *Postcolonial Theory: An Introduction*. OUP, 1998.
- Bill Ashcroft, Gareth Griffin, Helen Tiffin, *The Empire Writes Back*: *Theory and Practice of Post-Colonial Literature*.
- Edward Said. *Orientalism*.

Core Paper XIV

POPULAR LITERATURE

Introduction:

This paper seeks to introduce the students to genres such as children's literature, detective fiction and campus fiction, which have a "mass" appeal, and can help us gain a better understanding of the popular and folk roots of literature.

UNIT 1: Introduction to the concept

(i) What is popular literature?
(ii) Debate between popular and high cultures ('high brow' v/s 'low brow')
(iii) What is Genre fiction?
(iv) Debate between genre fiction and literary fiction

Essays for discussion:

- Lev Grossman: "Literary Revolution in the Supermarket Aisle: Genre Fiction is Disruptive Technology" http://entertainment.time.com/2012/05/23/genre-fiction-is-disruptive-technology/
- Arthur Krystal: "Easy Writers: Guilty pleasures without guilt"

http://www.newyorker.com/magazine/2012/05/28/easy-writers

- Joshua Rothman: “A Better Way to Think About the Genre Debate”

http://www.newyorker.com/books/joshua-rothman/better-way-think-genre-debate

- Stephen Marche: How Genre Fiction Became More Important than Literary Fiction" http://www.esquire.com/entertainment/books/a33599/genre-fiction-vs-literary-fiction/

UNIT 2: Children's Literature

(i) Lewis Caroll: *Alice in Wonderland*

UNIT 3: Detective Fiction

(i) Arthur Conan Doyle: *The Hound of the Baskervilles*

UNIT 4: Campus Fiction

(i) Chetan Bhagat: *Five Point Someone*

Text Books

- Essays given for discussion under unit I and Texts prescribed in Units 2, 3, 4

Reference Books

- Leslie Fiedler, "*Towards a Definition of Popular Literature"* in *Super Culture:American Popular Culture and Europe.* Ed. C.W.E. Bigsby. pp. 29-38
- Leo Lowenthal, *Literature, Popular Culture and Society*
- Felicity Hughes, "Children's Literature: Theory and Practice" in *English Literary History*. Vol. 45, 1978. pp. 542-61.
- Raymond Chandler, "The Simple Art of Murder", Atlantic Monthly. Dec. 1944 (available at <http://www.en.utexas.edu/amlitprivate/scans/chandlerart.html>
- *Popular Fiction: Essays in Literature and History* by Peter Humm, Paul Stigant, Peter Widdowson
- Sumathi Ramaswamy, "Introduction", in Beyond Appearances?: Visual Practices and Ideologies in Modern India. Pp.xiii-xxix

Discipline Specific Elective

Paper-I LITERARY THEORY

Introduction:
This paper seeks to expose the students to the basic premises and issues of major theoretical approaches to literary texts.

UNIT 1:

(i) New Criticism ("Language of Paradox" by Cleanth Brooks)

UNIT 2:

(i) Marxist Criticism (Terry Eagleton: "Literature and Ideology" from *Marxism and Literary Criticism*

UNIT 3:

(i) Feminist Criticism (*Second Sex*, Vol 1 Introduction "Facts and Myths")

UNIT 4:

(i) Structuralism ("The Nature of Linguistic Sign" by Saussure)

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books

- Peter Barry, *Beginning Theory*
- Terry Eagleton, *Literary Theory*
- David Lodge, ed. *Twentieth Century Criticism*
- David Lodge, ed. *Modern Criticism and Theory*: *A Reader*
- Jonathan Culler, "In Pursuit of Signs"
- Tony Bennett, *Formalism and Marxism* (New Accents)

Discipline Specific Elective

Paper- II WORLD LITERATURE

Introduction:

This paper proposes to introduce the students to the study of world literature through a representative selection of texts from around the world. The idea is to read beyond the classic European canon by including defining literary texts from other major regions/countries—except the United States of America—written in languages other than English, but made available to the readers in English translation.

UNIT 1: European

(i) Albert Camus: *The Outsider*

UNIT 2: Caribbean

(i) V S Naipaul: *A Bend in the River*

UNIT 3: Canadian Short Fiction

(i) Alice Munroe: “The Bear Came Over the Mountain”, “Face”

UNIT 4: Latin American Poetry

(i) Pablo Neruda :"Tonight I can Write" and "Every day you play"

(ii) Octavio Paz: "Between going and staying the day wavers" and "Motion"

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Web Resources:

- Alice Munro's short Stories http://www.newyorker.com/magazine/2013/10/21/the-bear-came-over-the-mountain-2, http://www.newyorker.com/magazine/2008/09/08/face
- Poems of Octavio Paz http://www.poetrysoup.com/famous/poems/best/octavio_paz

Reference Books:

- *Weltliteratur*: John Wolfgang von Goethe in *Essays on Art and Literature* Goethe : The Collected Works Vol.3
- Rabindranath Tagore "World Literature": *Selected Writings On Literature and Language: Rabindranath Tagore* Ed. Sisir Kumar Das and Sukanta Chaudhuri
- Goethe's "World Literature Paradigm and Contemporary Cultural Globalization" by John Pizer

  "Something Will Happen to You Who Read": Adrienne Rich, Eavan Boland' by Victor Luftig .JSTOR iv. *Comparative Literature* University of Oregon.
- "WLT and the Essay" *World Literature Today* Vol. 74, No. 3, 2000. JSTOR Irish University Review, Vol.23 Spring 1, Spring-Summer.
- What is world Literature? (Introduction) David Damrosch http://press.princeton.edu/chapters/i7545.html
- Tagore's comparative world literature

  https://www.academia.edu/4630860/

  Rabindranath_Tagores_Comparative_World_Literature

Discipline Specific Elective Paper- III

PARTITION LITERATURE

Introduction:

This paper seeks to expose the students to some significant writings on Indian partition, which brought untold miseries to those who lost lives and homes. The issues of loss, trauma, communalism etc. are explored by the texts.

UNIT 1: Defining partition literature

(i) Ritu Menon and Kamla Bhasin, 'Introduction' from *Borders and Boundaries* (New Delhi: Kali for Women, 1998)

UNIT 2:

(i) W.H. Auden "Partition", Agha Shahid Ali, "Learning Urdu", "The Dawn of Freedom" Faiz Ahmad Faiz

UNIT 3: Bapsi Sidhwa

(i) *Ice-candy-man*

UNIT 4:

(i) Sadat Hassan Manto, 'Toba Tek Singh" (from *Mottled Dawn*, Penguin India)
(ii) Rajinder Singh Bedi, "Lajwanti"(Trans. Khushwant Singh)
(iii) Lalithambika Antharajanam, "A Leaf in the Storm"

Text Books

- Texts prescribed in Units 1, 2, 3, 4
- (*Mottled Dawn* for Manto and Bedi in Unit 4, Penguin India)
- *Borders and Boundaries*. New Delhi: Kali for Women, 1998

Reference Books:

- Sukrita P. Kumar, "Narrating Partition" (Delhi: Indialog, 2004)
- Urvashi Butalia, "The Other Side of Silence: Voices from the Partition of India" (Delhi: Kali for Women, 2000)
- Sigmund Freud, "Mourning and Melancholia" in *The Complete Psychological Works of Sigmund Freud*, tr. James Strachey (London: Hogarth Press, 1953) pp. 3041-53.

Discipline Specific Elective

Paper- IV WRITING FOR MASS MEDIA

UNIT 1:

(i) History of English in India, Brief history of Journalism in English in India , Status of English in India, Indian writers of English and their treatment of the English language a non-native variety

UNIT 2:

(i) Writing for the Print Media: News Stories, Features, Editorials

(The teacher is required to cite examples and use material from mass media)

UNIT 3:

(i) Writing for the Electronic Media

(ii) Advertisement caption writing and tag lines (print and electronic)

UNIT 4:

(i) Email, Blogs, Social networking

(ii) Internet Journalism

Reference Books

- Rangaswamy Parthasarathy, *Journalism in India: From the earliest times to the present day*, Sterling.
- S V Parasher, *Indian English: Functions and Form*, Bahri Publications.
- Stepehen McLaren, *Easy Writer*
- A R Parhi*, Indian English through Newspapers,* Concept Publications.
- G L Labru, Indian Newspaper English, B R Publishing House.
- Vinod Dubey, Newspaper English in India, Bahri Publications.
- Kachru, Braj: *from* Indianization of English
- Dutta and Parhi, 'Prospect of Electronic Media as Curriculum in Non-Native Contexts', I-Manager's *Journal on English Language Teaching.* (2014)
- Aijaz Ahmed: 'Disciplinary English: Third-Worldism and Literature'.
- Narasimhaih; C.D. (ed.):*Awakened Consciousness: Studies in Commonwealth Literature,* New Delhi: Sterling.
- Omkar N. Koul: *English in India: Theoretical and Applied Issues.* New Delhi: Creative Publishers.

DSE Paper – IV: Dissertation/ Research Project (College can give this choice only for students with above 60% aggregate marks)

DISSERTATION/ RESEARCH PROJECT

Introduction and Outcome

A project is an individual or collaborative activity that is carefully planned to achieve a particular aim.

An undergraduate project is individual research by students to i. understand in-depth a particular topic or fact in their field of study, and ii. Strengthen their understanding of research processes

and methods.

Undergraduate research is inquiry-based learning that involves practical work, and not just

listening to classroom teaching and personal reading. Students learn to apply what they study in their courses to appreciate different aspects of their field better by working independently on the projects. At the same time, they contribute something original to the courses they study.

An undergraduate research project is expected to explore specific topics within the field of study of the students. The project should make an original contribution to the discipline in some manner. The results of quality undergraduate research can be presented in seminars and conferences, and published in research journals dedicated specifically to such work or in traditional academic journals with the student as a co-author.

There are many benefits of undergraduate research including, but not limited to, real world applications, research and professional experience, and better relationships between faculty and students. Relating coursework to out-of-class experiences, students train to work and think independently, take responsibility for their own learning, and take initiative to solve problems on their own rather than relying on experts for answers. They also learn to work in collaboration in interdisciplinary research. Most of all, projects help students learn a variety of skill sets to make them confident and competent in their future career.

The research process

Typically, all research answer three questions: *what, why* and *how*.

The *what* states the research question to be investigated in a project.

The *why* explains the purpose of the research and also every step undertaken to conduct the research.

The *how* describes the stages of the research procedure.

To understand the process of research and to practically conduct any requires a good background in research methodology. Students may study research methodology before undertaking their projects.

Pattern of examination

MID-SEMESTER ASSESSMENT

Presentation of the project synopsis

Synopsis to include:

i. Research statement/question and its rationale
ii. Review of literature stating the validity of the project
iii. Discussion of the research steps
iv. Possible conclusion/s
v. Contribution of the project to the existing body of research
vi. References

Semester final examination

A project of at least 3000 words to be submitted in the following structure:

- Research question - a short statement
- Rationale of the research
- Introductions of the research
- Review of literature relating the reviews to the research question and the research Introductions
- Data collection and interpretation
- Discussion of the findings; conclusions drawn
- Contribution of the project to the existing body of research
- Directions for future research
- Works cited section

Reference Books

- John Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications. 2009
- K Samantray, *Academic and Research Writing*. Orient Blackswan. 2015
- Sword, H. *Stylish Academic Writing*. Harvard University Press. 2012
- Norman Denzin, *Sage Handbook of Qualitative Research.* Sage Publications. 2005
- Kothari & Garg, *Research Methodology.* New Age Publishers

Deepak Chawla & Neena Sondhi. *Research methodology: Concepts & Cases.* Vikas Publishing

Generic Elective Paper I

ACADEMIC WRITING AND COMPOSITION

Introduction:

This paper seeks to train the students in the basic writing skills required for writing competently in the academic context.

UNIT 1:

(i) Introduction to the Writing Process: with a focus on Academic Writing

UNIT 2:

(i) Writing in one's own words: Summarizing and Paraphrasing

UNIT 3:

(i) Critical Thinking: Synthesis, Analysis, And Evaluation

UNIT 4:

(i) Citing Resources: Editing, Book and Media Review

Reference Books:

- Liz Hamp-Lyons and Ben Heasley, Study Writing: *A Course in Writing Skills for Academic Purposes* (Cambridge UP, 2006)
- Ilona Leki, *Academic Writing: Exploring Processes and Strategies*. New York: CUP, 2nd edn, 1998
- Stanley Fish, *How to Write a Sentence and How to Read One*. Harpar Perennial. 2011.
- *Literature and the art of Communication*, Cambridge University Press
- Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing*. New York: Norton, 2009

Generic Elective Paper II GENDER AND HUMAN RIGHTS

(Faculty training needed)

Introduction:

This paper seeks to familiarize the students with issues of inequality, and oppression of caste, race and gender.

UNIT 1:

(i) Unit I and II of *Gender Sensitivity* (UNESCO Module 5)

UNIT 2:

(i) " Castes in India": Dr Babasaheb Ambedkar

UNIT 3:

(i) *We Should All Be Feminists* by Chimamanda Ngozi Adichie,

UNIT 4:

(i) *Sultana's Dream* (a novella): Rokeya Sakhawat Hossain

Text Books

- Texts prescribed in Unit I,II,III, IV

Reference Books:

- Babasaheb Ambedkar, *Writings and Speeches,* Vol 1, Complied by Vasant Moon. Ambedkar Foundation, 2014.
- Chimamanda Ngozi Adichi- *We Should All Be Feminists*. London: Fourth Estate, 2014.
- Rokeya Sakhawat Hossain - *Sultana's Dream*. Penguin Modern Classics, 2005.
- UNESCO- Gender Sensitivity, Zambia, 2000. http://www.unesco.org/education/mebam/module_5.pdf

Generic Elective Paper III NATION, CULTURE, INDIA

Introduction:
This paper seeks to introduce students across disciplines to basic ideas about Indian cultural ethos mediated through literature.

UNIT 1:

(i) *An Autobiography* (*My Experiments With Truth*) - M.K. Gandhi. Part V, 'The First Experience' (Chapters I) to 'Face to Face with Ahimsa'(Chap XIV)

UNIT 2:

(i) "Secularism and Its Discontents"- Amartya Sen (from *The Argumentative Indian*)

UNIT 3:

(i) "Nationalism in India"- Rabindranath Tagore (from *Nationalism*)

UNIT 4:

(i) " The Renaissance in India"- Sri Aurobindo (from The Renaissance in India and Other Essays)

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- A.L. Basham, *Wonder that was India*
- D.D. Kosambi, *Culture and Civilization of Ancient India in Historical Outline*
- Romila Thapar, *Time as a Metaphor in Human History*
- Pawan K. Verma, *The Great Indian Middleclass*

Generic Elective Paper IV LANGUAGE AND LINGUISTICS

Introduction:
This paper aims to offer the students some fundamental knowledge in Linguistics and English Language Teaching ELT). It also seeks to acquaint the students with the variety of English that people come in contact with in contemporary times with a special emphasis on Asia and in particular, India.

UNIT 1:

(i) Language : What is Language, Linguistics, Branches and Scope, Applied Linguistics

Global Englishes: Who Speaks English today? Standard Language and Language Standards, Language Variation, Postcolonial English, Pidgin and Creole, English in Asia and Europe

UNIT 2:

(i) Phonology and Morphology

UNIT 3:

(i) Syntax

UNIT 4:

(i) Semantics

Reference Books

- *Introductory book on Linguistics and Phonetics* by R L Varshney
- *Global Englishes: A Resource Book for Students*, Jennifer Jenkins, 3rd Edn, Special Indian Edition, Routledge, 2016
- *An Introduction to Language and Communication*,
- A R Parhi,'Localising the Alien: Newspaper English and the Indian Classroom', *English Studies in India*, Springer, 2018.
- Adrian Akmajian, R. A. Demers, Ann K Farmer and R, M. Harnish, Prentice Hall of India, 2012
- David Crystal, *Linguistics*
- Braj B Kachru, The Indianization of English (OUP)
- David Crystal, *English as a World Language*

GE Tutorial - 4 (20 marks: 1 credit)

Introduction: This paper seeks to reinforce learning of the theory paper by way of engaging the students in remedial teaching and doubt clearing classes.
Scheme of Examination- Internal Assessment will be done by tutors through 10 multiple choice questions (10 x 1 = 10) and very short answer-type questions (5 x 2 = 10)

UG Course Sructure for History

Semester	Course	Course Name	Credit	Total marks
Semester-I	AECC-I	AECC-I	4	100
	C 1	History of India-I	6	100
	C 2	Social Formations and Cultural Patterns of the Ancient World	6	100
	GE-I	History of India-I (Early Times to 1750)	6	100
Semester-II	AECC-II	AECC-II	4	100
	C 3	History of India-II	6	100
	C 4	Social Formations and Cultural Patterns of the Medieval World	6	100
	GE-II	History of India – II (1750-1950)	6	100
Semester-III	C 5	History of India-III (c.750-1206)	6	100
	C 6	Rise of Modern West-I	6	100
	C 7	History of India-IV (c.1206-1526)	6	100
	GE-III	Rise of the Modern West – I	6	100
	SEC-I	SEC-I	4	100
Semester-IV	C 8	Rise of Modern West-II	6	100
	C 9	History of India-V (c.1526-1750)	6	100
	C 10	Historical Theories and Methods	6	100
	SEC-II	SEC-II	4	100
	GE-IV	Rise of the Modern West – II	6	100
Semester-V	C 11	History of Modern Europe-I(c.1780-1880)	6	100
	C 12	History of India-VII (1750-1857)	6	100
	DSE-I	History and Culture of Odisha - I	6	100
	DSE-II	History and Culture of Odisha - II	6	100

Semester-VI	C 13	History of India-VIII (C.1857-1950)	6	100
	C 14	History of Modern Europe-II(1880-1939)	6	100
	DSE-III	History and Culture of Odisha- III	6	100
	DSE-IV	Project Report	6	100
		Total	**148**	**2600**

HISTORY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers
Generic Elective for non History students – 4 papers. In case University offers 2 subjects as GE, then paper 1 and 2 will be the GE papers.

Marks per paper – Mid term: 20 Marks, End term: 80 Marks Total – 100 marks
Credit per paper – 6

Teaching hours per paper – 50 hours (Theory) + 10 hours (Tutorial)

Core Paper I

HISTORY OF

INDIA- I

Unit-I: Reconstructing Ancient Indian History

1. Early Indian notions of History
2. Sources of Historical Writings
3. Historical Geography (Major Harappan Sites and Sixteen Mahajanapadas).

Unit-II: Pre-historic Hunter-Gatherers and Food Production

1. Paleolithic Culture: Upper, Middle and Lower; Tool making habit
2. Mesolithic Culture: New developments in Technology and Economy
3. Neolithic and Chalcolithic Settlements
4. Food Production : Beginning of Agriculture

Unit-III: The Harappan Civilization

1. Origins; Settlement Patterns and Town Planning
2. Economic Life: Agriculture, Craft Productions and Trade
3. Social and Political Organization; Religious Beliefs and Practices; Art

Unit-IV: Cultures in Transition

1. Early Vedic Age: Society, Polity, Religion and Literature

2. Later Vedic Age: Social Stratification (Varna and Gender), Polity, Religion, and Culture

Suggested Text Books:

1. R. S. Sharma, Material Culture and Social Formations in Ancient India, 1983.
2. Upinder Singh, A History of Ancient and Early Medieval India.

Reference Reading:

1. Romila Thapar, Early India: From Beginning to 1300 CE, Penguin.
2. A.L. Basham, The Wonder that was India, Vol.1
3. B. Fagan, Digging from the Earth
4. H.D. Sankhalia, Prehistory of India.
5. B.R. Alchin, The Birth of Indian Civilization.

Core Paper II

SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT WORLD

Unit I

1. Evolution of Man
2. Paleolithic Cultures
3. Mesolithic Cultures

Unit-II: Neolithic Culture:

1. Food Production
2. Development of Agriculture
3. Animal Husbandry

Unit-III: Bronze Age Civilizations

1. Egypt
2. Mesopotamia (Sumeria & Babylonia)
3. China (Shang)

Unit-IV: Ancient Greece:

1. Athens and Sparta
2. Politics, Economic
3. Culture

Suggested Text Books:

1. Burns and Ralph. World Civilizations, Vol. A.
2. V. Gordon Childe, What Happened in History?

Reference Reading:

1. G. Clark, World Prehistory: A New Perspective.
2. Bisman Basu, The Story of Man
3. H.Neil & M.C.Willam, A World of History, Oxford, New York, 1907.
4. H.R. Hall, Ancient History of the Near East, 1932.

5. H.S. Baghela, World of Civilization

Core Paper III

HISTORY OF INDIA-II (300BCE-750CE)

Unit-I: Economy and Society (circa 300 BCE to circa CE 300):

1. Expansion of Agrarian Economy: Production relations.
2. Urban growth: Trade & Commerce
3. Social stratification: Class, Varna, Jati, Gender

Unit-II: Changing Political Formations (circa 300 BCE to circa CE 300):

1. The Mauryan Empire: Chandragupta Maurya and Asoka-Conquest and Administration
2. Post-Mauryan Polities: Kushanas, and Satavahanas
3. The Cholas

Unit-III: Towards Early Medieval India [circa CE fourth century to CE 750]:

1. Gupta Age: Agrarian Expansion, Land Grants, Graded Land Rights and Peasantry.
2. Varna, Proliferation of Jatis: changing norms of marriage and property.
3. The Nature of Polities: The Gupta Empire
4. Post- Gupta Polities - Pallavas, Chalukyas, and Vardhanas

Unit-IV: Religion, Culture, Philosophy and Society

1. Consolidation of the Brahmanical Tradition: Dharma, Varnashram, Purusharthas,
2. Buddhism: Hinayan and Mahayana
3. Jainism: It's major Priniples
4. Development of Art and Architecture: Mauryan, and Gupta

Suggested Text Books:

1. D. D. Kosambi, An Introduction to the Study of Indian History, 1975.
2. A. L. Basham, Wonder That Was India, Rupa.

Reference Reading:

1. Romila Thapar, Early India: From the Origins to 1300, 2002.
2. Dharma Kumar and Irfan Habib, Cambridge Economic History of India, vol-I.
3. Romila Thapar, Ancient India.
4. K.M. Ashraf, Life and Condition of the People of Hindustan.
5. D.N. Jha (ed.), Feudal Social Formation in Early India.

Core Paper IV

SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE MEDIEVAL WORLD

Unit-I: Polity and Economy in Ancient Rome

1. Polity and Empire in Ancient Rome
2. Crises of the Roman Empire-Rise and fall of Julius Caesar
3. Agrarian Economy
4. Urbanization and Trade

Unit-II: Economic Developments in Europe from 7th to 14th Centuries:

1. Agricultural Production
2. Towns and Trade,
3. Feudalism- Origin, Growth and Decline

Unit-III: Religion and Culture in Medieval Europe:

1. Medieval Church,
2. Monastic Communities
3. Papacy

Unit-IV: Societies in Central Islamic Lands:

1. The Tribal background, Rise of Islam; Rise of Sultanates
2. Religious Developments: the Origins of Shariah,

Suggested Text Books:

1. Perry Anderson, Passages from Antiquity to Feudalism.
2. Marc Bloch, Feudal Society, 2 Vols.

Reference Reading:

1. J. Barrawclough, The Medieval Papacy.
2. Cambridge History of Islam, 2 Vol.
3. Will Durant, The Story of Civilization (vols. I & II).
4. T.W. Wallbank & N.M. Bailey, Civilization –Past and Present.
5. R. Coulborne, Feudalism in History.

Core Paper V
HISTORY OF INDIA-III (c. 750 -1206)

Unit –I: Studying Early Medieval India: Political Structures

1. Sources: Literary and Archaeology
2. Evolution of Political structures: Rajputs and Cholas
3. Legitimization of Kingship; Brahmanas and Temples
4. Arab conquest of Sindh: Causes and Impact

Unit-II: Agrarian Structure and Social Change:

1. Agricultural Expansion; Crops
2. Landlords and Peasants
3. Proliferation of Castes
4. Peasantization of Tribes

Unit-III: Trade and Commerce:

1. Inter-regional Trade

2. Maritime Trade and Forms of Exchange
3. Process of Urbanization
4. Merchant Guilds of South India

Unit-IV: Religious and Cultural Developments:

1. Puranic Traditions; Buddhism and Jainism
2. Islamic Intellectual Traditions: Al-Biruni
3. Regional Languages and Literature
4. Art and Architecture: Evolution of Regional styles: Kalingan and Dravidian style of Temple Architecture

Suggested Text Books:

1. B.D. Chattopadhyaya, The Making of Early Medieval India.
2. R.S. Sharma and K.M. Shrimali, (eds), Comprehensive History of India, Vol. IV (A & B).

Reference Reading:

1. Satish Chandra, Medieval India, Vol. I, Har Anand.
2. D. D. Koasambi, The Culture and Civilization of Ancient India: In Historical outline New Delhi; Vikas 1971.5th Print.
3. K. A. Nilakantha Sastri, The Colas, South Indian History.
4. Mittal, Socio-Cultural History of India.
5. R.C.Majumdar (ed) History and Culture of Indian people. Bombay; Bharatiya Vidya Bhavan 1960.Relevant Vol.

Core Paper VI

RISE OF THE MODERN WEST - I

Unit-I: Transition from Feudalism to Capitalism:

1. The problems of Transition: Economic Expansion, Industrial production
2. Trade and Commerce
3. Urban Development, Town Life

Unit-II: Early Colonial Expansion:

1. Motives, Voyages and Explorations.
2. The Conquests of America
3. Mining and Plantation, The African Slaves.

Unit-III: Renaissance and Reformation:

1. Its Social Roots Spread of Humanism in Europe.
2. The Renaissance: Art, Architecture, Sculpture, Painting and Literature
3. Origins and Spread of Reformation Movements.
4. Emergence of European State system: Spain, France, England, Russia

Unit-IV: Economic Developments of the Sixteenth Century:

1. Shift of economic balance from the Mediterranean to the Atlantic.
2. Commercial Revolution- Causes and Nature
3. Growth of Industries and its Impact

Suggested Text Books:

1. Charles A. Nauert, Humanism and the Culture of the Renaissance (1996).
2. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 û1600.

Reference Reading:

1. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.
2. F. Rice, The Foundation of Early Modern Europe.
3. Toynbee, A.J, A Study of History (12 volumes).
4. Maurice Dobb, Transition from Feudalism to Capitalism.
5. Wallbank, T.W. & Bailey, N.M. Civilization: Past and Present.

Core Paper VII

HISTORY OF INDIA IV

(c.1206 - 1526)

Unit-I: Sultanate: Political Structures

1. Survey of Sources: (a) Persian Tarikh Tradition, (b) Vernacular Histories; (c) Epigraphy.
2. Consolidation of the Sultanate of Delhi: Balban, Alauddin Khaljis and Mahammad-bin Tughluqs.
3. Theories of kingship: The Ruling Elites: Ulema, Sufis and the Imperial Monuments

Unit-II: Emergence of Regional Identities

1. Bahamanis, Vijayanagar and Odisha.
2. Regional Art, Architecture and Literature in Vijayanagar and Odisha

Unit-III: Society and Economy:

1. Iqta and the Revenue-free Grants.
2. Agricultural production, Technology.
3. Market Regulations, Growth of Urban Centers.
4. Trade and Commerce, Indian Overseas Trade.

Unit-IV: Religion, Society and Culture:

1. Sufi Silsilas: Chishtis and Suhrawardis; doctrines and practices, Social roles
2. Bhakti Movements and Monotheistic Traditions: Kabir, Nanak, Ravidas and Sri Chaitanya.
3. Social Impact of the Bhakti Tradition: Rise of Liberal Thought, Ideology of Equality and Gender Relations

Suggested Text Books:

1. Satish Chandra, Medieval India, Vol. I, Har Anand Publications, New Delhi.
2. J.L. Mehta, An Advanced Study of the History of Mevieval India, Vol.I.

Reference Reading:

1. Irfan Habib, Medieval India: The Study of a Civilization, NBT, New Delhi.
2. ABM Habibullah, The Foundation of Muslim Rule in India.
3. SBP Nigam, Nobility under the Sultans of Delhi.
4. R.P. Tripathy, Some Aspects of Muslim Administration in India.
5. R.S.Sharma, Early Medieval Indian Society: Orient Blackswan 2001.

Core Paper VIII

RISE OF THE MODERN WEST - II

Unit-I: The English Revolution and European Politics in the 18th century:

1. Background: Socio-Economic and Political Crisis in 17th Century Europe.
2. Major Issues-Political and Intellectual Currents;
3. Parliamentary Monarchy;
4. Patterns of Absolutism in Europe

Unit-II: Rise of Modern Science

1. Development of Science from Renaissance to the 17th century
2. Impact of Modern Science on European society

Unit-III: Mercantilism and European Economy

1. Origin and spread of Mercantilism
2. Impact of Mercantilism on European economy
3. Agricultural and Scientific Background to the Industrial Revolution

Unit-IV: The American Revolution

1. Political currents
2. Socio-Economic Issues
3. Significance of the American Revolution

Suggested Text Books:

1. H. Butterfield, The Origins of Modern Science.
2. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.

Reference Reading:

1. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 - 1600.
2. C.A Fisher, History of Modern Europe.
3. F. Rice, The Foundation of Early Modern Europe
4. David Thomson, Europe since Napoleon, Pelican Books, 1985
5. Swain, J.E., A History of World Civilization, Eurasia Publishing House Pvt. Ltd., New Delhi, 1994

Core Paper IX
HISTORY OF INDIA V (c. 1526 - 1750)

Unit-I: Establishment of Mughal Rule:

1. India on the eve of advent of the Mughals

2. Military Technology: Fire Arms,
3. Sher Shah: Administrative and Revenue Reforms

Unit-II: Consolidation of Mughal Rule:

1. Incorporation of Rajputs and other Indigenous Groups in Mughal Nobility
2. Evolution of Administrative Institutions: zabti, mansab, jagir,madad-i-maash
3. Emergence of the Marathas; Shivaji; Expansion under the Peshwas

Unit-III: Society and Economy:

1. Land rights and Revenue system: Zamindars and Peasants
2. Trade Routes and patterns of Internal Commerce; overseas trade
3. Urban Centres, Craft and Technology

Unit-IV: Cultural Ideals:

1. Religious tolerance and sulh-i-kul; Sufi mystical and Intellectual Interventions
2. Art and Architecture
3. Mughal and Rajput Paintings: Themes and Perspectives

Suggested Text Books:

1. J.L. Mehta, An Advanced Study of the History of Mevieval India, Vol.II.
2. Satish Chandra, Medieval India, vol.2, Har Anand Publications, New Delhi.

Reference Reading:

1. Irfan Habib, Agrarian System of Mughal India, 1526-1707.
2. A.B.Pandey, Later Medieval Period.
3. R.P.Tripathi, Rise and Fall of the Mughal Empire
4. S.Nurul Hassan, Thoughts on Agrarian Relations in Mughal India.
5. Ishwari Prasad, Life and Times of Humayun.

Core Paper X
HISTORICAL THEORIES & METHODS

Unit-I: Meaning and Scope of History

1. Definition, Nature and Scope of History.
2. Object and Value of History.
3. History, Science and Morality.

Unit-II: Traditions of Historical Writing

1. Ancient Greek Traditions – Herodotus, Thucydides
2. Ancient Roman Traditions - Polybius, Livy and Tacitus
3. Medieval Understanding: Western – St. Augustine, Arabic – Ibn Khaldun.

Unit-III: History as Interdisciplinary Practice

1. History and Archaeology, History and Anthropology.

2. History and Psychology, History and Literature.
3. History and Political Science

Unit-IV: Historical Methods

1. Sources of History: Written, Oral. Visual & Archaeological.
2. Historical facts.
3. Historical Causation.
4. Historical Objectivity

Suggested Text Books:

1. B. Sheik Ali, History: Its Theory and Method, Macmillan, Reprinted, 1996.
2. E. H. Carr, What is History? , Penguine Books, Reprinted, 1983.

Reference Reading:

1. E. Sreedharan, A Text Book of Historiography, Orient Longman, Reprinted, 2004.
2. Marc Bloch, The Historians Craft.
3. R.G. Collingwood, The Idea of History
4. G.T.Reiner, History: Its Purpose and Method.
5. K.Rajayyan, History: it's Theory & Method

Core Paper XI

History of Modern Europe- I (c. 1780-1880)

Unit-I: The French Revolution (1789):

1. Socio, Religious, Economic and Political Conditions
2. Intellectual Currents.
3. Role of the Middle Classes

Unit-II: Revolution and its European Repercussions:

1. National Constituent Assembly
2. National Legislative Assembly
3. Napoleonic Consolidation- Reform and Empire

Unit-III: Restoration and Revolution: c. 1815 - 1848

1. Congress of Vienna Restoration of old Hierarchies
2. Revolutionary and Radical Movements-

   A) July Revolution (1830) and
   B) February Revolution (1848)

Unit-IV: Socio-Economic Transformation and Remaking of States (Late 18th Century to Late 19th Century)

1. Process of Capitalist Development: Agrarian and Industrial Revolutions in England and German States.
2. Evolution of Social Classes: Land Owners, Peasantry: Bourgeoisie and Proletariat
3. Popular Movements and the Formation of National Identities in Germany and Italy,

Ireland

Suggested Text Books:

1. T.S. Hamerow, Restoration, Revolution and Reaction: Economics and Politics in Germany [1815 - 1871].
2. Anthony Wood, History of Europe, 1815 to 1960 (1983).

Reference Reading:

1. E.J. Hobsbawm, Nations and Nationalism.
2. A .Wesley Rohem, The Record of Mankind, Health and Company, Boston, 1952.
3. CMD Ketelbey, History of Modern Times since 1789, OUP, 2009.
4. David Thomson, Europe since Napoleon, Pelican Books, 1985.
5. Edward Mac Nall Burns et al, World Civilizations, vols. A,B,C,Goyal Saab, New Delhi.

Core Paper XII HISTORY OF INDIA VII (c. 1750 - 1857)

Unit-I: Expansion and Consolidation of Colonial Power:

1. Foreign Trade and Early forms of Economic Exploitations in Bengal
2. Dynamics of Expansion, with special reference to Bengal, Mysore and Odisha

Unit-II: Colonial State and Ideology:

1. Arms of the Colonial state: army, Police, Law.
2. Imperial Ideology: Orientalism and Utilitarianism
3. Education: Indigenous and Modern.

Unit-III: Economy and Society:

1. Land revenue systems- Permanet, Ryotwari and Mahalwari.
2. Commercialization of Agriculture- Consequences
3. Drain of Wealth- Causes and Consequences
4. Growth of Modern Industry

Unit-IV: Popular Resistance:

1. Santhal Uprising (1856-57)
2. Indigo Rebellion (1860)
3. Movement of 1857- Causes and Consequences

Suggested Text Books:

1. Dharma Kumar and Tapan Raychaudhuri, (ed.)., The Cambridge Economic History of India, Vol. II.
2. Bipan Chandra, K.N. Panikkar, Mridula Mukherjee, Sucheta Mahajan and Aditya Mukherjee, India’s Struggle for Independence.

Reference Reading:

1. Sumit Sarkar, Modern India (1885-1947), Mac Milan.
2. A.R.Desai, Social Background of Indian Nationalism
3. R. Vlyanovsky, Agrarian India between the World Wars.
4. Sekhar Bondhapadhaya, From Plessey to Partition.
5. G.Kaushal, Economic History of India, 1757-1956

Core Paper XIII

C.C. XIII: HISTORY OF INDIA VIII (c. 1857 - 1950)

Unit-I: Cultural Changes, Socio and Religious Reform Movements:

1. The advent of Printing and its Implications
2. Reform and Revival: Brahmo Samaj, Arya Samaj, Aligarh Movement.
3. Emancipation of Women, Sanskritization and Anti-Caste Movements

Unit-II: Nationalism: Trends up to 1919:

1. Political Ideology and Organizations, Formation of INC
2. Moderates and Extremists.
3. Swedish Movement
4. Revolutionaries

Unit-III: Gandhian Nationalism after 1919: Ideas and Movements:

1. Mahatma Gandhi: His Perspectives and Methods
2. Non- Cooperation, Civil Disobedience, Quit India,
3. Subhas Chandra Bose and INA
4. Nationalism and Social Groups: Peasants, Tribes, Dalits and Women

Unit-IV: Communalism and Partition:

1. Ideologies and Practices, Muslim League
2. Hindu Maha Sabha
3. Partition and Independence
4. Making of the Constitution

Suggested Text Books:

1. Sumit Sarkar, Modern India, 1885-1947.
2. Bipan Chandra, K.N. Panikkar, Mridula Mukherjee, Sucheta Mahajan and Aditya Mukherjee, India's, Struggle for Independence, Penguin

Reference Reading:

1. Sekhar Bandopadhyaya, From Plessey to Partition
2. N.S. Bose, Indian Awakening and Bengal

3.A. R. Desai, Social Background of Indian Nationalism, Popular, Bombay.

4.S.Gopal, British Policy in India, 1858-1905.

5.Bipan Chandra, Indian National Movement.

Core Paper XIV

HISTORY OF MODERN EUROPE II (c. 1880 - 1939)Unit-I: Liberal Democracy, Working Class Movements and Socialism in the 19th and 20th Centuries:

1. The Struggle for Parliamentary Democracy and Civil Liberties in Britain.
2. Forms of Protest during early Capitalism: Food Riots in France and England: Luddites and Chartism.
3. Early Socialist Thought; Marxian Socialism

Unit-II: The Crisis of Feudalism in Russia and Experiments in Socialism:

1. Emancipation of Serfs
2. Revolutions of 1905; the Bolshevik Revolution of 1917.
3. Programme of Socialist Construction.

Unit-III: Imperialism, War, and Crisis: c. 1880-1939:

1. Growth of Militarism; Power Blocks and Alliances: Expansion of European Empires –First World War (1914 – 1918)
2. Fascism and Nazism.
3. The Spanish Civil War.
4. Origins of the Second World War.

Unit-IV: Intellectual Developments since circa 1850: Major Intellectual Trends:

1. Mass Education and Extension of Literacy.
2. Institutionalization of Disciplines: History, Sociology and Anthropology.
3. Darwin and Freud.

Suggested Text Books:

1. C.M. Cipolla, Fontana Economic History of Europe, Volume II the Present (1981). I : The Industrial Revolution.
2. T.S. Hamerow, Restoration, Revolution and Reaction: Economics and Politics in Germany [1815 - 1871].

Reference Reading:

1. George Lichtheim, A Short History of Socialism.
2. K.B. Keswani, International Relations in Modern World (1990-1995).
3. C.D.M. Ketelby, A History of Modern Times.
4. Carr.E.H., International Relations between the Two World Wars, 1919-1939, New York, 1966.
5. Garden Green Wood, The Modern World –A History of Our Times.

Discipline Specific Elective Paper-1

History and Culture of Odisha - I

Unit-I

1.Historical Geography: Kalinga, Utkal, Kosal
2.Kalinga War (261 B.C.) and its Significance.
3.Kharavela –Career and Achievements

Unit: II

1.Matharas and Eastern Gangas and Sailodbhavas
2.Bhaumakaras
3.Somavamsis

Unit: III

1.Imperial Gangas
2.Suryavamsi Gajapatis
3.Post- Gajapati Political developments upto 1568.

Unit: IV

1.Social and Cultural Life in Early and Medieval Odisha
2.Growth and Decay of Urban Centres
3.Trade and Commerce
4.Taxation and Land Revenue

Suggested Text Books:

1.K.C. Panigrahi, History of Odisha, Kitab Mahal.

2. Sahu, Mishra & Sahu, History of Odisha.

Reference Reading:

1.S.K. Panda, Political and Cultural History of Odisha.
C Pradhan, A Study of History of Orissa
3.B.K. Mallik, etal (eds) Odia Identity, Page Maker Publications, Bhubaneswar, 2019.
4.R. D Banarjee, History of Orissa, 2 vols.
5.M.N. Das(ed), Sidelights on History and Culture of Orissa, Vidyapuri, Cuttack, 1977

Discipline Specific Elective Paper-II History and Culture of Odisha -II

Unit I Afghan Conquest and Mughal Rule in Odisha- Administration

1. Maratha rule in Odisha – Administration
2. British Occupation and Early Colonial Administration: Land Revenue, Salt Policy, Jail and Police Administration.

Unit: II

1. Resistance Movements: Ghumsar Rebellion, Paik rebellion, Revolt of 1857 and Surendra Sai, Keonjhar Uprisings.
2. Famine of 1866 – Causes and Consequences
3. Growth of Education and Language Movement

Unit: III

1. Growth of Nationalism

2. Formation of Separate Province of Orissa.
3. Prajamandal Movement

Unit: IV

1. Nationalist Politics in Odisha
2. Quit India Movement
3. Merger of Princely States

Suggested Text Books:

1. P.K. Mishra & J.K. Samal, A Comprehensive History and Culture of Orissa- Vol. I & II.
2. A. C. Pradhan, Sidelights on Freedom Struggle in Orissa.

Reference Reading:

1. K.M. Patra, Freedom Struggle in Odisha.
2. J.K.Samal, Orissa under the British Crown.
3. K.M.Patra, Orissa State Legislature & Freedom Struggle.
4. B.C. Ray, Orissa under the Mughals, Punthi Pustak.
5. B.C. Ray, Orissa under the Marathas, Punthi Pustak.

Discipline Specific Elective

Paper-III History and

Culture of Odisha - III

Unit: I

1. Buddhism in Odisha
2. Jainism in Odisha
3. Saivism in Odisha

Unit: II

1. Saktism and Tantricism in Odisha
2. Growth of Vaishnavism in Odisha and Cult of Jagannath
3. Growth of Odia Literature : Sarala Mahabharata
4. Pancha-Sakha Literature

Unit: III

1. Buddhist Art and Architecture
2. Jaina Art
3. Evolution of Temple Architecture -Parsurameswar, Mukteswar, Lingaraja, Jagannath and Konarka

Unit: IV

1. Christian Missionaries – Education and Health
2. Mahima Movement and its Impact
3. Neo-Hindu Movements – Brahmo, Arya Samaj.

Suggested Text Books:

1.A.C. Pradhan, A Study of the History of Odisha, Panchasheel.

2. B.K. Mallik, Paradigm of Dissent and Protest :- Social Movements in Eastern India (1400-1700 AD)

Reference Reading:

1.K.S. Behera, Temples of Orissa.
2.P.K. Mishra(ed), Comprehensive History and Culture of Orissa, Vol-I Pt. II.
3.N.K. Bose, Canons of Orissan Architecture
4.M.N. Das (ed), Sidelights on History and Culture of Orissa.
5. N.K. Sahu, Buddhism in Orissa.

Discipline Specific Elective Paper-IV

(Optional/Project) History of

Contemporary Odisha (1947-1980)

Unit I: Political Developments

1. Second Congress Ministry (1946-1950):
a) Integration of Princely States with Odisha
b) New Capital
c) Hirakud Dam Project

2. Years of Uncertainties (1950-1980)
a) Third Congress Ministry and Abolition of Zamindary System
b) Biju Patnaik's First Ministry Achievements

Unit II: United Political Initiatives

1. Coalition Politics-Achievements and Challenges
a) R.N. Singdeo,
b) Sadasiba Tripathy

2. Panchayati Raj Institutions-Its Working and Impacts.
a) Rural Stages
b) Urban Stages

Unit III: Economic Development

a) Growth of Industries- Roulkela Steel Plant and Odisha Sponge Iron Ltd.
b) Irrigation and Agricultural Infrastructure
c) Development in Transport and State communication- National and State High Ways in Odisha

Unit IV: Social Developments and Problems

a) Government Community Development Programmes- Its Impact
b) Peasant Movements: Causes and Effects
c) Growth of Art and Craft: Raghunathpur, Pipli and Bargarh

Suggested Text Books:

1. Hemant K. Mohapatra, Odisara Etihasha (Odia), Friends Publishers, Cuttack,

2019.
2. Sukadeva Nanda, Coalition Politics in Odisha, Sterling Publishers, Delhi.

Reference Reading:

1. Sunit Ghosh, Orissa in Turmoil: A Study in Political Developments, Bookland International, Bhubaneswar, 1991.
2. Basant Das, Odisha Rajanitira Gopan Katha (Odia), Anusandhan Publication, Bhubaneswar, 2001.
3. B.B. Jena & J.K. Baral (eds), Government and Politics in Orissa, Print House (India), Lucknow, 1988.
4. Chittaranjan Das, Nabakrushna Chaudhury, NBT, New Delhi.
5. Dasarathi Bhuyan, Orissa Politics: From 1936 to Contemporary Politics, Mangalam Publishers, New Delhi, 2010.

OR

Project Report

The Students may be allotted topics of their interest in the beginning of 5th Semester Classes. They may write the Project Reports on local History and Culture, local personalities with their significant contribution to change the Society and economy with historical perspective containing up to 50 double spaced typed pages. The students may consult the sources like local archaeology, manuscripts, community documents, oral traditions, oral narratives, local biographies and family sources for writing the project dissertation. The Teachers will guide the students to complete their Project assignments. The students may be allowed to fill up their forms after their submission of the projects assigned to them. The student has to secure fifty percent of marks from the evaluation of the project and fifty percent of the marks in the viva voce test which are compulsory.

Generic Elective Paper
I History of India - I (Early Times to 1750)

Unit – I : Reconstructing Ancient Indian History

1. Sources of Historical Writings.
2. Vedic Age : Society, Polity and Culture
3. Buddhism and Jainism : Principles and Impact

Unit – II : Polity and Administration

1. The Mauryan Empire : Conquest and Administration
2. Gupta Society : Land Grants, Peasantry and beginning of Feudal Society
3. Gupta Polity : Conquests and Administration
4. Harshavardhan : Achievements

Unit – III: Early Medieval Society, Economy and Culture

1. Post Gupta Trade and Commerce
2. Delhi Sultanate : Conquests and Administration
3. Bhakti and Sufi Movements in India
4. Development of Regional Language and Literature

Unit – IV: India on the Eve of the Advent of the Mughals

1. Sher Shah : Administration and Reforms
2. Mughal Administrative Institutions : Zabti, Mansab and Jagir
3. Religious Tolerance Sulh-i- Kul
4. Mughal Art and Architecture

Suggested Text Books:

1. Upinder Singh, History of Ancient & Early Medieval India.
2. Romila Thappar, The Early India

Reference Reading:

1. Irfan Habib, Medieval India, NBT, New Delhi
2. R.S. Sharma, India's Ancient Past
3. S.A.A. Rizri, Wonder that was India, Vol.II, Rupa
4. Cultural Heritage of India, Bharatiya Vidyabhaban Series, Vol-1-IV
5. A.L. Basheon (ed), Cultural History of India, OUP, New Delhi, 2011

Generic Elective

Paper II History of

India - II (1750-1950)

Unit – I Foundation and Expansion of British Rule_

1. Battle of Plessey (1757) and Conquest of Bengal
2. Conquest of Mysore and Maharashtra
3. Expansion through Diplomacy : Subsidiary Alliance and Doctrine of Lapse

Unit – II Consolidation of British Rule and Indian Responses

1. Peasant & Tribal Resistance against British Rule: Sanyasi Reballion (1763); Kondh Rebellion in Ghumusar, Santal Rebellion
2. Revolt of 1857 : Nature and Significance
3. Land Revenue Settlements : Permanent Settlement, Ryotwari and Mahalwari Settlement

Unit – III – Social and Cultural Policies

1. Socio-Religious Reform Movements: Brahmo Samaj, Arya Samaj, Theosophical Society, Aligarh Movement.
2. Growth of Press and Education
3. Issues of Caste and Gender : Jyotiba Phule- Women Question and Issues, Depressed Class.

Unit – IV – Indian National Movement

1. Politics of Moderates and Extremists (1885-1920)

2. Gandhian Mass Movements (Non-Cooperation, Civil Disobedience and Quit India

Movements), (1920-1940)

3. Communal Politics and Partition
4. Making of the Democratic Constitution

Suggested Text Books:

1.A.R. Desai, Social Background of Indian Nationalism, Popular, Mumbai

2. Priyadarshi Kar, Comprehensive History of Modern India.

Reference Reading:

1. Sumit Sarkar, Modern India : 1885-1947, Mac Millon.
2. B.R.Mani, Debrahminising History: Dominance and Resistance in Indian Society, Manohar, New Delhi, First Published 2005.
3. Chandra Bharil, Social and Political Ideas of B.R. Ambedkar, Aalekh Publishers, Jaipur, 1977.
4. Sumit Sarkar, Modern India (1885-1947), Mac Millan, Delhi, First Published 1983.
5. Hirendra N.Mukherjee, Gandhi, Ambedkar and the Extirpation of Untouchablility, PPT, New Delhi.

Generic Elective

Paper III RISE OF THE

MODERN WEST - I

Unit-I: Transition from Feudalism to Capitalism

1. The problems of Transition: Economic Expansion, Industrial production
2. Trade and Commerce
3. Urban Development, Town Life

Unit-II: Early Colonial Expansion

1. Motives, Voyages and Explorations.
2. The Conquests of America
3. Mining and Plantation, The African Slaves.

Unit-III: Renaissance and Reformation

1. Its Social Roots Spread of Humanism in Europe.
2. The Renaissance: Art, Architecture, Sculpture, Painting and Literature
3. Origins and Spread of Reformation Movements.
4. Emergence of European State system: Spain, France, England, Russia

Unit-IV: Economic Developments of the Sixteenth Century

1. Shift of economic balance from the Mediterranean to the Atlantic.
2. Commercial Revolution- Causes and Nature
3. Growth of Industries and its Impact

Suggested Text Books:

1. Charles A. Nauert, Humanism and the Culture of the Renaissance (1996).
2. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 û1600.

Reference Reading:

1. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.
2. F. Rice, The Foundation of Early Modern Europe.
3. Toynbee, A.J, A Study of History (12 volumes).
4. Maurice Dobb, Transition from Feudalism to Capitalism.
5. Wallbank, T.W. & Bailey, N.M. Civilization: Past and Present.

Generic Elective Paper IV

G.E. IV: RISE OF THE MODERN WEST - II

Unit-I: The English Revolution and European Politics in the 18th century

1. Background: Socio-Economic and Political Crisis in 17th Century Europe.
2. Major Issues-Political and Intellectual Currents;
3. Parliamentary Monarchy;
4. Patterns of Absolutism in Europe

Unit-II: Rise of Modern Science

1. Development of Science from Renaissance to the 17th century
2. Impact of Modern Science on European society

Unit-III: Mercantilism and European Economics

1. Origin and spread of Mercantilism
2. Impact of Mercantilism on European economy
3. Agricultural and Scientific Background to the Industrial Revolution

Unit-IV: The American Revolution

1. Political currents
2. Socio-Economic Issues
3. Significance of the American Revolution

Suggested Text Books:

1. H. Butterfield, The Origins of Modern Science.
2. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.

Reference Reading:

1. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 - 1600.
2. C.A Fisher, History of Modern Europe.
3. F. Rice, The Foundation of Early Modern Europe
4. David Thomson, Europe since Napoleon, Pelican Books, 1985
5. Swain, J.E., A History of World Civilization, Eurasia Publishing House Pvt. Ltd., New Delhi, 1994

୨୦୧୯-୨୦

CBCS : BA (Hons.) 2019-20

Core Course – ପ୍ରଧାନ ପାଠ୍ୟାଂଶ

ମୋଟ ପତ୍ର ସଂଖ୍ୟା – ୧୪

ପ୍ରତ୍ୟେକ ପତ୍ର – ୧୦୦ ମୂଲ୍ୟାଙ୍କ ବିଶିଷ୍ଟ (୨୦ ନମ୍ବର ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା + ୮୦ ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମାନକ ଅନ୍ତିମ ପରୀକ୍ଷା)

ସମ୍ମାନ: ଜଣେ ସ୍ନାତକ – ସମ୍ମାନର (ଅନର୍ସ) ବିଦ୍ୟାର୍ଥୀ – ମୋଟ ୧୪୦୦ ନମ୍ବରର ପରୀକ୍ଷା ଦେବେ।

କ) ଅତି କମ୍‌ରେ (ମୋଟ୍) ୫୦ଟି କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (ପରିୟଡ୍)ରେ ଗୋଟିଏ ପତ୍ରର ପାଠଦାନ ଶେଷ ହେବ । ଗୋଟିଏ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ ବା ପରିୟଡ୍ -୪୫ ମିନିଟ)

ଖ) ପ୍ରତ୍ୟେକ ପତ୍ର ୪ ଗୋଟି ୟୁନିଟ୍ /ଏକକ / ଉପଶରେ ବିଭକ୍ତ ହୋଇଛି ।

ଗ) ପ୍ରତ୍ୟେକ ପତ୍ର ୬ ଆସୁଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (୪ + ୨ କ୍ରେଡିଟ୍) ପାଇବେ । ଗୋଟିଏ ଅଷ୍ଟାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟର ମହତ୍ତ୍ୱ ହେଉଛି - ୧୦ ପିରିୟଡ୍ ସହିତ ସମାନ

ମୋଟ ୧୪ ଗୋଟି ସମ୍ମାନ ପତ୍ରର ଆଷ୍ଟମୁଲ୍ୟାଙ୍କ (କ୍ରେଡିଟ) ହେଉଛି - ୧୪ × ୬ (୪ + ୨} = ୮୪ ।

ଏଥୁମଧ୍ୟରୁ ୧୪x ୪= ୫୬ ତାତ୍ତ୍ୱିକ ପାଠ (Theory) ରହିବ।

ଘ) ପରୀକ୍ଷା ପର୍ଯ୍ୟାୟକ୍ରମ (Semester) ଓ ପ୍ରସ୍ତାବିତ ପାଠ ଯୋଜନା :

ପ୍ରଥମ ଶିକ୍ଷାବର୍ଷ

୧ମ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧ମ ଓ ୨ୟ ପତ୍ର -100 + 0୧ = ୧୦୦ ନମ୍ବ

(୧ମ ଓ ୨ୟ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୨ ୟ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୩ୟ/୪ର୍ଥ ପତ୍ର ୧୦୦+ ୧୦୦ = ୨୦୦ ନମ୍ବର

(୩ୟ ଓ ୪ର୍ଥ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

ଦ୍ୱିତୀୟ ଶିକ୍ଷାବର୍ଷ

୩ୟ ପର୍ଯ୍ୟାୟ

ତିନୋଟି ପତ୍ର ୫ମ, ୬ଷ୍ଠ ଓ ୭ମ ପତ୍ର (୫ମ, ୬ଷ୍ଠ, ୭ମ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦+୧୦୦+ ୧୦୦= ୩୦୦ ନମ୍ବର

୪ର୍ଥ ପର୍ଯ୍ୟାୟ

ତିନୋଟି ପତ୍ର ୮ମ, ୯ମ ଓ ୧୦ମ ପତ୍ର- (୮ମ, ୯ମ, ୧୦ମ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦+୧୦୦+୧୦୦= ୩୦୦ ନମ୍ବର

ତୃତୀୟ ଶିକ୍ଷାବର୍ଷ

୫ମ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧୧ଶ ଓ ୧୨ଶ ପତ୍ର (୧୧ଶ/୧୨ଶ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦ + ୧୦୦ = ୨୦୦ ନମ୍ବର

୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧୩ଶ ଓ୧୪ଶ ପତ୍ର (୧୩ଶ, ୧୪ଶ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)
୧୦୦+ ୧୦୦ = ୨୦୦ ନମ୍ବର

ଶିକ୍ଷା ଅବଧି ୬ଟି ପରୀକ୍ଷା ୧୪ଗୋଟି ମୋଟ = ୧୪୦୦ ନମ୍ବର

୩ ବର୍ଷ ୬ଟି ପର୍ଯ୍ୟାୟ ପତ୍ର

3 years Course/ସେମିଷ୍ଟାର-୬ Total Total paper 1400 Total credits: 14 x 6 (4+2) = 84

ବିଦ୍ୟାର୍ଥୀମାନଙ୍କ ମୁକ୍ତ ମେଧାବୃତ୍ତି ପରୀକ୍ଷା ପାଇଁ ସେମାନଙ୍କ ପସନ୍ଦ ଓ ବୋଧଜ୍ଞାନମୂଳକ ଦୀର୍ଘ ଓ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପରୀକ୍ଷା ନିମନ୍ତେ ଉପସ୍ଥାପନା କରାଯିବ ।

ନମ୍ବର / ମୂଲ୍ୟାଙ୍କ ବିଭାଜନ ପଦ୍ଧତି:

୧. ପ୍ରତ୍ୟେକ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ ବା ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ

୨. ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତରୀକ୍ଷା – ୨୦ ନମ୍ବର
ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା - ୮୦ ନମ୍ବର

୩. ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା ନିମନ୍ତେ ନିମ୍ନମତେ ପ୍ରଶ୍ନ ହେବ:

କ. ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ୨ଟି କରି ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ସେଥିରୁ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । ପ୍ରତ୍ୟକ ଏକକରୁ ଗୋଟିଏ ଲେଖାଏଁ ପ୍ରଶ୍ନର ଉତ୍ତରଦେବା ବାଧତାମୂଳକ (୪X୧୫ = ୬୦ ନମ୍ବର)

ଖ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତି ଏକକରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ: ବିଦ୍ୟାର୍ଥୀ ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ (୨ X ୧୦ = ୨୦)

ବିଶେଷ ଦ୍ରଷ୍ଟବ୍ୟ –

ଓଡ଼ିଆ ସମ୍ମାନ ୧୧ଶ ପତ୍ର, ୧୨ଶ ପତ୍ର, ୧୩ଶ ପତ୍ର ଓ ୧୪ଶ ପତ୍ର ଥିବା ପ୍ରତ୍ୟେକ ପତ୍ରର ପଞ୍ଚମ ଏକକର ପ୍ରକଳ୍ପ ପାଇଁ ୨୦ ନମ୍ବର ଓ ଅନ୍ତଃ ପରୀକ୍ଷା ପାଇଁ ୧୦ ନମ୍ବର ରହିବ ।

କ) ମୋଟ ନମ୍ବର - ୧୦୦

ଖ) ଅନ୍ତଃ ପରୀକ୍ଷା - ୨୦ ଓ ମୁଖ୍ୟ ପରୀକ୍ଷା – ୬୦

ଗ) ପ୍ରକଳ୍ପ ପ୍ରଭୃତି – ୨୦

ଘ) ମୁଖ୍ୟ ପରୀକ୍ଷାରେ ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରଥମ ଚାରୋଟି ଏକକରୁ ଦୁଇଟି ଲେଖାଏଁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୮ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡିବ; ସେଥିରୁ ପ୍ରତ୍ୟେକ ଏକକରୁ ଗୋଟିଏ ଲେଖାଏଁ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବା ବାଧତାମୂଳକ । (୧୫ x ୪ = ୬୦)

ଙ) ପ୍ରଥମ ୪ଟି ଏକକରୁ ୨ନମ୍ବର ବିଶିଷ୍ଟ ୧୫ଟି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡିବ। ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର

ଉତ୍ତର ଦେବାକୁ ହେବ । (୧୦X ୨ = ୨୦)

ପ୍ରକଳ୍ପଗୁଡିକ ସାହିତ୍ୟଭିତ୍ତିକ ହେବା ଆବଶ୍ୟକ ବିଭାଗମୁଖ୍ୟଙ୍କ ଅନୁମୋଦନକ୍ରମେ ବିଭାଗର ସମସ୍ତ ଅଧ୍ୟାପକ ଓ ଅଧ୍ୟାପିକାଙ୍କ ମଧ୍ୟରେ ଦିଗ୍‌ଦର୍ଶନ ନିମନ୍ତେ ସମାନ ଭାବରେ ବାଣ୍ଟିଦିଆଯିବ ।

ଭୂମିକା

ସ୍ନାତକ ଶ୍ରେଣୀରେ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ସମ୍ବନ୍ଧୀୟ ପାଠ୍ୟଦାନ ନିମନ୍ତେ ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ପ୍ରସ୍ତୁତ ହୋଇଛି । ଏହାର ପ୍ରସ୍ତୁତି କ୍ଷେତ୍ରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଆୟୋଗଙ୍କ ପ୍ରାୟୋଜିତ “ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ ନୂତନ ପାଠ୍ୟବିନ୍ୟାସ ପଦ୍ଧତିକୁ ଗ୍ରହଣ କରାଯାଇଛି । ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ସଦ୍ୟତମ ଭାଷା-ସାହିତ୍ୟ ସମ୍ବନ୍ଧୀୟ ଜ୍ଞାନ ବ୍ୟବସ୍ଥା ଓ ଚଳନ୍ତି ସମୟର ଉପଯୋଗିତାକୁ ଚାହିଁ ପ୍ରସ୍ତୁତ ହୋଇଛି । ଏହା ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟର ଉନ୍ମେଷ ବିକାଶ ସହିତ ଏହାର ସାଂପ୍ରତିକ ସ୍ଥିତି, ବ୍ୟାକରଣ ଓ ଭାଷାତତ୍ତ୍ୱିକ ବୈଶିଷ୍ଟ୍ୟ ସଂପର୍କରେ ସବିଶେଷ ଧାରଣା ପ୍ରଦାନ କରିବ । ଓଡ଼ିଆ ସାହିତ୍ୟର ବ୍ୟାବହାରିକ ଦିଗ ଓ ମହତ୍ୱ ପ୍ରତି ଏଥିରେ ଧ୍ୟାନ ଦିଆଯାଇଛି । ଓଡ଼ିଆ ସାହିତ୍ୟର ବିବିଧ ରୂପ, ସାହିତ୍ୟ-ଧାରା ଓ ବିଶିଷ୍ଟ ସାହିତ୍ୟ-ଲେଖକକ ବହି ସହିତ ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ଅବଗତ କରିବାରେ ପାଠ୍ୟଖସଡ଼ାଟି ସହାୟକ । ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟକୁ ସର୍ବଭାରତୀୟ ଭାଷା ଓ ସାହିତ୍ୟ

ତଥା ଅନ୍ତର୍ଜାତୀୟ ସାହିତ୍ୟ ବିଦ୍ୟା ସହିତ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ପରିଚିତ କରାଇବାରେ ଏହା ବିଦ୍ୟାର୍ଥୀଙ୍କ ଉପଯୋଗୀ ହୋଇପାରିବ ।

ପାଠ୍ୟକ୍ରମର ସାରାଂଶ – ସଂରଚନା
Structure of B.A. (Honours) Odia Under CBCS

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ (Core Course) : 14

ପ୍ରତ୍ୟେକ ପତ୍ରର କ୍ରେଡ଼ିଟସ୍ /ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬ (୬୦ ପରିଅଡ଼ସ୍)

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧ (Core Course – 1) ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ:
(ଚର୍ଯ୍ୟାପଦଠାରୁ ପଞ୍ଚସଖା ପର୍ଯ୍ୟନ୍ତ)
୧ମ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬ (୬୦ ପରିଅଡ଼ସ୍)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୨ (Core Course – 2) ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ:
(ପାକରିତି, ରୀତି ଓ ଗୀତି ସାହିତ୍ୟ)
୨ୟ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୩ (Core Course – 3) ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ (ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ)
ତୃୟ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ= ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୪ (Core Course - 4) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ
୪ର୍ଥ ପତ୍ର - ମୂଲ୍ୟାଙ୍କ = ୪ + ୨ = ୬

ତୃତୀୟ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୫ (Core Course - 5) ଭାଷାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ
୫ମ ପତ୍ର- ସମୟ ନିର୍ଘଣ୍ଟ ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୬ (Core Course – 6) ଓଡ଼ିଆ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ଓ ବିବିଧତା
ଷଷ୍ଠ ପତ୍ର- ସମୟ ନିର୍ଘଣ୍ଟ ୪ + ୨ =୬

ପ୍ରଧାନ ପାଠ୍ୟଶ – ୭ (Core Course=7) ଓଡ଼ିଆ ବ୍ୟାବହାରିକ ବ୍ୟାକରଣ
ସପ୍ତମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୮ (Core Course – 8) ଓଡ଼ିଆ ଲୋକ ସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ

୮ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୯ (Coro Course – 9) ପ୍ରାଚ୍ୟ ଓ ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ
୯ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୧O (Core Course-10। ଓଡ଼ିଆ ପଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରାଚୀନରୁ ସ୍ୱାଧୀନତା ପର୍ଯ୍ୟନ୍ତ) ୧୦ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ-୧୧ (Core Course-11) ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୧୧ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪+ ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -୧୨ (Core Course-12) ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ (ଗଳ୍ପ ଓ ଉପନ୍ୟାସ)
୧୨ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟଶ-୧୩ (Cure Course-13) ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରବନ୍ଧ, ଆତ୍ମଜୀବନୀ, ଭ୍ରମଣକାହାଣୀ) ୧୩ଶ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ- ୧୪ (Core Course- 14) ଓଡ଼ିଆ ଭାଷାର ବ୍ୟବହାରିକ ପ୍ରୟୋଗ
୧୪ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ (Detail Syllabus)
ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester – 1)

ମୂଳ ପାଠ : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ
ପାଠ୍ୟାଂଶ -୧ (Core Course - 1) : ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ
ପ୍ରଥମ ପତ୍ର
୧ମ ଏକକ | ୟୁନିଟ୍ - ୧ . ପ୍ରାକ୍-ସାରଳା ସାହିତ୍ୟ (ଚର୍ଯ୍ୟାଗୀତିକା ଓ ନାଥ ସାହିତ୍ୟ) ସାମାଜିକ, ଧାର୍ମିକ, ସାହିତ୍ୟିକ ଓ ଭାଷାତାତ୍ତ୍ୱିକ ମୂଲ୍ୟାୟନ
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : ସାରଳା ସାହିତ୍ୟର ସାମାଜିକ, ସାଂସ୍କୃତିକ ଓ ସାହିତ୍ୟିକ ମୂଲ୍ୟ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ : ବଳରାମ ଦାସ ଓ ଜଗନ୍ନାଥ ଦାସ (ବିଶେଷ ଅଧ୍ୟୟନ)

୪ର୍ଥ ଏକକ | ୟୁନିଟ – ୪ ଅନନ୍ତ ଦାସ, ଯଶୋବନ୍ତ ଦାସ ଓ ଅଚ୍ୟୁତାନନ୍ଦ ଦାସ (ବିଶେଷ ଅଧ୍ୟୟନ)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ - ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୧ମ ଓ ୨ୟ ଭାଗ) – ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ଓଡିଆ ସାହିତ୍ୟର ଆଦିପର୍ବ – ସୁରେନ୍ଦ୍ର ମହାନ୍ତି – କଟକ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ
୩. ବର୍ଯ୍ୟା ଗୀତିକା - ଖଗେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡ଼ିଶାର ନାଥ ସାହିତ୍ୟ - ବଂଶୀଧର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଓଡ଼ିଆ ସାହିତ୍ୟର ସଂକ୍ଷିପ୍ତ ପରିଚୟ - ବୃନ୍ଦାବନ ଚନ୍ଦ୍ର ଆଚାର୍ଯ୍ୟ,ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୬. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ, ପ୍ରଥମ ଭାଗ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ,ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୭. ଓଡିଆ ସାହିତ୍ୟର ମଧ୍ୟପର୍ବ – ସୁରେନ୍ଦ୍ର ମହାନ୍ତି – କଟକ ଷ୍ଟୁଡେଣ୍ଟସ ଷ୍ଟୋର, କଟକ
୮. ପଞ୍ଚସଖା ଓଡ଼ିଆ ସାହିତ୍ୟ – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୯. ଓଡ଼ିଆ ସାହିତ୍ୟର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି, ଫେସ ପବ୍ଲିଶର୍ସ, କଟକ
୧୦. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ, ବଂଶୀଧର ମହାନ୍ତି (୧ମ ଓ ୨ୟ ଭାଗ), ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟଂଶ - ୨ (Core Course - 2) : ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ
ଦ୍ୱିତୀୟ ପତ୍ର

୧ମ ଏକକ । ୟୁନିଟ୍ – ୧ ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି (ସାମାଜିକ, ସାଂସ୍କୃତିକ, ରାଜନୀତିକ ଓ ଧର୍ମୀୟ ପୃଷ୍ଠଭୂମି)

୨ୟ ଏକକ | ୟୁନିଟ୍ - ୨ ; ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟର ଆଙ୍ଗିକ ବୈଚିତ୍ର୍ୟ (ବିଷୟ ବିନ୍ୟାସ, ଭାଷା, ଛନ୍ଦ ବୈଚିତ୍ର୍ୟ, ବର୍ଣ୍ଣନା ବୈଚିତ୍ୟ ଓ ଆଳଙ୍କାରିକତା)

୩ୟ ଏକକ | ୟୁନିଟ – ୩ = ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟର ଆତ୍ମିକ ବିଭବ (ରସ, ସୌନ୍ଦର୍ଯ୍ୟଚେତନା ଓ ଭାବାଦର୍ଶ)

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ - ୪ ମଧ୍ୟଯୁଗୀୟ ଓଡିଆ ଗୀତି ପରମ୍ପରା (ଚଉପଦୀ, ବଘଦୀ, ଚଉତିଶା, ଭଜନ ଓ ଜଣାଣ/ଚମ୍ପୁ)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ - ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୪ର୍ଥ ଭାଗ) – ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ,

୨. ଭଞ୍ଜୀୟ କାବ୍ୟ ଭାବନା – ବେଣୀ ମାଧବ ପାଢୀ, ବ୍ରହ୍ମପୁର

୩. ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ସାହିତ୍ୟ ଏକ ଅଧ୍ୟୟନ – ଜୟକୃଷ୍ଣ ମିଶ୍ର, ଓଡ଼ିଶା ରାଜ୍ୟ ପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୪. ମଧ୍ୟକାଳୀନ ଓଡ଼ିଆ ସାହିତ୍ୟ – କୃଷ୍ଣ ଚରଣ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶସ, କଟକ

୫. ଭଞ୍ଜ ସାହିତ୍ୟର ବିଭା ଓ ବିଭବ – ସଚ୍ଚିଦାନନ୍ଦ ମିଶ୍ର, ଓଡ଼ିଶା ବୁକ ହୋଇ

୬. ଓଡିଆ ଗୀତିକାବ୍ୟ- ଜାନକୀବଲ୍ଲଭ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୭. କାବ୍ୟକୌଶଳ-ସୁଦର୍ଶନ ଆଚାର୍ଯ୍ୟ ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester –II)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୩ (Core Course - 3) : ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ

ତୃତୀୟ ପତ୍ର

୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧: ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି ଓ ନବଜାଗରଣ (ଇଂରାଜୀ ଶିକ୍ଷା ବିସ୍ତାର, ପତ୍ରପତ୍ରିକା ପ୍ରକାଶନ, ମୁଦ୍ରଣଯନ୍ତ୍ର ପ୍ରତିଷ୍ଠା ଓ ଭାଷା ସୁରକ୍ଷା ଆନ୍ଦୋଳନ)

୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨ : ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ପ୍ରମୁଖ ସ୍ରଷ୍ଟା (ରାଧାନାଥଙ୍କ କାବ୍ୟ, ଗଙ୍ଗାଧରଙ୍କ କାବ୍ୟ, ମଧୁସୂଦନ ରାଓଙ୍କ କବିତା ଓ ଫକୀରମୋହନଙ୍କ ଉପନ୍ୟାସ ଓ ଗଳ୍ପ)

୩ୟ ଏକକ ୟୁନିଟ୍ – ୩ - ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସତ୍ୟବାଦୀଧାରା

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪: ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସବୁଜଧାରା ଓ ପ୍ରଗତିବାଦୀ ଧାରା

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (୧୮୦୩-୧୯୨୦) ନଟବର ସାମନ୍ତରାୟ, ବାଣୀ ଭବନ, ଭୁବନେଶ୍ୱର

୨. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ପ୍ରେମାନନ୍ଦ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ

୩. ମେହେର ସାହିତ୍ୟରେ ମାନବୀୟ ମହନୀୟତା - ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ
୪. କାବ୍ୟଶିଳ୍ପୀ ଗଙ୍ଗାଧର - ଗୋବିନ୍ଦଚନ୍ଦ୍ର ଉଦ୍‌ଗାତା
୫. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ରାଧାନାଥ ଓ ସତ୍ୟବାଦୀ ଯୁଗ, ପ୍ର. ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୬. ସବୁଜରୁ ସାଂପ୍ରତିକ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୭. ଓଡ଼ିଆ ସାହିତ୍ୟର ପ୍ରଗତିବାଦୀ ଧାରା – ବିଜୟ କୁମାର ଶତପଥୀ, ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୪ (Core Course - 4) : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ

ଚତୁର୍ଥ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧: ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତା
୨ୟ ଏକକ । ୟୁନିଟ – ୨ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ
୩ୟ ଏକକ | ୟୁନିଟ – ୩ : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରବନ୍ଧ, ଜୀବନୀ, ଆତ୍ମ ଜୀବନୀ ଓ ସମାଲୋଚନା)

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୧. ସବୁଜିରୁ ସାଂପ୍ରତିକ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ସତୁରୀକୁ ସହସ୍ରାବ୍ଦୀ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ
୩. ଶହେ ବର୍ଷର ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପ ଏକ ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ – କବିତା ବାରିକ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ - ସଂକଳନ - ପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ (୧ମ ଓ ୨ୟଭାଗ) ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୫. ଓଡ଼ିଆ କ୍ଷୁଦ୍ର ଗଳ୍ପର ଇତିବୃତ୍ତ - ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ବୁକ୍ସ ଆଣ୍ଡ ବୁକ୍ସ, କଟକ
୬. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡିଆ ସାହିତ୍ୟର ଭୂମି ଓ ଭୂମିକା- ସଂବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଓଡିଶା ବୁକ୍ ଷ୍ଟୋର,କଟକ
୭. ଓଡ଼ିଆ ନାଟକର ଉତ୍ତର ଆଧୁନିକ ପର୍ବ – ହେମନ୍ତ କୁମାର ଦାସ, ବିଦ୍ୟାପୁରୀ, କଟକ
୮. ସ୍ୱାଧୀନ ଓଡ଼ିଆ ନାଟକ ନାରାୟଣ ସାହୁ, ଓ. ରା, ପା. ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୯. ଓଡିଆ ନାଟ୍ୟସାହିତ୍ୟ - ସର୍ବେଶ୍ୱର ଦାସ, ଓ. ରା, ପା. ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୧୦. ଓଡିଆ ନାଟକର ଉତ୍ସବ ଓ ବିକାଶ - ରତ୍ନାକର ଚଇନି,
୧୧. ଓଡିଆ ଐତିହାସିକ ନାଟକର ମୂଳସୂତ୍ର - ନୀଳାଦ୍ରି ଭୂଷଣ ହରିଚନ୍ଦନ
୧୨. ନାଟକର ବ୍ୟାପ୍ତି ଓ ଦୀପ୍ତି - ସଂଘମିତ୍ରା ମିଶ୍ର, ଅଗ୍ରଦୂତ, କଟକ
୧୩. ନାଟ୍ୟସୃଷ୍ଟି ଓ ନାଟ୍ୟଦୃଷ୍ଟି –ବିଷ୍ଣୁପ୍ରିୟା ଓତା, ଶିଶୁକଲମ, ଭୁବନେଶ୍ୱର
୧୪. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ବାଉରୀ ବନ୍ଧୁ କର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୧୫. ଓଡ଼ିଆ ଚରିତ ସାହିତ୍ୟ – ଲାବଣ୍ୟ ନାୟକ
୧୬. ଓଡ଼ିଆ ସମାଲୋଚନା ସାହିତ୍ୟ - ଅସିତ କବି

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester – III)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୫ (Core Course - 5) : ଓଡ଼ିଆ ଭାଷା ଓ ଲିପିର ଐତିହାସିକ ବିକାଶକ୍ରମ
ପଞ୍ଚମ ପତ୍ର :
୧ମ ଏକକ | ୟୁନିଟ୍ – ୧. ଓଡ଼ିଆ ଭାଷାର ଉଦ୍ଭବ ଓ ବିକାଶକ୍ରମ
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨' : ଓଡ଼ିଆ ଲିପିର ଐତିହାସିକ ବିବର୍ତ୍ତନ
୩ୟ ଏକକ | ୟୁନିଟ୍ - ୩ ଓଡ଼ିଆ ଅଭିଲେଖର ଭାଷା (ଶିଳାଲେଖ, ତାମ୍ରଲେଖ ଓ ପ୍ରାଚୀନ ସନନ୍ଦ)

୪ର୍ଥ ଏକକ । ୟୁନିଟ - ୪: ଚର୍ଯ୍ୟାପଦ ଓ ସାରଳା ସାହିତ୍ୟର ଭାଷା

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୧. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ,
୨. ଓଡ଼ିଆ ଧ୍ୱନିତତ୍ତ୍ୱ ଓ ଶବ୍ଦ ସଂଭାଗ - ଧନେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଓଡ଼ିଆ ଭାଷା ଓ ଲିପିର କ୍ରମବିକାଶ – କୁଞ୍ଜ ବିହାରୀ ତ୍ରିପାଠୀ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ଓଡ଼ିଆ ଭାଷାତତ୍ତ୍ୱ ରୂପଚିତ୍ର, ନଟବର ଶତପଥୀ, ବିଜୟିନୀ ପବ୍ଲିକେଶନ, କଟକ
୫. ଧ୍ୱନିବିଜ୍ଞାନ, ଗୋଲୋକ ବିହରୀ ଧଳ, ଓ. ରା, ପା, ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ **- ୬ (Core Course - 6) : ଭାଷାର ସଂଜ୍ଞା ସ୍ୱରୂପ, ଓଡ଼ିଆ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ଓ ବିବିଧତା**
ଷଷ୍ଠ ପତ୍ର
୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଭାଷାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨: ଭାଷା ଉତ୍ପତ୍ତି ସମ୍ପର୍କୀୟ ବିଭିନ୍ନ ସିଦ୍ଧାନ୍ତ
୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଓଡ଼ିଆ ଭାଷାର ଆଞ୍ଚଳିକ ରୂପ
୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪ : ଓଡ଼ିଆ ଭାଷା ଉପରେ ବିଭିନ୍ନ ଭାଷାର ପ୍ରଭାବ (ଦ୍ରାବିଡ଼, ଅଷ୍ଟ୍ରିକ ଯାବନିକ ଓ ଇଂରାଜୀ)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଭାଷାବିଜ୍ଞାନର ରୂପରେଖ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଭାଷାଶାସ୍ତ୍ର ପରିଚୟ – ଗୋଲୋକ ବିହାରୀ ଧଳ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୩. ଓଡିଆ ଭାଷାର ସୃଷ୍ଟି ଓ ବିକାଶ – ଉପେନ୍ଦ୍ର ପ୍ରସାଦ ଦଳାଇ, ଏ.କେ.ମିଶ୍ର ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଭାଷା ଭାବନା, ସଂ. ବିଜୟଲକ୍ଷ୍ମୀ ମହାନ୍ତି, ବିଦ୍ୟାପ୍ରକାଶନୀ, ଭୁବନେଶ୍ୱର
୬. ଓଡ଼ିଆ ଭାଷା ଓ ଭାଷା ବିଜ୍ଞାନ - ଦେବୀ ପ୍ରସନ୍ନ ପଟ୍ଟନାୟକ, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୭ (Core Course - 7) : ଓଡ଼ିଆ ବ୍ୟାବହାରିକ ବ୍ୟାକରଣ

୭ମ ପତ୍ର

୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ ବର୍ଣ୍ଣ ବିଚାର, ବାକ୍ୟର ଗଠନ ଗୀତି ଓ ପ୍ରକାରଭେଦ ।

୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ : କାରକ, ବିଭକ୍ତି, କୃଦନ୍ତ ଓ ତଦ୍ଧିତ

୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଉପସର୍ଗ, ସନ୍ଧି ଓ ସମାସ

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ -୪ : ଓଡିଆ ଶବ୍ଦସମ୍ଭାର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସର୍ବସାର ବ୍ୟାକରଣ – ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ

୨. ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ – ଧନେଶ୍ୱର ମହାପାତ୍ର, କିତାବ ମହଲ, କଟକ

୩. ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ, ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ

୪. ଓଡ଼ିଆ ଭାଷା ଚର୍ଚ୍ଚାର ପରଂପରା, ପ୍ରଫେସର ଗଗନେନ୍ଦ୍ର ନାଥ ଦାସ, ଓଡିଆ ଗବେଷଣା ପରିଷଦ, କଟକ

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – ଆଇV)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୮ (Core Course - 8) : (ଓଡ଼ିଆ ଲୋକସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ)

ଅଷ୍ଟମ ପତ୍ର

୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଲୋକ ସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)

୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ ଓଡ଼ିଆ ଲୋକଗୀତର ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ ଓ ବିଭିନ୍ନ ଦିଗ

୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଓଡ଼ିଆ ଲୋକକାହାଣୀର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ

୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪: ଓଡ଼ିଆ ଲୋକନାଟକର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ (ପାଲା, ଦାସକାଠିଆ, ଦଣ୍ଡନାଚ, ଛଉନାଚ, ଲୀଳା, ଦଧି, ଡାଲଖାଇ ଓ କରମା)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଲୋକଧାରା, ଲୋକସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ – କୁମୁଦ ରଞ୍ଜନ ପାଣିଗ୍ରାହୀ, ସୁଖଦୁଖ ପବ୍ଲିକେଶନ, ସମ୍ବଲପୁର

୨. ଲୋକସଂସ୍କୃତି ଓ ଲୋକ ସାହିତ୍ୟ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ବିଦ୍ୟାପୁରୀ, କଟକ

୩. ଲୋକସାହିତ୍ୟ ତତ୍ତ୍ୱ- ଶ୍ୟାମ ସୁନ୍ଦର ମହାପାତ୍ର, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

୪. ଓଡ଼ିଆ ଲୋକଗୀତି ସଂଚୟନ - କୁଞ୍ଜବିହାରୀ ଦାଶ, ବିଶ୍ୱ ଭାରତୀ ପ୍ରକାଶନ

୫. ପଲ୍ଲୀଗୀତି ସଞ୍ଚୟନ - କୁଞ୍ଜବିହାରୀ ଦାଶ, (୧ମ- ୨ୟ ଓ ୩ୟ ଭାଗ)

୬. ଲୋକସଂସ୍କୃତି- ଲୋକସାହିତ୍ୟ - ନାରାୟଣ ସାହୁ, ଚିନ୍ମୟ ପ୍ରକାଶନ, କଟକ

୭. ଓଡ଼ିଶାର ଦଣ୍ଡ ନାଟ - ସନ୍ତୋଷ କୁମାର ଶତପଥୀ, କେଦାର ପ୍ରିଣ୍ଟିଙ୍ଗ୍ ପ୍ରେସ୍, ଭୁବନେଶ୍ୱର

୮. ଓଡ଼ିଆ ଲୋକନାଟ୍ୟ - କଲଚରାଲ ଏକାଡେମୀ, ରାଉରକେଲା

୯. ପଶ୍ଚିମ ଓଡିଶାର ଲୋକସଂସ୍କୃତି, ଡ. ସୁଶୀଳ କୁମାର ବାଗ୍

୧୦.ପଶ୍ଚିମ ଓଡିଶାର ଲୋକଗୀତ, ଦ୍ୱାରିକାନାଥ ନାୟକ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

୧୧. ଲୋକବିଶ୍ୱାସ ଲୋକାଚାର, ଡ. ସଦାନନ୍ଦ ନାୟକ, ବିଜୟ ବୁକ୍ ଷ୍ଟୋର, ବ୍ରହ୍ମପୁର
୧୨. ଉତ୍କଳ ଗାଉଁଲି ଗୀତ, ଚକ୍ରଧର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୧୩. ଉତ୍କଳ ଗ୍ରାମ୍ୟ ଗୀତି – ଚଳୁଧର ମହାପାତ୍ର, ଓଡିଆ ସାହିତ୍ୟ ଏକାଡେମୀ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୯ (Core Course - 9) : ସାହିତ୍ୟ ତତ୍ତ୍ୱ (ପ୍ରାଚ୍ୟ ଓ ପାଶ୍ଚାତ୍ୟ)

୯ମ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧. ରସ ଓ ଧ୍ୱନି
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨; ରୀତି, ବକ୍ରୋକ୍ତି (ଓ ଅଳଂକାର
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ ; କ୍ଲାସିସିଜିମ୍, ରୋମାଣ୍ଟିସିଜିମ୍
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ ପ୍ରତୀକବାଦ, ଚିତ୍ରକଳ୍ପ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଅଳଙ୍କାର ପ୍ରସଙ୍ଗ - ଗୋବିନ୍ଦ ଚନ୍ଦ୍ର ଉଦ୍‌ଗାତା, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ- ବନମାଳୀ ରଥ.ଓ.ରା,ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୩. ଓଡ଼ିଆ କାବ୍ୟ କୌଶଳ – ସୁଦର୍ଶନ ଆଚାର୍ଯ୍ୟ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ଓ ସମୀକ୍ଷା ତତ୍ତ୍ୱ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ପ୍ରାଚୀ ସାହିତ୍ୟ ପ୍ରତିଷ୍ଠାନ, କଟକ
୫. ସାହିତ୍ୟର ସୂଚୀପତ୍ର, ବିଭୂତି ପଟ୍ଟନାୟକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -୧୦ (Core Course - 10) : ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

୧୦ମ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ : ସାରଳା ମହାଭାରତ (ଦୁର୍ଯ୍ୟୋଧନଙ୍କ ରକ୍ତନଦୀ ସନ୍ତରଣ)
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨: ଭାଗବତ (୨୪ ଗୁରୁ ପ୍ରସଙ୍ଗ) - ଜଗନ୍ନାଥ ଦାସ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ : ଦୀନକୃଷ୍ଣ ଦାସଙ୍କ ରସକଲ୍ଲୋଳ(୧ମ ଛାନ୍ଦ) ଓ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୋଟିବ୍ରହ୍ମାଣ୍ଡ ସୁନ୍ଦରୀ (୧ମ ଛାନ୍ଦ)
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଆଧୁନିକ କବିତା
ମହାଯାତ୍ରା (ସପ୍ତମ ସର୍ଗ)- ଅମର୍ଷୀଙ୍କ ଉଦ୍‌ବୋଧନ (ରାଧାନାଥ ରାୟ)
ମଙ୍ଗଳେ ଅଇଲା ଉଷା – ଗଙ୍ଗାଧର ମେହେର
ବନ୍ଦୀର ସାନ୍ଧ୍ୟ ଅନୁଚିନ୍ତା - ଗୋପବନ୍ଧୁ ଦାସ
ପ୍ରତିମା ନାୟକ - ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସାରଳା ମହାଭାରତ (ଗଦା ପର୍ବ-ସାରଳା ଦାସ)

୨. ଅବଧୂତ ଓ ଯଦୁରାଜା ସମ୍ବାଦ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୩. କହେ କୃଷ୍ଣଦାସ କବି – କୃଷ୍ଣଚରଣ ସାହୁ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ରସକଲ୍ଲୋଳ, ସଂପାଦନା – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି
୫. ଦୁର୍ଲଭ ଦାନୀକୃଷ୍ଣ - ଡ. ଜ୍ୟୋତିରଞ୍ଜନ ସାମଲ, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍, କଟକ
୬. ତପସ୍ୱିନୀ ଓ ମେହେର ସାହିତ୍ୟ - ଗୌରୀ କୁମାର ବ୍ରହ୍ମା

ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ (Semester – V)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୧ (Core Course - 11) : ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୧୧ଶ ପତ୍ର
୧ମ ଏକକ/ୟୁନିଟ୍ – ୧: ରକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ ନନ୍ଦିକା କେଶରୀ - ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଞ୍ଜନା – ବିଜୟ ମିଶ୍ର
୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : କୋଳୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ଭୁଖା- ମଙ୍ଗଳୁଚରଣ ବିଶ୍ୱାଳ
୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪ ଏକାଙ୍କିକା- ସ୍ମୃତି ବିଭ୍ରାଟ - ପ୍ରାଣବନ୍ଧୁ କର ଓ ଛଦ୍ମବେଶୀ - ବିଶ୍ୱଜିତ ଦାସ
୫ମ ଏକକ/ୟୁନିଟ୍ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

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୧. ରକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨. ନନ୍ଦିକା କେଶରୀ-ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଞ୍ଜନା – ବିଜୟ ମିଶ୍ର
୩. କୋଳୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ଭୁଖା- ମଙ୍ଗଳୁଚରଣ ବିଶ୍ୱାଳ
୪. ଅଶ୍ରୁ ନୁହେଁ ଅନଳ, ହେମନ୍ତ କୁମାର ଦାସ
୫. ସ୍ୱାଧୀନତାର ଓଡିଆ ନାଟକର ମନସ୍ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ, ରଶ୍ମିତା ରାଉତରାୟ, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୬. ସାହିତ୍ୟ ସାଧକ ମଙ୍ଗଳୁବରଣ ବିଶ୍ୱାଳ – ଗୌରିଦାସ ପ୍ରଧାନ

(ଚତୁର୍ଥ ପତ୍ର ନିମନ୍ତେ ପ୍ରଦର ସହାୟକ ପୁସ୍ତକଗୁଡିକ ଅନୁସରଣୀୟ।)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୨ (Core Course - 12) : (ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ)
୧୨ଶ ପତ୍ର
୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ କଥାସାହିତ୍ୟର ବିକାଶକ୍ରମ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୩ୟ ଏକକ ୟୁନିଟ – ୩ ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା - ଦୟାନିଧି ମିଶ୍ର
୪ର୍ଥ ଏକକ । ୟୁନିଟ୍ -୪ ଗଳ୍ପ ସାହିତ୍ୟ
ପାଠ୍ୟ ଗଳ୍ପ: ଦେବତାର ବିଧାତା – ଗୋଦାବରୀଶ ମହାପାତ୍ର

ମାଂସର ବିଳାପ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ
ମଧୁବନର ମେୟର – ମନୋଜ ଦାସ

୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

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୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ,ସଂପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ, ଓଡ଼ିଶା ବୁକଷ୍ଟୋର କଟକ
୨. ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୪. ଛ ମାଣ ଆଠଗୁଣ୍ଠ ଭିନ୍ନ ଦୃଷ୍ଟି ଭିନ୍ନ ବ୍ୟାଖ୍ୟା, ପଞ୍ଚାନନ ମିଶ୍ର, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୧. ଦାନାପାଣି – ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା – ଦୟାନିଧି ମିଶ୍ର
୨. କଥାଶିଳ୍ପୀ ମନୋଜ ଦାସ - ଶତ୍ରୁଘ୍ନ ପାଣ୍ଡବ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ମନସ୍ୱି ମନୋଜ - ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡିଆ ଉପନ୍ୟାସର ସମାଜତାତ୍ତ୍ୱିକ ଆଲୋଚନା – କଇଳାଶ ପଟ୍ଟନାୟକ, ବିଦ୍ୟାପୁରୀ, କଟକ

ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester – VI)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୩ (Core Course - 13) : ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ

୧୩ଶ ପତ୍ର

୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧: ଆତ୍ମ ଜୀବନୀ, ଭ୍ରମଣ କାହାଣୀ ଓ ସମାଲୋଚନା ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨: ମୋ ଫୁଟା ଡଙ୍ଗାର କାହାଣୀ - ଫତୁରାନନ୍ଦ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩: ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି - ଭୁବନେଶ୍ୱର ବେହେରା
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪: ପ୍ରବନ୍ଧ - ଭାଷା ଓ ଜାତୀୟତା - ଗୋପବନ୍ଧୁ ଦାସ
ମୁଁ ସତ୍ୟଧର୍ମା କହୁଛି – ଚନ୍ଦ୍ରଶେଖର ରଥ
ବିବେକାନନ୍ଦ ଏକ ଗୁହାମୁକ୍ତିର ପ୍ରୟାସ –ଚିତ୍ତରଞ୍ଜନ ଦାସ
୫ମ ଏକକ | ୟୁନିଟ୍ – ୫: ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ମୋ ଫୁଟା ଡଙ୍ଗାର କାହାଣୀ – ଫତୁରାନନ୍ଦ
୨. ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି – ଭୁବନେଶ୍ୱର ବେହେରା
୩. ଜୀବନୀ ସାହିତ୍ୟ ଏକ ଅଧ୍ୟୟନ - ପଠାଣି ପଟ୍ଟନାୟକ, ଓଡ଼ିଶା ପା.ପୁ.ପ୍ର.ଓ.ପ୍ର.ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ସମାଲୋଚନାର ଦିଗଦିଗନ୍ତ ଖଗେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ସାହିତ୍ୟ ଓ ସମାଲୋଚନା - କୁଞ୍ଜବିହାରୀ ଦାଶ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୪ (Core Course - 14) : ଓଡ଼ିଆ ଭାଷାର ବ୍ୟାବହାରିକ ପ୍ରୟୋଗ

୧୪ଶ ପତ୍ର ୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ ଭାଷଣ କଳା, ଦଳଗତ ଆଲୋଚନା ଓ ସାକ୍ଷାତକାର
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : ସମ୍ବାଦ ପ୍ରସ୍ତୁତି, ଫିଚର ରଚନା ଓ ବିଜ୍ଞାପନ ପ୍ରସ୍ତୁତି
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ କାର୍ଯ୍ୟାଳୟରେ ଓଡ଼ିଆ ଲିଖନ ବିଧ
(ନଥି ପ୍ରସ୍ତୁତି, ଅନୁବିଧି, ଟିପ୍ପଣୀ, ପ୍ରସ୍ତାବ, ଅନୁମୋଦନ, ଚିଠା ପ୍ରସ୍ତୁତି, ଅଧିସୂଚନା, ବିଜ୍ଞପ୍ତି, ଘୋଷଣା ଲିଖନ, ପତ୍ରଲିଖନ (ବ୍ୟକ୍ତିଗତ, ବ୍ୟାବସାୟିକ ଓ ସମ୍ପାଦକଙ୍କୁ ପତ୍ର)
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ -୪ ଓଡ଼ିଆ ଭାଷାର କମ୍ପ୍ୟୁଟରୀକରଣ, ସଫ୍ଟୱେୟାର ଏବଂ ହାର୍ଡୱେୟାର, ଓଡ଼ିଆ ଫଣ୍ଟସ୍.କୀ-ବୋର୍ଡ, ୱାର୍ଡ ପ୍ରୋସେସିଂ, ବନାନ ଓ ବ୍ୟାକରଣଯାଞ୍ଚକ ପ୍ରକ୍ରିୟା, ଓଡ଼ିଆରେ ଇଣ୍ଟରନେଟ୍‌ର ବ୍ୟବହାର, ଓଡ଼ିଆ ସାମାଜିକ ୱେବ୍‌ସାଇଟ୍
୫ମ ଏକକ | ୟୁନିଟ୍ -- ୫. ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ବିରଞ୍ଚି ନାରାୟଣ ସାମଲ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୨. ଭାଷଣ କଳା ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସଙ୍ଗ - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୩. ସମ୍ବାଦପତ୍ର ଓ ଗଣମାଧ୍ୟମ - ମୃଣାଳ ଚାଟାର୍ଜୀ, ଶେଫାଳୀ କମ୍ୟୁନିକେଶନ, ସଞ୍ଚାରମାର୍ଗ, ଢେଙ୍କାନାଳ
୪. ପ୍ରାୟୋଗିକ ଭାଷା ଓ ବିଜ୍ଞାପନର ଦିଗବିଦିଗ – କେ.ବି. ପଟ୍ଟନାୟକ, ଓ.ରା.ପା.ପ୍ର.ଓ.ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୫. ସଂଯୋଗ ଅନୁବିଧି-ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ
୬. କାର୍ଯ୍ୟାଳୟ ନଥି – ଓଡ଼ିଆ ଭାଷା ପ୍ରତିଷ୍ଠାନ, ଭୁବନେଶ୍ୱର

୭. ଓଡ଼ିଆରେ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ରୁଦ୍ରନାରାୟଣ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର, କଟକ
୮. ଓଡ଼ିଆ ଭାଷାରେ କମ୍ପ୍ୟୁଟରର ପ୍ରୟୋଗ - ସୁଧିର ଚନ୍ଦ୍ର ମହାନ୍ତି, ଏ.କେ. ମିଶ୍ର ପବ୍ଲିକେଶନ, ଭୁବନେଶ୍ୱର
୯. କମ୍ପ୍ୟୁଟରରେ ଓଡିଆ ଭାଷାର ବ୍ୟବହାର ଓ ପ୍ରୟୋଗ, ରୁଦ୍ରପ୍ରସାଦ ମିଶ୍ର, ଆଜିଅନ୍ତା ପବ୍ଲିଶର୍ସ, ଜଗତସିଂହପୁର

ଶୃଙ୍ଖଳାକୈନ୍ଦ୍ରିକ ଇଚ୍ଛାଧୀନ ପାଠ – ଓଡ଼ିଆ

Discipline Specific Elective - Odia DSE

ସାଧାରଣ **(Pass)** ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester–V, II)

୫ମ ପର୍ଯ୍ୟାୟ (Semester – Vi- ପ୍ରଥମ ଓ ଦ୍ୱିତୀୟ ପତ୍ର

୧୦୦+ ୧୦୦= ୨୦୦ ନମ୍ବର

୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester-VI) ତୃତୀୟ ପତ୍ର ଓ ଚତୁର୍ଥ ପତ୍ର

୧୦୦+୧୦୦ = ୨୦୦ ନମ୍ବର

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା ଓ ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ଚତୁର୍ଥ ପତ୍ର – ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି ୧୦୦ ନମ୍ବର

(ଅନୁବାଦ ବା ସଂପାଦନା ବା ଓଡିଆ ସଂସ୍କୃତି ଉପରେ ଅନ୍ୟୂନ ୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ ନିବନ୍ଧଟି ଲେଖିବାକୁ ହେବ ।)
(୮୦ ନମ୍ବର ପ୍ରକଳ୍ପ ଲେଖା । ୨୦ ନମ୍ବର ସାକ୍ଷାତକାର ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ମୋଟ୍ – ୪୦୦ ନମ୍ବର

ମୂଲ୍ୟାଙ୍କନ ବିଭାଜନ ପଦ୍ଧତି

(କ) ପ୍ରତ୍ୟେକ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ) ରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ଅତି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ସେଥିରୁ ଯେକୌଣସି ୧୦ ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (୨x୧୦=୨୦)

(ଖ) ପ୍ରତ୍ୟେକ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ୍)ରୁ ଅନ୍ତତଃ ୨ଟି ଲେଖାଏଁ ମୋଟ ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ସେଥିରୁ ଯେକୌଣସି ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ପଡ଼ିବ । (୧୫ x ୪=୬୦)

(ଗ) ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା – (୨୦ ନମ୍ବର)

ମୋଟ ମୂଲ୍ୟାଙ୍କ – ୧୦୦ ନମ୍ବର

ଭୂମିକା :

ଏହି ପାଠ୍ୟକ୍ରମଟି ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଓଡ଼ିଶାର ସାମାଜିକ, ସାଂସ୍କୃତିକ ଓ ଐତିହାସିକ ବିବର୍ତ୍ତନ ବିଷୟରେ ଜ୍ଞାନ ଆହରଣ ପାଇଁ ସୁଯୋଗ ସୃଷ୍ଟିକରିବ । ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସମାଜ ଓ ସଂସ୍କୃତିର ପ୍ରତିଫଳନ, ସାହିତ୍ୟର ବିବିଧତା ଏବଂ କମ୍ପ୍ୟୁଟର ଭିତ୍ତିକ ବିଦ୍ୟା ଶିକ୍ଷଣ ଦିଗକୁ ଧ୍ୟାନ ଦିଆଯାଇ ଏହା ପ୍ରସ୍ତୁତ ହୋଇଛି।

ଏହି ପାଠ୍ୟକ୍ରମରେ ମୋଟ ୪ ଗୋଟି ପାଠ୍ୟ ବାଧତାମୂଳକ । ସମ୍ମାନ (Hons) ଶ୍ରେଣୀର ଛାତ୍ରଛାତ୍ରୀମାନେ ଏହି ଚାରୋଟିଯାକ ପାଠ୍ୟ ପଢ଼ିବେ । ଏଥିମଧ୍ୟରୁ ଗୋଟିଏ ପାଠ୍ୟକୁ ଆଧାର କରି ତା' ସହିତ ଅନ୍ୟ ବିଦ୍ୟାକୁ ସଂଯୋଗ କରି ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ (ସେମିଷ୍ଟର-୬) ପରୀକ୍ଷା ବେଳକୁ ପ୍ରକଳ୍ପ (୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ) ପ୍ରସ୍ତୁତ କରିବେ । ପ୍ରକଳ୍ପଟି ୪ର୍ଥ ପତ୍ର ଭାବରେ ବିବେଚିତ ହେବ

ବିଶେଷ୍ୟ ଦ୍ରଷ୍ଟବ୍ୟ: ସାଧାରଣ (Pass) ଶ୍ରେଣୀର ଛାତ୍ରଛାତ୍ରୀମାନେ ପାଠ୍ୟ-୧ ରୁ ୫ ପର୍ଯ୍ୟାୟରେ DSE-IA କିମ୍ବା DSE-IIA ଭାବେ ଏବଂ ପାଠ୍ୟ-୨କୁ ଏ ପର୍ଯ୍ୟାୟରେ DSE-IB କିମ୍ବା DSE-JIB ଭାବେ ପଢିବେ ।

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ

ମୋଟ ୪ ଗୋଟି ପାଠ୍ୟ
ପତ୍ର ସଂଖ୍ୟା ୧୪
ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର (୬୦ ନମ୍ବର ଅନ୍ତଃପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା)
ସମୟ ନିର୍ଘଣ୍ଟ = ୬× ୪ = ୨୪
ପ୍ରତ୍ୟେକ ପତ୍ର ପାଇଁ ୪୦ଟି ପରିୟଡ଼, ପ୍ରତି ପିରିୟଡ଼ – ୪୫ ମିନିଟ

୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (ସେମିଷ୍ଟର – ୦୫ ଓ ୦୬)

ପାଠ୍ୟ-୧ / **Course-1** : ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ ଓ ଓଡ଼ିଆ ସାହିତ୍ୟ (Pass)
(ସମୟ ନିର୍ଘଣ୍ଟ ୪+୨=୬)

୧ମ ଏକକ : ଓଡ଼ିଶାର ସଂକ୍ଷିପ୍ତ ଇତିହାସ ।

୨ୟ ଏକକ ଓଡ଼ିଶାରେ ବୌଦ୍ଧ ସଂସ୍କୃତି, ଶୈବ ସଂସ୍କୃତି ଓ ବୈଷ୍ଣବ ସଂସ୍କୃତି ।
୩ୟ ଏକକ : ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି ଓ ଆଦିବାସୀ ସଂସ୍କୃତି ।
୪ର୍ଥ ଏକକ ଓଡ଼ିଆ ଓଷା ବ୍ରତ ଓ ପର୍ବପର୍ବାଣି ।

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧. ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ – ସଂସ୍କୃତି ବିଭାଗ, ଓଡ଼ିଶା
୨. ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ - ପ୍ରବୋଧ କୁମାର ମିଶ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ
୩. ଓଡ଼ିଆ ସାହିତ୍ୟର ସାମାଜିକ ଓ ସାଂସ୍କୃତିକ ଇତିହାସ – ଚିତ୍ତରଞ୍ଜନ ଦାସ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ଓଡ଼ିଶାର ଧର୍ମଧାରା - କାହ୍ନୁଚରଣ ମିଶ୍ର, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୫. ବୈଷ୍ଣବ ସାହିତ୍ୟ ତତ୍ତ୍ୱ - ଆଶୁତୋଷ ପଟ୍ଟନାୟକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୬. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଶୈବଧର୍ମ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ଫ୍ରେଣ୍ଡସ୍ କଟକ
୭. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଶ୍ରୀଜଗନ୍ନାଥ - ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୮. ଲୀଳାମୟ ନୀଳାଦ୍ରୀଶ – ସଂପାଦନା, ଭୁବନେଶ୍ୱର ଭଞ୍ଜ ଭାରତୀ (୧ମ ଭାଗ ଓ ୨ୟ ଭାଗ)
୯. ଓଡ଼ିଆ ବ୍ରତ ସାହିତ୍ୟ - ଅରବିନ୍ଦ ପଟ୍ଟନାୟକ, ଓଡ଼ିଶା ସାହିତ୍ୟ ଏକାଡେମୀ

୧୦. ଓଡ଼ିଶାର ଧର୍ମଧାରା, ଡ. ପ୍ରଦୀପ୍ତ କୁମାର ପଣ୍ଡା
୧୧. ଲୋକଧର୍ମ ଓ ଲୋକସାହିତ୍ୟ, ଡ. ସଦାନନ୍ଦ ନାୟକ, ବିଜୟ ବୁକ୍ ଷ୍ଟୋର୍, ବ୍ରହ୍ମପୁର

ପାଠ୍ୟ-୨ | Course – 2 ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟ ଓ ବିଜ୍ଞାନଭିରିକ ସାହିତ୍ୟ (Pass)

୧ମ ଏକକ ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨ୟ ଏକକ ଓଡ଼ିଆ ବିଜ୍ଞାନଭିତ୍ତିକ ସାହିତ୍ୟର ସ୍ୱରୂପ ଓ ବିକାଶଧାରା
୩ୟ ଏକଳ: ପୃଥିବୀ ବାହାରେ ମଣିଷ - ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର
୪ର୍ଥ ଏକକ ବିଚିତ୍ର ବିଶ୍ୱ - ଦେବକାନ୍ତ ମିଶ୍ର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧. ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟର ଇତିବୃତ୍ତ - ମନୀନ୍ଦ୍ର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ପୃଥିବୀ ବାହାରେ ମଣିଷ - ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର
୩. ବିଚିତ୍ର ବିଶ୍ୱ - ଦେବକାନ୍ତ ମିଶ୍ର
୪. ଓଡିଆ ସାହିତ୍ୟ, ମହେଶ୍ୱର ମହାନ୍ତି
୫. ଆଧୁନିକ ଶିଶୁ ଓଡିଆ ସାହିତ୍ୟ –ଜାନକୀ ବଲ୍ଲଭ ମହାନ୍ତି, ଗନ୍ଥମନ୍ଦିର, କଟକ

ପାଠ୍ୟ-୩ | Course – 3 : ଓଡ଼ିଆ ପଦ୍ୟ ସାହିତ୍ୟ (Pass)

୧ମ ଏକକ : ଜଗନ୍ନାଥ ଜଣାଣ - କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ
ଆକାଶ ପ୍ରତି - ମଧୁସୂଦନ ରାଓ
ଯାତ୍ରା ସଂଗୀତ - ବୈକୁଣ୍ଠନାଥ ପଟ୍ଟନାୟକ
ମୌସୁମୀ - ରାଧାମୋହନ ଗଡ଼ନାୟକ
୨ୟ ଏକକ କ୍ଷୁଦ୍ରଗଳ୍ପ
ଡିମିରି ଫୁଲ – ଅଖିଳ ମୋହନ ପଟ୍ଟନାୟକ
ଭଙ୍ଗା ଖେଳନା - କିଶୋରୀ ଚରଣ ଦାଶ
ଅନ୍ଧ ରାତିର ସୂର୍ଯ୍ୟ - ମହାପାତ୍ର ନୀଳମଣି ସାହୁ
ବାସି ମଡ଼ା - ସୁରେନ୍ଦ୍ର ମହାନ୍ତି
୩ୟ ଏକକ : ପ୍ରବନ୍ଧ ଓ ସମାଲୋଚନା
ମହାସ୍ରୋତ - ବିଶ୍ୱନାଥ କର
ଚିତ୍ରଗ୍ରୀବର ଉଚିତ ଅଭିମାନ – ଗୋଲୋକ ବିହାରୀ ଧଳ

ତିନୋଟି ସମାଲୋଚନା – ବାଉରୀବନ୍ଧୁ କର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
ଉପନ୍ୟାସ – ମାଟିର ମଣିଷ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ, ସ ପଠାଣୀ ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୨. କାଳିନ୍ଦୀ ଚରଣଙ୍କ କଥାସାହିତ୍ୟ – ବିଷ୍ଣୁପ୍ରିୟା ଓତା, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଓଡ଼ିଆ ପ୍ରବନ୍ଧ ସାହିତ୍ୟ – ବାଉରୀବନ୍ଧୁ କର
୪. ଓଡିଆ ସମାଲୋଚନା ସାହିତ୍ୟ - ଓଡିଶା ସାହିତ୍ୟ ଏକାଡେମୀ
୫. ମାଟିର ମଣିଷ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ପାଠ୍ୟ–୪ | Course – 4 : ପ୍ରବନ୍ଧ ପ୍ରସ୍ତୁତି ଓ ଉପସ୍ଥାପନା (Pass)

ସନ୍ଦର୍ଭ ଲିଖନ - ୮୦ + ମୌଖିକ - ୨୦ = ୧୦୦

ଅନୁବାଦ ବା ସଂପାଦନା ବା ଓଡ଼ିଆ ସଂସ୍କୃତି ଉପରେ ଅନ୍ୟୂନ ୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି କିମ୍ବା

(ସମାଲୋଚନା, ଅନୁବାଦ, ସମ୍ପାଦନା, ଗବେଷଣା)

୧. ପ୍ରଥମ ଏକକ ; ସମାଲୋଚନାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨. ଦ୍ୱିତୀୟ ଏକକ ଅନୁବାଦର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୩. ତୃତୀୟ ଏକକ : ସମ୍ପାଦନା ବିଧି

୪. ଚତୁର୍ଥ ଏକକ : ଗବେଷଣା ପ୍ରବିଧି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଗବେଷଣା ଅନୁବାଦ ସମ୍ପାଦନା କଳା – ସଁ ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର, କଟକ
୨. ଗବେଷଣା ପ୍ରବିଧି - ଡ. ସୁବୋଧ ଚାଟାର୍ଜୀ, ବିଦ୍ୟାପୁରୀ, କଟକ
୩. ଗବେଷଣା ପ୍ରକରଣ; ସଂପାଦନା ଓ ଅନୁବାଦ ପ୍ରବିଧି - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ ଓ ନିର୍ମଳା କୁମାରୀ ରାଉତ

ଅନ୍ତର୍ବିଷୟ ଇଚ୍ଛାଧୀନ ପାଠ - ଓଡ଼ିଆ

Generic Electives (GE) - Course - Odia

ସୂଚନା : ଅନ୍ୟ ସମ୍ମାନର ବିଦ୍ୟାର୍ଥୀ ଏଥିମଧ୍ୟରୁ ୨ଗୋଟି କିମ୍ବା ୪ଗୋଟି ପତ୍ର ଅଧ୍ୟୟନ କରିପାରିବେ ; କିନ୍ତୁ ପାସ୍ ବିଦ୍ୟାର୍ଥୀ ଏଥିମଧ୍ୟରୁ ୧ମ ଓ ୨ୟ ପତ୍ରକୁ ଯଥାକ୍ରମେ ୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟରେ ପଢିବେ ।

୧. ପତ୍ର ସଂଖ୍ୟା ୪
୨. ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ ମୋଟ ୪୦୦ ନମ୍ବର ୨.
୩. ପ୍ରତ୍ୟେକ ପତ୍ରରେ ୪ଗୋଟି ଏକକ ରହିବ।

ନମ୍ବର ବିଭାଜନ ବିଧି :

କ) ପ୍ରତ୍ୟେକ ପତ୍ରର ମୋଟ ନମ୍ବର – ୧୦୦
ଖ) ଅନ୍ତଃପରୀକ୍ଷା – ୨୦ ଓ ମୁଖ୍ୟ ପରୀକ୍ଷା – ୮୦
ଗ) ମୁଖ୍ୟ ପରୀକ୍ଷାରେ ପ୍ରତ୍ୟେକ ଏକକରୁ ଦୁଇଟି ଲେଖାଏଁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ପସନ୍ଦମୂଳକ ବୋଧଜ୍ଞାନମାପକ ୮ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ ୮ ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନରୁ ୪ଟିର ଉତ୍ତର ଦେବାକୁ ହେବ ।
(୧୫x୪=୬୦)
ଘ) ସମସ୍ତ ଏକକରୁ ୨ ନମ୍ବର ବିଶିଷ୍ଟ ଲବ୍ଧଜ୍ଞାନମୂଳକ ୧୫ଟି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ମୋଟ ୧୫ ଗୋଟି ପ୍ରଶ୍ନରୁ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (୨ x ୧୦ = ୨୦)

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester –1)

ପାଠ୍ୟ – ୧ | ପତ୍ର - ୧ (Core Course - 1): ଗଣମାଧ୍ୟମ, ବେତାର କଳା ଓ ବିଜ୍ଞାପନ କଳା

୧ମ ଏକକ : ଗଣମାଧ୍ୟମ ଓ ତା'ର ପ୍ରକାରଭେଦ
୨ୟ ଏକକ : ବିଜ୍ଞାପନର ପରିଭାଷା, ପରିସର ଓ ଉଦ୍ଦେଶ୍ୟ
୩ୟ ଏକକ ସ୍ତମ୍ଭ ଲିଖନ ଓ ଫିଚର ଲିଖନ
୪ର୍ଥ ଏକକ : ପତ୍ରଲିଖନ (ବାଣିଜ୍ୟିକ, କାର୍ଯ୍ୟାଳୟ ଭିତ୍ତିକ, ବ୍ୟକ୍ତିଗତ ଓ ସମ୍ପାଦକଙ୍କୁ ପତ୍ର)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟକୁ ଆକାଶବାଣୀର ଦାନ - ବ୍ରଜମୋହନ ମହାନ୍ତି, ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର
୨. ସମ୍ବାଦପତ୍ର ଓ ଗଣମାଧ୍ୟମ -ମୃଣାଳ ଚାଟାର୍ଜୀ, ଶେଫାଳୀ କମ୍ୟୁନିକେଶନ, ଢେଙ୍କାନାଳ
୩. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ସଂଯୋଗ ଅନୁବିଧି,-ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ
୫. ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା - ବିରଞ୍ଚି ନାରାୟଣ ସାମଲ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର୍
୬. ଯୋଗାଯୋଗର ଭାଷା – ସୁଧୀର ଚନ୍ଦ୍ର ମହାନ୍ତି, ପ୍ରାଚୀ ପ୍ରକାଶନ, କଟକ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester –II)

ପାଠ୍ୟ – ୨ | ପତ୍ର - ୨ (Core Course -2) : ସାହିତ୍ୟ ଅଧ୍ୟୟନ

୧ମ ଏକକ : ଗଳ୍ପ ସାହିତ୍ୟ
ବୁଢ଼ା ଶଙ୍ଖାରି - ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର
ମାଗୁଣୀର ଶଗଡ଼ - ଗୋଦାବରୀଶ ମହାପାତ୍ର
ଶିକାର - ଭଗବତୀ ଚରଣ ପାଣିଗ୍ରାହୀ
୨ୟ ଏକକ : ଉପନ୍ୟାସ ସାହିତ୍ୟ
ଶାସ୍ତି – କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩ୟ ଏକକ : ନାଟକ
ଶେଷ କଥା – ଡକ୍ଟର ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୪ର୍ଥ ଏକକ- ରମ୍ୟ ରଚନା
ବାଇ ମହାରି ପାଞ୍ଜି (ପ୍ରଥମ ବିଡ଼ା) - ଗୋପାଳ ଚନ୍ଦ୍ର ପ୍ରହରାଜ
ବଟୁଆ - ଗୋବିନ୍ଦ ତ୍ରିପାଠୀ
ସାଧୁ ସଙ୍ଗ – ଚୌଧୁରୀ ନେମକାନ୍ତ ମିଶ୍ର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. କାହ୍ନୁଚରଣ ବିଶେଷଜ୍ଞ, କୋଣାର୍କ, ଓଡିଶା ସାହିତ୍ୟ ଏକାଡେମୀ
୨. ଓଡିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଇତିହାସ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୩. ଓଡ଼ିଆ କଥାସାହିତ୍ୟର କଥା ଓ ରମ୍ୟରଚନା, ମହାପାତ୍ର ନୀଳମଣି ସାହୁ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୪. ଶାସ୍ତି – କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଉତ୍ତର ସତୁରୀ ଓଡ଼ିଆ ନାଟକ, ହେମନ୍ତ କୁମାର ଦାସ, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ
୬. ଶେଷ କଥା - ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester –III)

ପାଠ୍ୟ – ୩/ପତ୍ର - ୩ (Core Course -3); ପ୍ରାଚୀନ, ମଧ୍ୟଯୁଗ ଓ ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ
୧ମ ଏକକ ସାରଳା ମହାଭାରତରେ କାହାଣୀ
ସତ୍ୟଆତ୍ମ
ତୁଳସୀବଣ ବାଘ
ଗଙ୍ଗା ବୋଇଲେ ଥିବି ଗଙ୍ଗୀ ବୋଇଲେ ଯିବି
୨ୟ ଏକକ: ବଳରାମ ଦାସ ଓ ଜଗନ୍ନାଥ ଦାସଙ୍କ କାହାଣୀ
ବଳରାମ ଦାସଙ୍କ ବଉଳା ଅଧ୍ୟାୟ ଓ ମୃଗୁଣା ସ୍ମୃତି
ଜଗନ୍ନାଥ ଦାସଙ୍କ କପୋତ ଉପାଖ୍ୟାନ ଓ ପିଙ୍ଗଳା ଉପାଖ୍ୟାନ
୩ୟ ଏକକ: ମଧ୍ୟକାଳୀନ ସାହିତ୍ୟ ସ୍ରଷ୍ଟାଙ୍କ ସଂକ୍ଷିପ୍ତ ପରିଚୟ
ଦୀନକୃଷ୍ଣ ଦାସ, ଅଭିମନ୍ୟୁ ସାମନ୍ତସିଂହାର, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ
କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ
୪ର୍ଥ ଏକକ :ଆଧୁନିକ ଯୁଗର ସାହିତ୍ୟ ସ୍ରଷ୍ଟା ସଂକ୍ଷିପ୍ତ ପରିଚୟ
ରାଧାନାଥ ରାୟ, ଫକୀର ମୋହନ ସେନାପତି, ଗଙ୍ଗାଧର ମେହେର, ମାୟାଧର ମାନସିଂହ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ - ମାୟାଧର ମାନସିଂହ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୨ୟ ଓ ୩ୟ ଭାଗ) – ଗୁନ୍ଥ ମନ୍ଦିର, କଟକ
୩. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (୧୮୦୩-୧୯୨୦) ନଟବର ସାମନ୍ତରାୟ, ବାଣୀ ଭବନ,
ଭୁବନେଶ୍ୱର
୪. ଆଲୋକ ଓ ଅମୃତର କବି ଗଙ୍ଗାଧର ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ପଢାପଢି, ଭୁବନେଶ୍ୱର

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – IV)

ପାଠ୍ୟ – ୪ | ପତ୍ର - ୪ (Core Course - 4) : ଓଡ଼ିଆ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା

୧ମ ଏକକ | ୟୁନିଟ୍-୧ କମ୍ପ୍ୟୁଟର କ'ଣ ଓ କାହିଁକି
କମ୍ପ୍ୟୁଟର ର ବିଭିନ୍ନ ଅଂଶବିଶେଷ ଓ କାର୍ଯ୍ୟ
୨ୟ ଏକକ। ୟୁନିଟ୍-୨: ୟୁନିକୋଡ ମାଧମରେ ଓଡ଼ିଆ ଡିଟିପି ଶିକ୍ଷା
୩ୟ ଏକକ। ୟୁନିଟ୍-୩: ଇଣ୍ଟରନେଟ୍‌ରେ ଓଡ଼ିଆ ଚିଠି
ଇଣ୍ଟରନେଟରେ ସାମାଜିକ ଗଣମାଧମର ବ୍ୟବହାର

୪ର୍ଥ ଏକକ/ୟୁନିଟ୍-୪: ପାୱାର ପଏଣ୍ଟ ମାଇତ୍ର ପ୍ରସ୍ତୁତି, ଟେବୁଲ, ଫିଗର୍ସ ଏବଂ ପିକଚର୍ସ/ସ୍ଲାଇଡ ଏକସେଲ୍‌ର ବ୍ୟବହାର ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ମୌଳିକ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ଦେବକାନ୍ତ ମିଶ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଓଡ଼ିଆରେ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ରୁଦ୍ରନାରାୟଣ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୩. ଓଡ଼ିଆ ଭାଷାରେ କମ୍ପ୍ୟୁଟର୍‌ର ପ୍ରୟୋଗ - ସୁଧୀର ଚନ୍ଦ୍ର ମହାନ୍ତି, ଏ.କେ. ମିଶ୍ର ପବ୍ଲିକେଶନ, ଭୁବନେଶ୍ୱର
୪. କମ୍ପ୍ୟୁଟରରେ ଓଡିଆ ଭାଷାର ବ୍ୟବହାର ଓ ପ୍ରୟୋଗ – ରୁଦ୍ରପ୍ରସାଦ ମିଶ୍ର, ଆଜିଅନ୍ତା ପବ୍ଲିଶର୍ସ, ଜଗତସିଂହପୁର
୫. କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା –ରାନୁ ବନିକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପାଠ୍ୟକ୍ରମର ସାରାଂଶ – ସଂରଚନା

Structure of B.A. Pass (DSC-Odia) Under CBCS

ପ୍ରଧାନ ପାଠ୍ୟ (Core Course): ୪

ପ୍ରତ୍ୟେକ ପତ୍ରର କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ : **(1st Semester)**

ପ୍ରଧାନ ପାଠ୍ୟ - ୧ (Core Course – 1) ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

ପ୍ରଥମ ପତ୍ର – କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (2nd Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୨ (Core Course –2) ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା

୨ୟ ପତ୍ର - କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ତୃତୀୟ ପର୍ଯ୍ୟାୟ : (3rd Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୩ (Core Course - 3) ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ

୩ୟ ପତ୍ର- କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ : (4th Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -4 (Core Course-4) ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ

୪ର୍ଥ ପତ୍ର - କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ ପାଠ୍ୟଖସଡ଼ା : ସ୍ନାତକ (ଓଡ଼ିଆ ଇଚ୍ଛାଧୀନ)
2019-20

Core Course -- ପ୍ରଧାନ ପାଠ୍ୟ
ମୋଟ ପତ୍ର ସଂଖ୍ୟା - ୦୪ (Four Paper – Discipline-I/ Four Paper – Discipling-2) ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ (୨୦ ନମ୍ବର ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା + ୮୦ ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମାନକ ପରୀକ୍ଷା)
ଇଚ୍ଛାଧୀନ ଓଡ଼ିଆ : ଜଣେ ସ୍ନାତକ – (ଇଚ୍ଛାଧୀନ)– ମୋଟ ୪୦୦ ନମ୍ବରର ପରୀକ୍ଷା ଦେବେ
କ) ଅତି କମ୍‌ରେ (ମୋଟ) ୫୦ଟି କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (ପିରିୟଡ୍)ରେ ଗୋଟିଏ ପତ୍ରର ପାଠଦାନ ଶେଷ ହେବ । ଗୋଟିଏ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ ବା ପିରିୟଡ୍-୪୫ ମିନିଟ)
ଖ) ପ୍ରତ୍ୟେକ ପତ୍ର ୪ ଗୋଟି ୟୁନିଟ୍ (ଏକକ) ଉପାଂଶରେ ବିଭକ୍ତ

ଗ) ପ୍ରତ୍ୟେକ ପତ୍ର ୬ ଆସ୍ଥାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (୪ + ୨ କ୍ରେଡିଟ୍) ବିଶିଷ୍ଟ । ଗୋଟିଏ ଆସ୍ଥାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟର ମହତ୍ତ୍ୱ ହେଉଛି - ୧୦ ପିରିୟତ୍ର ସହିତ ସମାନ
ମୋଟ ୪ ଗୋଟି ଇଚ୍ଛାଧୀନ ପତ୍ରର କ୍ରେଡିଟ ହେଉଛି - ୪x୬ (୪ + ୨) = ୨୪
ଘ) ପର୍ଯ୍ୟାୟ (Semester) ଓ ପ୍ରସ୍ତାବିତ ପାଠ ଯୋଜନା;
ପ୍ରଥମ ଶିକ୍ଷାବର୍ଷ
୧ମ ପର୍ଯ୍ୟାୟ ୧ମ –ପତ୍ର -୧୦୦ ନମ୍ବର
୨ୟ ପର୍ଯ୍ୟାୟ ୨ୟ –ପତ୍ର -୧୦୦ ନମ୍ବର

ତୃତୀୟ ଶିକ୍ଷାବର୍ଷ
୩ୟ ପର୍ଯ୍ୟାୟ ୩ୟ –ପତ୍ର -୧୦୦ ନମ୍ବର
୪ର୍ଥ ପର୍ଯ୍ୟାୟ ୪ର୍ଥ – ପତ୍ର -୧୦୦ ନମ୍ବର

ଙ) ନମ୍ବର । ମୂଲ୍ୟାଙ୍କ ବିଭାଜନ ପଦ୍ଧତି:

ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃପରୀକ୍ଷା -୨୦ ନମ୍ବର

ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା -୮୦ ନମ୍ବର

ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ପରୀକ୍ଷାରେ ନିମ୍ନମତେ ପ୍ରଶ୍ନ ପଡ଼ିବ -
କ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ବିକଳ୍ପ ସହ ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (୧୫ × ୪ = ୬୦ ନମ୍ବର)
ଖ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ୧୦ଟି

ପ୍ରଶ୍ନର ତରଳ ଦେବେ । (୨x ୧୦ = ୨୦) ଉତ୍ତର

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ (Detail Syllabus)

(କ) ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester – 1) DSC 1/2 A
ପ୍ରଥମ ପତ୍ର ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

ପ୍ରଧାନ ପାଠ **(Core Course -1):** ଓଡ଼ିଆ ସାହିତ୍ୟ ପ୍ରାଚୀନକୁ ଆଧୁନିକ
୧ମ ଏକକ / ୟୁନିଟ୍ – ୧ ସାରଳା ମହାଭାରତ (ଦୁର୍ଯ୍ୟୋଧନଙ୍କ ରକ୍ତନଦୀ ସନ୍ତରଣ)
୨ୟ ଏକକ / ୟୁନିଟ୍ – ୨ : ଭାଗବତ (୨୪ ଗୁରୁ ପ୍ରସଙ୍ଗ) - ଜଗନ୍ନାଥ ଦାସ
୩ୟ ଏକକ / ୟୁନିଟ – ୩ - ଦୀନକୃଷ୍ଣ ଦାସଙ୍କ କସକଲ୍ଲୋଳ(୧ମ ଛାନ୍ଦ) ଓ ଉପେନ୍ଦ୍ରଭଞ୍ଜ କୋଟିବ୍ରହ୍ମାଣ୍ଡ ସୁନ୍ଦରୀ(୧ମ ଛାନ୍ଦ)
୪ର୍ଥ ଏକକ । ୟୁନିଟ୍ – ୪ ଆଧୁନିକ କବିତା
ମହାଯାତ୍ରା (ସପ୍ତମ ସର୍ଗ)- ଅମର୍ଷୀଙ୍କ ଉଦ୍‌ବୋଧନ, ରାଧାନାଥ ରାୟ
ମଙ୍ଗଳେ ଅଇଲା ଉଷା – ଗଙ୍ଗାଧର ମେହେର
ବନ୍ଦୀର ସାନ୍ଧ୍ୟ ଅନୁଚିନ୍ତା - ଗୋପବନ୍ଧୁ ଦାସ
ପ୍ରତିମା ନାୟକ - ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ
୧. ସାରଳା ମହାଭାରତ (ସାରଳା ଦାସ)
୨. ଅବଧୂତ ଓ ଯଦୁରାଜା ସମ୍ବାଦ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. କହେ କୃଷ୍ଣଦାସ କବି – କୃଷ୍ଣଚରଣ ସାହୁ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ରସକଲ୍ଲୋଳ, ସଂପାଦନା – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି
୫. ଦୁର୍ଲଭ ଦୀନକୃଷ୍ଣ, ଜ୍ୟୋତିରଞ୍ଜନ ସାମଲ, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍, କଟକ

(ଖ) ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester – II) DSC 1/2 B

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୨ (Core Course - 2) : ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା

ଦ୍ୱିତୀୟ ପତ୍ର
୧ମ ଏକକ । ୟୁନିଟ – ୧ : ଭକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨ : ନନ୍ଦିକା କେଶରୀ ମନୋରଞ୍ଜନ ଦାସ

୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ କୋକୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଏକାଙ୍କିକା- ସ୍ମୃତି ବିଭ୍ରାଟ – ପ୍ରାଣବନ୍ଧୁ କର ଓ ଛଦ୍ମବେଶୀ - ବିଶ୍ୱଜିତ ଦାସ
୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ
୧ ଅଭିଯାନ – କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨. ନନ୍ଦିକା କେଶରୀ-ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଂଜନା – ବିଜୟ ମିଶ୍ର
୩. କୋକୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ମୁଖା - ମଙ୍ଗୁଲୁ ଚରଣ ବିଶ୍ୱାଳ
୪. ଅଶ୍ରୁ ନୁହେଁ ଅନଳ, ହେମନ୍ତ କୁମାର ଦାସ
୫. ସ୍ୱାଧୀନୋତ୍ତର ଓଡ଼ିଆ ନାଟକର ମନସ୍ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ, ରଶ୍ମିତା ରାଉତରାୟ, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୬. ସାହିତ୍ୟସାଧକ ମଙ୍ଗଳବରଣ – ଗୌରିଦାସ ପ୍ରଧାନ (ଚତୁର୍ଥ ପତ୍ର ନିମନ୍ତେ ପ୍ରଦତ୍ତ ସହାୟକ ପୁସ୍ତକଗୁଡିକ ଅନୁସରଣୀୟ।

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester – III) DSC 1/2 C

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୩ (Core Course - 3): ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ

ତୃତୀୟ ପତ୍ର :

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ କଥାସାହିତ୍ୟର ବିକାଶକ୍ରମ
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ - ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ ; ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା -ଦୟାନିଧି ମିଶ୍ର
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଗଳ୍ପ ସାହିତ୍ୟ
ପାଠ୍ୟ ଗଳ୍ପ:ଦେବତାର ବିଧାତା – ଗୋଦାବରୀଶ ମହାପାତ୍ର
ମାଂସର ବିଳାପ – କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ମଧୁବନର ମେୟର - ମନୋଜ ଦାସ

୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ ସଂ ପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର, କଟକ
୨. ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୪. ଛ ମାଣ ଆଠଗୁଣ୍ଠ ଭିନ୍ନ ଦୃଷ୍ଟି ଭିନ୍ନ ବ୍ୟାଖ୍ୟା, ପଞ୍ଚାନନ ମିଶ୍ର, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍ସ, କଟକ

୫. ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି
୬. ନୟନତାରା - ଦୟାନିଧି ମିଶ୍ର
୭. କଥାଶିଳ୍ପୀ ମନୋଜ ଦାସ, ଶତ୍ରୁଘ୍ନ ପାଣ୍ଡବ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୮. ମନସ୍ୱୀ ମନୋଜ, ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଫେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୯. ଓଡିଆ ଉପନ୍ୟାସର ସମାଜତାତ୍ତ୍ୱିକ ଆଲୋଚନା, କଇଳାଶ ପଟ୍ଟନାୟକ, ବିଦ୍ୟାପୁରୀ, କଟକ

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – 1V)

ପ୍ରଧାନ ପାଠ୍ୟଂଶ - ୪ **(Core Course -4)** :ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ (DSC 1/2 D}
୪ର୍ଥ ପତ୍ର
୧ମ ଏକକ } ୟୁନିଟ୍ – ୧ ଓଡ଼ିଆ ବର୍ଣ୍ଣ ବିଚାର, ବାକ୍ୟର ଗଠନ ରୀତି ଓ ପ୍ରକାରଭେଦ ।
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : କାରକ, ବିଭକ୍ତି,କୃଦନ୍ତ ଓ ତଦ୍ଧିତ
୩ୟ ଏକକ | ୟୁନିଟ – ୩ : ଉପସର୍ଗ, ସନ୍ଧି ଓ ସମାସ
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ - ୪ ଓଡ଼ିଆ ଶବ୍ଦସମ୍ଭାର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସର୍ବସାର ବ୍ୟାକରଣ – ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ
୨. ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ - ଧନେଶ୍ୱର ମହାପାତ୍ର, କିତାବ ମହଲ, କଟକ
୩. ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ, ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫେସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫। ଓଡ଼ିଆ ଭାଷା ଚର୍ଚ୍ଚାର ପରଂପରା, ଗଗନେନ୍ଦ୍ର ନାଥ ଦାସ, ଓଡିଆ ଗବେଷଣା ପରିଷଦ, କଟକ

ଦକ୍ଷତାବର୍ଷକ ବାଧତାମୂଳକ ପାଠ୍ୟକ୍ରମ

Ability Enhancement Compulsory Course (AECC)

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ଓଡ଼ିଆ

(2019-20)

MIL (Communications) - Odia

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ **(2nd Semester)** କଳା, ବିଜ୍ଞାନ ଓ ବାଣିଜ୍ୟ ସାଧାରଣ (Pass) | ସମ୍ମାନ (Hons)
ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ
ମୋଟ କ୍ରେଡିଟ୍-୪, ମୋଟ ଶ୍ରେଣୀ ପାଠଦାନ ନିର୍ଘଣ୍ଟ - ୪୦, ଗୋଟିଏ ଶ୍ରେଣୀ ପାଠଦାନର {ପିରିୟଡ ସମୟ ଅବଧି-୪୫ ମିନିଟ୍ ପାଠ୍ୟକ୍ରମ – ୨, ପୂର୍ବସଂଖ୍ୟା – ୧୦୦

(Credits - 4) Total Classes - 40, One Period - 45 Minutes, Course - ll, Full Marks - 100

ପାଠ୍ୟକ୍ରମର ଭୂମିକା:

ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ (CBCS / ସିବିସିଏସ୍) ପାଠ୍ୟ ପ୍ରଣାଳୀ ଅନୁସାରେ ପ୍ରସ୍ତୁତ ହୋଇଛି । ବିଭିନ୍ନ ସ୍ତରରେ ଆବଶ୍ୟକ ଅନୁସାରେ ସମସାମୟିକ ପରିସ୍ଥିତିକୁ ନେଇ ଭାବବିନିମୟ ଓ ପାରସ୍ପରିକ ଯୋଗାଯୋଗ ସ୍ଥାପନ କିପରି ଓଡ଼ିଆ ଭାଷାରେ ସହଜରେ, ସରଳରେ ହୋଇପାରିବ – ଏ ଦିଗ ପ୍ରତି ଏଥିରେ ପାନ ଦିଆଯାଇଛି । ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟିକ ପ୍ରାୟୋଗିକ ଜ୍ଞାନର ବିକାଶ ନିମିତ୍ତ +୩ ସ୍ତରୀୟ ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ଏହି ପାଠ୍ୟକ୍ରମର ଖସଡ଼ାଟି ସାହାଯ୍ୟ କରିବ । ସେଥିପାଇଁ ପ୍ରଚଳିତ ଭାଷାର ବୈୟାକରଣିକ, ବ୍ୟାବହାରିକ ଓ ପ୍ରାୟୋଗିକ ଦିଗ ପ୍ରତି ଏଥିରେ ସ୍ଥାନ ଦିଆଯାଇଛି । ଏଥିରେ ସଂଯୋଗ ପ୍ରକ୍ରିୟାର ଅନୁବିଧ, ଯୋଗାଯୋଗର ତଥ୍ୟ ଓ ଗୁତତ୍ତ୍ୱ ପ୍ରତି ଗୁରୁତ୍ୱ ଦିଆଯାଇଛି । ସରକାରୀ କାର୍ଯ୍ୟାଳୟରେ ଓଡ଼ିଆ ଭାଷାର ବ୍ୟବହାରରେ ଏହା ଦକ୍ଷତା ବୃଦ୍ଧି କରିବ । ଓଡ଼ିଆ ଭାଷାର ପ୍ରୟୋଗରେ ସେମାନେ ଶୁଦ୍ଧ ଓ ପରିଚ୍ଛନ୍ନ ଭାବରେ ଯେକୌଣସି ପ୍ରକାର ଜ୍ଞାନର ସୂଚନା ତଥ୍ୟ ଓ ସିଦ୍ଧାନ୍ତକୁ ମୌଖିକ ଓ ଲିଖିତ ସ୍ତରରେ ସହଜରେ ପ୍ରକାଶ କରିପାରିବେ ଏବଂ ସେମାନଙ୍କ ମାତୃଭାଷା ପ୍ରୟୋଗର ବିକାଶ ଘଟିପାରିବ ।

ମୂଲ୍ୟ ବିଭାଜନ ପଦ୍ଧତି : (ସବୁଥିରୁ ବିକଳ୍ପ ପଡ଼ିବ)

କ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ୍) ରୁ ବିକଳ୍ପସହ ଦୁଇଟି ଲେଖାଏଁ ମୋଟ ୮ଟି ୧୫ନମ୍ବର ବିଶିଷ୍ଟଦୀର୍ଘପ୍ରଶ୍ନ ପଡିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ ।(୧୫ x ୪ = ୬୦)

ଖ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକରୁ ୧୨ଟି ଅତିସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ (୧୦x୨ = ୨୦)

ଗ) ମହାବିଦ୍ୟାଳୟସ୍ତରୀୟ ଅନ୍ତଃ ପରୀକ୍ଷା (୨୦)

ମୋଟ ମୂଲ୍ୟାଙ୍କ – ୧୦୦

ସବିଶେଷ ପାଠ୍ୟ

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା - ଓଡ଼ିଆ

ପାଠ୍ୟ–୧| **Course – 1 ଯୋଗାଯୋଗ ଅନୁବିଧ, ରୀତି ଓ ମାଧ୍ୟମ**

୧ମ ଏକକ : ଯୋଗାଯୋଗର ପରିଭାଷା, ଅନୁବିଧି, ପରିସମ ଓ ପ୍ରକାରଭେଦ

୨ୟ ଏକକ : ସାକ୍ଷାତକାର, ଭାଷଣ କଳା

୩ୟ ଏକକ : ସମ୍ବାଦର ପରିଭାଷା, ପରିସର ଓ ସମ୍ବାଦ ପ୍ରସ୍ତୁତି

୪ର୍ଥ ଏକକ : ଓଡ଼ିଆ ଭାଷାର ବର୍ଣ୍ଣମାଳା, ବର୍ଣ୍ଣାଶୁଦ୍ଧିର ନିରାକରଣ । (ବନାନ ତ୍ରୁଟି - ସାଦୃଶ୍ୟଜନିତ ଅଶୁଦ୍ଧି , ଲିଙ୍ଗ ଗତ ଅଶୁଦ୍ଧି, ସନ୍ଧିଗତ ଅଶୁଦ୍ଧି, ସମାସଗତ ଅଶୁଦ୍ଧି, ବଚନ ଓ ବିଭକ୍ତିଗତ ଅଶୁଦ୍ଧି, ବାକ୍ୟ ବିଧିଜନିତ ଅଶୁଦ୍ଧି ସମାର୍ଥବୋଧକ ଶବ୍ଦୀଶୁଦ୍ଧି ପ୍ରତ୍ୟୟ ଜନିତ ଅଶୁଦ୍ଧି, ଶବ୍ଦ ସଂଯୋଗାତ୍ମକ ଓ ସ୍ୱରସଙ୍ଗତି ଜନିତ ଅଶୁଦ୍ଧି)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ (ପାଠ୍ୟ-୧ | Course – 1)

୧. ଯୋଗାଯୋଗ ମୂଳକ ମାତୃଭାଷା (ଓଡ଼ିଆ) ସାମଲ ବିରଞ୍ଚି ନାରାୟଣ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର,

କଟକ ।

୨. ସଂଯୋଗ ଅନୁବିଧି, ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ

୩. ଭାଷଣ କଳା ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସଙ୍ଗ - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର,କଟକ

୪. ପ୍ରାୟୋଗିକ ଓଡ଼ିଆ ଭାଷା – ଓଡ଼ିଶା ରାଜ୍ୟପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓଡ଼ିଶା ରାଜ୍ୟ ପାଠ୍ୟପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ନିର୍ଭୁଲ ଲେଖାର ମୂଳସୂତ୍ର, ନୀଳାଦ୍ରି ଭୂଷଣ ହରିଚନ୍ଦନ, ପି.ସି.ଆର ପବ୍ଲିକେସନ, ଭୁବନେଶ୍ୱର

୨. ସର୍ବସାର ବ୍ୟାକରଣ - ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ

COMPULSORY LANGUAGE/LITERATURE COURSE MIL

(ODIA)- ARTS

ବାଧତାମୂଳକ ଭାଷା ଓ ସାହିତ୍ୟ – ଆଧୁନିକ ଭାରତୀୟ ଭାଷା (ଓଡ଼ିଆ)

+୩, ପ୍ରଥମ ବର୍ଷ କଳା ସାଧାରଣ (PASS) ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

ପତ୍ର ସଂଖ୍ୟା – ପ୍ରଥମ

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ **(1st SEMESTER)**

ପ୍ରତ୍ୟେକ ପତ୍ରର ମୂଲ୍ୟ - ୧୦୦ ନମ୍ବର

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା)

ମୂଲ୍ୟ ବିଭାଜନ

(କ) ପ୍ରଥମ ଏକକ (ଗଦ୍ୟ ସାହିତ୍ୟ)ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ।
ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ - ୧୫)

(ଖ) ଦ୍ୱିତୀୟ ଏକକ (ପଦ୍ୟ ସାହିତ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧୫)

(ଗ) ତୃତୀୟ ଏକକ (ଅତିରିକ୍ତ ପାଠ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ -୧୫)

(ଘ) ଚତୁର୍ଥ ଏକକରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ପ୍ରଶ୍ନରୁ ଗୋଟିକର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ - ୧୫)

(ଙ) ପ୍ରତ୍ୟେକ ଏକକରୁ ତିନୋଟି କରି ୧୨ଟି ପ୍ରଶ୍ନ ଆସିବ, ସେଥିରୁ ବିଦ୍ୟାର୍ଥୀ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (ମୋଟ ୨ x ୧୦ = ୨୦)

ସବିଶେଷ ଅଧ୍ୟୟନ

ଅନୁମୋଦିତ ପାଠ୍ୟ

ପ୍ରଥମ ଏକକ- ଗଦ୍ୟ ସାହିତ୍ୟ

୧- ଜାତୀୟ ଜୀବନ - ମଧୁସୂଦନ ଦାସ

୨- ସୌନ୍ଦର୍ଯ୍ୟ ଓ ପ୍ରେମ – ଶଶିଭୂଷଣ ରାୟ
୩- ସାହିତ୍ୟ ଓ ଗଣମାଧ୍ୟମ – ଶରତ କୁମାର ମହାନ୍ତି

ଦ୍ୱିତୀୟ ଏକକ – ପଦ୍ୟ ସାହିତ୍ୟ

୧- କେଶବ କୋଇଲି – ମାର୍କଣ୍ଡ ଦାସ
୨- ମନବୋଧ ଚଉତିଶା - ଭକ୍ତଚରଣ ଦାସ
୩- କାକ ବାରତା - ନନ୍ଦକିଶୋର ବଳ
୪- ଝିଅ ପାଇଁ ଗୋଟିଏ କବିତା - ରାଜେନ୍ଦ୍ର କିଶୋର ପଣ୍ଡା

ତୃତୀୟ ଏକକ - ଅତିରିକ୍ତ ପାଠ୍ୟ (ଗଳ୍ପ ସାହିତ୍ୟ)

୧- ଅଶୁଭ ପୁତ୍ରର କାହାଣୀ - ଅଚ୍ୟୁତାନନ୍ଦ ପତି
୨- ସୁଲତାନ - ରାଜକିଶୋର ପଟ୍ଟନାୟକ
୩- ପାଟଦେଈ – ବୀଣାପାଣି ମହାନ୍ତି

ଚତୁର୍ଥ ଏକକ - ବ୍ୟାକରଣ

ପାଠ : ପଦ ପ୍ରକରଣ - (ବିଶେଷ୍ୟ, ବିଶେଷଣ, ସର୍ବନାମ, ଅବ୍ୟୟ ଓ କ୍ରିୟା)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧) ସର୍ବସାର ବ୍ୟାକରଣ - ପଣ୍ଡିତ ନାରାୟଣ ମହାପାତ୍ର ଏବଂ ଶ୍ରୀଧର ଦାଶ - ନିଉ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ ।

୨) ପ୍ରଚଳିତ ଓଡ଼ିଆ ଭାଷାର ବ୍ୟାକଗଣ – ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର - ବିଦ୍ୟାପୁରୀ, କଟକ
୩) ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ – ଧନେଶ୍ୱର ମହାପାତ୍ର - କିତାବ ମହଲି, କଟକ
୪) ଶେଷ ଦଶକର ରଚନା – ଶରତ କୁମାର ମହାନ୍ତି ।

COMPULSORY LANGUAGE / LITERATURE COURSE

MIL (ODIA)- ARTS

ବାଧତାମୂଳକ ଭାଷା ଓ ସାହିତ୍ୟ - ଆଧୁନିକ ଭାରତୀୟ ଭାଷା (ଓଡ଼ିଆ)

+୩, ପ୍ରଥମ ବର୍ଷ କଳା ସାଧାରଣ (PASS)ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

2019-20

ପତ୍ର ସଂଖ୍ୟା – ଦ୍ୱିତୀୟ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (3RD SEMESTER)

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ମୂଲ୍ୟ ବିଭାଜନ

(କ) ପ୍ରଥମ ଏକକ (ଗଦ୍ୟ ସାହିତ୍ୟ)ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦାର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ।
ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧:୫)

(ଖ) ଦ୍ୱିତୀୟ ଏକକ (ପଦ୍ୟ ସାହିତ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ। (ମୋଟ ମୂଲ୍ୟ – ୧୫)

(ଗ) ତୃତୀୟ ଏକକ (ଅତିରିକ୍ତ ପାଠ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘଧର୍ମୀ ପ୍ରଶ୍ନ ଆସିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧୫)

(ଘ) ଚତୁର୍ଥ ଏକକରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ପ୍ରଶ୍ନରୁ ଗୋଟିକର ଉତ୍ତର ଦେବାକୁ ହେବ ।
(ମୋଟ ମୂଲ୍ୟ – ୧୫)

(ଙ) ପ୍ରତ୍ୟେକ ଏକଳରୁ ତିନୋଟି କରି ୧୨ଟି ପ୍ରଶ୍ନ ଆସିବ, ସେଥିରୁ ବିଦ୍ୟାର୍ଥୀ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (ମୋଟ୍ ୨ x ୧୦ = ୨୦)

ଅନୁମୋଦିତ ପାଠ୍ୟ

ପ୍ରଥମ ଏକକ- ଗଦ୍ୟ ସାହିତ୍ୟ
୧- ଅଛୁ ଓ ହେବୁ - ନୀଳକଣ୍ଠ ଦାସ
୨- ସ୍ତ୍ରୀ ଶିକ୍ଷା – ରେବା ରାୟ
୩- ଇଚ୍ଛନ୍ତି ଦାମିକେ - ବୈଷ୍ଣବ ଚରଣ ସାମଲ

ଦ୍ୱିତୀୟ ଏକକ – ପଦ୍ୟ ସାହିତ୍ୟ
୧- ସବୁଠୁରୁ ବଞ୍ଚିତ କରି - କାନ୍ତକବି ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର
୨- ଅକ୍ରୂର ଉବାଚ – ଗୁରୁ ପ୍ରସାଦ ମହାନ୍ତି
୩- ଓଡିଶା – ସୀତାକାନ୍ତ ମହାପାତ୍ର
୪– ହେ ମୋ ଦେଶ – ବଜନାଥ ରଥ
ତୃତୀୟ ଏକକ - ଅତିରିକ୍ତ ପାଠ୍ୟ (ଜୀବନୀ)
୧-ପିତୃ ପ୍ରସଙ୍ଗ (ସଭାବ କବି ଗଙ୍ଗାଧର ମେହେରଙ୍କ ଜୀବନୀ -କେବଳ ଜୀବନୀ ଅଂଶ)- ଭଗବାନ ମେହେର
ଚତୁର୍ଥ ଏକକ - ବ୍ୟାକରଣ- ବାକ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ଲକ୍ଷଣ ଓ ରୂପାନ୍ତର, ଲୋକୋକ୍ତିର ଅର୍ଥ ଓ ପ୍ରୟୋଗ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧) ସର୍ବସାର ବ୍ୟାକରଣ - ପଣ୍ଡିତ ନାରାୟଣ ମହାପାତ୍ର ଏବଂ ଶ୍ରୀଧର ଦାଶ - ନିଉ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ
୨) ପ୍ରାୟୋଗିକ ଓଡିଆ ଭାଷା, ଓଡ଼ିଶା ରାଜ୍ୟପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

ପାଠ୍ୟକ୍ରମ ସଂପର୍କରେ ଶିକ୍ଷକଙ୍କ ପ୍ରଶିକ୍ଷଣ ଯୋଜନା (୨୧ ଦିନ)

୨-ବୌଦ୍ଧ, ଶୈବ, ବୈଷ୍ଣବ, ଜଗନ୍ନାଥ ତତ୍ତ୍ୱ
୩-ଗବେଷଣା ପ୍ରବିଧ
୪ – ସାହିତ୍ୟତତ୍ତ୍ୱ (ପ୍ରାଚ୍ୟ-ପଶ୍ଚ୍ୟାତ୍ୟ)
୫- ଭାଷାବିଜ୍ଞାନ ଓ ଭାଷାତତ୍ତ୍ୱ
୬- ଲୋକସାହିତ୍ୟ ଓ ସଂସ୍କୃତି
୭-କଥା ସାହିତ୍ୟ (ଗଳ୍ପ ଉପନ୍ୟାସ)
୮ -ଅନୁବାଦ ଓ ସଂପାଦନା
୯-କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା

U.G. Course Structure Philosophy

Semester		CORE COURSE (14)	Ability Enhancement Compulsory Course (AECC) (2)	Skill Enhancement Compulsory Course (SECC)(2)	Elective: Discipline Specific DSE (4)	Elective: Generic (GE) (4)
I	CC I	General Philosophy	Environmental Science or English/MIL Communication			**GE-I** Symbolic Logic
	CCII	Logic and Scientific Method				
II	CCIII	Systems of Indian Philosophy –I	Environmental Science or			**GE-II** Indian
	CCIV	Symbolic Logic				
III	CCV	Ethics		**SECC -I**		**GE-III** History of Modern European Philosophy
	CCVI	History of Greek Philosophy				
	CCVII	Systems of Indian Philosophy (II)				
IV	CCVIII	Contemporary Indian Philosophy		**SECC-II**		**GE- IV** Ethics: Theory and Practice
	CCIX	History of Modern European Philosophy				
	CCX	Philosophy of Language				
V	CCXI	Western Classics: Meditations of Rene Descartes			**DSE-I** PHILOSOPHY OF BHAGAVAD GITA	
	CCXII	Indian Text: Isa Upanishad			**DSE-II** PHILOSOPHY OF RELIGION	
VI	CCXIII	Social & Political Philosophy			**DSE-III** GANDHIAN STUDIES	
	CC XIV	Applied Ethics			**DSE- IV** RECENT WESTERN PHILOSOPHY/ PROJECT	

PHILOSOPHY

PHILOSOPHY-HONOURS

Core course – 14 papers
Discipline Specific Elective – 4 papers
Skill Enhancement Compulsory Course-2 papers Generic Elective for non Philosophy students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6,Teaching hours per paper – 50 hours + 10 hours tutorial

CC I:GENERAL PHILOSOPHY

Unit-I: Definition, Nature & Function of Philosophy, and Philosophy in relation to other modes of thinking like Science & Religion.

Unit-II: Metaphysics: Monism, Pluralism, Realism, Idealism, Metaphysical issues: Substance, Universal, Mind & Body.

Unit-III: Problem of knowledge: What is knowledge? Sources of knowledge: Empiricism, Rationalism, Theories of Truth: Correspondence, coherence and pragmatic theory

Unit-IV: Problems of Ethics**:** (1) Theories of Goodness: The good and the evil (2) Theories of conduct: Egoism & Altruism.

Prescribed Books:

1. John Hospers: An Introduction to Philosophical Analysis(relevant portions)
2. J.N. Sinha : Introduction to Philosophy

Reference books:

(1) G.T.W. Patrick: Introduction to Philosophy
(2) A.C. Ewing: The Fundamental Questions of Philosophy
(3) G.W. Cunningham: Problems of Philosophy
(4) Richard Taylor: Metaphysics
(5) D.W. Hamlyn: Metaphysics

CC II: LOGIC AND SCIENTIFIC METHOD

Unit-I: Definition of Logic, Laws of Thought, Deductive and Inductive Arguments, Validity&Soundness of Arguments.

Unit-II: Classification of Propositions (from stand-point of Quality & Quantity), Distribution of Terms, Square of oppositions, Existential Import of Propositions, Interpretation of categorical proposition.

Unit-III: Inference- Immediate Inference (Conversion and Obversion), Mediate Inference(Syllogism): Figure & Moods, Testing of Validity of Arguments by syllogistic Rules.

Unit-4: Inductive Reasoning & Scientific Enquiry: Causation & Mills Experimental Methods.

Prescribed Book:

1. Cohen& Nagel- Introduction to Logic & Scientific Method.

Reference Book:

1. Copi, Cohen & Mac Mahan- Introduction to Logic (14th Edition)
2. Alex Rosenberg- Philosophy of Science: A Contemporary Introduction
3. John Hospers: An Introduction to Philosophical Analysis.

CC III:SYSTEMS OF INDIAN PHILOSOPHY–I

Unit-I: Salient Features of Indian Philosophy, Basic concepts like Rta, Rna, Carvakas- Epistemology and Metaphysics (Lokayatamata)

Unit-II- Jainism - Syadvada, Anekantavada, Jaina ethics (concept of Triratna)

Unit-III: Buddhism: Four Noble Truths, Doctrine of Momentariness, Dependant Origination, No Soul Theory, Nirvana

Unit-IV: Samkhya-Dualistic System: Purusa, Prakriti, Theory of Causation, Theory of Evolution, Astanga Yoga of Patanjali

Prescribed Books:

(1) Dutta&Chatterjee - An Introduction to Indian Philosophy
(2) C. D. Sharma - A Critical Survey of Indian Philosophy

Reference Books:

(1) R. K. Puligandla- Fundamentals of Indian Philosophy.
(2) M. Hiriyana- Outlines of Indian Philosophy
(3) J. N. Sinha- Indian Philosophy
(4) S. Radhakrishnan- Indian Philosophy(Vol.1& 2)

CC IV:SYMBOLIC LOGIC

Unit-I: Chapter- I Introduction

Chapter- II-The Calculus of Propositions

Unit- II: Chapter-IlI Calculus of Propositions (Sec 1 to 6)

Unit-Ill: Chapter-IV Calculus of Propositions (Sec 7 to 9)
The Elements of Predicate Calculus (Section 1 to 9 of chapter V)

Unit-IV: Appendix (Sec-I to Sec-IV)

Prescribed Books: -Basson & O' Corner: Introduction to Symbolic Logic

CC V:ETHICS

Unit-I: Definition, Nature & Scope of Ethics, Ethics in relation to Politics, Sociology and Religion

Unit-II: Distinction between moral and non-moral action, Moral and factual Judgement. Object of Moral Judgement.

Unit-III: Theories of Morality: Hedonism, Utilitarianism, Rigorism, Perfectionism **Unit-IV:** Theories of punishment; Retributive, Reformative and Preventive theory**. Prescribed Book:**

(1)J. N. Sinha- A Manual of Ethics

Reference Books:

(1) W. Frankena– Ethics
(2) William Lily- An Introduction to Ethics

CC VI:HIISTORY OF GREEK PHILOSOPHY

Unit-I: Nature of Greek Philosophy: What is Philosophy? Origin, development andSalient features of early Greek Thought

Unit-II: Pre-Socratic Thought: The Being of Parmenides, Becoming of Heraclitus andAtomism of Democritus

Unit-III: Socrates: Problem before Socrates, Dialectical method, epistemology And ethics of Socrates.

Unit-IV: Plato: Theory of Knowledge, Theory of Idea, and Theory of Soul Aristotle: Theory of Form and Matter, Theory of Causation.

Prescribed Book:

(1) W. T. Stace - Greek Philosophy

Reference books:

(1) Burnet - Greek Philosophy
(2) B. A. G. Fuller - A History of Greek Philosophy
(3) B. Russell - A History of Western Philosophy
(4) Y. Masih - A Critical History of Philosophy

CC VII:SYSTEMS OF INDIAN PHILOSOPHY (II)

Unit-I: UPANISHADic view of Atman and Brahman, Vidya and Avidya, Para vidyaand Aparavidya

Unit-II: Nyaya theory of Inference, Prama and Aprama, Concept of God

Unit-III: Vaishesika: Categories (Padarthas),Nyaya: Pramanas

Unit-IV: Sankara and Ramanuja's view on Maya, Jiva, Isvara, Brahman and Liberation

Prescribed Books: -

1. Dutta and Chatterjee: An Introduction to Indian Philosophy
2. C.D. Sharma: A Critical Survey of Indian Philosophy
3. M. Hiriyana: Outlines of Indian Philosophy

Books for Reference: -

1. J.N Sinha: Indian Philosophy
2. R.K Puligandla: Fundamentals of Indian Philosophy
3. S. Radhakrishnan: Indian Philosophy (Vol-I and II)

CC VIII:CONTEMPORARY INDIAN PHILOSOPHY

UNIT-I: Tagore: Nature of man God, Reality and Religion, Vivekananda: The concept of man, Universal Religion and PracticalVedanta

Unit-II: Sri Aurobindo: World, Maya, Evolution and Reality (Sacchidananda),Integral yoga

Unit- III: Gandhi: Truth, God and Non-violence, Ideal social order Dr B.R. Ambedkar: Vision of a just society

Unit- IV:S. Radhakrishnan: Man, Reality and Religion
J Krishna Murty: Man and Nature, Human Crisis

Prescribed Book: -

1. B.K Lal: Contemporary Indian Philosophy

Books forReference: -

1. H. Sahoo (Ed): Contemporary Indian Philosophy
2. T.M.P Mahadevan and V. Saroja: Contemporary Indian Philosophy

CC IX:HISTORY OF MODERN EUROPEAN

PHILOSOPHY

Unit- I Bacon: Theory of Idola, Inductive Method

Descartes: Universal Doubt, Cogito-Ergo-Sum, Existence of God

Unit-II Spinoza: Substance, Attribute and Modes

Leibnitz: Theory of Monads, Pre-established harmony

Unit- III Locke: Refutation of Innate ideas, Sources of knowledge

Berkeley: Subjective idealism, Ese-est-percipii Hume: Impression and Idea, Skepticism and Causality

Unit- IV Kant: Reconciliation between empiricism and Rationalism

Possibility of Synthetic-a priorijudgment

Prescribed Book: -

1. R.K. Pati: History of Modern European Philosophy

Books for Reference: -

1. Y Masih: History of Western Philosophy
2. Ira Sen Gupta: A History of Western Philosophy
3. Frank Thilly: History of Western Philosophy

CC X:PHILOSOPHY OF LANGUAGE

Unit-I Word Meaning: Meaning of the word "meaning", Ambiguity and Vagueness

Unit- II Definitions: Denotative, Connotative and Ostensive

Defining and Accompanying Characteristics

Stipulative, Reportive and Persuasive definition

Unit- III Sentence Meaning: Proposition and sentence

Word Meaning and sentence meaning, Criteria of sentence meaning

Unit-IV Concept: Nature and source

Truth: Correspondence, Coherence and Truth as it works

Prescribed book: -

1. John Hospers: An Introduction to Philosophical Analysis

Books for Reference: -

1. Alston: Philosophy of Language
2. Das P: Life Language & Reality: An Introduction to Philosophy of Language

CCXI:WESTERN CLASSICS: MEDITATIONS OF RENE DESCARTES

Unit- I Meditation I: Sceptical Doubts

Meditation II: Cogito-ergo-sum, Sum- res-cogitans,The Wax argument

Unit- II Meditation III: Clear and Distinct perceptions

Theory of Ideas, Existence of God

Unit- III Meditation IV: God is no deceiver, will, intellect and possibility of Error

Meditation V: Essence of Material things, Existence of God

Unit- IV Meditation- VI Mind- body Dualism,Primary and Secondary Quality

Prescribed Book: -

1. Rene Descartes: Meditations on first Philosophy

Books for Reference: -

1. Rae Langton: A Study Guide to Descartes Meditations
2. Amelie Rorty: Essays on Descartes Meditations

CCXII:INDIAN TEXT: ISA UPANISHAD

Unit-I What are Upanishads? Place of Upanishad in Indian Philosophy and Isa Upanishad

Unit-II Mantra 1 to 9

Unit- III Mantra 10 to 14

Unit- IV Mantra 15 to 18

Prescribed Book: -

1. Swami Gambhirananda, Eight Upanishads (Vol-I) God and Reality, Advaita Ashrama, Calcutta

Books for Reference: -

1. S. Radhakrishnan: The Principal Upanishads
2. Satyabadi Mishra: Central Philosophy of the Upanishads
3. Aditya Ku. Mohanty: Upanishads Rediscovered

CCXIII:SOCIAL & POLITICAL PHILOSOPHY

Unit-I: Sociality, Social science & Social laws, Philosophy of Social Science-Relation Between Individual&Society (Mechanical,Organic &Idealistic view)

Unit- II: Political Ideals- Justice, Liberty, Equality
Political Doctrines- Humanism, Secularism, Feminism, Philosophy of Ecology.

Unit- III: Democratic Ideals- Democratic Government, Conditions for Successful Functioning of Democracy,Human Rights

Unit-IV: Political Ideologies- (a) Anarchism (b) Marxism (c) Sarvodaya

Prescribed Book-

1. O.P. Gauba - An Introduction to Political Philosophy.

Reference Books-

1. Mackenzie: Social & Political Philosophy
2. Sukhvir Singh- Social and Political Philosophy
3. Sushila Ramaswamy- Political Theories: Ideas &Concepts
4. D.D. Raphel- Problems of Political Philosophy
5. Patitapaban Das- Social and Political Philosophy

CCXIV:APPLIED ETHICS

Unit- I: What is Applied Ethics: Nature &Scope of Applied Ethics- Ethical Theories- Deontology, Utilitarianism, Relativism &Subjectivism

Unit-II: Taking Life: Animals- Animals rights, Reverence for life
Taking Life: Humans- Types of Euthanasia, Abortion

Unit-III: Environmental Ethics: Anthropocentricism, Non-anthropocentricism, Deep Ecology

Unit-IV: Professional Ethics: (a) Business Ethics- Rights and Obligations,Justice& Honesty in Ethics.(b) Bio-medical Ethics- Hippocratic Oath, Rights and Obligations of Health Care Professionals, Doctor- Patient-Relationship

Prescribed Book-

1. Peter Singer- Practical Ethics

Reference Books-

1. J. Jagadeb- Bio-medical Ethics
2. Tom Regan - Animal Rights
3. J. P. Theroux- Ethics: Theory & Practice
4. P.K Mohapatra :Ethics and Society

DESCIPLINE SPECIFIC ELECTIVE

DSE I: PHILOSOPHY OF BHAGAVAD GITA

Unit-I: Dharma:-Varnadharma, Swabhava, Swadharma- Paradharma

Unit-II: Karma:-Classification of Karma; Agency Niskama Karma, Lokasamgraha, Relation between Karma Yoga and Jnana yoga

Unit-III: Jnana:- Distinction between Jnana and Vijnana. Criteria of True Knowledge (Buddhi Yoga & JnanaYoga), Kshetra, Kshetrajna, Purusottama.Sattvika, Rajasika and TamasikaJnana

Unit-IV: Bhakti Yoga:- Four kinds of devotee, Characteristics of Ideal Bhakti- Saranagati & Prapattikrupa (grace); Relation between Bhakti Yoga & Jnana Yoga

Prescribed Books-

1. The Bhagavad Gita- S. Radhakrishnan (Trs&Ed)

Reference Books-

1. Concept of Yoga in the Gita- S. C. Panigrahi
2. Bhagavad Gita & Modern Life- K. M. Munshi& R. R. Diwakar
3. The Lord Speaks (2016)- B. K. Tripathy
4. Srimad Bhagavad Gita Bhasya of Sri Sankaracharya- A. G. K. Warrier(Trs)
5. The Ethical Philosophy of Gita- P. N. Srinivasachari

DSE-II: PHILOSOPHY OF RELIGION

Unit-I: Judaic- Christian Concept of God (Chapter-1) Introduction to Philosophy of Religion Grounds for belief in existence of God (Chapter- 2)

Unit-II: Grounds for belief against existence of God (Chapter-3)

Unit-III: The Problem of Evil (Chapter- 4)

Unit-IV: Problems of Religious Language

Prescribed Book-

1. John Hick- Philosophy of Religion

Reference Books-

1. Y. Masih-Introduction to Religious Philosophy
2. Arvind Sharma- Philosophy of Religion

DSE –III:GANDHIAN STUDIES

Unit-I : Gandhi's concept of a Just society. Basic Ideals- Truth, Non-violence, Equality and Human Freedom.

Unit-II: Gandhi's idea of Social Engineering, Constructive Programme. Fight against social Evils (Injustice, Caste system, Untouchability) upliftment of Women.

Unit-III: Social Ideals of Gandhi Sarvodaya, Criticism of industrial civilization, Gramaswaraj, Anarchism, Trusteeship.

Unit –IV: Method of Social Action, Satyagraha- Kinds of Satyagraha,Methods of Satyagraha. Mercy- Killing, Ideals of Basic Education. Basic Norms & Method of Education, Education for a Happier & Peaceful Society. World Peace.

Prescribed Book-

1. The Philosophy of Mahatma Gandhi, by D.M Datta

Reference Books-

1. Social & Political Thought of M.K. Gandhi- Jaya Tanuja Bandopadhyay
2. Mahatma Gandhi- R.R. Diwakar

DSE-IV: RECENT WESTERN PHILOSOPHY

Unit-1: Arther, Schopenhauer: The world as representation. The world as will, theory of perception, Ethics

Unit-2: Nietzsche: Critique of enlightenment Perspectivism, Appollonian and Dyonysian will to power, concept of superman

Unit-3: Sartre, J.P.: Concept of Freedom, Bad-faith, Humanism

Unit-4: William James: Meaning & Truth, Varieties of Religious experience

Recommended Text

1. B.A.G Fuller & McMurrin , A History of Philosophy
2. D.M.Dutta Chief Currents of Contemporary Philosophy
3. Frank Thilly, History of Western Philosophy

Reference Book

1. M.K. Bhadra, A critical Survey of Phenomenology & Existentialism
2. H.J. Blackham, Six Existential Thinkers
3. W.Mc. Neil& K.S. Feldman, Continental Philosophy: An Anthology

Project (Optional)

Eligibility: Students who have scored more than 60% marks in Semester –I, II, III &IV are eligible to opt for project paper. The student has to prepare a project of his own selecting a topic from philosophical perspective (For example-some broad themes are given below). The dissertation carries 60 marks which will be evaluated by an external examiner and he / she will face a viva-voice test of 40 marks by an external examiner along with his / her supervisor of the concerned project.

1. Philosophy, value and culture
2. Existentialism and Phenomenology
3. Philosophy of religion
4. Philosophy of Language
5. Socio-Political Philosophy
6. Indian Philosophy/Contemporary Indian Philosophy
7. Ethics/Applied ethics
8. Philosophy of Mind

GE I General Philosophy

Unit 1: Chapter I- Introductory

Chapter II- The Calculus of Propositions

Unit II: Chapter III- The Calculus of Propositions (Sec 1 to 6)

Unit III: Chapter IV- The Calculus of Propositions (Sec 7 to 9) Chapter V- The Elements of Predicate Calculus

Unit IV: Appendix Sec 1 to Sec 4

Prescribed Book: -

1. Basson and O. Conner: Introduction to symbolic Logic

GEII: INDIAN PHILOSOPHY

Unit I: Salient features of Indian philosophy and key concepts, Carvaka epistemology and metaphysic, Jainism Syadvada and Anekantavada

Unit II: Buddhism- The Four Nobel Truth, Doctrine of Dependent origination, No Soul Theory, Nirvana

Unit III: Samkhya- Purusa, Prakrti, Theory of Evolution Yoga- Patanjali's CittaVrtti Nirodha, Astanga Yoga

Unit IV: Nyaya- Theory of Inference, Vaishesika- Padarthas (Categories)

Prescribed Books:-

1. Dutta and Chatterjee: An Introduction to Indian Philosophy

Reference Books:-

1. C.D Sharma: A critical Survey of Indian Philosophy
2. G.C Nayak: Bharatiya Darshana (Odia)
3. B.B. Choudhury: Bharatiya Darshana Ruparekha (Odia Translated book)

GE III:HISTORY OF MODERN EUROPEAN PHILOSOPHY

Unit I : Bacon: Theory of Idolas, Inductive Method Descartes: Methods of Doubt, Cogito ergo Sum

Unit II: Spinoza: Substance, Attributes and Model Leibnitz: Theory of Monads, Pre-Established Harmony

Unit III: Locke: Refutation of Innate Ideas, Theory of Knowledge Berkeley: Esseest percipi, Subjective Idealism

Unit IV: Hume: Ideas and Impressions Skepticism Kant: Reconciliation of Empiricism and Rationalism

Prescribed Book: -

1. R.K Pati- A History of Modern European Philosophy

Reference Books: -

1. Ira Sengupta- A History of Western Philosophy
2. Barlingay and Kulkarni- A History of Western Philosophy
3. Ray and Das- Paschatya Darshanra Itihasa
4. Y. Masih- A Critical History of Western Philosophy
5. Falkenberg- A History of Philosophy

GE IV: ETHICS: THEORY AND PRACTICE

Unit I: Definition, Nature and Scope of Ethics, Distinction between moral and Non-moral action.

Unit II: Distinction between factual and moral judgement, objects of moral judgement.

Unit III: Moral Standards: Hedonism, Mill's Utilitarianism, And Kant's Rigorism and Perfectionism.

Unit IV: Environmental Ethics: Anthropocentrism and Non-Anthropocentrism Bio-centric Egalitarianism, Deep Ecology, Responsibility for future Generation

Prescribed Book: -

1. J.N. Sinha- A Manual of Ethics
2. Peter Singer- Practical Ethics

Reference Book:

1. H. Sahoo(ed) Ethics theory and practice

Course structure of UG Political Science Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AEC-I	04	100
	C-I	Understanding Political Theory	06	100
	C-II	Constitutional Government and Democracy in India	06	100
	GE-I	Feminism: Theory and Practice	06	100
			22	
II	AECC-II	AEC-II	4	100
	C-III	Political Theory-Concepts and Debates	06	100
	C-IV	Political Process in India	06	100
	GE-II	Governance: Issues and Challenges	06	100
			22	
III	C-V	Introduction to Comparative Government and Politics	06	100
	C-VI	Introduction to Public Administration	06	100
	C-VII	Perspectives on International Relations	06	100
	GE-III	Gandhi and the Contemporary World	06	100
	SEC-I	SEC-I(to be selected by the University/College from the Repertoire of SEC courses)	04	100
			28	
IV	C-VIII	Political Processes and Institutions in Comparative Perspective	06	100
	C-IX	Public Policy and Administration in India	06	100
	C-X	Global Politics	06	100
	GE-IV	United Nations and Global Conflicts	06	100

	SEC-II	SEC-II (to be selected by the University/College from the Repertoire of SEC courses)	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI	Western Political Philosophy	06	100
	C-XII	Indian Political Thought(Ancient & Medieval)	06	100
	DSE-I	Introduction to Human Rights	06	100
	DSE-II	Development Process and Social Movements in Contemporary India	06	100
			24	
VI	C-XIII	Contemporary Political Philosophy	06	100
	C-XIV	Modern Indian Political Thought	06	100
	DSE-III	India's Foreign Policy in a Changing world	06	100
	DSE-IV	Women, Power and Politics	06	100
	OR			
	DSE-IV	Dissertation	06	100*
			24	

Discipline Specific Elective Papers: (Credit: 06 each) (4 papers to be selected by students of Political Science Honours): DSE 1-IV

1. Human Rights in a Comparative Perspective
2. Development Process and Social Movements in Contemporary India (PROJECT)
3. India's Foreign Policy in a Globalizing world
4. Women, Power and Politics
5. Project *Dissertation (can be opted as alternative of DSE-IV only and of 6 credits.

Dissertation content: 50, Seminar: 30, Viva: 20) as per regulation

POLITICAL SCIENCE

HONOURS PAPERS:

Core course – Designated as CI to C XIV i.e. 14 papers
Discipline Specific Elective (DSE) – 4 papers
Generic Elective (GE) for non Public Administration students– 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

Core Paper I (C- I) UNDERSTANDING POLITICAL THEORY

Introduction: This course is divided into two sections. Section 'A' introduces the students to the idea of political theory, its history and approaches and an assessment of its critical and contemporary trends. Section 'B' is designed to reconcile political theory and practices through reflections on the ideas and practices related to democracy.

UNIT-1: Introducing Political Theory

(i) What is Politics: Theorizing the 'Political'
(ii) Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative
(iii)Approaches to Political Theory: Normative, Historical, Behavioural and Post-behavioural

UNIT-II: Critical and Contemporary Perspectives in Political Theory

(i) Theories of Feminism: Feminist and Postmodern
(ii) Modernism and Post -modernism

UNIT-III: Political theory and Practice

(i) Democracy: Liberal and Marxist.
(ii) Procedural Democracy and its critique

UNIT-IV: The Grammar of Democracy

(i) Deliberative Democracy
(ii) Participation and Representation

Text Books

- Bhargava, R. and Ashok Acharya (2008) '*Political Theory: An Introduction.* New Delhi:Pearson Longman.
- Vinod, M.J and Deshpande, Meena (2013) 'Contemporary Political Theory', PHI, New Delhi
- Verma, S. P. (1996) 'Modern Political Theory', Vikash Publishing, 3rd Reprint, New Delhi.
- Ramaswamy, Sushila (2010), 'Political Theory: Ideas and Concepts', PHI Learning, New Delhi
- Bellamy, R. (1993), (ed.) 'Theories and Concepts of Politics'. New York: Manchester University Press.
- Marsh, D. and Stoker, G. (eds.) 'Theory and Methods in Political Science'. London: Macmillan.
- Heywood, Andrew (2016) (Reprint) 'Political Theory: An Introduction', Palgrave, UK.

Further Reading

- Kukathas, Ch. and Gaus, G. F. (2004) (eds.) 'Handbook of Political Theory'. New Delhi, Sage.
- Vincent, A. (2004) 'The Nature of Political Theory'. New York: Oxford University Press.
- Mckinnon, C. (ed.) (2008) 'Issues in Political Theory', New York: Oxford University Press.
- Arblaster, A. (1994) 'Democracy', (2nd Edition), Buckingham: Open University Press.
- Parekh, B. (2000), 'Rethinking Multiculturalism: Cultural Diversity and Political Theory', Macmillan Press, London.

Core Paper II(C-II)

CONSTITUTIONAL GOVERNMENT AND DEMOCRACY IN INDIA

Introduction: This course acquaints students with the Constitutional design of state structures and institutions, and their actual working over time. The Indian Constitution accommodates conflicting impulses (of liberty and justice, territorial decentralization and a strong union, for instance) within itself. The course traces the embodiment of some of these conflicts in constitutional provisions, and shows how these have played out in political practice. It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extra-constitutional environment.

UNIT-I: The Constituent Assembly and the Constitution

i) Formation and working of the Constituent Assembly
ii) The Philosophy of the constitution: The Preamble and its Features.
iii) Fundamental Rights, Directive Principles of State Policy, Fundamental Duties

UNIT-II: Organs of Government

i) The Legislature and the Executive
ii) The Judiciary: Supreme Court and High Courts

UNIT-III: Federalism

i) Federalism: Centre-State relations
ii) Recent trends in federalism

UNIT-IV: Decentralization

i) Panchayati Raj Institutions: Composition, Powers and functions of Gram Panchayat, Panchayat Samiti and Zilla Parishad.

ii) Municipalities: Composition Powers and function of Municipal Corporation, Municipal Council and Notified Area Council

Text Books

- G. Austin, (2010) 'The Indian Constitution: Cornerstone of a Nation', New Delhi, Oxford University Press, 15th print.
- R. Bhargava (ed.) 'Politics and Ethics of the Indian Constitution', New Delhi, Oxford University Press.
- D. Basu, (2012) 'Introduction to the Constitution of India', New Delhi, Lexis Nexis.
- S. Chaube, (2009) 'The Making and Working of the Indian Constitution', New Delhi, National Book Trust.
- G. Austin, (2000) 'Working a Democratic Constitution', New Delhi, Oxford University Press.
- B. Shankar and V. Rodrigues, (2011), 'The Indian Parliament: A Democracy at Work', New Delhi: Oxford University Press.
- P. Mehta and N. Jayal (2010) (eds.) 'The Oxford Companion to Politics in India', New Delhi, Oxford University Press.

Reference Books

- Mehra and G. Kueck (eds.) 'The Indian Parliament: A Comparative Perspective', New Delhi, Konark.
- B. Kirpal et.al (eds.) 'Supreme but not Infallible: Essays in Honour of the Supreme Court of India', New Delhi, Oxford University Press.
- L. Rudolph and S. Rudolph, (2008) 'Explaining Indian Institutions: A Fifty Year Perspective, 1956-2006', Volume 2, New Delhi, Oxford University Press.
- M. Singh, and R. Saxena (2011) (eds.), 'Indian Politics: Constitutional Foundations and Institutional Functioning', Delhi: PHI Learning Private Ltd.
- K. Roy, C. Saunders and J. Kincaid (2006) (eds.) 'A Global Dialogue on Federalism', Volume 3Montreal, Queen's University Press

Core Paper III (C - III)

POLITICAL THEORY-CONCEPTS AND DEBATES

Introduction: This course is divided into two sections. Section A helps the student familiarize with the basic normative concepts of political theory. Each concept is related to a crucial political issue that requires analysis with the aid of our conceptual understanding. This exercise is designed to encourage critical and reflective analysis and interpretation of social practices through the relevant conceptual tool kit. Section B introduces the students to the important debates in the subject. These debates prompt us to consider that there is no settled way of understanding concepts and that in the light of new insights and challenges, besides newer ways of perceiving and interpreting the world around us, we inaugurate new modes of Political debates.

UNIT-I: Importance of Freedom

(i) Negative Freedom and Positive Freedom, Freedom of belief, expression and dissent
(ii) Equality: Meaning and Types, Egalitarianism: Social Exclusion & Affirmative action

UNIT-II: Indispensability of Justice

(i) Justice: Meaning and Types
(ii) Procedural, Distributive and Global Justice.

UNIT-III: The Universality of Rights

(i) Rights: Natural, Moral and Legal
(ii) Three Generations of Rights

UNIT-IV: Major debates

(i) Political obligation: Grounds
(ii) Cultural Relativism and Multiculturalism.

Text Book

- Verma, S. P. (1996) 'Modern Political Theory', Vikash Publishing, 3rd Reprint, New Delhi.
- Vinod, M.J and Deshpande, Meena (2013) Contemporary Political Theory, PHI, New Delhi
- Ramaswamy, Sushila (2010), 'Political Theory: Ideas and Concepts', PHI Learning, New Delhi
- Bellamy, R. (1993), (ed.) *Theories and Concepts of Politics*. New York: Manchester University Press.
- Marsh, D. and Stoker, G. (eds.) 'Theory and Methods in Political Science'. London, Macmillan.
- Heywood, Andrew (2016) (Reprint), 'Political Theory: An Introduction', Palgrave, UK.

Reference Books

- Bellamy, Richard and Mason, Andrew (1993) (eds.) 'Political Concepts' Manchester, Manchester University Press.
- Knowles, Dudley. (2001) 'Political Philosophy', London, Routledge.
- Mckinnon, Catriona (2008) (ed.) 'Issues in Political Theory', New York: Oxford University Press.
- Swift, Adam. (2001) 'Political Philosophy: A Beginners Guide for Student's and Politicians', Cambridge, Polity Press.
- La Follett, Hugh (2003) (ed.) 'The Oxford Handbook of Practical Ethic'. New York, Oxford University Press.
- Knowles, Dudley. (2001) 'Political Philosophy', London, Routledge.

Core Paper IV (C-IV) POLITICAL PROCESS IN INDIA

Introduction: Actual politics in India diverges quite significantly from constitutional legal rules. An understanding of the political process thus calls for a different mode of analysis - that offered by political sociology. This course maps the working of 'modern' institutions, premised on the existence of an individuated society, in a context marked by communitarian solidarities, and their mutual transformation thereby. It also familiarizes students with the working of the Indian state, paying attention to the contradictory dynamics of modern state power.

Political Parties, the Party system and Determinants

of Voting Behaviour UNIT-I: Indian party system

(i) Party System in India: Features and Trends
(ii) Voting Behaviour and Its determinants: Caste, Class, Gender and Religion.
(iii) Election Commission: Constitution and Functions, Electoral Reforms

UNIT-II: Regionalism, Religion and Politics

(i) Regionalism: Causes and its trends,
(ii) Secularism and Communalism: Debates

UNIT-III: Caste and Politics

i) Caste and Politics: Politicisation of Caste
ii) Affirmative Action: Policies, Women, Caste and Marginalized Class

UNIT-IV: The Changing Nature of the India State

(i) Developmental and Welfare Dimensions
(ii) Coercive Dimension

Text books

- Kaviraj, Sudipta(2009) 'Politics in India', Oxford University Press, New Delhi
- Kohli, Atul (2004) (ed.) 'The Success of India's Democracy', New Delhi, Cambridge University Press.
- Kothari,R (1970) 'Caste in Indian Politics', Delhi, Orient Longman.
- M. John, (ed) (2008) 'Women in India: A Reader, Penguin , India
- P. Brass, (1999) 'The Politics of India since Independence, New Delhi, Cambridge University Press and Foundation Books.
- P. Mehta and N. Jayal (2010) (eds.) 'The Oxford Companion to Politics in India', New Delhi, Oxford University Press.
- Z. Hasan (2002) (ed.) 'Parties and Party Politics in India', New Delhi: Oxford University Press.
- Z. Hasan, E. Sridharan and R. Sudarshan (2002) (eds.) 'India's Living Constitution: Ideas, Practices, Controversies', New Delhi, Permanent Black.

Reference Books

- N. Menon and A. Nigam, (2007) 'Power and Contestation: India since 1989', London, Fernwood Publishing, Halifax and Zed Books.

- R. Vora and S. Palshikar (eds.) 'Indian Democracy: Meanings and Practices', New Delhi, Sage.
- Shah, G (ed.) 'Social Movements and the State', New Delhi, Sage Publications.
- P. deSouza and E. Sridharan (eds.) 'India's Political Parties', New Delhi, Sage Publications.
- A S. Ganguly, L. Diamond and M. Plattner (eds.) 'The State of India's Democracy', Baltimore, John Hopkins University Press.

Core Paper V (C - V)

INTRODUCTION TO COMPARATIVE GOVERNMENT AND POLITICS

Introduction: This is a foundational course in comparative politics. The purpose is to familiarize students with the basic concepts and approaches to the study of comparative politics. More specifically the course will focus on examining politics in a historical framework while engaging with various themes of comparative analysis in developed and developing countries.

UNIT-1: Understanding Comparative Politics

(i) Meaning, Nature, scope and Evolution
(ii) Approaches to the study of Comparative Politics

UNIT-II: Historical context of modern government

(i) Capitalism: meaning and development
(ii) Globalization: Features & impact

UNIT-III: Historical context of Modern Government- II

(i) Socialism: Meaning, Types and its growth
(ii) Rise and Decline of Communism as a Ruling Ideology
(iv) Colonialism and decolonization: meaning, context, forms of colonialism

UNIT-IV: Themes of Comparative Politics

(i) A comparative study of Governments of USA & China
(ii) US: President, Congress, Supreme Court
(iii) China: People's Congress, National Assembly, Role of Communist Party of China

Text books:

- Bhagwan, Vishnoo et al (2012) 'World Constitutions', Sterling Publishers , New Delhi
- Chilcote, Ronald (1994) 'Theories of Comparative Politics: The Search for a Paradigm Reconsidered', Westview Press, Boulder.
- G. Ritzer, (2002) 'Globalization: A Basic Text'. London, Wiley-Blackwell.
- Huntington, Samuel, (1968) 'Political Order in Changing Societies', Yale University Press, New Haven.
- Kapur, A.C and K.K. Mishra (2010) 'Select Constitutions', S. Chand, New Delhi

- Suresh. R(2010), 'Economy and Society : Evolution of Capitalism', Sage , New Delhi

Reference Books

- P. Burnell, et. al, 'Politics in the Developing World'. New Delhi: Oxford University Press,
- J. McCormick, (2007) 'Comparative Politics in Transition', UK, Wadsworth.
- L. Barrington et. al (2010) 'Comparative Politics - Structures and Choices', Boston, Wadsworth,
- M. Kesselman, J. Krieger and William (2010), 'Introduction to Comparative Politics: Political Challenges and Changing Agendas', UK, Wadsworth.
- J. Kopstein and M. Lichbach. (eds.) 'Comparative Politics: Interest, Identities and Institutions in a Changing Global Order'. Cambridge: Cambridge University Press.

Core Paper VI (C-VI)

INTRODUCTION TO PUBLIC ADMINISTRATION

Introduction: The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the recent trends, including feminism and ecological conservation and how the call for greater democratization is restructuring public administration. The course will also attempt to provide the students a comprehensive understanding on contemporary administrative developments.

UNIT-1 : Public Administration as a Discipline

(i) Meaning, Scope and Significance of the Discipline,Public and Private Administration
(ii) Evolution of Public Administration

UNIT-II: Theoretical Perspectives

Classical Theories

(i) Scientific management (F. W. Taylor), Ideal-type bureaucracy (Max Weber)
(ii) Administrative Management (Gullick, Urwick and Fayol)

UNIT-III: Neo-Classical and Contemporary Theories

(i) Human Relations theory (Elton Mayo), Rational decision-making (Herbert Simon)
(ii) Ecological approach (Fred Riggs), Innovation and Entrepreneurship (Peter Drucker)

UNIT-IV: Public Policy and Major Approaches in Public Administration

(i) Public Policy-Concept and approaches, Formulation, implementation and evaluation
(ii) New Public Administration, New Public Management, New Public Service Approach

(iii) Good Governance, Feminist Perspectives in Governance

Text Books

- B. Chakrabarty and M. Bhattacharya (eds), 'Administrative Change and Innovation: A Reader', New Delhi, Oxford University Press.
- Basu, Rumki, (2014) 'Public Administration: Concepts and Theories', Sterling Publishers, New Delhi
- D. Ravindra Prasad, Y. Pardhasaradhi, V. S. Prasad and P. Satyrnarayana, (2010) (eds.) 'Administrative Thinkers', Sterling Publishers.
- J. Shafritz, and A. Hyde, (2004) (eds.) 'Classics of Public Administration', 5th Edition. Belmont, Wadsworth.
- M. Bhattacharya, (2008) 'New Horizons of Public Administration', 5th Revised Edition. New Delhi, Jawahar Publishers.
- M. Bhattacharya, (2011) 'New Horizons of Public Administration', New Delhi: Jawahar Publishers.
- M. Bhattacharya, (2012) 'Restructuring Public Administration: A New Look', New Delhi, Jawahar Publishers,
- N. Henry, (2013) 'Public Administration and Public Affairs', 12th edition. New Jersey, Pearson,
- Shafritz, J. and Hyde, A. , (1997) (eds.) 'Classics of Public Administration', 4th Edition. Forth Worth, Hartcourt Brace, TX.

Reference Books

- B. Chakrabarty and M. Bhattacharya (2003) (eds.), 'Public Administration: A Reader', New Delhi, Oxford University Press.
- B. Chakrabarty, (2007) 'Reinventing Public Administration: The India Experience'. New Delhi, Orient Longman,
- B. Miner, (2006) 'Organisational Behaviour: Historical Origins and the Future'. New York,
- F. Riggs, (1964) 'Administration in Developing Countries: The Theory of Prismatic Society'. Boston, Houghton Miffin.
- F. Riggs, (1961) 'The Ecology of Public Administration', Part 3, New Delhi, Asia Publishing House.
- M. Bhattacharya, (2006) 'Social Theory, Development Administration and Development Ethics', New Delhi, Jawahar Publishers.
- Nivedita Menon (1999), (ed.) 'Gender and Politics', New Delhi, Oxford University Press.
- Peter F. Ducker, (2006) 'The Practice of Management', Harper Collins.
- S. Maheshwari,(2009) 'Administrative Thinkers', New Delhi: Macmillan

Core Paper VII (C-VII)

PERSPECTIVES ON INTERNATIONAL RELATIONS

Introduction: This paper seeks to equip students with the basic intellectual tools for understanding International Relations. It introduces students to some of the most important theoretical approaches for studying international relations. The course begins by historically contextualizing the evolution of the international state system before discussing the agency-structure problem through the levels-of-analysis approach. After having set the parameters of the debate, students are introduced to different theories in International Relations. It provides a fairly comprehensive overview of the major political developments and events starting from the twentieth century. Students are expected to learn about the

key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives. A key objective of the course is to make students aware of the implicitEuro-centricism of International Relations by highlighting certain specific perspectives from the Global South.

UNIT-I: Studying International Relations

(i) International Relations: Meaning, Scope and Evolution**,** Emergence of International State System
(ii) National Interest-Key Determinants of International Relations

(iii) Power-Cornerstone of International Relations

UNIT-II: Theoretical Perspectives

(i) Classical Realism & Neo-Realism, Liberalism & Neo-liberalism
(ii) Marxist Approaches, Feminist Perspectives, Euro- centricism & Perspective from the Global South

UNIT-III: An Overview of Twentieth Century IR History-I

(i) World War I: Causes & Consequences, significance of Bolshevik Revolution
(ii) Rise of Fascism / Nazism, World war II-Causes &Consequences

UNIT-IV: An Overview of Twentieth Century IR -II

(i) Cold War Evolution& Different Phases (4 Lectures) Disintegration of USSR
(ii) Emergence of the Third World, End of the Cold War

Text Books

- Basu, Rumki (2012) (ed.) 'International Politics: Concepts, Theories and Issues', New Delhi.
- Baylis & S. Smith (2002) (eds.), 'The Globalization of World Politics', Oxford University Press, UK, 4th edition, 2007 W.Bello, Deglobalization, Zed Books, London.
- M. Nicholson, (2002) 'International Relations: A Concise Introduction', New York, Palgrave.
- P. Viotti and M. Kauppi, (2007) 'International Relations and World Politics: Security, Economy, Identity', Pearson Education.
- R. Jackson and G. Sorensen, (2007) 'Introduction to International Relations: Theories and Approaches', 3rd Edition, Oxford, Oxford University Press.
- S. Joshua. Goldstein and J. Pevehouse, (2007) 'International Relations', New York, Pearson Longman.

Reference Books

1. Calvocoressi, P. (2001) 'World Politics: 1945—2000'. Essex, Pearson.
1. Dey, Dipankar (2007)(ed.), 'Sustainable Development: Perspectives and Initiatives', ICFAI University Press, Hyderabad,
2. K. Booth and S. Smith, (eds), 'International Relations Theory Today', Pennsylvania, The Pennsylvania State University Press.
3. M. Smith and R. Little (2000) (eds.), 'Perspectives on World Politics', New York, Routledge

Core Paper VIII(C-VIII)

POLITICAL PROCESSES AND INSTITUTIONS IN COMPARATIVE PERSPECTIVE

Introduction: In this course students will be trained in the application of comparative methods to the study of politics. The course is comparative in both what we study and how we study. In the process the course aims to introduce undergraduate students to some of the range of issues, literature, and methods that cover comparative political.

UNIT-I: Approaches to Studying Comparative Politics

(i) Political Culture –Meaning, Types &relevance.
(ii) New Institutionalism –Meaning, Background, Significance

UNIT-II: Election& Party System

(i) Definition and procedures: Types of election system (First Past the Post, Proportional Representation, Mixed Representation)
(ii) Party System -Evolution, Theories and types

UNIT-III: Nation-state

(i) Nation-state; Meaning and Evolution in West Europe
(ii) Nation and State; Debates in Post-colonial contexts

UNIT-IV: Democratization in Post- colonial societies

(i) Democratization in Post-authoritarian countries and in Post-communist countries
(ii) Federalism: Meaning and Features, Federation& Confederation: Debates around territorial division of power.

Text Books

- A. Heywood, (2002) 'Politics', New York, Palgrave.
- J. Bara and M. Pennington, (eds.) *Comparative politics.* New Delhi: Sage Publications.
- J. Bara and Pennington. (2009) (eds.) 'Comparative Politics: Explaining Democratic System', Sage Publications, New Delhi.
- J. Ishiyama, and M. Breuning, (2011) (eds) '21st Century Political Science: A Reference Book', Los Angeles, Sage Publications.
- M. Lichback and A. Zuckerman, (eds.) 'Comparative Political: Rationality, Culture, and Structure'. Cambridge, Cambridge University Press.

Reference Books

- R. Watts, (2008) 'Comparing Federal Systems'. Montreal and Kingston, McGill

Queen'sUniversity Press.

- Saxena, R (2011) (eds.) 'Varieties of Federal Governance: Major Contemporary Models', New Delhi, Cambridge University Press.
- T. Landman, (2003) 'Issues and Methods of Comparative Methods: An Introduction'. London, Routledge.

Core Paper IX (C-IX)

PUBLIC POLICY AND ADMINISTRATION IN INDIA

Introduction: The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programs and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non-western perspective.

UNIT-I: Public Policy

i) Definition, characteristics and models
ii) Public Policy Process in India

UNIT-II: Decentralization

(i) Meaning, significance, types and approaches to decentralization.
(ii) Local Self Governance: Rural and Urban

UNIT-III: Budget and Social Welfare Administration

(i) Concept and Significance of Budget, Budget cycle in India, Types of Budgeting
(ii) Concept and Approaches of Social Welfare.
(iii) Social Welfare Policies:
(a) **Education:** Right to Education,
(b) **Health:** National Health Mission,
(c) **Food:** Right to Food Security,
(d) **Employment:** MNREGA

UNIT-I V: Citizen and Administration Interface

(i) Public Service Delivery System;
(ii) Redressal of Public Grievances: RTI, Lokpal, Citizens' Charter and e-Governance

Text Books

- Basu Rumki (2015) 'Public Administration in India Mandates, Performance and Future Perspectives', New Delhi, Sterling Publishers

- Bidyut Chakrabarty, (2007) 'Reinventing Public Administration: The Indian Experience', Orient Longman,
- Henry, N. (1999) 'Public Administration and Public Affairs', New Jersey, Prentice Hall
- Jean Drèze and Amartya Sen, (1995) 'India, Economic Development and Social Opportunity', Oxford, Oxford University Press.
- R.B. Denhardt and J.V. Denhardt, (2009) 'Public Administration', New Delhi, Brooks/Cole
- Satyajit Singh and Pradeep K. Sharma (2007) (eds.) 'Decentralization: Institutions and Politics in Rural India', Oxford University Press, New Delhi.
- Singh, S. and Sharma, P. (2007) (eds.) 'Decentralization: Institutions and Politics in Rural India'. New Delhi, Oxford University Press.
- Vasu Deva, (2005) 'E-Governance In India: A Reality', Commonwealth Publishers.
- Vijaya Kumar, (2012) 'Right to Education Act 2009: Its Implementation as to Social Development in India', Delhi: Akansha Publishers.

Reference Books

- 'World Development Report', (1992) World Bank, Oxford University Press,.
- Anderson, (1975) 'Public Policy Making', New York, Thomas Nelson and sons Ltd.
- Gabriel Almond and Sidney Verba, (1965) 'The Civic Culture', Boston, Little Brown.
- J.Dreze and Amartya Sen, (1997) 'Indian Development: Selected Regional Perspectives', Oxford, Clareland Press
- Jayal, N.G (1999) 'Democracy and The State: Welfare, Secular and Development in Contemporary India', Oxford, Oxford University Press.
- Jugal Kishore, (2005) National Health Programs of India: National Policies and Legislations, Century Publications.
- Lee and Mills, (1983) 'The Economic of Health In Developing Countries', Oxford, Oxford University Press.
- M. Howlett, M. Ramesh, and A. Perl, (2009), 'Studying Public Policy: Policy Cycles and Policy subsystems', 3rd edition, Oxford University Press, New Delhi
- Marma Mukhopadhyay and Madhu Parhar (2007) (ed.) 'Education in India: Dynamics of Development' New Delhi, Shipra Publications.
- Noorjahan Bava, (2001) 'Development Policies and Administration in India', Delhi, Uppal Publishers.
- R. Putnam, (1993) 'Making Democracy Work', Princeton University Press.
- T. Dye, (2002) 'Understanding Public Policy', New Delhi, Pearson
- United Nation Development Programme, (1997)'Reconceptualising Governance', New York
- Y. Dror, (1989) 'Public Policy Making Reexamined'. Oxford, Transaction Publication.

Core Paper X (C-X)

GLOBAL POLITICS

Introduction: This course introduces students to the key debates on the meaning and nature of globalization by addressing its political, economic, social, cultural and technological dimensions. In keeping with the most important debates within the globalization discourse, it imparts an understanding of the working of the world economy, its anchors and resistances offered by global social movements while analyzing the changing nature of relationship between the state and trans- national actors and networks. The course also offers insights into key contemporary global issues such as the proliferation of nuclear weapons, ecological issues, international terrorism, and human security before concluding with a debate on the phenomenon of global governance.UNIT-I: Globalization: Conceptions

(i) Understanding Globalization and its Alternative Perspectives, Non-Proliferation Regimes
(ii) Global Economy: Its significance & anchors of Global Political Economy: IMF, World Bank, WTO, TNCs

UNIT-II: Globalization: Perspectives

(i) Political Debates on Sovereignty and Territoriality
(ii) Cultural and Technological Dimensions
(iii) Global Resistances (Global Social Movements and NGOs)
(iv) Ecological Issues: International Environmental Agreements, Climate Change

UNIT-III: Contemporary Global Issues-I

(i) Proliferation of Nuclear Weapons
(ii) International Terrorism: Non-State Actors and State Terrorism; Post 9/11 developments

UNIT-IV: Contemporary Global Issues-II

(i) Migration & Human Security
(ii) Global Shifts: Power and Governance

Text Books

- G. Ritzer, (2010) 'Globalization: A Basic Text', Sussex: Wiley-Blackwell.
- M. Strager, (2009) 'Globalization: A Very Short Introduction', London, Oxford University Press.
- Heywood, (2011) 'Global Politics', New York, Palgrave-McMillan.
- J. Baylis, S. Smith and P. Owens (2011) (eds.) 'Globalization of World Politics: An Introduction to International Relations', New York, Oxford University Press.
- W. Ellwood, (2005) 'The No-nonsense Guide to Globalization', Jaipur, Rawat Publications.
- D. Held and A. McGrew (2000) (eds.) 'The Global Trans-Formations Reader', Cambridge, Polity Press.

Reference Books

- A. Narlikar, (2005) 'The World Trade Organization: A Very Short Introduction', New York, Oxford University Press.
- Goldstein, (2006) 'International Relations', New Delhi, Pearson.
- P. Hirst, G. Thompson and S. Bromley, (2009) 'Globalization in Question', Cambridge, Polity Press.
- D. Held et al, (1999) 'Global Transformations: Politics, Economics and Culture', California, Stanford University Press.
- F. Lechner and J. Boli (ed.), (2004) 'The Globalization Reader', London, Blackwell.(WTO).
- G. Ritzer, (2010) 'Globalization: A Basic Text', Sussex, Wiley-Blackwell.
- T. Cohn, (2009) 'Global Political Economy', New Delhi, Pearson.
- D. Held and A. McGrew (eds.), (2002) 'Global Transformations Reader: Politics, Economics and Culture', Cambridge, Polity Press.
- A. Vanaik, (ed.), (2004) 'Globalization and South Asia: Multidimensional Perspectives', New Delhi, Manohar Publications.

Core Paper XI (C-XI)

WESTERN POLITICAL PHILOSOPHY

Introduction: This course goes back to Greek antiquity and familiarizes students with the manner in which the political questions were first posed. Machiavelli comes as an interlude inaugurating modern politics followed by Hobbes and Locke, Rousseau, Marx. This is a basic foundation course for students.

UNIT-I : Text and Interpretation: Antiquity

(i) Plato
(ii) Aristotle

UNIT-II

(i) Machiavelli
(ii) Hobbes

UNIT-III

(i) Locke
(ii) Rousseau

UNIT-IV

(i) J. S. Mill
(ii) Karl Marx

Text Books

- C. Kukathas and G. Gaus, (eds.) 'Handbook of Political Theory', London, Sage Publications Ltd.
- D. Boucher and P. Kelly (2009), (eds) 'Political Thinkers: From Socrates to the Present', Oxford, Oxford University Press.
- J. Coleman, (2000) 'A History of Political Thought: From Ancient Greece to Early Christianity, Oxford, Blackwell Publishers.
- Mukherjee, Subrato and Susheela Ramaswamy(2011*)* 'History of political Thought: Plato to Marx', PHI Publishers , New Delhi
- Okin, S. (1992), 'Women in Western Political Thought', Princeton, Princeton University Press.
- R. Kraut (1996) (ed.) 'The Cambridge Companion to Plato', Cambridge, Cambridge University Press.

Reference Books

1. A. Skoble and T. Machan, (2007) 'Political Philosophy: Essential Selections', New Delhi, Pearson Education.
2. J. Barnes (1995) (ed.), 'The Cambridge Companion to Aristotle'. Cambridge, Cambridge University Press.

Core Paper XII (C-XII)

INDIAN POLITICAL THOUGHT (ANCIENT AND MEDIEVAL)

Introduction: This course introduces the specific elements of Indian Political Thought spanning over two millennia. The basic focus of study is on individual thinkers whose ideas are however framed by specific themes. The course as a whole is meant to provide a sense of the broad streams of Indian thought while encouraging a specific knowledge of individual thinkers and texts. Selected extracts from some original texts are also given to discuss in class. The list of Reference books is meant for teachers as well as the more interested students.

UNIT-I: Traditions of Pre-colonial Indian Political Thought

i) Brahmanic and Shramanic
ii) Islamic and Syncretic.

UNIT-II : Ved Vyasa (Shantiparva) and Manu

(i) Ved Vyasa : Rajadharma
(ii) Manu : Social Laws

UNIT-III: Kautilya, Barani and Aggannasutta

(i) Kautilya: Theory of State, Foreign Policy, Role of King
(ii) Aggannasutta- Theory of Kingship
(iii) Barani: Ideal Polity

UNIT-IV :Kabir and Abul Faza

(i) AbulFazal-Monarchy
(ii) Kabir: Syncretism

Text Books

- A. Appodoroy, (2002) 'Political Thought in India, Delhi, Khama Publication.
- A. B. M, (1976), 'The Foundation of Muslim Rule in India', Allahabad, Central Book Depot.
- Brown, (2003) 'The Verses of Vemana', Asian Educational Services, Delhi.
- Habib, Irfan.(1995) 'Essays in Indian History', New Delhi, Tulika Publications.
- Roy, Himanshu and Singh, M. (2017), 'Indian Political Thought: Themes and Thinker', Second Edition, New Delhi, Pearson.
- S. Saberwal, (2008) 'Spirals of Contention', New Delhi, Routledge,
- Sharma, R. S (1991) 'Aspects of Political Ideas Institutions in Ancient India, Delhi, Motilal Banarsidas.
- T. Pantham, and K. Deutsch (1986) (eds.), Political Thought in Modern India, New Delhi, Sage Publications.
- Thapar, Romila, (1997) 'Ashok and the Decline of the Mauryas, ' New York, Oxford University Press.
- V. Mehta, (1992) 'Foundations of Indian Political Thought, New Delhi, Manohar Publications.
- V.P. Varma, (1974) 'Studies in Hindu Political Thought and Its Metaphysical Foundations', New Delhi, Motilal Banarsidass.

Reference Books

- A. Fazl, (1873) 'The Ain-i Akbari ' (translated by H. Blochmann), Calcutta: G. H. Rouse.
- J. Spellman, (1964) 'Political Theory of Ancient India: A Study of Kingship from the Earliest time to Ceirca AD 300, Oxford, Clarendon Press.
- L. Hess and S. Singh, (2002) 'The Bijak of Kabir', New Delhi, Oxford University Press.
- R. Kangle (ed. and trns.), 'Arthasastra of Kautilya', New Delhi, Motilal Publishers.
- S. Collins, (2001) 'Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali), Delhi, Sahitya Akademi.

Core Paper XIII (C-XIII)

CONTEMPORARY POLITICAL PHILOSOPHY

Introduction: Philosophy and politics are closely intertwined. Students will be exposed to the manner in which the questions of politics have been posed in terms that have implications for larger questions of thought and existence. Contemporary political philosophy and debates are introduced to the students here.

UNIT-I

i) Lenin

UNIT-II

i) Mao Zedong (Mao Tse Tung)

UNIT-III

(i) Antonio Gramsci

UNIT-IV

(i) John Rawls

Text Books

- B. Nelson, (2008) 'Western Political Thought'. New York, Pearson Longman.
- D. Boucher, and P. Kelly, (2003) (eds.) 'Political Thinkers: From Socrates to the Present'. New York, Oxford University Press.
- Gramsci, Antonio(1996), 'Selections from the Prison Notebooks', Orient Longman, Hyderabad
- Hacker, A. (1961), 'Political Theory: Philosophy, Ideology, Science', Macmillan, New York.
- Mukherjee, Subrato and Susheela Ramaswamy(2011) 'History of political Thought: Plato to Marx', PHI Publishers , New Delhi
- Rawls, John (2011), 'A Theory of Justice', Universal Law Publishing Co., New Delhi.

- Sabine, George, H. (1973). 'A History of Political Theory', Oxford and I.B.H. Publishing, New Delhi.
- Wayper. C.L (1989), 'Political Thought', B.I. Publications, Bombay.

Reference Books

- D. Germino (1972). Modern Western Political Thought: Machiavelli to Marx, Chicago University Press, Chicago.
- F.W. Coker (1971). Recent Political Thought, The World Press Pvt. Ltd., Calcutta.
- J.H. Hallowell (1960). Main Currents in Modern Political Thought, Holt, New York.

Core Paper XIV (C-XIV)

MODERN INDIAN POLITICAL THOUGHT

Introduction: Based on the study of individual thinkers, the course introduces a wide span of thinkers and themes that defines the modernity of Indian political thought. The objective is to study general themes that have been produced by thinkers from varied social and temporal contexts. Selected extracts from original texts are also given to discuss in the class. The list of Reference books is meant for teachers as well as the more interested students.

UNIT-I: Introduction

(i) Rammohan Roy: Rights, Reform Movement, Liberalism
(ii) Pandita Ramabai: Gender, critique of orthodoxy
(iii)Vivekananda: Ideal Society, Humanism, Nationalism

UNIT-II: Gandhi & Ambedkar

(i) Gandhi: Swaraj, Swadeshi(8 lectures)
(ii) Ambedkar: Social Justice

UNIT-III : Tagore&Savarkar

(i) Tagore Critiqueof Nationalism (8 lectures)
(ii) Savarkar: Hindutwa-A critical Assessment

UNIT-IV: Nehru,Lohia and J.P. Narayan

(i) Nehru: Secularism, Socialism
(ii) Lohia: Socialism,
(iii) J.P.Narayan: Total Revolution

Text books:

- A. Sen, (2003) 'Swami Vivekananda', Delhi, Oxford University Press.

- D. Dalton, (1982) 'Indian Idea of Freedom: Political Thought of Swami Vivekananda, Aurobindo Ghose, Rabindranath Tagore and Mahatma Gandhi', Academic Press, Gurgaon.
- G. Omvedt, (2008) 'Ramabai: Women in the Kingdom of God', in *Seeking Begumpura*: *The Social Vision of Anti Caste Intellectuals,* New Delhi, Navayana.
- M. Kosambi (2000) (ed.), 'Pandita Ramabai Through her Own Words: Selected Works', New Delhi, Oxford University Press.
- Raghuramaraju, (2007) 'Debates in Indian Philosophy: Classical, Colonial, and Contemporary', Delhi, Oxford University Press.
- S. Sarkar, (1985) 'A Critique on Colonial India', Calcutta, Papyrus.
- Sh. Kapila (2010) (ed.), 'An intellectual History for India', New Delhi: Cambridge University Press.
- T. Pantham and K. Deutsch (1986), (eds.) 'Political Thought in Modern India', New Delhi, Sage.
- V. Mehta and T. Pantham (eds.), (2006) 'A Thematic Introduction to Political Ideas in Modern India: Thematic Explorations, History of Science, Philosophy and Culture in Indian civilization' Vol. 10, Part: 7, New Delhi, Sage Publication.

Reference Books

- P. Chatterjee, (1986) 'Nationalist Thought and the Colonial World: A Derivative Discourse? London, Zed Books.
- S. Hay (1991) (ed.), 'Sources of Indian Tradition', Vol. 2.Second Edition, New Delhi, Penguin.
- S. Thorat and Aryama (2007) (eds.), 'Ambedkar in Retrospect - Essays on Economics, Politics and Society', Jaipur, IIDS and Rawat Publications.

Discipline Specific Elective Paper-I

INTRODUCTION TO HUMAN RIGHTS

Introduction: This course attempts to build an understanding of human rights among students through a study of specific issues in a comparative perspective. It is important for students to see how debates on human rights have taken distinct forms historically and in the contemporary world. The course seeks to anchor all issues in the Indian context, and pulls out another country to form a broader comparative frame.

Human Rights: Theory and Institutionalization UNIT-I:

i) Understanding Human Right
ii) Three Generations of Rights

UNIT-II

i) Universal Declaration of Human Rights

UNIT-III

i) Rights in National Constitutions: South Africa and India

UNIT-IV

i) International Refugee Law, International Humanitarian Law

Text Books

- Alston Philip (1995), 'The United Nations and Human Rights-A Critical Appraisal', Oxford, Clarendon.
- Baxi, Upendra (1995) (ed.), 'The Right to be Human', Delhi, Lancer,
- Beetham, David (1987) (ed.), 'Politics and Human Rights', Oxford, Blackwell.
- Desai, A R. (1986)(ed), 'Violations of Democratic Rights in India', Bombay, Popular Prakashan.
- Evans, Tony (2001), 'The Politics of Human Rights: A Global Perspective', London, Pluto Press.
- Hargopal. G.(1999) 'Political Economy of Human Rights', Hyderabad, Himalaya.
- J. Hoffman and P. Graham, (2006) 'Introduction to Political Theory', Delhi, Pearson.

Reference Books

- Kothari, Smitu and Sethi, Harsh (1991)(eds.), 'Rethinking Human Rights', Delhi, Lokayan.
- Saksena, K.P. (1999) (ed.), 'Human Rights: Fifty Years of India's Independence', Delhi, Gyan.
- Subramanian, S.(1997), 'Human Rights: International Challenges', Delhi, Manas Publications.
- Vistaar Iyer, V.R. Krishna (1999), 'The Dialectics and Dynamics of Human Rights in India', Delhi, Eastern Law House.

Discipline Specific Elective Paper II

DEVELOPMENT PROCESS AND SOCIAL MOVEMENTS IN CONTEMPORARY INDIA
(Project)

Introduction: Under the influence of globalization, development processes in India have undergone transformation to produce spaces of advantage and disadvantage and new geographies of power. The high social reproduction costs and dispossession of vulnerable social groups involved in such a development strategy condition new theories of contestation and struggles. A variety of protest movements emerged to interrogate and challenge this development paradigm that evidently also weakens the democratic space so very vital to the formulation of critical consensus. This course proposes to introduce students to the conditions, contexts and forms of political contestation over development paradigms and their bearing on the retrieval of democratic voice of citizens.

UNIT-I: Development Process since Independence

(i) Welfare State, Development and the role of Planning commission
(ii) Development in the era of Liberalization and Reforms

UNIT-II: Development Strategy and its Impact on the Social Structure

(i) Industrial Development and its impact on organized and unorganized labour

(ii) Agricultural Development and Agrarian Crisis, Land Reforms and Green Revolution,

UNIT-III: Social Movements

i) Social Movements: Meaning and Approaches, New Social Movements
ii) Women's Movement, Environmental Movements

UNIT-IV: Social Movements

i) Dalit Movement, Tribal Movement,
ii) Left wing Extremism: Issues and Challenges

Text Books

- A. Desai, (1986) (ed.), 'Agrarian Struggles in India After Independence', Delhi, Oxford University Press
- A. F. Frankel, (2005) 'India's Political Economy (1947-2004): The Gradual Revolution', Delhi, Oxford University Press.
- B. Nayar, (2007) (ed.), 'Globalization and Politics in India', Delhi, Oxford University Press.
- G. Omvedt, (1983) 'Reinventing Revolution, New Social Movements and the Socialist Tradition in India', New York, Sharpe.
- G. Rath, (2006) (ed.), 'Tribal development in India: The Contemporary Debate', New Delhi, Sage Publications.
- G. Shah, (2004) 'Social Movements in India: A Review of Literature', New Delhi, Sage Publications.
- G. Shah, (ed.), (2002) 'Social Movements and the State'. New Delhi, Sage Publications.
- R. Mukherji (2010) (ed.) 'India's Economic Transition: The Politics of Reforms', Delhi, Oxford University Press.
- S. Roy and K. Debal, (2004) 'Peasant Movements in Post-Colonial India: Dynamics of Mobilization and Identity', Delhi, Sage.

Reference Books

- J. Harris, (2009) 'Power Matters: Essays on Institutions, Politics, and Society in India', Delhi, Oxford University press.
- J. Harriss, (2006) (ed*)* 'Power Matters: Essays on Institutions, Politics, and Society in India,' Delhi. Oxford University Press.
- K. Suresh, (ed.), (1982) 'Tribal Movements in India', Vol I and II, New Delhi, Manohar (emphasis on the introductory chapter).
- L. Fernandes, (2007) 'India's New Middle Class: Democratic Politics in an Era of Economic Reform', Delhi, Oxford University Press.
- M. Jayal, and P. Mehta, (2010) (eds.), 'The Oxford Companion to Politics in India', Delhi, Oxford University Press.
- M. Mohanty, P. Mukherji and O. Tornquist, (1998)(eds.) 'People's Rights: Social Movements and the State in the Third World', New Delhi, Sage.
- N. Jayal (2012)(ed.) 'Democracy in India', New Delhi, Oxford India Paperbacks, Sixth impression.

Discipline Specific Elective Paper III

INDIA'S FOREIGN POLICY IN A CHANGING WORLD

Introduction: This course's objective is to teach students the domestic sources and the structural constraints on the genesis, evolution and practice of India's foreign policy. The endeavour is to highlight integral linkages between the 'domestic' and the 'international' aspects of India's foreign policy by stressing on the shifts in its domestic identity and the corresponding changes at the international level. Students will be instructed on India's shifting identity as a postcolonial state to the contemporary dynamics of India attempting to carve its identity as an 'aspiring power'. India's evolving relations with the superpowers during the Cold War and after, bargaining strategy and positioning in international politics facilitate an understanding of the changing positions and development of India's role as a global player since independence.

UNIT-I : India's Foreign Policy in a changing world

i) India's Foreign Policy: Major bases and determinants
ii) India's Foreign Policy: Postcolonial Perspective

UNIT-II : India's Relation with USA& Russia

i) India's Relations with the USA
ii) India's Relation with USSR/Russia,

UNIT-III : India-China Relations, India and South Asia

(i) India-China Relations
(ii) India and South Asia: SAARC, Look East Policy, Act East Policy

UNIT-IV : India and Contemporary World

(i) India as an emerging Global Power, Myth and Reality
(ii) India in the Contemporary World

Text Books :

- Appadorai, A. and M.S. Rajan(1988), 'India's Foreign Policy and Relations', New Delhi, South Asian Publishers Pvt. Ltd.
- Bahadur, Kalim (ed.)(1986), 'South Asia in transition: Conflicts and Tensions', New Delhi, Patriots.
- Bandyopadhyaya, J.(2006), 'The making of India's Foreign Policy', New Delhi, Allied Publishers Pvt. Ltd.
- Banerjee, A.K. (ed.)(1998), 'Security issues in South Asia: Domestic and External Sources of Threats to Security', Calcutta, Minerva.
- Bidwai, Praful and Achin Vanaik (eds.)(1999), 'South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament', New Delhi, Oxford University Press.
- D. Scott (2011)(ed.), 'Handbook of India's International Relations', London, Routeledge.
- Dutt, V.P.(2007), 'India's Foreign Policy Since Independence', New Delhi, National Book Trust.
- Tellis and S. Mirski (2013) (eds.), 'Crux of Asia: China, India, and the Emerging Global Order', Carnegie Endowment for International Peace, Washington.

Reference Books

- A. Ganguly, S. and Rahul Mukherji(2011), India since 1980, New Delhi: Cambridge University Press.
- Ghosh, Partha S.(1989), Cooperation and conflict in South Asia, New Delhi: Manohar.
- Gould, H.A. and Sumit Ganguly (eds.)(1993), The Hope and the Reality: U.S.-Indian Relations from Roosevelt to Reagan, New Delhi: Oxford & IBH.
- Gujral, I.K.(1998), A foreign policy for India, Delhi: External publicity division, MEA, Government of India.
- Mansingh, Surjeet(1984), India's search for power: Indira Gandhi's foreign policy, 1966-1982 New Delhi: Sage.
- Muni, S.D.(2010), India's Foreign Policy the democracy dimension, New Delhi: Foundation Books.
- Nayar, B.R. and T.V. Paul(2004), India in the world order searching for major power status, New Delhi: Cambridge University Press.
- S. Cohen, (2002) *India: Emerging Power*, Brookings Institution Press.
- S. Mehrotra, (1990) 'Indo-Soviet Economic Relations: Geopolitical and Ideological Factors', in *India and the Soviet Union: Trade and Technology Transfer*, Cambridge University Press: Cambridge.
- Sengupta, Bhabani(1998), Fulcrum of Asia relations among China, India, Pakistan and the USSR, New Delhi: Konark Publishers.
- W. Anderson, (2011) 'Domestic Roots of Indian Foreign Policy', in W. Anderson, *Trysts with Democracy: Political Practice in South Asia*, Anthem Press: University Publishing Online.

Discipline Specific Elective Paper IV

WOMEN, POWER AND POLITICS

Introduction: This course opens up the question of women's agency, taking it beyond 'women's empowerment' and focusing on women as radical social agents. It attempts to question the complicity of social structures and relations in gender inequality. This is extended to cover new forms of precarious work and labour under the new economy. Special attention will be paid to feminism as an approach and outlook.

UNIT-I: Feminism

(i) Meaning and Development

(ii) Liberal, Socialist and Radical Feminism

UNIT-II: Issues

i) Patriarchy
ii) Sex and Gender
iii) Gender, Power and Politics

UNIT-III: Issues

(i) Women Movement in India

(ii) Women Empowerment: Policies and Practices
(iii) Violence against Women

UNIT-IV: Women and Development

i) WID (Women in Development), WAD (Women and Development), GAD (Gender and Development
ii) Women and Work (Visible and Invisible)

Text Books

.

B. Hooks, (2010) 'Feminism: A Movement to End Sexism', in C. Mc Cann and S. Kim (eds),

M. John.(2008) (ed) *Women's Studies in India,* New Delhi: Penguin.

M. Kosambi, (2007) *Crossing the Threshold,* New Delhi, Permanent Black. Menon, (2008) 'Power', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson.

Naarivaadi Rajneeti: Sangharsh evam Muddey, University of Delhi: Hindi Medium Implementation Board.

T. Shinde, (1993) 'Stree Purusha Tulna', in K. Lalitha and Susie Tharu (eds), *Women Writing in India*, New Delhi, Oxford University Press.

The Feminist Reader: Local and Global Perspectives, New York: Routledge.

U. Chakravarti, (2001) 'Pitrasatta Par ek Note', in S. Arya, N. Menon & J. Lokneeta (eds.)

V Geetha, (2002) *Gender*, Kolkata, Stree Publications.

Reference Books

N. Gandhi and N. Shah, (1992) *Issues at Stake – Theory and Practice in the Women's Movement,* New Delhi: Kali for Women.

N. Menon, (2004) 'Sexual Violence: Escaping the Body', in *Recovering Subversion,* New Delhi: Permanent Black.

P. Swaminathan, (2012) 'Introduction', in *Women and Work*, Hyderabad: Orient Blackswan.

R. Kapur, (2012) 'Hecklers to Power? The Waning of Liberal Rights and Challenges to Feminism in India', in A. Loomba *South Asian Feminisms*, Durham and London: Duke University Press.

U. Chakravarti, (2003) *Gendering Caste through a Feminist Len,* Kolkata, Stree pubications.

V. Bryson, (1992) *Feminist Political Theory,* London: Palgrave-MacMillan.

DSE Paper – IV DISSERTATION / RESEARCH PROJECT

(College can give this choice only for students with above 60% aggregate marks)

Project Paper- Development Process and Social Movements in Contemporary India (DSE- II)

Introduction:

The research experience of students is greatly enriched by early exposure to conducting research. There are numerous benefits of undergraduate students who get involved in research. They are better off in understanding published works, determine an area of interest, can discover their

passion for research and may start their career as a researcher. Further students will be able to develop ability for scientific inquiry and critical thinking, ability in the knowledge base and communication. This course is included to promote above mentioned abilities among the students.

Learning Objectives:

- To help students to learn how to develop scientific research designs in the study of public administration.
- To guide students to understand the previous research in their field of interest and review them to arrive at a research problem
- To encourage the students to learn ways to describe and evaluate public policy implementation.
- To help students understand the logic of hypothesis testing in both quantitative and qualitative research.
- To make students to learn the methods of writing a research report.

Expected outcomes: Students will be able to

- Independently prepare a research design to carry out a research project
- Review the related research papers to find out a research problem and relevant hypotheses
- Understand the dynamics of citizen – administrative interface and administrative behaviours.
- Learn the use of statistical techniques for interpretation of data.
- Learn the APA style of reporting a research project.

A student is required to carry out a project on an issue of interest to him / her under the guidance and supervision of a teacher. In order to do so s/he must have the knowledge in research methodology and of steps in planning and conducting a research. The supervisorsmay help the students to go on field study / study tour relevant to their work. Thirty hours of class may be arranged in the routine to help students understand research methodology, and planning, conduction and reporting on the research. An external examiner with the supervisor as the internal examiner will evaluate the research project on the basis of scientific methodology in writing the report, and presentation skill and performance in the viva.

Format

- **Abstract –** 150 words including problem, method and results.
- **Introduction** – Theoretical considerations leading to the logic and rationale for the present research
- **Review**- Explaining current knowledge including substantive findings and theoretical and methodological contributions to the topic, objectives and hypotheses of the present research
- **Method** – Design, Sample, Methods of data collection, Procedure
- **Results**- Quantitative analysis of group data-- (Raw data should not be attached in Appendix) Graphical representation of data wherever required. Qualitative analysis wherever done should indicate the method of qualitative analysis.
- **Discussion**
- **References (APA Style) & Appendices**

- Project should be in Soft binding. It should be typed in Times New Roman 14 letter size with 1.5 spacing on one sides of the paper. Total text should not exceed 50 pages (References & Appendices extra).
- Two copies of the project should be submitted to the College.
- ***Project - American Psychological Association (APA) – Publication Manual 2006 to* be followed for project writing**

Mark distribution for dissertation / Research project

Identification of problem	Review of Literature	Methodology	Analysis	Findings	Viva-voce	Total
10	10	10	25	20	25	100

Broad areas identified for Project: Social Movements: Environment, Women, Dalit, Peasant, Social Development, Political Development in Odisha, Political Socialization, Political Participation, Political Modernization and Communication, Decentralized democracy: Rural and Urban Local Self Governance, Functionary of Gram Sabha, Empowerment of Women and other marginals in PRIs, Development, Displacement, Rehabilitation, Resettlement in Odisha, Role of NGOs in Development, Regional Development and Regional Imbalances, Implementation of ORTPS- 2012, RTE-2009, Food Security Act, 2013, FRA, 2007.

Generic Elective Paper I

FEMINISM: THEORY AND PRACTICE

Introduction: The aim of the course is to introduce students to contemporary debates on feminism and the history of feminist struggles. The course begins with a discussion on construction of gender and an understanding of complexity of patriarchy and goes on to analyze theoretical debates within feminism. It offers a gendered analysis of Indian society, economy and polity with a view to understanding the structures of gender inequalities. And the last section aims to understand the issues with which contemporary Indian women's movements are engaged with.

UNIT-I: Understanding Feminism

(i) Feminist theorizing of the sex/gender distinction; Public Man and Private Woman

(ii) Understanding Patriarchy and Feminism

UNIT-II: Theories of Feminism

(i) Liberal and Socialist,

(ii) Radical feminism and Eco-feminism

UNIT-III: Feminist issues and women's participation: The Indian Experience

(i) Women's participation in anti-colonial and national liberation movements with special focus on India

(ii) Traditional Historiography and Feminist critiques; Social Reforms Movement and position of women in India, History of Women's struggle in Post- Independent India

UNIT-IV: Family in contemporary India and Understanding Woman's Work and Labour

(i) Family in contemporary India - patrilineal and matrilineal practices. Gender Relations in the Family, Patterns of Consumption: Intra Household Divisions, entitlements and bargaining, Property Rights

(ii) Understanding Woman's Work and Labour – Sexual Division of Labour, Productive and Reproductive labour, Visible - invisible work – Unpaid (reproductive and care), Underpaid and Paid work,- Methods of computing women's work , Female headed households

Text Books

- Bina Agarwal, (2013) 'Gender And Green Governance', Oxford University Press, Oxford,
- Forbes, Geraldine (1998) 'Women in Modern India'. Cambridge, Cambridge University Press
- Geetha, V. (2002) 'Gender'. Calcutta, Stree Publications.
- Geetha, V. (2007) 'Patriarchy'. Calcutta, Stree Publications.
- Jagger, Alison. (1983) 'Feminist Politics and Human Nature'. U.K, Harvester Press.
- John, Mary (
- John, Mary(2008) 'Women studies in India: A Reader', Peguin, New Delhi
- Lerner, Gerda. (1986) 'Creation of Patriarchy'. New York. Oxford University Press.

Reference Books

- Banarjee, Sikata. (2007) 'Ghadially, Rehana. (ed.) 'Urban Women in Contemporary India: A Reader'. New Delhi, Sage.
- Chakravarti, Uma. (1988) 'Beyond the Altekarian Paradigm: Towards a New Understanding of Gender Relations in Early Indian History', Social Scientist, Volume 16, No. 8.
- Desai, Neera & Thakkar, Usha. (2001) 'Women in Indian Society'. New Delhi: National Book Trust.
- Gandhi, Nandita & Shah, Nandita. (1991) 'Contemporary Women's Movement in India'. Delhi, Zubaan.
- Gupta, A and Sinha Smita, (2005) 'Empowerment of women: Language and Other Facets', Mangal Deep, New Delhi.
- Jayawardene, Kumari. (1986) 'Feminism and Nationalism in the Third World'. London, Zed Books and Conclusion.
- Nayak, Smita (2016) (eds.) ' Combating Violence Against Women: A Reality in the Making', Kalpaz, Gyan Books Pvt, Ltd, New Delhi
- Nayak, Smita (2016) (eds.) 'Gender Dynamics: The Emerging Frontiers', Research India Publications, New Delhi.
- Nayak, Smita, (2016), 'Whither Women: A Shift from Endowment toEmpowerment', Edupedia, New Delhi.
- Rege, Sharmila. (2003) (ed.) 'The Sociology of Gender: The Challenge of Feminist Sociological Knowledge'. New Delhi, Sage.
- Rowbotham, Shiela. (1993) 'Women in Movements', New York and London, Routledge.
- Sangari, Kumkum & Chakravarty, Uma.(1999) (eds.) 'From Myths to Markets: Essays on Gender'. Delhi, Manohar.
- Sarkar, Tanika & Butalia, Urvashi. (1995) (eds.) 'Women and the Hindu Right'. Delhi, Kali for Women.

Generic Elective Paper II

GOVERNANCE: ISSUES AND CHALLENGES

Objectives: This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalizing world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

UNIT-I: Government and governance: concepts

(i) Governance: Meaning, Nature and Types
(ii) Role of State in the Era of Globalisation: State, Market and Civil Society

UNIT-II : Good Governance

i) Good Governance
ii) Sustainable Development and Governance

UNIT-III: Local Governance

(i) Democratic Decentralization: Institutions of Local Governance (PRIs),
(ii) People' Participation in Local Governance & Deepening Democracy

UNIT-IV : Good Governance Initiatives In India

i) Public Service Guarantee Acts & Electronic Governance
ii) Citizens Charter & Right to Information, Corporate Social Responsibility iii)

Text Books

- A Baviskar, ((1995) The Belly of the River: Tribal Conflict Over Development in the Narmada Valley', Delhi, Oxford University Press.
- A. Parel (2000) (ed) 'Gandhi, Freedom and Self-Rule', New Delhi, Lexington Books.
- B. Parekh, (1997) 'Gandhi: A Brief Insight', Delhi, Sterling Publishing Company.
- B. Parekh, (1999) 'Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse', New Delhi, Sage Publication.
- D. Hardiman, (2003) 'Gandhi in his Time and Ours'. Delhi, Oxford University Press.

Reference Books

- R Iyer, (ed) (1993) 'The Essential Writings of Mahatma Gandhi', New Delhi, Oxford University Press.
- R. Ramashray, (1984) 'Self and Society: A Study in Gandhian Thought', New Delhi, Sage Publication.

Generic Elective Paper III

GANDHI AND THE CONTEMPORARY WORLD

Introduction: Locating Gandhi in a global frame, the course seeks to elaborate Gandhian thought and examine its practical implications. It will introduce students to key instances of Gandhi's continuing influence right up to the contemporary period and enable them to critically evaluate his legacy.

UNIT-I-

i) Theories: Satyagraha, Ahimsa

UNIT-II-

i) Swaraj, Swadeshi

UNIT-III-

i) Relevance Gandhi: Gandhi & Environment, Gandhi & Women, Gandhi & Social Harmony

UNIT-IV-

- Gandhi & Global Peace: Gandhian Philosophy in Contemporary World

Text Books

- B. C. Smith (2007), 'Good Governance and Development', Palgrave.
- B. Chakrabarty and M. Bhattacharya, (1998) (eds.) 'The Governance Discourse'. New Delhi, Oxford University Press.
- B. Nayar (1995) (ed.), 'Globalization and Politics in India', Delhi, Oxford University Press.
- Neera Chandhoke, (1995) 'State and Civil Society Explorations In Political Theory', Sage Publishers.
- Panda, Smita Mishra (2008), 'Engendering Governance Institutions: State, Market and Civil Society', Sage Publications.
- Surendra Munshi and Biju Paul Abraham (2004) (eds.), 'Good Governance, Democratic Societies and Globalisation', Sage.
- United Nation Development Programme, (1997) 'Reconceptualising Governance', New York.
- World Bank Report, (1992) 'Governance and Development'.

Reference Books

- Burns H Weston and David Bollier (2013), 'Green Governance: Ecological Survival, Human Rights, and the Law of the Commons', Cambridge University Press.
- Emilio F. Moran, (2010) 'Environmental Social Science: Human - Environment interactions and Sustainability', Wiley-Blackwell.
- Pardeep. Sachdeva, (2011) 'Local Government in India', Pearson Publishers, New Delhi.
- Pranab Bardhan and Dilip Mookherjee (2006), 'Decentralization And Local Governance In Developing Countries: A Comparative Perspective', MIT Press.
- T.R. Raghunandan (2013), 'Decentralization and Local Governments: The Indian Experience, Readings on The Economy, Polity and Society', Orient Blackswan.
- D. Crowther (2008), 'Corporate Social Responsibility', Deep and Deep Publishers, New

Delhi.

Generic Elective Paper IV

UNITED NATIONS AND GLOBAL CONFLICTS

Introduction: This course provides a comprehensive introduction to the most important multilateral political organization in international relations. It provides a detailed account of the organizational structure and the political processes of the UN, and how it has evolved since 1945, especially in terms of dealing with the major global conflicts. The course imparts a critical understanding of the UN's performance until now and the imperatives as well as processes of reforming the organization in the context of the contemporary global system.

UNIT-I : The United Nations

i) An Historical Overview of the United Nations.
ii) Principles and Objectives

UNIT-II

i) Structures and Functions**:** General Assembly, Security Council, Economic and Social Council,.

ii) The International Court of Justice, The Specialized Agencies (International Labour Organisation (IOL), United Nations Educational, Scientific and Cultural Organisation (UNESCO), World Health Organisation (WHO), UN Programmes Funds: United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP), United Nations High Commissioner for Refugees (UNHCR)
iii) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
iv) Millennium Development Goals.

UNIT-III Major Global Conflicts since the Second World war

i) Korean war
ii) Vietnam War
iii) Afghanistan War
iv) Balkans Serbia and Bosnia

UNIT-IV

Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms

Text Books

- Basu, Rumki (2014) 'United Nations: Structure and Functions of an international

organization', New Delhi, Sterling Publishers
- Baylis, J. and Smith, S. (2008) (eds.) 'The Globalization of World Politics: An Introduction to International Relations'. 4th edn. Oxford, Oxford University Press.
- Gareis, S.B. and Varwick, J. (2005) 'The United Nations: an introduction'. Basingstoke, Palgrave.
- Goldstein, J. and Pevehouse, J.C. (2006) 'International Relations'. 6th edn. New Delhi, Pearson.
- Saxena, J.N. (1986) et.al. 'United Nations for a Better Worl', New Delhi, Lancers.
- White, B. et al. (eds.) (2005) 'Issues in World Politics', 3rd edn. New York, Macmillan.
- Whittaker, D.J. (1997) 'United Nations in the Contemporary World', London, Routledge.

Reference Books

- Armstrong, D., Lloyd, L. and Redmond, J. (2004) 'International Organisations in World Politics'. 3rd edn. New York, Palgrave, Macmillan.
- Calvocoressi, P. (2001) 'World Politics: 1945-2000', 3rd edn. Harlow, Pearson Education.
- Moore, J.A. Jr. and Pubantz, J. (2008) 'The new United Nations', Delhi, Pearson Education.
- United Nations Department of Public Information. (2008) 'The United Nations Today'. New York, UN.

PSYCHOLOGY

Framework of CBCS Syllabus for PSYCHOLOGY (Honours) from 2019-20					
Full Forms of Course Codes Used: CC = Core Course, AECC = Ability Enhancement Compulsory Course, SEC = Skill Enhancement Course, DSE = Discipline Specific Elective (Related to Core Subject), GE = Generic Elective (Not related to Core Subject; 2 different subjects of 2 papers each). **Total Marks:** CC (1400) + AECC (200) + SEC (200) + DSE (400) + GE (400) = 2600					
Semester	CC 14 papers 100 X 14 = 1400; Credits=14x6=84	AECC 2 Papers 100 X 2 = 200 Credits=4x2=8	SEC 2 Papers 100 X 2 = 200 Credits=4x2=8	DSE 4 Papers 100 X 4 = 400 4x6=24 credits	GE 4 Papers 100 X 4 = 400 4x6=24 credits
I	CC-I: Introductory Psychology CC-II: Basic Developmental Processes	AECC-I: MIL Communication (Odia/English)			GE Paper-I: Introductory Psychology
II	CC-III: Basic Psychological Processes CC – IV: Processes of Human Empowerment	AECC-II: Environmental Science			GE Paper-II: Basic Developmental Processes
III	CC – V: Statistics CC – VI: Social Psychology CC – VII: Environmental Psychology		SEC-I:		GE Paper-III: Basic Psychological Processes
IV	CC – VIII: Psychopathology CC – IX: Educational Psychology CC – X: Psychological Assessment		SEC-II:		GE Paper-IV: Processes of Human Empowerment
V	CC – XI: Organizational Behavior CC – XII: Health Psychology			DSE-I: Psychological Research and Measurement DSC-II: Ethics, Integrity and Aptitude	
VI	CC – XIII: Counseling Psychology CC – XIV: Positive Psychology			DSC-III: Psychology of the Disability DSC-IV: Project & Field work/ Psychology of Crime	

PSYCHOLOGY Papers for HONOURS Students

Core course – 14 papers, Discipline Specific Elective – 4 papers, Generic Elective for non-psychology honours students – 4 papers. In case University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Scoring System for Papers with Practical:

Marks per paper - Midterm: 15 marks, Practical: 25 marks, End term: 60 marks, Total: 100 marks, Credit per paper – 6, Teaching hours per paper – 40 hours theory + 20 hours practical

Scoring System for Papers without Practical:

Marks per paper - Midterm: 20 marks, End term: 80 marks, Total: 100 marks, Credit per paper – 6, Teaching hours per paper – 50 hours + 10 hours tutorial

Core Paper- I INTRODUCTORY PSYCHOLOGY

Introduction: The course is designed to provide the student a basic understanding of the psychology of human behavior. The students will be given exposure to concepts, terminology, principles, and theories that comprise an introductory course in psychology.

Learning Objectives:

- To help the students know the sources and processes of development of modern scientific psychology.
- To help the students develop a scientific temperament in studying and understanding human behavior.

Expected outcomes: Students will be able to

- Define the term psychology and demonstrate command of the basic terminology, concepts, and principles of the discipline.
- Gain knowledge of scientific methodology–the variety of ways in which psychological data are gathered and evaluated / interpreted.
- Identify and compare the major perspectives in psychology: Recognize how each approach views human thought and behavior.
- Understand the physiological and biochemical links of human behavior.

UNIT-I: Introducing Psychology

(i) Concept and definition of psychology, Roots of psychology, Psychology as a scientific discipline.

(ii) Key Perspectives in Psychology- Behavioral, Cognitive, Humanistic, Psychodynamic, and Socio-cultural.

UNIT- II: Methods in Psychology

(i) Natural Observation, Survey and Case Study - Nature, advantages and limitations.

(ii) Experimental and Correlational methods -Nature, advantages and limitations.

UNIT –III: Biological Bases of Behavior

(i) Structure and functions of the neurons, Communication within and between neurons, Chemical regulation of the endocrine glands.

(ii) Structure and functions of the Central nervous system and Autonomic nervous system

UNIT-IV: States of Mind

(i) Nature of consciousness; changes in consciousness- sleep-wake schedules

(ii) Extended states of Consciousness - Hypnosis, Meditation and Hallucinations

Practical:

(i) **R.L. by Method of Limits:** To find out the R. L. of volar surface of the right arm of a subject by method of limits

(ii) **D.L. by Method of Constant Stimuli:** To find out the D.L. for lifted weight of your subject by method of constant stimuli.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi: Pearson Education.
- Hilgard & Atkinson- Introduction to Psychology (2003) 14th Edition, Thomson Learning Inc.

- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata-McGraw Hill.

Core Paper-II BASIC DEVELOPMENTAL PROCESSES

Introduction: The course is designed to expose students to a basic understanding about the fundamental concerns of developmental psychology and provide examples of the following three dimensions of development: growth, differentiation, and orderly progression.

Learning Objectives:

- To help students gain some key ideas about human development and the perspectives to understand and explain such developments.
- To help the students understand the significance of prenatal period for human development.
- To help the students understand the developmental preparations of the childhood and the implications of developmental milestones for the normal human development.

Expected outcomes: Students will be able to

- Understand the nature, types, and principle of development.
- Understand the processes of formation of life and development during pre- and post-natal periods.
- Understand about the different aspects of preparation for future life.

UNIT-I: Basics of development

(i) Meaning, nature, and types of development; Principles of development; Factors influencing development

(ii) Perspectives of development- Psychoanalytic; Mechanistic; Organismic; Humanistic

UNIT- II: Life in formation

(i) Fertilization, determination of sex, multiple birth; Prenatal development- germinal stage, embryonic stage, fetal stage; Factors influencing prenatal development. Impact of perinatal processes on development

(ii) Physical and motor developments, Social and emotional developments during childhood.

UNIT –III: Life in preparation

(i) Physical and motor developments, Social and emotional developments during adolescence.

(ii) Piaget's stage of cognitive development; Kohlberg's stages of moral development

Unit- IV: Self and identity

(i) Emergence of self; Structure of the self; Development of personal identity

(ii) Development of self-control; Development of gender differences and gender roles

Practical:

(i) **Locus of Control:** To assess the Locus of Control of four college students by using Rotter's

Locus of Control Scale.

(ii) **Emotional Intelligence:** To measure the emotional intelligence of four college students by using the Schutte's Emotional Intelligence Scale.

Text Books:

- Sigelman, G.K. & Schaffer, D.R. (1995). Life-span Human Development, Brooks / Cole Publishing Co. Pacific Grove, California
- Berk, L. E. (2010). Child Development (8th Ed.). New Delhi: Prentice Hall.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Papalia, Diane E., Sally Wendos Olds (2006). Human Development. 9th Edition. New Delhi: Tata McGraw Hill
- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

Core Paper III BASIC PSYCHOLOGICAL PROCESSES

Introduction: The course is designed to provide the student a basic understanding of the psychological processes from sensation to thought and communication. The student will be given exposure to the concepts, terminology, principles, and theories relating to each of the mental processes that constitute human psychology.

Learning Objectives:

- To help the students to understand the mental processes to begin with sensation and perception up to how it results in thoughts and communication.
- To help the students gather knowledge about the structural and functional dynamics of each of the mental processes and their interconnectedness.

Expected outcomes: Students will be able to

- Understand the basic sensory actions and the processes of integration of sensory actions in creating and interpreting perceptual events.
- Gain knowledge of the important processes and principles of human learning as well as the structural functional attributes of human memory to help conserve the learning outcomes.
- Understand the structural and functional properties of language and the way it helps thought, communication, problem solving and decision making through development of concepts, ideas, images, and so on.

UNIT-I: Sensation and Perception

(i) Basics of sensation- Sensory receptors (eye and ear), transduction, sensory thresholds, and sensory adaptation

(ii) Nature of perceptual process- Figure and ground, Grouping (Gestalt laws), Perceptual constancies, and illusions, Perception of distance and depth.

UNIT- II: Learning and Memory

(i) Nature and principles of Classical conditioning, Operant conditioning, and Observational learning

(ii) The Atkinson and Shiffrin Model of Memory; Types of Memory- episodic, semantic and procedural; Causes of Forgetting- interference, repression, and amnesia

UNIT –III: Language and Communication

(i) Properties and structure of language, Linguistic hierarchy, Language acquisition-predisposition, Nature of effective communication
(ii) Stages of language development; critical period controversy; speech error and its implications

UNIT- IV: Thinking and Reasoning

(i) Thinking process; concepts, categories and prototypes, Decision making and factors of influencing decision making.
(ii) Inductive and deductive reasoning; Problem solving approaches; Steps in problem solving

Practical:

(i) **Learning Curve:** To demonstrate the Learning Curve as a function of Learning trials using Non-sense Syllables.
(ii) **Serial Position Effect:** To demonstrate the serial position effect on memory in learning a list of nonsense syllables.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata Mc. Graw Hill.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.

Core Paper-IV PROCESSES OF HUMAN EMPOWERMENT

Introduction: Human empowerment is ultimately an individual condition of gaining the power to control and modulate changes in one's own life those are considered important to one's identity and adjustment. The purpose of the course is to introduce to the students the basics of human empowerment and how the empowerment processes are strengthened and improved.

Learning Objectives:

- To help students gain ideas about intelligence and personality as foundations of human empowerment.
- To make students understand how motivation and emotion are empowering processes to human development.
- To help students gain insight into human behavior as products of empowerment.

Expected outcomes: Students will be able to

- Know the structural components and functional dynamics of both intelligence and personality.
- Understand the significance of emotion and motivation in behavior management.
- Understand significant aspects of social behavior as resulting in happiness, well-being

and personal growth.

UNIT-I: Basics of empowerment

(i) Intelligence- Heredity, environment, and intelligence, Theories of Gardner, Stenberg, & PASS
(ii) Measuring Intelligence: intelligence tests; Interpretation of test score, Cross-cultural issues in testing intelligence

UNIT- II: Sources of Power (1)

(i) Personality- Freud's theory, and Social cognitive theory
(ii) Personality-Trait and type approach, Biological and sociocultural determinants, Psychometric and projective assessment.

UNIT –III: Sources of Power(2)

(i) Motivation-Drive theory, Arousal theory, Expectancy theory, Maslow's need hierarchy
(ii) Emotion-Theories of James-Lange, Cannon-Bard, & Schachter-Singer

UNIT –IV: Proving empowered

(i) Social behavior- Meaning of attribution and errors in attribution, Meaning of social cognition and processing of social information
(ii) Positive Psychology-Scope and aims, Nature and characteristics of happiness, Subjective well-being and personal growth

Practical:

(i) **Intelligence test-** To test the non-verbal intelligence of Two college students using Raven's Standard Progressive Matrices
(ii) **Personality Type-** To assess the personality type of a student obtaining responses from the student and two other significant persons in his /her life by using Glazer's test of Personality Type

Text Books:

- Baron, R.A. (1995).Psychology- The Essential Science, Pearson Education Company of India Pvt. Ltd.
- Gerrig, R.J. &Zimbardo, P.G. (2010). Psychology and Life (19th Ed.). Delhi: Allyn& Bacon
- Snyder, C.R. & Shane, J.L. (2005) Handbook of Positive Psychology: Oxford University Press.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Baron, R. A. & Byrne, D. (2003). Social Psychology, 10th Edition, Prentice Hall
- Misra, G. (2009). Psychology in India, Vol 1: Basic Psychological Processes and Human Development. India: Pearson
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

Core Paper- V PSYCHOLOGICAL STATISTICS

Introduction: The course is designed to equip students with knowledge in the fundamentals of statistics and research methods so that they understand the application of statistics to different research problems in psychology.

Learning Objectives:

- To help students develop knowledge and understanding of the application of Statistics within Psychology
- To help students develop critical thinking for application of appropriate statistical analysis in Psychological research

Expected outcomes: Students will be able to understand

- The nature of psychological variables and how to measure them using appropriate scale.
- The processes of describing and reporting statistical data.
- The methods of drawing inferences and conclusions for hypothesis testing by using appropriate statistical analysis.

UNIT-I: Fundamentals of statistics

(i) Meaning and scope of statistics, Nature of variables- Categorical and Continuous, Levels of Measurement- Nominal, Ordinal, Interval, and Ratio
(ii) Drawing frequency distribution; Graphical representation of grouped data-Polygon, Histogram, Ogive.

UNIT- II: Measures of Statistics

(i) Measures of Central Tendency- Characteristics of mean, median and mode; Computation of mean, median, and mode
(ii) Measures of Variability- Concept of variability, computation of semi-inter quartile range, Standard deviation and variance, Co-efficient of variation

UNIT- III: Sources and Applications

(i) Concept of Probability; Characteristics of Normal Probability curve, Applications of NPC, Deviation from NPC- Skewness and Kurtosis
(i) Concept of correlation, Product-moment correlation (ungrouped data), Rank order correlation, Chi-square test (Contingency Table)

UNIT –IV: Hypothesis Testing

(i) Level of significance; Type I and Type II error; Computation of 't' for independent and dependent samples
(ii) Purpose and assumptions of ANOVA; One-way and two-way ANOVA

Practical:

(i) **Reporting of Statistical Results:** To collect data of 60 (30 boys and 30 girls) High School students about their Annual examination marks in four subjects and to report by descriptive statistical analyses.
(ii) **Computer Awareness:** To be familiar with software packages of statistics and their applications.

Text Books:

- Aron, A., Aron, E.N., & Coups, E.J. (2007).Statistics for Psychology. (4thEd.) India: Pearson Education, Prentice Hall.
- Ferguson, G.A. &Takane, Y. (1989). Statistical Analysis in Psychology & Education, Tata McGraw Hill Publishing Company, New Delhi
- Garrett, H. E. & Woodworth, R.S. (1985). Psychology in Statistics and Education, Vakils, Feffer& Simons Ltd. Mumbai
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Mishra, G.C. (2018). Applications of Statistics in Psychology and Education, Kalyani Publisher, New Delhi
- Mohanty, B. and Misra, S. (2017). A text book of Basic Statistics. LaxmiPrakashans, Bhubaneswar, Odisha
- Siegal, S. (1994). Nonparametric Statistics. McGraw Hill, New Delhi

Core Paper-VI SOCIAL PSYCHOLOGY

Introduction: Social psychology is the scientific study of the nature and causes of human behavior in a social context. This course is designed to introduce the students to the field of social psychology, to explain how social psychologists think about and study human behavior; to introduce the body of knowledge and underlying principles that currently exist in the field and to encourage reflection about the implications of social psychology for the situations we encounter in everyday life.

Learning Objectives:

- To help students develop awareness of the concepts, problems and issues in the discipline of social psychology
- To make students understand the individuals and groups in respect to patterns of social behavior and attitudes
- To help students gain insight into the dynamics of intergroup relationships, conflict, prejudice and cooperation.

Expected outcomes: Students will be able to

- Know the scope of studying social psychology and the methods to gather data in the social context to explain them.
- Understand the significance of social cognition, attitudes, stereotypes and prejudices in explaining human behavior in the social contexts.
- Understand the significant aspects group behavior and social influence that constitute the core of human relationships.

UNIT-I: Introduction

(i) Nature, goal, and scope of Social Psychology; Methods of Social Psychology- Observation; Questionnaire, Interview, and Experiment

(ii) Social Cognition- Perceiving ourselves: self-concept, self-esteem, self-presentation and self-expression; Perceiving others and forming impressions

UNIT- II: Attitude, Prejudice and Stereotypes

(i) Attitudes- Nature, characteristics and functions of attitude; Attitude formation and change; Attitude measurement

(ii) Prejudice and Stereotypes- Nature and components of prejudice, Acquisition of prejudice, Reduction of prejudice

UNIT –III: Group and Leadership

(i) Group - Group structure and function, Task performance: Social facilitation, Social loafing; Conformity, Obedience and social modeling; Group cohesiveness.

(ii) Leadership- Definitions and functions, Trait, situational, interactional and contingency approaches to leadership; Leadership effectiveness, The charismatic leadership.

UNIT- IV: Social Behavior

(i) Pro-social behavior- Cooperation and helping, personal, situational and socio-cultural determinants, Theoretical explanations of pro-social behavior

(ii) Aggression- Theoretical perspectives, Trait, situational and social learning approaches, social and personal determinants of aggression, prevention and control of aggression.

Practical:

(i) **Ethical Values:** To assess the ethical values of five adolescents by using Donelson's Ethical Position Questionnaire (EPQ)

(ii) **Attitude towards Women**: To measure the attitude of three boys and three girls towards Women by using Spence, Helmrich & Stapps' Attitude towards Women scale.

Text Books:

- Baron R. A & Byrne. D. (2003). Social Psychology. 10th Edition, Prentice Hall
- Baron. R.A., Byrne, D. &Bhardwaj. G (2010).Social Psychology (12th Ed).New Delhi: Pearson
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

Reference Books:

- Developments (ICSSR survey of advances in research). New Delhi: Pearson.
- Misra, G. (1990).Applied Social Psychology. New Delhi: Sage.
- Misra, G. (2009). Psychology in India, Volume 4: Theoretical and Methodological Implications

Core Paper- VII ENVIRONMENTAL PSYCHOLOGY

Introduction: Environmental psychology is an interdisciplinary field focussed on the interplay between individuals and their surroundings. The field defines the term environment broadly, encompassing natural environments, social settings, built environments, learning environments, and informational environments. The course is designed to introduce to the students about all these aspects of environment.

Learning Objectives:

- To highlight the simultaneous mutual interaction of environment and behavior.
- To delineate psychological approaches to the study of environment.
- To discuss the impact of ecological degradation and the need for enhanced awareness programs

Expected outcomes: Students will be able to

- understand the interactional relationships between environment and behavior
- understand the problems occurring to ecology and environment at the present time
- understand different psychological approaches to the study of man-environment relationship.

UNIT -I: Environment and Behavior

(i) Earth as a living system: The Gaia hypothesis, Deep ecology; Man-environment relationship-physical, social, cultural, orientation and product.
(ii) Effects of Environment on behavior: Noise pollution, Air pollution, Crowding and Population explosion.

UNIT- II: Ecology and Development

(i) Human behavior and Environmental Problems: Global warming, Greenhouse effect, Energy depletion; Pro-environmental behaviors.
(ii) Ecosystem and their components; Sustainable development; Resource use: Common property resources. Ecology: Acculturation and psychological adaptation

UNIT –III: Psychological Approaches to environment

(i) Field theory approach; Eco-cultural Psychology (Berry); Biosocial Psychology (Dawson);
(ii) Ecological Psychology (Barker); Ecological system approach (Bronfenbrenner)

UNIT- IV: Environmental Assessment

(i) Socio-psychological dimensions of environmental impact; Environmental deprivation-nature and consequences.
(ii) Creating environmental awareness; Social movements- Chipko, Tehri, Narmada.

Practical:

(i) To assess the environmental literacy of 4 college students using Bob Simpson's Environment literacy and awareness survey questionnaire.
(ii) To assess the environmental attitude, concern and sensitivity of 4 college students using Bob Simpson's Environment literacy and awareness survey questionnaire.

Text Books:

- Dreze, J. and Sen, A. (1992). Indian Development. Delhi: Oxford University Press.
- Gadgil, M. and Guha. R. (1995). Ecology and Equity. New Delhi, Penguine Books
- Mohanty, B. and Misra, S. (2017). A text book on Environmental Psychology. Krupajala Books, Bhubaneswar, Odisha
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Goldsmith, E. (1991). The way: The ecological World View. Boston: Shambhala

Core Paper VIII PSYCHOPATHOLOGY

Introduction: Psychopathology refers to the study of mental illness. This course is designed to expose students to the key concepts in psychopathology as well as the major theories associated with the etiology and treatment of psychological disorders and disabilities. Students will be able

to understand the distinction between normal and abnormal and the qualities that are used to differentiate what is typical versus atypical through citations of different disorders.

Learning Objectives:

- To help students define and understand the basic concepts underlying psychopathology and the perspectives which contributed to the development of modern psychopathology.
- To help students understand the assessment techniques for identifying and classifying maladaptive behavior and mental disorders.
- To guide students to gain specific knowledge about different types of mental disorders.

Expected outcomes: Students will be able to

- Understand the differences between normality and abnormality along with the perspectives explaining them.
- Know the importance and the use of assessment techniques in identifying different forms of maladaptive behaviour.
- Learn the symptoms, causes and treatment of anxiety disorders, mood disorders and schizophrenia.

UNIT-I: Basics of Pathology

(i) Concept of abnormality; Perspectives of abnormal behavior- Psychodynamic, Behavioral, Cognitive, Humanistic-Existential, and Sociocultural

(ii) Classification of maladaptive behavior-DSM-IV; Assessment techniques- Diagnostic tests, Rating scales, History taking interview, Projective tests

UNIT- II: Anxiety and Mood disorder

(i) Symptoms, causes and treatment of Generalized anxiety disorder, Phobic disorder, Obsessive-Compulsive disorder

(ii) Depressive disorder –Symptoms, causes and treatment of Bipolar affective disorder, and Dysthymia

UNIT- III: Personality Disorders

(i) Paranoid, Schizoid, Dissociative, Impulsive

(ii) Borderline, Anxious, Avoidance, Dependent personality

UNIT –IV: Schizophrenia and Therapies

(i) Characteristics, Major subtypes, Causes and treatment of Schizophrenia

(ii) Psychodynamic, and Cognitive Behaviour therapy.

Practical:

(i) **Anxiety:** Assessment of Anxiety of a subject by Hamilton Anxiety Rating Scale (HARS)

(ii) **Depression:** Assessment of Depression Profile of a subject by Beck's Depression Inventory (BDI)

Text Books:

- Carson R.C., Butcher J.N., Mineka, S., & Hooley J.M. (2007). Abnormal Psychology (13th Ed.).ND: Pearson Education.
- Irwin G. Sarason, Barbara Sarason (2005). Abnormal Psychology. New Delhi: Prentice Hall Publication
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Kring,A.M.,Johnson,S.L.,Davison G.C. & Neale J.M. (2010). Abnormal Psychology (11th Ed.).NY: John Wiley

Core Paper IX EDUCATIONAL PSYCHOLOGY

Introduction: This course provides an introduction to concepts, theories, and research in educational psychology. The topics covered include cognitive development during the school years, classroom management, instructional approaches, motivation, assessment, and individual differences.

Learning Objectives:

- To provide students with an overview of the purposes and uses of educational psychology.
- To help students understand human development focusing mainly on the years of formal education including those with ability differences
- To make students understand the ways that educators motivate their students to learn and strive for excellence
- To make students explore the ways that educators manage learning environments to maximize learning and social cohesion

Expected outcomes: Students will be able to

- Define educational psychology and give examples of the different topics educational psychologists study.
- Describe the developmental issues faced by school age children.
- Describe the challenges presented by children with ability differences.
- Explain the role of motivation on learning and classroom behavior.
- Describe classroom management techniques.
- Identify commonly used standardized tests, their strengths and limitations, and use in school settings.

UNIT-I: Foundations of Educational Psychology

(i) Concepts and principles of educational psychology, The teaching-learning process, Goals of teaching and objectives for learning, transfer of training, reinforcements in learning process
(ii) Theories of cognitive development-Piaget, Bruner, and Vygotsky.

UNIT- II: Motivation and Classroom Management

(i) Meaning of motivation, Intrinsic and extrinsic motivation, Approaches to understand classroom motivation, Motivational techniques in classroom teaching
(i) The goals of classroom management, Creating a positive learning environment, Characteristics of an effective teacher, Teacher expectation and students' performance

UNIT- III: Creativity and Aptitude

(i) Nature and characteristics of creativity; Theories of creativity; Fostering creativity among children
(ii) Nature and characteristics of aptitude; Types of aptitude; Measurement of aptitude; Utility of aptitude tests

UNIT –IV: Dealing with ability differences and Testing

(i) Teaching children with mental retardation, learning disability, social class differences and

educational difficulties, and attention deficit Hyperactive disorder.
(ii) Types of standardized tests- Achievement test, and aptitude tests, Advantages and limitations of standardized test.

Practical:

(i) **Academic Behaviour:** To assess the academic attitude and behavior of college students by using Sia's Academic Behavior Scale
(ii) **Academic Stress:** To assess the academic stress of two higher Secondary students using Rao's Academic Stress Scale.

Text Books:

- Gage, N. L., & Berliner, D. C. (2009) *Educational psychology* (5th ed.). Boston, MA: Houghton Mifflin.
- Woolfolk, A.E. (2004). Educational Psychology (9th Ed.), Allyn& Bacon, London / Boston
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Chauhan, S. S. (2010). Advanced Educational Psychology, Vikash Publishing.

Core Paper-X PSYCHOLOGICAL ASSESSMENT

Introduction: The course is designed to expose students to a basic understanding about approaches to psychological assessment and develop skill in the administration and interpretation of psychological tests.

Learning Objectives:

- To train students in various psychological assessment techniques
- To impart skills necessary for selecting and applying different tests for different purposes such as evaluation, training, rehabilitation etc.

Expected outcomes: Students will be able to

- Understand the basic facts about psychological assessment.
- Understand the processes of test construction and standardization.
- Understand about the assessment of different types of skills and abilities.

UNIT-I: Introduction

(i) Nature and Scope of human assessment; Parameters of assessment
(ii) Psychological scaling, Methods of scaling

UNIT- II: Psychological Tests

(i) Principles of test construction and standardization- Item analysis, reliability, validity and development of norms
(ii) Types of psychological tests- Individual, group, performance, verbal, nonverbal

UNIT –III: Assessment of Ability

(i) Assessment of general abilities- Intelligence, interest, interpersonal interaction
(ii) Assessment of personality- Use of self-report inventories, interview, projective and non-

projective tests

UNIT- IV: Classroom Assessment

(i) Classroom as assessment context, Traditional tests, Alternative assessment
((ii) Grading and reporting of performance, Computer and assessment

Practical:

(i) **Empathy:** To assess the empathy behavior of Five college students using Spreng's Empathy questionnaire.
(i) **Sense of Humor:** To assess the Sense of Humor of 4 College Students Using McGhee's Scale of Sense of Humor (MSSH)

Text Books:

- Anastasi, A. (1988). Psychological Testing. New York: MacMillan
- Mishra, G.C. & Others (2018). Psychological Assessment. Kalyani Publisher, New Delhi

Reference Books:

- Kerlinger, F.N. (1983). Foundations of Behavioral Research. New York: Surjeet Publications
- Minium, E.W., King, B.M. & Bear, G. (1993). Statistical Reasoning in Psychology and Education. New York: John Willey

Core Paper XI ORGANIZATIONAL BEHAVIOR

Introduction: The course provides an overview of the main fields of organizational and personnel psychology. It focuses on topics such as organizational system; work behavior, attitudes and motivation as related to organizational set up; management of power and politics in the organizations; and finally development and evaluation of human resources for sustainable growth of an organizations.

Learning Objectives:

- To help students understand the structure, functions, and designs of different organizations.
- To make students understand the processes of group decision making and leadership functions in different organizations.
- To make students understand the theories of work motivation and related issues of power and politics in the organizational set up.
- To help students demonstrate professional skills in the evaluation, management, and development of human resources in the organizations.

Expected outcomes: Students will be able to

- Understand different concepts and dynamics related to organizational system, behavior, and management.
- Identify steps managers can take to motivate employees in the perspectives of the theories of work motivation.
- Understand the tricks of power and politics management in the organizations.
- Understand significance of human resource development, evaluation and management for the interest and benefit of the organization.

UNIT I: Historical context of organizational behavior

(i) Contributions of Taylor, Weber and Fayoll; Challenges, Scope and opportunities for OB
(ii) OB perspectives-Open system approach, Human relations perspective, Socio-technical

approach, OB model responsive to Indian realities

UNIT-II: Organization System

(i) Structure and functions of organization, Common organizational designs, Management roles, functions and skills
(ii) Group decision making processes in organizations, Organizational leadership and types of leadership in organizations

UNIT- III: Work, Power and Politics

(i) Contemporary theories of work motivation- ERG theory, McClelland's theory of needs, Cognitive evaluation theory, Goal-setting theory, Reinforcement theory
(ii) Defining power in organization, Bases of power, Power tactics, Nature of organizational politics, Impression management, and defensive behavior

UNIT –IV: Human resource development and Evaluation

Human Skills and Abilities, Selection Practices for Optimal Use of Human Resources; Training Programs for the Development of Human Resources
(i) Performance Evaluation- Purpose, Methods, Potential Problems and methods to overcome them

Practical:

(i) Leadership Style: To measure his basic leadership style of 4 college students by using Greenberg Basic Leadership Style scale
(ii) Conflict-Handling: To measure the conflict-handling style of 4 college students by using Rahim's scale to identify their conflict handling style.

Text Books*:*

- Robbins, S.P.; Timothy, A.J. &Vohra, N. (2012). Organizational Behavior, 15th Edn. Pearson Education: New Delhi
- Luthans, F. (2009). Organizational behavior. New Delhi: McGraw Hill.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books*:*

- Greenberg, J. & Baron, R.A. (2007). Behaviour in Organizations (9th Ed.). India: Dorling Kindersley.

Core Paper XII HEALTH PSYCHOLOGY

Introduction: Health psychology is a specialty area that focuses on how biology, psychology, behavior and social factors influence health and illness. This course is designed to provide an introduction to the area of health psychology to help students understand how Health Psychology as a specialty within psychology addresses the role of behavioral factors in health and illness. Basic theories, models and applications are also included.

Learning Objectives:

- To help the students understand the issues of Health Psychology and how to address them by the bio-psychosocial model of health and illness.
- To help the students to describe behavioral factors that influence health and illness.

- To guide the students understand about health enhancing behaviors including coping with illness.

Expected outcomes: Students will be able to

- Know the basics of health and illness from the Bio-psychosocial perspectives.
- Understand the significance of behavioral and psychological correlates of health and illness.
- Understand the significant aspects of coping and importance of health enhancing behavior.

UNIT-I: Introduction

(i) Goals of Health Psychology, , Biopsychosocial model of health and illness
(ii) Basic nature of stress, Cognitive appraisal of stressors, Some major causes of stress, Management of stress

UNIT- II: Health and Illness

(i) Behavioral and psychological correlates of illness, Approaches to promoting wellness, Some common health beliefs and their implications
(ii) Models of health- The cognition models- The health belief model, The protection motivation model, Leventhal's self-regulatory model.

UNIT –III: Health and Coping

(i) Individual differences in symptom perception, Coping with the crises of illness; Compliance behavior and improving compliance.
(ii) Health enhancing behavior- Diet management, Yoga and Exercise

UNIT- IV: Health Issues

(i) Children health issues- Malnutrition, Immunization, Autism, ADHD
(ii) Health issues of women and elderly: **Diabetes, Osteoporosis, Alzheimer's Disease, Depression**

Practical:

(i) **Sleep Quality**: To assess the Sleep quality of 4 college students The Pittsburgh Sleep Quality Index (PSQI)
(ii) **Coping Strategies:** To assess of the Coping Strategies of 4 college students by Tobin's Coping Strategy Inventory (TCSI)

Text Books:

- Taylor, S.E. (2006). Health Psychology (6th Ed.). New York: Tata McGraw Hill
- Brannon and Feist. Health Psychology.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Ogden, J. (2007). Essentials of Health Psychology. McGraw Hill.

Core Paper XIII COUNSELING PSYCHOLOGY

Introduction: The course is designed to develop entry level counseling psychologists who will be capable of understanding and demonstrating behavior and attitudes in the basic areas of professional counseling.

Learning Objectives:

- To help students understand and integrate current scientific knowledge and theory into counseling practice.
- To make students learn the history and professional issues related to counseling psychology.
- To help students integrate and convey information in the core areas of counseling practice.
- To help students demonstrate professional behavior in their various roles as counseling psychologists.

Expected outcomes: Students will be able to

- Understand the purpose of counseling and practice of counseling ethically following different approaches.
- Understand the basics of counseling process and use them for counseling students, families, couples, distressed, and handicaps.

UNIT-I: Basics of Counseling

(i) Meaning, scope and purpose of counseling with special reference to India; The counseling process, counseling relationship, counseling interview

(**i**) Characteristics of a good counselor, Ethics and values in counseling; Education and training of the counselor

UNIT –II: Theories and Techniques of Counseling

(i) Psychodynamic approach-Freud and Neo Freudians; Humanistic approach-Existential and Client centered

(ii) Cognitive approach- Rational-emotive and transaction analysis; Behavioral approach-Behavior modification; Indian contribution- yoga and meditation

UNIT- III: Counseling Programs

(i) Working in a counseling relationship, transference and counter transference, termination of counseling relationship, Factors influencing counseling

(ii) Student counseling, Emphases, roles and activities of the school, and college counselor.

UNIT –IV: Counseling application

(i) Family and Marriage Counseling, Family life and family cycle, Models and methods of family counseling

(ii) Alcohol and drug abuse counseling; Counseling the persons with Suicidal tendencies, and Victims of Harassment and Violence

Practical:

(i) **Marital Relationship-** To assess the marital relationship of 2 couples using Lerner's Couple adjustment scale

(ii) **Case Reporting:**To complete four case studies of high school students with problem

behavior in the appropriate case record proforma

Text Books:

- Gladding, S.T. (2009). Counseling: A comprehensive profession (6th Ed.). New Delhi: Pearson India
- Mishra, H.C. &Varadwaj, K. (2009). Counseling Psychology: Theories, Issues and Applications, DivyaPrakashini, Samantarapur, Bhubaneswar, Odisha
- Burnard Philip. (1995). Counseling Skills Training – A sourcebook of Activities. New Delhi: Viva Books Private Limited.
- Gibson, R.L & Mitchell M.H. (2003). Introduction to counseling and Guidance. 6th edn. Delhi: Pearson Education
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Feltham, C and Horton, I. (2000). Handbook of Counseling and Psychotherapy. London: Sage.
- Misra, G. (Ed) (2010). Psychology in India, Volume 3: Clinical and Health Psychology. New Delhi: Pearson India.
- Nelson-Jones. (1995). The theory and practice of counseling. 2nd Edn. London: Holt, Rinehart and Winston Ltd
- Mohanty, G. B. (2018). Counseling Psychology, Kalyani Publisher, New Delhi.

Core Paper XIV POSITIVE PSYCHOLOGY

Introduction: Positive psychology is the scientific study of optimal human functioning to help people flourish. This is a foundation course in positive psychology to help students not only to understand the core themes of positive psychology, but also to equip them with the helpful positive interventions in various areas of professional psychology, such as clinical, health, education, organization and community.

Learning Objectives:

- To help students to understand the rationale behind positive psychology.
- To guide students to identify and analyze the key conceptual and theoretical frameworks underpinning positive psychology.
- To encourage students to appreciate the contributions of scholars from a range of disciplines and their influence on developing a positive approach to mental health.
- To make students understand and apply a strengths-based approach to mental health issues.

Expected outcomes: Students will be able to understand

- The goal of positive psychology and the basic behavior patterns that result in positive human growth from the point of view of leading positive psychologists.
- The concepts of flow and happiness and the related theories and models explaining happiness behavior and its consequences.
- All the precursors to positive psychology from character strength and altruism to resilience.

UNIT-I: Foundations

(i) Historical roots and goals of positive psychology, Positive emotions, Positive Individual traits, and positive subjective experience
(ii) Contribution of Martin Seligman, Albert Bandura, Carol Dweck and Abraham Maslow to positive psychology

UNIT- II: Flow and Happiness

(i) Components of flow, Conditions and mechanisms of flow, Positive and negative consequences of flow experience
(ii) Meaning and nature of happiness, Sources of happiness, Theories of happiness- Set-point theory, Life satisfaction and Affective state theories.

UNIT –III: Precursors to Positive Psychology

(i) Character strength, Altruism, Hope and Optimism, Positive thinking, Resilience
(ii) Psychology of well-being: Meaning of well-being, The well-being models, Factors affecting well-being, Promoting well-being among people

UNIT- IV: Ways to Positive Psychology

(i) Discovering strength, Increasing optimism, Self-direction, Purpose, gratitude, Mindfulness, and Activities and experience
(ii) Effects of exercise, Yoga, meditation and spiritual intelligence on development of positive psychology; Positive psychology in building relationship

Practical:

(i) **Happiness:** To measure the happiness of 4 adults using Oxford Happiness questionnaire
(ii) **Spiritual Intelligence:** To measure the spiritual intelligence of 4 adults using King's Spiritual Intelligence test.

Text Books:

- Seligman, M.E. (2002).Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment: Oxford University Press
- Carr, A. (2004). Positive Psychology: The science of happiness and human strength.UK: Routledge.
- Mohanty, G.B. (2018). Positive Psychology. Kalyani Publisher, New Delhi
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Peterson, C. (2006). A Primer in Positive Psychology; Oxford University Press
- Seligman, M.E. (2012). Flourish:A Visionary New Understanding of Happiness and Well-being. Oxford University Press
- Snyder, C.R. & Shane, J.L. (2005). Handbook of Positive Psychology. .Oxford University Press
- Snyder, C.R., & Lopez,S.J.(2007).Positive psychology :The scientific and practical explorations of human strengths. Thousand Oaks, CA: Sage.

Discipline Specific Elective Paper-I
PSYCHOLOGICAL RESEARCH AND MEASUREMENT

Introduction: The research methods course is among the most frequently required in the psychology and with good reason. It helps the students know about the difference between an experiment and a correlational study, the function of independent and dependent variables, the importance of reliability and validity in psychological measurement, and the need for replication in psychological research. In other words, psychologists' research methods are at the very core of their discipline. The course is designed to train the students in psychological research and measurement.

Learning Objectives:

- To provide an overview of scientific approaches to psychological research in term of sampling techniques, scientific method, and experimental designs.
- To acquaint the students with respect to psychometric, projective techniques and non-testing approaches like interview
- .

Expected outcomes: Students will be able to

- Understand the nature of psychological research and characteristics of scientific methods of research.
- Know the methods of test construction and standardization
- Know the different approaches to assessment of personality.

UNIT-I: Psychological Research

(i) Assumptions of science, Characteristics of scientific methods, Psychological research: Correlational and experimental

(ii) Sampling frame: probability and non-probability samples, sample size, sampling error

UNIT- II: Psychological Scaling and Construction of test

(i) Purpose of scaling and types of psychological data, Psychological scaling methods: Familiarity with Thurstone, Likert and Guttman scale

(ii) Construction of test: Theory of measurement error; Operationalizing a concept, Generating items, Item analysis, Item response theory

UNIT –III:

(i) **Experimental Designs:** Pretest- post-test design, Factorial designs, Randomized Block design

(ii) **Standardization of tests:** Reliability and validity of tests, Development of norms and interpreting test scores

UNIT- IV:

(i) **Assessment of Personality:** Psychometric and projective techniques, Familiarity with MMPI, Rorachsch, WAT, and TAT

(ii) **Interviewing:** Principles and procedures of interviewing, gaining cooperation, motivating respondents, training of interviewers, ethics of interviewing

Practical:

(i) **TAT:** To administer the TAT on a subject and give summary report

(ii) **Word Association test:** To administer the Jung / Kent-Rosanoff list of WAT on a subject and report on his areas of emotional difficulties

Text Books:

- Anastasi, A. (1988). Psychological Testing. New York: MacMillan
- Minium, E.W., King, B.M. & Bear, G. (1993). Statistical Reasoning in Psychology and Education. New York: John Willey

Reference Books:

- Kerlinger, F.N. (1983). Foundations of Behavioral Research. New York: Surjeet Publications
- Best, W.J. & Kahn, J.V. (2006)- Research in Education. Pearson

Discipline Specific Elective Paper-II
PSYCHOLOGY AND SOCIAL ISSUES

Introduction: Psychologists can play a largerrole in the solution of important social problems. Psychology brings two important qualities to the study of social problems: attention to psychological process and rigorous methodology. The key task in the designed course is to define social problems in part as psychological problems.

Learning Objectives:

- The course will provide social psychological analysis of some major social issues in India.

Expected outcomes: Students will be able to

- Understand the nature and characteristics of different social systems and social integration in India.
- Understand the aspects of health and wellbeing of Indian people.
- Understand about the political behavior of Indian people

UNIT-I

(i) **Understanding Social Systems:** Indian Family System; Social stratification; caste, class, power, Religious ethics

(ii) **Poverty and Deprivation:** Theories of poverty, Concomitants of poverty, Sources of deprivation, inequality and social justice.

UNIT- II

(i) **Health and wellbeing:** Role of behavior in health problems, Behavioral sciences in disease prevention and control, India's health scenario

(ii) **Political Behavior:** Development of ideology, Use of small groups in politics, Issues of human and social development, Quality of life and development

UNIT –III: Antisocial Behavior

(i) Corruption and bribery, Juvenile delinquency, terrorism,
(ii) Crime and criminal behavior, Alcoholism and drug abuse, Psychopath

UNIT- IV

(i) **Social integration:** The concept of social integration; Causal factors of social conflicts and prejudices; Psychological strategies for handling the conflicts and prejudices; Measures to achieve social integration.

(ii) **Violence:** Nature and categories of violence, violence in family and marriage, rape, Collective violence for social change

Practical:

(i) **Quality of Life:** To assess the quality of life family of 4 families using Beach CenterFamily Quality of Life Scale

(ii) **Community Integration:** To assess the community integration of a village by using Community integration questionnaire (CIQ) of Barry Willer

Text Books:

- Srinivas, M.N. (1966). Social change in modern India, .Bombay: Allied
- Mohanty, A .K. and Mishra, G. (Eds.) (2000). Psychology of Poverty and Disadvantage. New Delhi: Concept
- Mishra, H.C. and Misra, S. (2009). Psychology of Deviants, DivyaPrakashani, Bhubaneswar

Reference Books:

- Banerjee, D. (1998). Poverty, class and health culture in India, Vol. I, Delhi PrachiPrakashan
- Dube, S.C. (1987) Modernization and Development. ND: Sage
- Mishra, G. (1999). Psychological perspectives on stress and Health. New Delhi: Concept
- Sen, A. &Sen A.K. (Eds.). (1998). Challenges of contemporary Realities: A psychological Perspective. New Delhi: New Age International

Discipline Specific Elective Paper-III PSYCHOLOGY OF DISABILITY

Introduction: According to WHO, disability is any restriction or lack resulting from an impairment of ability to perform an activity in the manner or within the range considered normal for a human being. While individuals may have physical or psychological impairments, it is often the society and environment that contributes to the experience of disability by failing to accommodate people with impairments. Inclusion and access is a fundamental human right and inclusive and accessible communities are vital for individual and community wellbeing. Study of psychology of disability would help the students understand this social responsibility.

Learning Objectives:

- The objective of the course is to provide students with an overview of the disability from the psychological perspective.

- Drawing from the four units, students will be exposed to varying disability definitions, cultural meanings and representations.
- What does it mean to be "disabled"? How has this meaning changed over time in India? What factors affect a person's experience of disability? Why should people in psychology learn about these matters?

Expected outcomes: Students will be able to

- Know about different types of disability and their prevalence in India.
- Understand various socio-cultural models of disability
- Gain knowledge about disability policies in India
- Understand about intervention and rehabilitation of disables in India

UNIT I

(i) Conceptualizing Disability: Meaning and Definition, Types of disability, Assessment and Diagnosis
(ii) Understanding Disability Policy in India: Equal opportunities Bill, Rehabilitation Council of India, National Trust

UNIT-II

(i) Theorizing Disability: Charity Model: Welfare Model; Medical Model
(ii) Social Model: culture as disability; Empowerment Model

UNIT- III

(i) Disability support: Beliefs and attitudes towards disability; Family, care, and support structure
(ii) Issues of Access: Built and Psychological; Education and Employment, learning disability

UNIT -IV

(i) Designing Interventions: Psychotherapeutic approaches; Rehabilitation
(ii) Contemporary Debates: euthanasia, prenatal selection

Practical:

(i) To assess the attitude of 8 college students by using 'Attitude towards Disabled Persons Scale" (Yuker et al., 1998).
(ii) To assess the knowledge of 4 college students about Disability Policy in India using a Questionnaire.

Text Books:

- Chib, M. (2011). One Little Finger. New Delhi: Sage Publications Pvt. Ltd.
- Dalal, A. K. (2011). Folk wisdom and traditional healing practices: Some lessons for modern psychology. In MatthijsCornelissen, GirishwarMisra, &SuneetVarma (eds) Foundations of Indian Psychology: Practical applications (Vol. 2) Longman, Pearson Education, New Delhi
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar

Reference Books:

- Ghai, A. (2015). Rethinking Disability in India. India: Routldge. Ghai, A. (2010). Psychology of Disabled in G.Misra (Ed.) Psychology in India: Advances in research. New Delhi: Pearson education. Ghai, A. (2006 [2003]) (Dis)Embodied Form: Issues of Disabled Women. New Delhi: Shakti Books.

- Goodley. D & Lawthom. R. (2006). Disability and Psychology: Critical Introductions and Reflections. Palgrave Macmillan.

Discipline Specific Elective Paper-IV
DISSERTATION / RESEARCH PROJECT

Introduction: The research experience of students is greatly enriched by early exposure to conducting research. There are numerous benefits of undergraduate students who get involved in research. They are better off in understanding published works, determine an area of interest, can discover their passion for research and may start their career as a researcher. Further, students will be able develop ability for scientific inquiry and critical thinking, ability in the knowledge base and communication of psychology. This course is included to promote above mentioned abilities among the students.

Learning Objectives:

- To help students to learn how to develop scientific research designs in the study of psychology.
- To guide students to understand the previous research in their field of interest and review them to arrive at a research problem
- To encourage the students to learn ways to describe and measure human behavior.
- To help students understand the logic of hypothesis testing and application of appropriate statistical analysis.
- To make students to learn the methods of writing a research report.

Expected outcomes: Students will be able to

- Independently prepare a research design to carry out a research project
- Review the related research papers to find out a research problem and relevant hypotheses
- Understand the administration, scoring and interpretation of the appropriate instrument for measurement of desired behavior
- Learn the use of statistical techniques for interpretation of data.
- Learn the APA style of reporting a research project.

Unit I

A student is required to carry out a project on an issue of interest to him / her under the guidance and supervision of a teacher. In order to do so s/he must have the knowledge in research methodology and of steps in planning and conducting a research. The supervisors may help the students to go on field study / study tour relevant to their work. Thirty hours of class may be arranged in the routine to help students understand research methodology, and planning, conduction and reporting on the research. An external examiner with the supervisor as theinternal examiner will evaluate the research project on the basis of scientific methodology in writing the report, and presentation skill and performance in the viva.

Format

- **Abstract –** 150 words including problem, method and results.
- **Introduction** – Theoretical considerations leading to the logic and rationale for the present research
- **Review**- Explaining current knowledge including substantive findings and theoretical and methodological contributions to the topic, objectives and hypotheses of the present research

- **Method** – Design, Sample, Measures, Procedure
- **Results**- Quantitative analysis of group data (Raw data should not be attached in Appendix) Graphical representation of data wherever required. Qualitative analysis wherever done should indicate the method of qualitative analysis.

➢ **Discussion**

➢ **References (APA Style) & Appendices**

- Project should be in Soft binding. It should be typed in Times New Roman 14 letter size with 1.5 spacing on one sides of the paper. Total text should not exceed 50 pages (References & Appendices extra).
- Two copies of the project should be submitted to the College.
- ***Project - American Psychological Association (APA) – Publication Manual 2006 to be followed for project writing***

Mark distribution for dissertation / Research project						
Identification of problem	**Review of Literature**	**Methodology**	**Analysis**	**Findings**	**Viva-voce**	**Total**
10	10	10	25	20	25	100

Or

DSE Paper-IV /Alternative to dissertation
PSYCHOLOGY OF CRIME

Introduction: This course provides an introduction to psychology of crime and criminal behavior. The topics covered in this paper include meaning, nature and theories of criminal behavior; crime prevention and control; and about the trauma of some victims of crime.

Learning Objectives:

- To provide students with an overall knowledge of psychology of crime.
- To help students understand the psychosocial perspectives of crime.
- To make students aware about the processes of crime prevention and control.
- To help students understand the trauma of victims of some types of crime.

Expected outcomes: Students will be able to

- Define criminal behavior and explain the psychosocial factors of crime and criminal behavior.
- Discuss the social and psychological theories of crime and criminal behavior.
- Describe how crimes are prevented and controlled by police and other agencies.
- Describe the behavior and mental health of the victims of crimes.

UNIT-I: Introduction to crime

(i) Definition, meaning, and nature of criminal behavior; Factors of criminal behavior: Antisocial values; Peer influence; Antisocial personality; Dysfunctional family; Substance abuse
(ii) Major types of crimes: Homicide; Robbery, Sexual offences; Cybercrimes.

UNIT- II: Theories of Criminal Behavior

(i) Social disorganization theory; Rational choice theory; Strain theory
(ii) Social learning theory; Social control theory, Labeling theory; Genetic theory

UNIT –III: Crime prevention and Control

(i) Crime prevention models: Primary prevention, Secondary prevention; Tertiary prevention
(ii) Crime control: Crime control model and Due process model

UNIT –IV: Special Victims

(i) Rape and sexual assault; Domestic violence; Bullying and school violence
(ii) Workplace violence, Victims of terrorism

Practical:

(i) **Guilt quotient:** Test your subject's Guilt Quotient Using Chattopadhyay's"What is your guilt quotient?" scale.
(ii) **Domestic Violence:** Using the "Domestic Violence Scale (Michale, 2008)" assess your subject's attitude towards domestic violence.

Text Books:

- Counseling Crime Victims: Practical Strategies for Mental Health Professionals; Laurence Miller, Springer Publishing Company, USA.
- Criminal Psychology; Nabin Kumar; LexisNexis, USA

Reference Books:

- Inside the Criminal Mind, S. E. Samenow; BDWY/ Newyork

Generic Elective Paper-I INTRODUCTORY PSYCHOLOGY

Introduction: The course is designed to provide the students a basic understanding of the psychology of human behavior. The students will be given exposure to concepts, terminology, principles, and theories that comprise an introductory course in psychology.

Learning Objectives:

To help the students know the sources and processes of development of modern scientific psychology.

- To help the students develop a scientific temperament in studying and understanding human behavior.

Expected outcomes: Students will be able to

- Define the term psychology and demonstrate command of the basic terminology, concepts, and principles of the discipline.
- Gain knowledge of scientific methodology–the variety of ways in which psychological data are gathered and evaluated / interpreted.
- Identify and compare the major perspectives in psychology: Recognize how each approach views human thought and behavior.
- Understand the physiological and biochemical links of human behavior.

UNIT-I: Introducing Psychology

(i) Concept and definition of psychology, Roots of psychology, Psychology as a scientific discipline.
(ii) Key Perspectives in Psychology- Behavioral, Cognitive, Humanistic, Psychodynamic, and Sociocultural

UNIT- II: Methods in Psychology

(i) Natural Observation, Survey and Case Study- Nature, advantages and limitations.
(ii) Experimental and Correlational methods-Nature, advantages and limitations.

UNIT –III: Biological Bases of Behavior

(i) Structure and functions of the neurons, Communication within and between neurons, Chemical regulation of the endocrine glands.
(ii) Structure and functions of the Central nervous system and Autonomic nervous system

UNIT-IV: States of Mind

(i) Nature of consciousness; changes in consciousness- sleep-wake schedules

(ii) Extended states of Consciousness- Hypnosis, Meditation and Hallucinations

Practical:

(i) R.L. by Method of Limits: Students are required to find out the R. L. of volar surface of the right arm of a subject by method of limits
(ii) D.L. by Method of Constant Stimuli: To find out the D.L. for lifted weight of your subject by method of constant stimuli.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi: Pearson Education.
- Hilgard& Atkinson- Introduction to Psychology (2003) 14th Edition, Thomson Learning Inc.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., & Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata-McGraw Hill.

Generic Elective Paper-II

BASIC DEVELOPMENTAL PROCESSES

Introduction: The course is designed to expose students to a basic understanding about the fundamental concerns of developmental psychology and provide examples of the following three dimensions of development: growth, differentiation, and orderly progression.

Learning Objectives:

- To help students gain some key ideas about human development and the perspectives to understand and explain such developments.
- To help the students understand the significance of prenatal period for human development.
- To help the students understand the developmental preparations of the childhood and the

implications of developmental milestones for the normal human development.

Expected outcomes: Students will be able to

- Understand the nature, types, and principle of development.
- Understand the processes of formation of life and development during pre- and post-natal periods.
- Understand about the different aspects of preparation for future life.

UNIT-I: Basics of development

(i) Meaning, nature, and types of development; Principles of development; Factors influencing development

(ii) Perspectives of development- Psychoanalytic; Mechanistic; Organismic; Humanistic

UNIT- II: Life in formation

(i) Fertilization, determination of sex, multiple birth; Prenatal development- germinal stage, embryonic stage, fetal stage; Factors influencing prenatal development

(ii) Physical and motor developments, Social and emotional developments during childhood.

UNIT –III: Life in preparation

(i) Physical and motor developments, Social and emotional developments during adolescence.

(ii)Piaget's stage of cognitive development; Kohlberg's stages of moral development

Unit- IV: Self and identity

(i) Emergence of self; Structure of the self; Development of personal identity

(ii) Development of self-control; Development of gender differences and gender roles

Practical:

(i) **Locus of Control:** To assess the Locus of Control of four college students by using Rotter's Locus of Control Scale.

(ii) **Emotional Intelligence:** To measure the emotional intelligence of four college students by using the Schutte's Emotional Intelligence Scale.

Text Books:

- Sigelman, G.K. & Schaffer, D.R. (1995). Life-span Human Development, Brooks / Cole Publishing Co. Pacific Grove, California.
- Berk, L. E. (2010). Child Development (8th Ed.). New Delhi: Prentice Hall.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Papalia, Diane E., Sally Wendos Olds (2006). Human Development. 9th Edition. New Delhi: Tata McGraw Hill
- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

Generic Elective Paper-III

BASIC PSYCHOLOGICAL PROCESSES

Introduction: The course is designed to provide the student a basic understanding of the psychological processes from sensation to thought and communication. The student will be given exposure to the concepts, terminology, principles, and theories relating to each of the mental

processes that constitute human psychology.

Learning Objectives:

- To help the students to understand the mental processes to begin with sensation and perception up to how it results in thoughts and communication.
- To help the students gather knowledge about the structural and functional dynamics of each of the mental processes and their interconnectedness.

Expected outcomes: Students will be able to

- Understand the basic sensory actions and the processes of integration of sensory actions in creating and interpreting perceptual events.
- Gain knowledge of the important processes and principles of human learning as well as the structural functional attributes of human memory to help conserve the learning outcomes.
- Understand the structural and functional properties of language and the way it helps thought, communication, problem solving and decision making through development of concepts, ideas, images, and so on.

UNIT-I: Sensation and Perception

(i) Basics of sensation- Sensory receptors (eye and ear), transduction, sensory thresholds, and sensory adaptation

(ii) Nature of perceptual process- Figure and ground, Grouping (Gestalt laws), Perceptual constancies, and illusions, Perception of distance and depth.

UNIT- II: Learning and Memory

(i) Nature and principles of Classical conditioning, Operant conditioning, and Observational learning

(ii) The Atkinson and Shiffrin Model of Memory; Types of Memory- episodic, semantic and procedural; Causes of Forgetting- interference, repression, and amnesia

UNIT –III: Language and Communication

(i) Properties and structure of language, Linguistic hierarchy, Language acquisition- predisposition, Nature of effective communication

(ii) Stages of language development; critical period controversy; speech error and its implications

UNIT –IV: Thinking and Reasoning

(i) Thinking process; concepts, categories and prototypes, Decision making and factors of influencing decision making.

(ii) Inductive and deductive reasoning; Problem solving approaches; Steps in problem solving

Practical:

(i) **Learning Curve:** To demonstrate the Learning Curve as a function of Learning trials using Non-sense Syllables.

(ii) **Serial Position Effect:** To demonstrate the serial position effect on memory in learning a list of nonsense syllables.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata Mc. Graw Hill.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.

Generic Elective Paper-IV
PROCESSES OF HUMAN EMPOWERMENT

Introduction: Human empowerment is ultimately an individual condition of gaining the power to control and modulate changes in one's own life those are considered important to one's identity and adjustment. The purpose of the course is to introduce to the students the basics of human empowerment and how the empowerment processes are strengthened and improved.

Learning Objectives:

- To help students gain ideas about intelligence and personality as foundations of human empowerment.
- To make students understand how motivation and emotion are empowering processes to human development.
- To help students gain insight into human behavior as products of empowerment.

Expected outcomes: Students will be able to

- Know the structural components and functional dynamics of both intelligence and personality.
- Understand the significance of emotion and motivation in behavior management.
- Understand significant aspects of social behavior as resulting in happiness, well-being and personal growth.

UNIT-I: Basics of empowerment

(i) Intelligence- Heredity, environment, and intelligence, Theories of Gardner, Stenberg, & PASS
(ii) Measuring Intelligence: intelligence tests; Interpretation of test score, Cross-cultural issues in testing intelligence

UNIT- II: Sources of Power (1)

(i) Personality- Freud's theory, and Social cognitive theory
(ii) Personality-Trait and type approach, Biological and sociocultural determinants, Psychometric and projective assessment.

UNIT- III: Sources of Power(2)

(i) Motivation-Drive theory, Arousal theory, Expectancy theory, Maslow's need hierarchy
(ii) Emotion-Theories of James-Lange, Cannon-Bard, &Schachter-Singer

UNIT –IV: **Proving empowered**

(i) Social behavior- Meaning of attribution and errors in attribution, Meaning of social cognition

and processing of social information
(ii) Positive Psychology-Scope and aims, Nature and characteristics of happiness, Subjective well-being and personal growth

Practical:

(i) **Intelligence test-** To test the non-verbal intelligence of Two college students using Raven's Standard Progressive Matrices
(ii) **Personality Type-** To assess the personality type of a student obtaining responses from the student and two other significant persons in his /her life by using Glazer's test of Personality Type

Text Books:

- Baron, R.A. (1995).Psychology- The Essential Science, Pearson Education Company of India Pvt. Ltd.
- Gerrig, R.J. &Zimbardo, P.G. (2010). Psychology and Life (19th Ed.). Delhi: Allyn & Bacon
- Snyder, C.R. & Shane, J.L. (2005) Handbook of Positive Psychology: Oxford University Press.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practical in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Baron, R. A. & Byrne, D. (2003). Social Psychology, 10th Edition, Prentice Hall
- Misra, G. (2009). Psychology in India, Vol 1: Basic Psychological Processes and Human Development. India: Pearson
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

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COURSESTRUCTUREFOR+3B.A.SANSKRIT(HONS.-CC,DSE&GENERICELECTIVE)

1st Year (08 Papers : 800 Marks)					
Sl. No.	**Semester – I**	**Marks-Credits**	**Sl. No.**	**Semester-II**	**Marks-Credits**
1	Core Course (SKT.)-1	(100 -6)	5	Core Course (SKT.)-3	(100-6)
2	Core Course (SKT.)-2	(100 -6)	6	Core Course (SKT.)-4	(100-6)
3	AECC-1Env. Studies	(100 -4)	7	AECC-2 M.I.L. (A.ENG/ ODIA/ SANS/ HINDI)	(100-4)
4	Generic Elective- 1 (If SKT.)	(100-6)	8	Generic Elective- 2 (If SKT.)	(100-6)
	(6+6+4+6 = 22 Credits)	**400 Marks**		**(6+6+4+6 = 22 Credits)**	**400 Marks**
2nd Year (10 Papers : 1000 Marks)					
Sl. No.	**Semester – III**	**Marks-Credits**	**Sl. No.**	**Semester-IV**	**Marks-Credits**
9	Core Course (SKT.)-5	(100 -6)	14	Core Course (SKT.)-8	(100-6)
10	Core Course (SKT.)-6	(100 -6)	15	Core Course (SKT.)-9	(100-6)
11	Core Course (SKT.)-7	(100 -6)	16	Core Course (SKT.)-10	(100-6)
12	SEC-1 Eng. Communicative	(100-4)	17	SEC-2 Office Management	(100-4)
13	Generic Elective- 3 (If SKT.)	(100-6)	18	Generic Elective- 4 (If SKT.)	(100-6)
	(6+6+6+6+4+6 = 28 Credits)	**500 Marks**		**(6+6+6+6+4+6 = 28 Credits)**	**500 Marks**
3rd Year (8 Papers : 800 Marks)					
Sl. No.	**Semester – V**	**Marks-Credits**	**Sl. No.**	**Semester-VI**	**Marks-Credits**
19	Core Course (SKT.)-11	(100 -6)	23	Core Course (SKT.)-13	(100-6)
20	Core Course (SKT.)-12	(100 -6)	24	Core Course (SKT.)-14	(100-6)
21	DSE (SKT) – 1	(100 -6)	25	DSE (SKT) – 3	(100-6)
22	DSE (SKT) – 2	(100-6)	26	DSE (SKT) – 4 (Project)	(100-6)
	(6+6+6+6 = 24 Credits)	**400 Marks**		**(6+6+6+6 = 24 Credits)**	**400 Marks**

Grand Total: 26 Papers
Grand Total Credits:148(22+22+28+28+24+24)
Grand Total Marks: 2600 (400+400+500+500+400+400)
CC= Core Course-1400
DSE= Discipline Specific Elective-400
GE= Generic Elective- 400
SEC= Skill Enhancement Course- 200
AECC= Ability Enhancement Compulsory Course- 200

ABBREVIATION: 1. CC= Core Course, 2. **DSE**= Discipline Specific Elective, 3. **GE**= Generic Elective, 4. **SEC**= Skill Enhancement Course, 5. **AECC**= Ability Enhancement Compulsory Course

NAME OF THE PAPERS AND ABBREVIATIONS AT A GLANCE

1st YEAR

SEMESTER-I

1. CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT -[MTBS]
2. CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE -I -[D-1& HSL-1]
3. AECC-1 ENVIORNMENTAL SCIENCE -[ENVSC]
4. GE-1 KHANDAKAVYA & DARSANAKAVYA -[KK & DK]

SEMESTER-II

5. CC-3 DRAMA -II & DRAMATURGY -[D-2 & DT]
6. CC-4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR& PROSODY -[TPGM]
7. AECC-2 M.I.L.
8. GE – 2 MORAL TEACHINGS AND BASICS OF SANSKRIT -[MTBS]

2nd YEAR

SEMESTER-III

9. CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II -[PT & HSL-2]
10. CC-6 META-RULES OF PANINIAN GRAMMAR, POETICS AND FIGURES OF SPEECH -[PG-2 & SD]
11. CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION- I -[PG-3 & TR-1]
12. SEC-1 COMMUNICATIVE ENGLISH -[COMLIS]
13. GE-3 TECHNICAL LITERATURE IN SANSKRIT -[TELISA]

SEMESTER-IV

14. CC-8 UPANISAD, RAMAYANA & BHAGAVADGITA -[UP, RM & BG]
15. CC-9 CASE AND CASE ENDINGS OF PANINIAN GRAMMAR, TRANSLATION- II & LEXICON -[PG-4, TR-2 & LX]
16. CC-10 ORNATE PROSE IN CLASSICAL SANSKRIT -[OPRCS]
17. SEC-2 MODERN OFFICE MANAGEMENT -[MOFM]
18. GE-4 ETHICAL LITERATURE IN SANSKRIT -[ETLS]

3rd YEAR

SEMESTER-V

19. CC-11 ORNATE POETRY IN SANSKRIT -[OPS]
20. CC-12 VEDA, VEDIC GRAMMAR &HISTORY OF VEDIC LITERATURE -[VDGRL]
21. DSE-1 SOCIO – POLITICAL THOUGHT IN ANCIENT INDIA -[SPTIN]
22. DSE-2 ETHICAL LITERATURE IN SANSKRIT -[ETLS]

SEMESTER-VI

23. CC-13 AYURVEDA & VRKSAYURVEDA -[ARV & VRV]
24. CC-14 TECHNICAL LITERATURE IN SANSKRIT -[TELISA]
25. DSE-3 TRANSLATION, EDITING AND WRITING SKILL -[TEWS]
26. DSE-4 (PROJECT PREPARATION AND PRESENTATION) -[PROJECT]

1st YEAR

SEMESTER-I

CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT [Term end: 80 +

Midterm 20 = 100 marks] **Marks**

1. *Hitopadesa* 32
2. *Yaksaprasna of Mahabharata (Aranyakaparva, ch.313)* 32
3. *Sabdarupa &Dhaturupa* 16

CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE -I [Term end : 80 + Midterm20= 100 marks]

1. *Abhijnanasakuntalam* (Act I-IV) 40
2. *History of Sanskrit Literature*-I 40

(*Ramayana*, *Mahabharata*, General out lines of *Puranas*, *Mahakavya* & Sanskrit Drama)

SEMESTER-II

CC-3 DRAMA -II & DRAMATURGY [Term end: 80 + Midterm 20= 100 marks]

1.*Abhijnanasakuntalam* (Act V-VII) 40
2. *Dramaturgy* 40

CC-4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR & PROSODY [Term end: 80 + Midterm 20= 100 marks]

1. *Vocabulary Relevant to Sanskrit Grammar and Arrangement of Paninian Grammar* 20
2. *Samjnaprakaranam* 40
3. *Chandas* 20

2nd YEAR

SEMESTER-III

CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II [Term end: 80 + Midterm 20= 100 marks]

1. *Meghadutam-* (*Purvamegha*) 40
2. *History of Sanskrit Literature-II* 40

(Gitikavyas/Khandakavyas,Campu, Gadyakavyas, Kathasahitya)

CC-6 META-RULES OF PANINIAN GRAMMAR, POETICS AND FIGURES OF SPEECH [Term end: 80 + Midterm 20= 100 marks]

1. *Paribhasa Prakaranam* 40
2. *Sahityadarpanah(Ch. I & II)* 40
3. *Sahityadarpanah (Alamkaras)* 20

CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION-
I [Term end: 80 + Midterm 20= 100 marks]

1. *Siddhantakaumudi*(*Karaka- Vibhakti* I-IV) 60
2. *Translation from Sanskrit- Odia/ Eng* 20

SEMESTER-IV

CC-8 *UPANISAD, RAMAYANA* & *BHAGAVADGITA* [Term end: 80 + Midterm 20= 100 marks]

Marks

1. *Kathopanisad (Adhyaya-I, Vallis-I,II&III)* 40
2. *Ramayana (Ch.IX of Aranyakand, Ahimsa Prasamsa)* 20
3. *Bhagavatagita(Ch.XV)* 20

CC-9 CASE AND CASE ENDINGS OF PANINIAN GRAMMAR, TRANSLATION- II & LEXICON [Term end: 80 + Midterm 20= 100 marks]

1. *Siddhantakaumudi*(*Karaka- Vibhakti* V-VII) 40
2. *Translation from Odia/ Eng passage-Sanskrit* 20
3. *Amarakosa* 20

CC-10 ORNATE PROSE IN CLASSICAL SANSKRIT [Term end: 80 + Midterm 20= 100 marks]

1. *Inscrption* 20
2. *Dasakumaracharitam* (*Purvapithika Dvitiya Ucchvasa*) 20
3. *Sukanasopadesa* 40

.

3rd YEAR

SEMESTER-V

CC-11 ORNATE POETRY IN CLASSICAL SANSKRIT [Term end: 80 + Midterm 20= 100 marks]

1. *Sisupalabadham*(Canto-I Verses 01-48) 40
2. *Kiratarjuniyam* (Canto-I) 40

CC-12 VEDA,VEDIC GRAMMAR &HISTORY OF VEDIC LITERATURE [Term end: 80 + Midterm 20= 100 marks]

1. *Vedic Suktas* 40
2. *Vedic Grammar* 20
3. *History of Vedic Literature* 20

SEMESTER-VI

CC-13 AYURVEDA AND VRKSAYURVEDA [Term end: 80 + Midterm 20= 100 marks]

1. *Ayurveda (Carakasamhita- Sutrasthana, dhirgham jivitiyadhyaya)* 60
2. *Vrksayurveda* (*Vrksayurvedadhyaya of Brhatsamhita*) 20

CC-14 TECHNICAL LITERATURE IN SANSKRIT [Term end: 80 + Midterm 20=100 marks] (JYOYISA & VASTU)

1.*Jyotisha* (*Jyotihsara-ratnavali* Chap- I) 40
(Grahanaksatraparicayaprakaranam)
2.*Vastu* (*Vasturatnakara* Chap-I) 40
(Bhuparigrahaprakaranam)

GENERIC ELECTIVE (GE)

04 Papers in Generic Elective such as 1, 2, 3 & 4
(One examinee may choose SANSKRIT as GE- A or GE-B)

GE- 1 KHANDAKAVYA & DARSANA -KAVYA ***80+20 = 100 Marks***

1. *Meghadutam-* (*Purvamegha*) 60
2. *Bhagavatagita(Ch.XV)* 20

GE-2 MORAL TEACHING AND BASICS OF SANSKRIT 80+20 = 100 Marks

1. *Hitopadesa* 32
2. *Yaksaprasna of Mahabharata (Aranyakaparva, ch.313)* 32
3. *Sabdarupa &Dhaturupa* 16

GE-3 TECHNICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks
(JYOYISA & VASTU)

1. *Jyotisa* (*Jyotihsara-ratnavali* Chap- I) 40
(Grahanaksatraparicayaprakaranam)
2. *Vastu* (*Vasturatnakara* Chap-I)40
40
(Bhuparigrahaprakaranam)

GE-4 ETHICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks

1. *Cāṇakyanīti (*Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. *Nītiśataka* of Bhartrhari (Verses 1-50) 40 marks

DISCIPLINE SPECIFIC ELECTIVE (DSE)

SEMESTER-VI

Total 04 Papers DSE- 1, 2, 3 & 4 (Paper 4 is meant for Project Preparation & Presentation)

DSE- 1

SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA 80+20 = 100 Marks

1. ***Arthasastra (Adhikarana* I.1- 4) 40 Marks**
2. ***Dharmasastra* 40 Marks**

Yājñavalkyasmṛti (*Vyavahārādhyāya* verses 1-65)

DSE-2

ETHICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks

1. ***Cāṇakyanīti (***Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. ***Nītiśataka* of Bhartrhari** (Verses 1-50) 40 marks

DSE-3

TRANSLATION, EDITING AND WRITING SKILL **80+20 = 100 Marks**

1. Anuvada Kala-	**20**
2. Precises Writing-	**20**
3. Proof Correction and Transliteretion	**20**
4. Essay	**20**

DSE – 4 INDIAN PHILOSOPHY : GENERAL IDEAS

1. Astika	**60 Marks**
2. Nastika	**20 Marks**

OR

DSE-04 PREPARATION AND PRESENTATION OF PROJECT ***80+20 = 100 Marks***

Project- 80 Marks

Presentation- 20 Marks

(The Project work should be done preferably on Creative writings and Translation wroks of Sanskrit Language.)

+3 M.I.L.(Sanskrit) Paper-1

(For Hons. Students as AECC-2 if Sanskrit M.I.L.-1) Full Marks- 80 + 20 = 100Marks

1. SANSKRIT PROSE	***40 Marks***
2. SANSKRIT POETRY	**40 Marks**

SYLLABUS IN DETAIL

1st YEAR
SEMESTER-I

CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT 80+20 = 100 Marks

1.	***Hitopodeśa Mitralabha* (*Prastavana, Kathāmukha, Brddhavyaghrapathiakakatha, Mrgajambukakatha & Gṛdhravidalakatha*)**	32 Marks
2.	***Yaksaprasna of Mahabharata(Aranyakaparva, ch.313*** *from Verses no. 41 to 133)*	32 Marks

Long Questions -1 (About 300 words) 16 Marks

3. ***Śabdarupa* & *Dhaturupa*** ('a' *karanta*, 'i' *karanta*, 'ī'*karanta*, 'u'*karanta*, 'ū' *karanta*, 'in' *bhaganta*, *Mātṛ*, *Pitṛ*, *Asmad*, *Yusmad*, *Tad* (**Sabdarupas**).

16 Marks

Lat, *Laṅ*, *Vidhiliṅ*, *Lṛt*, *Lot* and *Litlakaras* path, *Ni*, *Kṛ*, *Sev*, *Han*, *Pā*, *Dā*, *Śru*, *Śī* and *Krīṇ* in the form of *Ātmanepada*, *Parasmaipada* or *Ubhayapada* whichever is applicable. **(*Dhaturupas*)**

Unit-I & II *Hitopodeśa Mitralabha and Sabdarupa* **40 Marks**

Long Questions -1 (About 300 words)

16 Marks

Short Questions -2 (About 50 words each) 5×2=10 Marks

Translation of a textual verse 6 Marks
Sabdarupa – 4 2 x 4 = 8 Marks

Unit-III & IV *Yaksaprasna* of *Mahabharata and Dhaturupa* **40 Marks**

Long Questions-1 (About 300 words) 16 Marks

Explanation - 1(About 150 words) 10 Marks

Translation of a textual verse 6 Marks
Dhaturupa – 4 2 x 4 = 8 Marks

Core Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) Kapildev Giri, Chaukhamba Publications, Varanasi.
2. *Mahabharata*, Gitapress, Gorakhpur (Prescribed Text)
3. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation andProduction, Bhubaneswar, 2013

Suggested Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) N.P. Dash and N.S. Mishra, Kalyani Publishers,New Delhi
2. *Hitopadesah* (*Mitralabhah*) (Ed.) B.S. Mishra, Vidyapuri, Cuttack
3. *Yaksaprasna, T. K. Ramaayiyar, R. S. Vadhyar & Sons. Palkad, Kerala*
4. *Yaksaprasna, Ed. Dr. Nirmal Sundar Mishra, A.K. Mishra Agency, Cuttack, 2016*

CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE – I 80+20 = 100 Marks

1. *Abhijnanasakuntalam* (Act I-IV) **40 Marks**

2. History of Sanskrit Literature-I **40 Marks**

(*Ramayana*, *Mahabharata,* General out lines of *Puranas, Mahakavyas* and Sanskrit Dramas)

1. *Abhijnanasakuntalam* (Act I-IV) **40 Marks**

Unit-I & II Long Question -1(About 300 words) 12 Marks
Short Questions -2 (About 50 words each) 5×2=10 Marks
Translation of Texual Verse- 1 06 Marks
Textual Grammar 12 Marks
i) *Sandhi- (4)* 1×4= 4 Marks

ii) *Karaka&Vibhakti-(2)* 2×2= 4 Marks
iv) *Samasa-(2)* 2×2= 4 Marks

2. History of Sanskrit Literature-I **40 Marks**

Unit- III *Ramayana & Mahabharata,General out lines of Puranas (Defination & Number)*
Long Question -1(About 150 words) 12 Marks
Short Questions -2(About 50 words each) 4x2= 08 Marks

Unit- IV (General Outlines of *Mahakavyas with special refence to Ashvaghosa, Kalidasa, Bharavi, Magha* and Sriharsa and Sanskrit Dramas *with special refence to* Bhasa, Kalidasa, Sudraka, Visakhadatta, *Ashvaghosa*, Bhattanarayana)

Long Questions -1(About 150words)	12 Marks
Short Questions -2(About 50 words each)	4x2= 08 Marks

Core Readings :

1. Abhijnanasakuntalam (Ed.) M.R. Kale,Motilal Banarsidass Publishers Pvt. Ltd., NewDelhi-11007, 8th Reprint-2010

2. History of Sanskrit literature, Baladev Upadhyay, Chaukhamba Publications, Varanasi.

Suggested Readings :

1. Abhijnanasakuntalam (Ed.) R.M. Bose, Modern Book Agency Pvt. Ltd., 10 BankimChatterjee Street, Calcutta

2. Abhijnanasakuntalam (Ed.) R.M.Mohapatra, Books &Books , Cuttack

3.Abhijnanasakuntalam (Ed.) H.K. Satapathy, Kitab Mahal, Cuttack

4. Sanskrit Drama, A.B.Keith , Oxford University Press, London

5. Samskrta Sahiytara Itihasa, (Odia) H.K. Satapathy, Kitab Mahal, Cuttack- 753003.

GENERIC ELECTIVE -1

KHANDAKAVYA & DARSANAKAVYA **80 +20 = 100 Marks**

1. *Meghadutam*(Purvamegha) **60 Marks**

2. Gita (Chapter.XV) **20 Marks**

1. *Meghadutam*- (*Purvamegha*) **60 Marks**

Unit-I	Long Question – 2 (About 150 words each)	12 x 2= 24 Marks
Unit- II	Short Questions - 4(About 50 words each)	5 x 4 = 20Marks
Unit-III	i) Explanation of One Verse (About 150 words)	10 Marks
	ii) Translation of One Verse into Odia/ English	06 marks

***2.Bhagavadgita* (Chap.XV)** **20 Marks**

Unit-IV	Long Question - 1(About 150 words)	12Marks
	Explanation of One Verse (About 150 words)	08 Marks

Core Reading:

1. *Meghadutam* (Ed.) M.R. Kale, Motilal Banarsidass, Delhi
2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

Suggested Reading:

1. *Meghadutam* (Ed.) B.S. Mishra, Vidyapuri, Cuttack, 1st Edn-1999
2. *Meghadutam* (Ed.) Radhamohan Mahapatra, Books and Books, Vinodvihari, Cuttack, 1984
3. *Shrimad-bhagavad-gita* (Ed.) S. Radhakrishnan, Bharatiya Vidya Bhavan
4. *Shrimad-bhagavad-gita* (Ed.) Gambhirananda, Ramakrishna Mission

SEMESTER-II

CC - 3 DRAMA - II & DRAMATURGY **80+20 = 100 Marks**

1.*Abhijnanasakuntalam* (Acts V-VII) **40 Marks**

2. *Dramaturgy* **40 Marks**

(*Nandi,Prastavana, Purvaranga, Panca-arthaprakṛti*, *Pancasandhi*, Panca-*arthopaksepaka, Nataka,Prakarana from sahityadarpana*)

***1. Abhijnanasakuntalam* (Acts V-VII)** **40 Marks**

Unit-I & II Long Question -1(About 300 words) 12 Marks

Short Questions -2 (About 50 words) 5×2= 10 Marks

Explanation of textual verse- 1(About 150 words) 8 Marks

Translation from Sanskrit to Odia/ English-1 verse 5 Marks

Translation from Prakit to Sanskrit-1 5 Marks

2. *Dramaturgy* (*Sahityadarpana*,Chapter- VI) **40 Marks**

Unit-III

Nandi, Prastavana, Purvaranga, Nataka, Prakarana

Short Notes on any four 5× 4= 20 Marks

Unit-IV

Pancasandhi , *Panca - arthaprakṛti* and *Panca-arthopaksepaka*

Short Notes on any four 5× 4= 20 Marks

Core Readings :

1. Abhijnanasakuntalam (Ed.) M.R. Kale,Motilal Banarsidass Publishers Pvt. Ltd., NewDelhi-11007, 8th Reprint-2010

2. Sahitya Darpana with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.

Suggested Readings :

1. *Abhijnanasakuntalam* (Ed.) H.K. Satapathy, Kitab Mahal, Cuttack
2. *Sahitya Darpana* (Ed.) P.V.Kane, Motilal Banarsidass Publishers Pvt. Ltd., New Delhi
3. *Odia Translation* of Sahityadarpana by Narayana Mohapatra, Odisha Sahitya Academy,Bhubaneswar.
4. *Sahityadarpana* evam Chanda (Ed.) Dr. Braja Sundar Mishra, Satyanarayan Book Store,Cuttack
5. *Sahityadarpana o Chanda* (Ed.) Niranjan Pati, Vidyapuri, Cuttack

CC- 4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR & PROSODY ***80+20 = 100 Marks***

1. ***Vocabulary relevant to Sanskrit Grammar and Arrangement of Paninian Grammar*** **20 Marks**
2. ***Samjna-prakaranam from Vaiyakarana Siddhanta Kaumudi*** **40 Marks**
3. ***Chanda from Srutabodha*** **20 Marks**

1. Vocabulary relevant to Sanskrit Grammar and Arrangement of Paninian Grammar

Unit- I **20 Marks**

(*Sutra, Vartika, Bhasya, Astadhyayi, Siddhantakaumudi, Dhatupatha, sthani, Agama, Adesa, Nadi, Nistha,Krdanta, Taddhita,Tinanta,Nijanta,Sananta, Yananta, Namadhatu, Vikarana, Luk, Lopa, Sarvadhatuka, Ardhadhatuka, ti & Upadha* = 26)

Short Notes on any - 4 5×4= 20 Marks

2. *Samjnaprakaranam* **40 Marks**

Unit- II From beginning upto **najjhalau**
four questions to be answered 5×4=20 Marks

Unit- III Rest of the Sutras 5x4 = 20
four questions to be answered Marks

3. *Chanda* (Prosody)- *Srutabodhah* **20 Marks**

(Chandas such as *-: Arya, Anustubh, Indravajra, Upendravajra,* Upajati, *Vamsastha, Vasantatilaka, Mandakranta, Malini, Shikharini, Shardula-vikridita, Sragdhara*.)

Unit- IV Definition and Examples of 4 Chandas - out of 7 asked (The students are advised to compose slokas in seminar period) 5×4= 20 Marks

Core Readings :

1. *Siddhanta-kaumudi* with *Balamanorama* and *Tattvabodhini*, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. Vyakaranadarpana, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar- 2013
3. Shrutabodha, Hari Prasad Sharma, Nirnaya Sagar Press. Bombay

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K.Mishra Publishers Pvt. Ltd, Cuttack.
2. Siddhanta-kaumudi (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. Siddhanta-kaumudi (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi
4. Siddhanta-kaumudi (Ed.) P.R.Ray, Sailabala Womens College,(Skt.Deptt.) Cuttack.
5. Sahityadarpana Evam Chhanda (Ed.) Dr. Brajasundar Mishra, Satyanarayana Book Store, Cuttack**.**

GENERIC ELECTIVE -2

MORAL TEACHINGS AND BASICS OF SANSKRIT **80+20 = 100 Marks**

1. ***Hitopodeśa Mitralabha* (*Prastavana, Kathāmukha, Brddhavyaghrapathiakakatha, Mrgajambukakatha & Gṛdhravidalakatha*)** **32 Marks**
2. ***Yaksaprasna of Mahabharata(Aranyakaparva, ch.313***

from Verses no. 41 to 133) **32 Marks**

3. *Śabdarupa* & *Dhaturupa* **16 Marks**

('a' *karanta*, 'i' *karanta*, 'ī' *karanta*, 'u' *karanta*, 'ū' *karanta*, 'in' *bhaganta*, *Māṭṛ*, *Piṭṛ*, *Asmad*, *Yusmad*, *Tad* **(*Sabdarupas*).**

Lat, *Laṅ*, *Vidhiliṅ*, *Lṛt*, *Lot* and *Litlakaras* in the form of *Ātmanepada*, *Parasmaipada* or *Ubhayapada* whichever is applicable. (*Dhaturupas*) *path*, *Ni*, *Kṛ*, *Sev*, *Han*, *Pā*, *Dā*, *Śru*, *Śī* and *Kṛ*,

Unit-I & II *Hitopodeśa Mitralabha and Sabdarupa* **40 Marks**

Long Question -1 (About 300 words)	16 Marks
Short Questions -2 (About 50 words each)	5×2=10 Marks
Translation of a textual verse	6 Marks
Sabdarupa – 4	2 x 4 = 8 Marks

Unit-III & IV *Yaksaprasna* of *Mahabharata and Dhaturupa* **40 Marks**

Long Question-1 (About 300 words)	16 Marks
Explanation - 1(About 150 words)	10 Marks
Translation of a textual verse	6 Marks
Dhaturupa – 4	2 x 4 = 8 Marks

Core Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) Kapildev Giri, Chaukhamba Publications, Varanasi.
2. *Mahabharata*, Gitapress, Gorakhpur (Prescribed Text)
3. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation andProduction, Bhubaneswar, 2013

Suggested Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) N.P. Dash and N.S. Mishra, Kalyani Publishers,New Delhi
2. *Hitopadesah* (*Mitralabhah*) (Ed.) B.S. Mishra, Vidyapuri, Cuttack
3. *Yaksaprasna, T. K. Ramaayiyar, R. S. Vadhyar & Sons. Palkad, Kerala*
4. *Yaksaprasna, Ed. Dr. Nirmal Sundar Mishra, A.K. Mishra Agency, Cuttack, 2016*

2nd Year

SEMESTER-III

CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II ***80+20 = 100 Marks***

1. Meghadutam- (Purvamegha) ***40 Marks***
2. History of Sanskrit Literature-II ***40 Marks***
(Gitikavyas / Khandakavyas, Campu, Gadyakavyas and Kathasahitya)

1. Meghadutam- (Purvamegha) ***40 Marks***

Unit-I & II	*Long Question - 1(About 300 words)*	*12 Marks*
	Short Questions – 3 (About 50 words each)	*4×3= 12 Marks*
	i) Explanation of One Verse (About 150 words)	*10 Marks*
	ii) Translation of One Verse into Odia/ Sanskrit	*06 Marks*

2. History of Sanskrit Literature-II ***40 Marks***

Unit-III	*Gitikavyas / Khandakavya(Kalidas, Bhatrhari & Jayadev)*	
	Long Questions -1(About 300 words)	*12 Marks*
	Short Questions -2 (About 50 words each)	*4x2= 08 Marks*
Unit- IV	*Campu (Ramayana campu, Bharata campu, Nala campu & Nilakantha campu)* *Gadyakavyas (Suvandhu, Banabhatta & Dandi)* *Kathasahitya (Gunadhya, Somadeva, Visnusarma & Pandita Narayana)*	
	Long Question -1 (About 150 words)	*12 Marks*
	Short Questions -2 (About 50 words each)	*4x2= 08 Marks*

Core Readings :

1. *Meghadutam* (Ed.) M.R. Kale, Motilal Banarsidass, Delhi
2. *Samskrta Sahitya ka Itihasa*, Baladeva Upadhyaya, Choukhamba, Varanasi.

Suggested Readings:

1. *Meghadutam* (Ed.) Dr. Braja Sundar Mishra, Vidyapuri, Cuttack, 1st Edn-1999

2. *Meghadutam* (Ed.) Radhamohan Mahapatra, Books and Books, Vinodvihari, Cuttack,1984

3. *Samskrta Sahitya ka Ruparekha*, Vacaspati Goreilla, Choukhamba Vidyabhavan, Varanasi.

4. *Samskrta Sahityara Itihasa*, H.K. Satapathy, Kitab Mahal, Cuttack
5. Samskrta Sahitya Itihasa, Text Book Bureau, Govt. of Odisha, Bhubaneswar

CC-6 META - RULES OF PANINIAN GRAMMAR, POETICS & FIGURES OF SPEECH **80+20 = 100 Marks**

1. *Paribhasaprakaranam* of *Vaiyakarana Siddhantakaumudi* **20 Marks**
2. *Sahityadarpanah (Ch.I & II)* **40 Marks**
3.*Sahityadarpanah* (Selected *Alamkaras* from *Ch.X*) **20 Marks**

1. Paribhasaprakaranam **20 Marks**
Unit- I Four *Sutras* to be explained. 5×4= 20 Marks

2. Poetics **40 Marks**

Unit- II *Sahityadarpana Ch. I (Kavya laksana, Kavya prayojana, Kavya hetu, Kavya bheda)*
Long Question -1 (About 300 words) 12 Marks
Short Notes – 2 (About 50 words each) 4x2 = 8 Marks

Unit- III *Sahityadarpana Ch. II* (*Vakya*, *Pada*, *Abhidha*, *Laksana*, *Vyanjana*)

Long Question -1(About 300 words) 12 Marks
Short Questions -2 (About 50 words each) 4x2= 8 Marks

3. **Figures of speech** (without Sub-division) **20 Marks**
Sahityadarpana(Ch.X)

(*Alamkaras* such as-
Anuprasa,*Yamaka*,*Slesa*,*Upama*,*Rupaka*,*Utpreksa*,*Bhrantiman, Nidarsana, Arthantaranyasa, Aprastuta-prasamsa, Apahnuti, Vyatireka, Vibhavana, Visesokti, Samasokti, Svabhavokti*)

Unit- IV 5×4= 20 Marks
Definition and Examples of **Four***Alamkaras* (figures of speech) out of **seven** asked.

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass, Delhi
2. *Sahitya Darpana* with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.

Suggested Readings:

1. Siddhanta-kaumudi (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Sahitya Darpana* (Ed.) P.V.Kane, Motilal Banarsidass Publishers Pvt. Ltd., New Delhi
3. *Odia Translation* of Sahityadarpana by Narayana Mohapatra, Odisha Sahitya Academy, Bhubaneswar.
4. *Sahitya Darpana* with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.
5. *Sahityadarpana* evam Chanda (Ed.) Dr. Braja Sundar Mishra, Satyanarayan Book Store,Cuttack.
6. *Sahityadarpan, Dr. Niranjan Pati, Kalyani Publishers, Ludhiana*.

CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION – I

80+20 = 100 Marks

1. *Vaiyakarana Siddhantakaumudi*(*Karaka-Vibhakti* I-IV) 60 Marks
2. Translation from Sanskrit unseen passage to Odia/ English 20 Marks

1. *Siddhantakaumudi(Karaka-Vibhakti I-IV)* 60 Marks

Unit- I (*Prathama&Dvitiya*)
Two *Sutras/ Vrtti/ Vartika* to be explained. 10×2= 20 Marks

Unit- II (*Trtiya*)
Two *Sutras/ Vrtti/ Vartika* to be explained 10×2= 20 Marks

Unit- III (*Caturthi*)
Two *Sutras/ Vrtti/ Vartika* to be explained. 10×2= 20 Marks

Unit -V *Translation from Sanskrit unseen passage into Odia/ English* *20 Marks*

One unseen Sanskrit Passage is to be given for Translation into Odia/ English
(At least 08 sentences) 2.5 x 8 = 20 Marks

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation and Production,Bhubaneswar- 2013

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Siddhanta-kaumudi* (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. *Siddhanta-kaumudi* (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi
4. *A Guide to Sanskrit Composition and Translation*, M.R.Kale,Motilal Banarsidass, NewDelhi
5. *Brhat Anuvada Candrika*, Chakradhara Hamsa Nautial Shastri, Motilal Banarsidass, New Delhi

GENERIC ELECTIVE -3

TECHNICAL LITERATURE IN SANSKRIT (JYOTISA & VASTU) 80+20 = 100 Marks

1. *Jyotisa* (*Jyotihsara-ratnavali*, Chap I) 40 Marks
(*Graha-naksatra-paricaya-prakaranam*)
2. Vastu (*Vasturatnakara,* Chap-I) 40 Marks
(*Bhuparigraha-prakaranam*)

1. *Jyotisa* 40 Marks

Unit-I & II

Long Question -2 (About 150 words each) 12 x 2 = 24Marks
Short Questions - 4 (About 50 words each) 4x4 = 16 Marks

2. *Vastu* 40 Marks

Unit-III & IV

Long Question -2 (About 150 words each) 12x2=24Marks

Short Questions - 4 (About 50 words each) 4x4 = 16 Marks

Core Readings :

1. *Jyotihsara-ratnavali*(Part-I) (Ed.) Pandit Baikoli Mahapatra, Radhakrishna Pustakalaya, Satyanarayan Temple Road, Berhampur,Ganjam,Odisha
2. *Vasturatnakar* (Ed.) Vindhyeshwari Prasad Dwivedi, Chowkhamba Krishnadas Academy, Varanasi

Suggested Readings:

1. Grahanaksatra paricaya prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.

2. Bhuparagraha – prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.

3. Jyotisavisvakosa, Haridutta Sharma, Subodh Publication, New Delhi

4. Vaidika jyotisa, Dr.G.S.Shastri, Chaukhamba Samskriti bhabana, Varanasi

5. Bharatiya jyotisa, Dr.Nemichandra Shastri, Bharatiya Jnanapitha,New Delhi-110003

6. Jyotisa- tattvanka, Gitapress, Gorakhpur (2014)

7. RajaballavamVastusatram, Ed. Dr Srhrikrishna Jugnu, Parimal Publication, Delhi, 2005

8. Vastu, Astrology & Architecture, (Copmilation of Research Paper of ANational Conference on Vastu & Jyotisa), Ed.by Gayatri Dev Vasudev, MLBD,New Delhi,(4th reprint-2015)

CC-8 UPANISAD, RAMAYANA & BHAGAVADGITA 80 +20 = 100 Marks

1. ***Kathopanisad*** **(Vallis-I,II&III)** **40Marks**
2. ***Ramayana (Ch.IX of Aranyakanda, Ahimsa prasamsa*** **20Marks**
3. ***Bhagavadgita*** **(Chap.XV)** **20 Marks**

1. *Kathopanisad* (Adhyaya I, Vallis-I, II & III) **40 Marks**

Unit- I & II Long Questions -2 (About 150 words each) 12x2=24 Marks

i) Explanation - 1 Mantra (About 150 words) 10 Marks
ii) Translation- 1 06 Marks

2. Ramayana (Ch. IX of Aranyakanda, Ahimsa prasamsa) **20 Marks**

Unit- III Long Question-1(About 150 words) 12 Marks

Two short questions (About 50 words each) 4x2 = 08 Marks

Unit-IV Bhagavadgita **(Chap.XV)** **20 Marks**

Long Question-1(About 150 words) 12 Marks

Explanation - 1 Mantra (About 150 words) 08 Marks

2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

3. *Srimad Valimkiya Ramayanam,*Gita Press, Gorakhpur (Prescribed Text)

Core Readings :

1. *Kathopanisad* with *Sankarabhasya* (Ed.) V.K. Sharma, Sahitya Bhandar, Subhas Bazar, Meerut

2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

3. *Srimad Valimkiya Ramayanam,* Gita Press, Gorakhpur (Prescribed Text)

Suggested Readings:

1. *Kathopanisad with* Sankarabhasya, Ed. Dr. Haramohan Mishra, Vidyapuri, Cuttack.
2. *The Message of the Upanisad* , Swami Ranganathananda, Bharatiya VidyaBhavan, K.M. Munsi Marg Mumbai.
3. *Valmiki Ramayana*, (Crtical Edition), Oriental Institute, Baroda
4. *Shrimad-bhagavad-gita* (Ed.) S. Radhakrishnan, Bharatiya Vidya Bhavan
5. *Shrimad-bhagavad-gita* (Ed.) Gambhirananda, Ramakrishna Mission
6. *Shrimad-bhagavad-gita*(Ed.) Swami Ranganathananda, Advaita Ashrama, Kolkata- (8th reprint 2014.

CC 9 CASE AND CASE ENDING OF PANINIAN GRAMMAR, TRANSLATION- II AND LEXICON ***80 +20 = 100 Marks***

1. *Vaiyakarana Siddhantakaumudi (Karaka – vibhakti* V-VII) **40 Marks**

2. Translation of an unseen Odia / English passage into Sanskrit ***20 Marks***

3. *Amarakosa* **20 Marks**

Siddhantakaumudi (Karaka – Vibhakti V – VII)

Unit - I(CASE –V)

Explanation of any two sutras / Vrttis / Vartikas 10 x 2 = 20 Marks

Unit – II (CASE VI & VII)

Explanation of any two sutras / Vrttis / Vartikas 10 x 2 = 20 Marks
(One from VIth and one from VIIth)

Unit – III **Translation – II** **20 Marks**

One unseen Passage of Odia is to be translated into Sanskrit.

2.5 x 8 = 20 Marks

(At least Eight sentences)

3. Amarakosa *(Devata, Svarga, Visnu, Laksmi, Durga, Surya, Brahma,Siva, Kartikeya, Ganesa, Sarasvati from Svargavarga)* **20 Marks**

Unit- V Short notes on any two out of four asked 10×2= 20Marks

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar- 2013
3. *Amarakosa* with Ramasrami tika, Choukhamba Sanskrit Series office, Varanasi

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Siddhanta-kaumudi* (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. *Siddhanta-kaumudi* (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi

4. *A Guide to Sanskrit Composition and Translation*, M.R.Kale,Motilal Banarsidass, New Delhi

5. Brhat Anuvada Candrika, Chakradhara Hamsa Nautial Shastri, Motilal Banarsidass, New Delhi.

6. *Namalinganuasanam* (*Amarakosa*), D.G. Padhye, Choukhamba Sanskrit Series,New Delhi

CC-10 ORNATE PROSE IN CLASSICAL SASNKRIT **80 +20 = 100 Marks**

1. ***Inscriptions*** **20 Marks**
2. ***Dasakumaracaritam* (*Purvapithika, Dvitiya Ucchvasa*)** **20 Marks**

40 Marks

3. ***Sukanasopadesa of Kadambari***

1. ***Inscriptions (Girnar inscription of Rudradaman, Prayaga (Allahabad) stone pillar inscription of Samudragupta & Mandasore inscription of Yasovarman)*** **20 Marks**

Unit-I Long Question - 1(About 150 words) 12 Marks

Short Questions – 2 (About 50 words each) 4×2= 8Marks

2. *Dasakumaracaritam*(*Purvapithika, Dvitiya Ucchvasa*) **20 Marks**

Unit- II Long Question-1 (About 150 words) 12 Marks

Short Questions -2 (About 50 words each) 4x2= 08 Marks

3. Sukanasopadesa of Kadambari **40 Marks**

Unit-III & IV	Long Question-1 (About 300 words)	16Marks
	Short Questions -2 (About 50 words each)	5x2 =10 Marks
	Textual Sentence Translation into Odia/ English	06 Marks
	Explanation - 1 (About 150 words)	08 Marks

Core Reading :

1. *Dasakumaracarita* (Ed.) M.R. Kale, Motilal Banarsidass,Delhi.
2. *Sukanasopadesa* (Ed.) Ramakanta Jha, Choukhamba Vidyabhavan, Varanasi.
3. Selected Sanskrit inscriptions (Ed.) by D.B. Pusalkar, Classical Publisher, New Delhi.

Suggested Reading :

1. *Dasakumarcarita*, Chaukhamba Publications, Varanasi.
2. *Sukanasopadesa* (Ed.) Nirmal Sundar Mishra, Kalyani Publishers, New Delhi.
3. *Abhilekhamala* (Ed.) sujata Dash, Kalyani Publisher, New Delhi.
4. *Abhilekhacayana* (Ed.) Jayanta Tripathy, Vidyapuri, Cuttack
5. *Kadambari (Purvardham*) with the com. of Bhanuchandra Siddhanjani, MLBD, New Delhi

GENERIC ELECTIVE -4

ETHICAL LITERATURE IN SANSKRIT ***80+20 = 100 Marks***

1. *Cāṇakyanīti (*Chaps-I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. *Nītiśataka* of Bhartrhari (Verses 1-50) 40 marks

1. *Cāṇakyanīti* **40 Marks**

Unit-I & II Long Question -2 (About 150 words each) 12x2= 24 10 Marks

Short Questions – 4 (About 50 words each) Marks 3 ×2= 06 Marks

4x4=16 Marks

2. *Nitisataka*

40Marks

Unit-III & IV Long Question -2 (About 150 words each) 12x2= 24 10 Marks

Short Questions – 4 (About 50 words each) Mar 3 ks ×2= 06 Marks

4x4=16 Marks

Core Readings:

1. *Cāṇakyanītidarpaṇa* (Ed.) Gunjeswar Choudhury, Choukhamba SurabharatiPrakashan, Varanasi
2. *Nītiśataka* (Ed.) M.R. Kale, MLBD, New Delhi(Text)

Suggested Readings:

1. *Sampurna Canakyaniti (Ed.),* Dr. N.S. Mishra, A.K. Mishra Agencies, Cuttack
2. *Nītiśataka* (Ed.) Naresh Jha, Choukhamba Prakashan, New Delhi
3. *Bhartrhari Satakatrayam,* B. S. Mishra, Vidyapuri, Cuttack.

3rd Year

SEMESTER-V

CC-**11 ORNATE POETRY IN SANSKRIT - 80 +20 = 100 Marks**

1. ***Sisupalabadham*(Canto-I Verses 01-48) 40 Marks**
2. ***Kiratarjuniyam* (Canto-I) 40Marks**

1. Sisupalabadham(Canto-I Verses 01-48) 40 Marks

Unit-I & II	Long Question -1 (About 300 words)	15 Marks
	i) Explanation of One Verse (About 150 words)	10 Marks
	Short Questions- 3	5x 3=15 Marks

2. Kiratarjuniyam (Canto-I) 40 Marks

Unit-III	Long Question -1 (About 300 words)	15 Marks
Unit- IV	Explanation of One Verse (About 150 words)	10 Marks
	Short Questions - 3	5x 3=15 Marks

Core Readings:

1. *Sisupalabadham* (Ed.) S.R. Ray, Vallabhatika, Bharatiya Vidya Prakashan, New Delhi.
2. *Kiratarjuniyam* (Cantos I-III) (Ed.) M.R. Kale, Motilal Banarsidass Publishers Pvt. Ltd.,Delhi,4th Edn-1966,Rpt-1993

Suggested Readings:

1. Sisupalabadham - Canto-I (Ed.), Devanarayan Mishra,(With *Sarvankasa-tika* ofMallinatha) Sahitya Bhandar, Meerut
2.Kiratarjuniyam (Canto- I) (Ed.) Niranjan Pati,Vidyapuri, Cuttack.
3. Sisupalabadham – H.K. Satpathy, Kitab Mahal, Cuttack

CC- 12 VEDA, VEDIC GRAMMAR & HISTORY OF VEDIC LITERATURE 80 +20 = 100 Marks

1. ***Vaidika Suktas*** **40 Marks**
2. ***Vedic Grammar*** **20 Marks**
3. ***History of Vedic Literature*** **20 Marks**

1. Veda **40 Marks**

Vedic Suktas from different *Samhitas*

Agni (RV- I.1), Indra (RV- II.12) , Savitr (RV- I.35), Usas (RV- I.48), Purusa-sukta (YV XXXI.1.16), Siva-samkalpa (YV-XXX.1.6), Samjnana(RV X.191), Vak(RV X.125)

Unit-I & II	i) Long Question -2 (About 150 words each)	12x2= 24 Marks

ii) Explanation – 2 Mantra(About 150 words each) 8x2= 16 Marks

2. Vedic Grammar **20 Marks**

Unit – III

The following Sutras are to be taught:
Chandasi pare'pi, Vyavahitasca, Caturthyarthe bahulam chandasi, Chandasi lun-lan-litah,

Linarthe let,Leto'datau, Sibbahulam leti, Itasca lopah parasmaipadesu, Sa uttamasya, Ata ai, Vaito'nyatra, Hr-grahor bhaschandasi, Chandasi ubhayatha, Tumarthe se-sen-ase-asen- kse-kasen-adhyai-adhyain-kadhyai-kadhyain-shadhyai-shadhyain-tavai-taven-tavenah, Va chandasi, Ses chandasi bahulam, Prakrtya'ntapadam avyapare, Nipatasya ca, Supam suluk purva-savarnac che-ya-da-dya- ya-jalah, Idanto masi, Ajjaserasuk, Dirghadati samanapade

Two *sutras* to be explained	5×2=10Marks
Two *sadhanas* to be worked out	5×2=10 Marks

3. History of Vedic Literature **20Marks**
(*Samhita*, *Brahmana*, *Aranyaka*, *Upanisad*)

Unit-IV	Long Question -1 (About 150 words)	12 Marks
	Short Questions – 2(About 50 words each)	4 ×2= 8 Marks

Core Readings :

1. *New Vedic Selection* (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, NewDelhi
2. *Vaidika Sahitya aur Samskrti*, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

1. *Vaidika sahitya o Samskrti* , A.C. Das, Grantha Mandira, Cuttack
2. *Veda O Vaidika Prakarana*,(Ed) Niranjan Pati, Vidyapuri, Cuttack.
3. *History of Indian Literature* Vol. I, M.Winternitz, MLBD, New Delhi
4. *Vaidik sahitya ki Ruparekha*,Umashankar Sharma Rsi,Chawkhamba Vidyaprakashan, Varanasi
5. Vaidika Sahitya O Samskrti, Bholanath Rout, Chitrotpala Publication, Salipur

DISCPLINE SPECIFIC ELECTIVE (DSE)-1

DSE-1 SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA ***80+20 = 100 Marks***

3. ***Arthasastra (Adhikarana* I.1- 4)** **40 Marks**
4. *Dharmasastra*
   Yājñavalkyasmṛti (*Vyavahārādhyāya* verses 1-65) **40 Marks**

***1. Arthasastra (Adhikarana* I.1-4 from the beginning up to vinayadikarana)** **40 Marks**

Unit- I & II — Long Questions -2 (About 150 words each) 16 Marks
Short Questions – 4 (About 50 words each) 4 ×4= 16 Marks

12x2= 24 Marks
4x4 = 16 Marks

2. *Dharmasastra*

a)Yājñavalkyasmṛti
Units- III & IV –
Long Question -2 (About 150 words each) **40Marks**
Short Questions - 4(About 50 words each)

12x2= 24 Marks
4x4=16 Marks

Core Readings:

1. *Kautilya Arthashastra*, (Ed. &Trans.) R.P. Kangle, 3 Vols., Motilal Banarsidass, New Delhi
2. *Yājñavalkyasmṛti* (*Vyavahārādhyāya*), (Ed.) Kishore Chandra Mahapatra, Jageswarilane, Balighat, Puri

Suggested Readings:

1. The*Arthashastra*. (Ed.& Trans), L.N. Rangarajan, Penguin Classics, India, 1992
2. The*Arthashastra*. (Ed.) N.P. Unni, Bharatiya Vidya Prakashan, New Delhi
3. *Arthashastra* (Odia Trans.) Anantarma Kar, Odisha Sahitya Academy, Bhubaneswar
4. *Kautilya Arthashastra*, (Ed.) Karunakar Das, Kitab Mahal, Cuttack.
5. *Yājñavalkyasmṛti*, (Ed.) M.N. Dutta, Parimal Publications, New Delhi

DISCPLINE SPECIFIC ELECTIVE (DSE)-2

DSE-2 ETHICAL LITERATURE IN SANSKRIT ***80+20 = 100 Marks***

1. ***Cāṇakyanīti* (Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*)** **40 marks**
2. ***Nītiśataka* of Bhartṛhari (Verses 1-50)** **40 marks**

1. *Cāṇakyanīti* **40 Marks**

Unit-I & II — Long Question -2 (About 150 words each) 10 Marks
Short Questions – 4 (About 50 words each)

12x2= 24 Marks
3 ×2= 06 Marks
4x4=16 Marks

2. *Nitisataka*

40Marks

Unit-III & IV — Long Question -2 (About 150 words each) 10 Marks

12x2= 24 Marks

Short Questions – 4 (About 50 words each) 3 ×2= 06 Marks
4x4=16 Marks

Core Readings:

3. *Cāṇakyanītidarpaṇa* (Ed.) Gunjeswar Choudhury, Choukhamba SurabharatiPrakashan, Varanasi
4. *Nītiśataka* (Ed.) M.R. Kale, MLBD, New Delhi(Text)

Suggested Readings:

4. *Sampurna Canakyaniti (Ed.),* Dr. N.S. Mishra, A.K. Mishra Agencies, Cuttack
5. *Nītiśataka* (Ed.) Naresh Jha, Choukhamba Prakashan, New Delhi
1. *Bhartrhari Satakatrayam,* B. S. Mishra, Vidyapuri, Cuttack.

SEMESTER-VI

CC-13 AYURVEDA & VRKSAYURVEDA 80+20 = 100 Marks

1. *Ayurveda* (*Carakasamhita- Sutrasthana, dhirgham jivitiyadhyaya)* **60 Marks**

2 *Vrksayurveda* (*Vrksayurvedadhyaya of Brhatsamhita)* **20 Marks**

Unit I , II & III - ***Ayurveda*** (*Carakasamhita*) **60 Marks**

Long Questions – 2 (About 150 words each) 12 x 2 =24 Marks

Short Questions - 4 (About 50 words each) 6x 4 = 24 Marks
Explanation – 1 (About 150 words) 12 Marks

Unit-IV *Vrksayurveda (Vrksayurvedadhyaya of Brhatsamhita)* 20 Marks

Long Question -1 (About 150 words) 12 Marks
Short Questions - 2 (About 50 words each) 4x2 = 8 Marks

Core Readings :

1. *Carakasamhita, Brahmananda Tripathy, Chawkhamba Surabharati Prakasan, Varanasi.*
2. *Brhatsamhita of Barahmihira, Ed. Sudhakar Dwivedi, Sampurnanda Samskrita Viswavidyalaya,Varanasi*

Suggested Readings:

1. *Samskrita Vanmayaka brhata itihas* (Vol.17) Ayurved ka itithas Uttarpradesh Samskrit Sansthan, Lukhnow, 2006
2. *Ayurved ka Brhat Itithas,* Atridev Vidyalankar, Chawkhamba, Delhi
3. *Carakachintanam,* Priyabrata Sharma, Chawkhamba, Delhi
4. *Vrksayurveda*, Ed. Dr. Narayana Prasad Dash, Vidyapuri, Cuttack.

CC – 14 TECHNICAL LITERATURE IN SANSKRIT (JYOTISA & VASTU) 80+20 = 100 Marks

1. *Jyotisa* (*Jyotihsara-ratnavali*, Chap I) (*Graha-naksatra-paricaya-prakaranam*) **40 Marks**

2. Vastu (*Vasturatnakara*, Chap-I) (*Bhuparigraha-prakaranam*) **40 Marks**

1. *Jyotisa* **40 Marks**

Unit-I & II

Long Question -2 (About 150 words each)	12 x 2 = 24Marks
Short Questions - 4 (About 50 words each)	4x4 = 16 Marks

2. *Vastu* **40 Marks**

Unit-III & IV

Long Question -2 (About 150 words each)	12x2=24Marks
Short Questions - 4 (About 50 words each)	4x4 = 16 Marks

Core Readings :

3. *Jyotihsara-ratnavali*(Part-I) (Ed.) Pandit Baikoli Mahapatra, Radhakrishna Pustakalaya, Satyanarayan Temple Road, Berhampur,Ganjam,Odisha

4. *Vasturatnakar* (Ed.) Vindhyeshwari Prasad Dwivedi, Chowkhamba Krishnadas Academy, Varanasi

Suggested Readings:

1. *Grahanaksatra paricaya prakaranam*, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.
2. Bhuparagraha – prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.
3. *Jyotisavisvakosa*, Haridutta Sharma, Subodh Publication, New Delhi
4. *Vaidika jyotisa*, Dr.G.S.Shastri, Chaukhamba Samskriti bhabana, Varanasi
5. *Bharatiya jyotisa*, Dr.Nemichandra Shastri, Bharatiya Jnanapitha,New Delhi-110003
6. *Jyotisa- tattvanka*, Gitapress, Gorakhpur (2014)
7. *RajaballavamVastusatram*, Ed. Dr Srhrikrishna Jugnu, Parimal Publication, Delhi, 2005
8. *Vastu, Astrology & Architecture*, (Copmilation of Research Paper of ANational Conference on Vastu & Jyotisa), Ed.by Gayatri Dev Vasudev, MLBD,New Delhi,(4th reprint-2015)

DSE-3

TRANSLATION, EDITING AND WRITING SKILL **80+20 = 100 Marks**

2. Anuvada Kala-	**20**
2. Precises Writing-	**20**
3. Proof Correction and Transliteretion	**20**
4. Essay	**20**

Unit-I **Anuvada Kala-** **20 Marks**

Translation of one Odia/ English Paragraph in to Sanskrit

Unit-II **Precises Writing-** **20 Marks**

One Sanskrit Paragraph is to be precised in 1/3rd words and a suitable title is to be suggested.

Unit-III **Proof Correction and Transliteretion**

20 Marks

i. Proof Correction of **two** *wrongly printed* Sanskrit Verses from the Prescribed text are to set for necessary Proof Correction- 5x2=10Marks

ii. Transliteretion of **two** Sanskrit Verses from Prescribed text are to be written in Roman/ Italic script with diacritical marks. 5x2=10Marks

Unit- IV**Essay** **20 Marks**

One Essay in Sanskrit (About 300 words) 20Marks

Core Readings:

1. Samskrta Vyakaranadarpana, Odisha Text Book Bureau, Bhubaneswar
2. Samskrta Nibandha Satakam, Kapildev Dwivedi, Chawkhamba Publication, Banaras

Suggested Readings:

1. Brht Anuvada Shiksa, Chakradhara Hansa Nautiyal, MLBD, New Delhi
2. Samskrta- nibandhadarsah, Rammurti Sharma, Sahitya Niketan, Kanpur

DSE – 4 INDIAN PHILOSOPHIES: GENERAL IDEAS

1. **Astika** **60 Marks**
2. **Nastika** **20 Marks**

1. **Astika**

Unit – I **Samkhya and Yoga** **20 Marks**

Twenty – five elements of Samkhya, Satkaryavada and Astangayoga of Yogadarsana.
Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Unit – II **Nayavaisesika** **20 Marks**

Asatkaryavada, Saptapadarthas, Armbhavada, Paramanuvada
Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Unit – III **Vedanta Mimamsa** **20 Marks**

Saktidvaya of Maya in vedanta, Vivartavada, Netivada and karma in Mimamsa, Svatapramanyavada.

Long question – 1 (About 150 words)	12 Marks
Short Questions – 2 (About 50 words each)	4x2= 8 Marks

Unit IV ***Nastikas Carvak Jaina & Bouddha*** ***20 Marks***

Svabhavavada, Adibhautikasukhavada of Carvak, Ratnatryam, Sapta-bhanga-naya/ Syadvada

of Jaina, Aryasatyas, Ksanikavada, Nairatmyavada & Moksa of Bouddha.

Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Core Reading :

1. Bharatiya Darsana (Odia), Gouranga Charana Nayak, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar.

Suggested Readings :

1. History of Indian Philosophy, S.N. Dasgupta, MLBD, New Delhi.
2. Indian Philosophy, S. Radhakrishnan, George Allen and Unuin Ltd., New York.
3. A Critical Survey of Indian Philosophy, C. D. Sharma, MLBD, New Delhi.
4. Outlines of Indian Philosophy, M. Hiriyana, MLBD, New Delhi.

OR

DSE-04 PREPARATION AND PRESENTATION OF PROJECT **80+20 = 100 Marks**

Project- 80 Marks

Presentation- 20 Marks

(The Project work should be done preferably on Creative writings and Translation wroks of Sanskrit Language.)

DETAILS OF M.I.L. (SANSKRIT)

+3 M.I.L.(If Sanskrit)
Paper-1

(For Hons. Students as AECC-2) M.I.L.-1

Full Marks- 80 + 20 = 100Marks

1. **SANSKRIT PROSE** **40 Marks**
2. **SANSKRIT POETRY** **40 Marks**

Unit- I & II SANSKRIT PROSE **40 Marks**

1. Aparīksitakārakam
2. Pitṛbhaktih
3. Jimutavahanakatha

Unit- I Two Long Questions – (About 150 words each) 12x2= 24Marks
Unit-II Four Short Questions - (About 50 words each) 4×4 = 16Marks

Unit- III & IV SANSKRIT POETRY ***40 Marks***

1. Mahabharata Santi Parva (Ch. 70 on Qualities of Ruler)
2. Mahabharata Santi Parva (Ch. 107 on Democracy)
3. Mahabharata, Santiparva, (Ch. 120 on Duties of Ruler)

Unit- III Two Long Questions (About 150 words each) 12x2= 24 Marks
Unit- IV Four Short Questions - (About 50 words each) 4×4 = 16 Marks

Core Reading:

1. *Samskrta-pravesa*, Utkal University, Vanivihar, Bhubaneswar
2. *Mahabharata Santi Parva*, Gita Press, Gorakhpur

Suggested Reading:

1. *Mahabharata Santi Parva,* Rastriya Sanskrit Sansthan, New Delhi

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SOCIOLOGY UNDERGRADUATE SYLLABUS FOR HONOURS

SL.No	Semester	Number	Title of the Course	Marks	Credit
1	1st	DSC.H.SOC.1	Introduction to Sociology-1	80+20	6
2		DSC.H.SOC.2	Introduction to Sociology-2	80+20	6
3		GE.H.SOC.1	Introduction to Sociology-1	80+20	6
4		AECC.H.SOC.1		80+20	4
5	2nd	DSC.H.SOC.3	Indian Society	80+20	6
6		DSC.H.SOC.4	Sociology of Environment	80+20	6
7		GE.H.SOC.2	Indian Society	80+20	6
8		AECC.H.SOC.2		80+20	4
9	3rd	DSC.H.SOC.5	Classical Sociological Thinkers	80+20	6
10		DSC.H.SOC.6	Social Change & Development	80+20	6
11		DSC.H.SOC.7	Sociology of Gender	80+20	6
12		GE.H.SOC.3	Social Change and Development	80+20	6
13		SEC SOC.1	Political Sociology	80+20	4
14	4th	DSC.H.SOC.8	Rural Sociology	80+20	6
15		DSC.H.SOC.9	Globalization & Society	80+20	6
16		DSC.H.SOC.10	Marriage, Family and Kinship	80+20	6
17		GE.H.SOC.4	Rural Sociology	80+20	6
18		SEC SOC.2	Industrial Sociology	80+20	4
19	5th	DSC.H.SOC.11	Research Methodology	80+20	6
20		DSC.H.SOC.12	Social Movements in India	80+20	6
21		DSE.H.SOC.1	Sociology of Health	80+20	6
22		DSE.H.SOC.2	Sociology of Education	80+20	6
23	6th	DSC.H.SOC.13	Population & Society	80+20	6
24		DSC.H.SOC.14	Social Disorganization & Deviance	80+20	6
25		DSE.H.SOC.3	Urban Sociology	80+20	6
26		DSE.H.SOC.4	Field Work& Dissertation / Tribes of India	80+20	6
	TOTAL			**2600**	**0**

HONOURS PAPERS:

Core Paper – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non Sociology students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

CORE PAPER I INTRODUCTION TO SOCIOLOGY-I

This introductory paper intends to acquaint the students with Sociology as a social science and the basic concepts used in the discipline. It also focuses on the social processes and the social institutions that man encounters as a member of the society.

Objectives: After studying this paper the student can

- Can get to know the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature and scope of the discipline and its approach.
- Develop knowledge about its historicity.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions man encounters as a member of the society.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Discipline and Perspective

Meaning, Definition and Subject Matter
Emergence of Sociology
Nature and Scope of Sociology
Importance of Sociology

Unit-2: Sociology and other Social Sciences

Sociology, Anthropology and History
Sociology and Psychology
Sociology and Political Science
Sociology and Economics

Unit-3: Basic Concepts

Society and Community**,** Associations and Institutions
Social Groups and Culture
Role and Status.
Power and Social Norms

Unit-4: Social Stratification

Meaning, Definition, Characteristics
Forms of Stratification-Caste, class & gender
Theories of stratification: Functional, Marxian
& Weberian Theories of stratification
Elite Theory: Pareto, C Wright Mills.

Suggested Text Book:

1. Haralambos, M. & Holborn , Sociology: Themes and Perspectives, Harper Collins; Eighth edition, 2014

Reference Readings:

1. C.N.Shankar Rao, Principles of Sociology: With an Introduction to Social Thought, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2006
2. Inkles, A.,What is Sociology? An Introduction to the Discipline and Profession, Englewood Cliffs, New Jersey: Prentice Hall, 1964.
3. Mills, C.W., The Power Elite, Oxford:Oxford University Press, 1954.
4. Bottomore, T. B. Sociology: A Guide to Problems and Literature, New Delhi: S. Chand, 2008
5. Paul B. Horton, Chester L. Hunt.. Sociology, McGraw-Hill., 1984
6. Giddens, Anthony., Introduction to Sociology, Polity Press 1991

CORE PAPER II INTRODUCTION TO SOCIOLOGY-II

This part two introductory paper intends to provide some additional knowledge on the interrelationship between individual and society, the types of societies and the various social processes that contribute to sustain the society over a period of time.
Objectives: After studying these two papers, the student can

- Develop knowledge about the subject matter, nature and scope of the key topics and its approach.
- Develop knowledge about individual and society.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Individual, Society and Culture:

Social Structure
Types of Society – Primitive, Agrarian and Industrial
Relationship between individual and society
Culture and Personality, Theories of Self: Cooley and Mead

Unit-2: Socialization

Meaning, Definitions & types
Stages of Socialization Process

Agencies of Socialization
Theories of Socialization- G H Mead, C.H Cooley

Unit-3: Social Control

Meaning, Definitions & Nature
Importance of social Control
Types of Social Control: Formal and Informal
Agencies of Social Control

Unit-4: Social Processes

Meaning and Definition
Associative Social Processes- Cooperation, Accommodation, Assimilation
Dissociative Social Processes- Competition and Conflict
Cooperation, Conflict and Competition: Interrelations and relevance

Suggested Text Books:

1. Rao ,C.N.Shankar, Principles of Sociology: With an Introduction to Social Thought, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2006
2. Haralambos & Holborn , Sociology: Themes and Perspectives Harper Collins; Eighth edition, 2014

Reference Readings:

1. Mills, C.W.,*The Sociological Imagination*, Oxford: Oxford University Press, 1959.
2. Giddens ,Anthony, Introduction to Sociology, 1991
3. Rawat, H.K. Contemporary Sociology, Rawat Publication, Jaipur, 2013
4. Johnson, Harry M. Sociology: A Systematic Introduction, New Delhi, Allied Publishers, 1995
5. Smelser Neil J. *Hand Book of Sociology*, Sage Publications, Inc. 1998
6. Dasgupta,Samir and Saha,Paulomi An Introduction to Sociology,Pearson,2014

CORE PAPER III INDIAN SOCIETY

Every society has its own peculiar structure and there are some institutions universal to every society, but with their unique manifestations in each society. There are some change agents and initiatives that enable the society to change with the passage of time. This paper focuses on the structure of the Indian society and the changing aspects with the processes operating change agents and initiatives.

Objectives: After studying these two papers on Indian society, the student can

- Get an impression about the basic composition of Indian society, its historical moorings, basic philosophical foundations of the society and the institutions.
- Learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.

Learning Outcomes: This paper is expected to bring familiarity in a student about Indian society. It will present a comprehensive, integrated and empirically –based profile of Indian society. It is hoped that the structure and processes operative in the society, the change agents operating in Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

Unit-1: Composition of Indian Society and Approaches to the study of Indian Society:

Religious composition, Linguistic composition &Racial composition
Unity in diversity
National Integration—Meaning, Threats (Communalism, Linguism, Regionalism)
Approaches to the study of Indian society: Structural-Functional, Marxian and Subaltern

Unit-2: Historical Moorings and Bases of Hindu Social Organization

Varna Vyavastha and relevance
Ashrama and relevance
Purusartha and relationship with Ashramas
Doctrine of Karma

Unit-3: Marriage and Family in India

Hindu Marriage as Sacrament, Aims of Hindu marriage, Forms of Hindu Marriage.
Hindu Joint Family-Meaning & disintegration
Marriage among the Muslims & Tribes
Changes in Marriage and Family in India

Unit-4: The Caste System in India

Meaning, Definitions & features of Caste
Functions & Dysfunctions of Caste
Factors affecting caste system
Recent Changes in Caste System

Suggested Text Book:

1**.** Rao ,C.N.Shankar, Sociology of Indian Society, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2004

Reference Readings:

1. Shah, A.M., *The Household Dimension of the Family in India: A Field Study in a Gujarat Village and a Review of Other Studies*, Delhi: Orient Longman, 1973.
2. Uberoi, P. (ed.), *Family, Kinship and Marriage in India*,New Delhi: Oxford University Press, 1993.
3.. Y. Singh , *Modernisation of Indian Tradition*, Jaipur: Rawat Publications, 1986
4..Ram Ahuja, Indian Social System, Rawat Publications, 1993
5. Sharma, KL. Indian Social Structure and Change, Rawat Publication, 2008
6. Srinivas, M.N. India*: Social Structure*. New Delhi: Hindustan Publishing Corporation, 1980

CORE PAPER- IV SOCIOLOGY OF ENVIRONMENT

Environment and society are in constant interaction with each other. It is the environment which sustains life in society and it is the society that is responsible for the preservation and the degradation of the environment. In the recent years environmental challenges have posed a threat to the lives on the planet. Keeping this in view, the present paper tries to create awareness among the students about the major environmental issues and the efforts geared to tackle them.

Objectives: After going through this paper, the student can

- Derive knowledge about the close interaction between society and environment.
- Gain substantial idea about the environmental issues and their repercussions on humanity.
- Accumulate ideas about the ideological currents, issues that drive environment movements.
- Get aware about the global and national efforts to conserve environment.

Learning Outcomes: The very aim of this paper is to disseminate knowledge about the significance of environment for society, to change the practices that can protect and preserve the environment and to make the students participate in the mission to preserve, protect and promote the cause of environment.

Unit-1: Conceptual Issues of Sociology of Environment

Sociology of Environment: Meaning, emergence and scope

Environment and Society – their inter-relations, Ecology and Environment.
Eco-system.
Sustainable Development

Unit-2: Environmental Movements

2.1 Narmada Bachao Andolan
2.2Ganga Bachao Abhiyan
Silent valley movements
Eco-feminist movement

Unit-3: Major Environmental Issues:

Global Warming & Climate Change.
Loss of Biodiversity
Deforestation.
Urban Wastes, Industrial wastes

Unit-4: Environmental Protection:

Environment protection efforts at the global level
Efforts at national level
Role of Civil Society Organizations

Role of Corporate Social Responsibility in environmental protection

Suggested Text Books:

1. Biswas, Anupama Environment & Society, Wisdom Press (ISBN) (CBCS).
2. Giddens, Anthony "Global Problems and Ecological Crisis": 2nd edition New York. W.W.Norton and Co.,1996

Reference Readings:

1. Baviskar, A., In the Belly of the River: Tribal Conflicts Over Development in the Narmada Vally, New Delhi: Oxford University Press, 2005.
2. DharamGhai, (ed) Development and Environment: Sustaining People and Nature UNRISD Blackwell Publication,1994.
3. Schumacher, E. F., Small is Beautiful: A Study of Economics as if People Mattered,London: Blond and Briggs, 1973.
4. Prasad, A., Against the Ecological Romanticism: Verrier Elwin and the Making of an Anti-modern Tribal Identity, Delhi: Three Essays Collective, 2011.
5. Maria Mies&Vandana Shiva, Ecofeminism, Fernwood Pub. Halifax, Nova Scotia, Canada, 1993
6. Gadgil Madhav& Ram Ch. Guha, Ecology & Equity: The use and abuse of Nature in contemporary India, New Delhi, OUP, 1996.

CORE PAPER V CLASSICAL SOCIOLOGICAL THINKERS

Sociology originated as an intellectual response to the crisis confronting the mid nineteenth century European society. Its development over two centuries has been influenced by a variety of socio-economic and political conditions. It is now established as a multi-paradigmatic academic discipline, with its body of theoretical knowledge enriched and its methodological techniques and procedures systemized. This paper is intended to familiarize the students with the social, political, economic and intellectual contexts in which sociology emerged as a distinctive discipline. It deals with the contributions of the forerunners of the discipline and with the contributions of the founders who gave a systematic shape to the subject.

Objectives: After going through these two papers, the student can

- Gain an understanding of some of the classical contributions in Sociology, and their contemporary relevance.
- Learn about the methodological shift in the discipline over the years.

Learning Outcomes: This paper is expected to clarify and broaden the student's knowledge about the theoretical and methodological contributions of the classical contributors to the subject and the contemporary relevance of these theories.

Unit-1: Auguste Comte

Law of the Three Stages
Hierarchy of Sciences & Positivism
Organismic Analogy
Theory of Social Evolution

Unit-2: Karl Marx

2.1Historical and Dialectical Materialism
2.2Class struggle
2.3 Alienation
2.4 Theory of Capitalism

Unit-3: Emile Durkheim

Division of Labour in Society
Rules of Sociological Method
Theory of Suicide
Theory of Religion

Unit-4: Max Weber

Social Action
Protestant ethic and the spirit of capitalism
4.3Ideal type
4.4Bureaucracy, Authority

Suggested Text Books:

1. Morrison, Ken, Marx, Durkheim, Weber: Formation of Modern Social Thought, London, Sage, 1995
2. Lewis A. Coser,Masters of Sociological Thought, New York, Harcourt Brance Jovanovich (Text Book), 1977

Reference Readings :

1. F. Abraham & J.H.Morgan, Sociological Thought, Wyndham Hall Press, 1989.
2. Kenneth, A.,*The Social Lens: An Invitation to Social and Sociological Theory*, London: Sage. 2011.
3 Ramond Aron, Main Currents in Sociological thoughts Vol. I & Vol. II Harmondsworth, Middlesex: Penguin Books,1967 (1982 reprint).
4. Ritzer, George, Sociological Theory, New Delhi, Tata-McGraw Hill, 1996
5. Waters, M., *Modern Sociological Theory*, London: Sage, 2000
6. Fletcher, R .*The Making of Sociology: A Study of Sociological Theory*, Volume 1 and 2, Thomas Nelson & Sons Ltd , 1972

CORE PAPER VI SOCIAL CHANGE AND DEVELOPMENT

Change is the law of nature and every society is subject to change. Social change has always been a central concern of Sociological study. Change takes different forms. Change has its pattern which is spelt out by various theories. Change is often propelled by various factors. This paper is designed to provide some ideas to the student about such process, theories and factors.

Objectives: After going through this paper, the student can

- Derive knowledge about the meaning, nature, forms and patterns of change.
- Get an idea about the theories that explain change and their adequacy in explaining so.
- Get an impression about the factors that propel change in the society.

Learning Outcomes: This paper is expected to provide a wholesome idea to the students about the process of social change. They can relate their experience with the theoretical explanations.

Unit-1: Social Change:

Meaning and Nature
Social Evolution & Social Progress: Meaning and features
Social Development: Meaning and Features
Factors of Change: Cultural, Technological, Demographic

Unit-2: Theories of Social Change:

Evolutionary theory
Functionalist theory
Conflict Theory
Cyclical Theory

Unit-3: Models of development:

Indicators of Social Development
Capitalist
Socialist
Gandhian

Unit-4: Processes of Social Change in Indian Context:

Sanskritsation
Westernisation
Modernisation
Secularisation

Suggested Text Books

1. Steven, Vago, Social Change,Pearson Prentice Hall, 2003 5th Rev.Edt

Reference Readings:

1. Jairam Kansal , Social Change & Development, Wisdom Press (ISBN) (CBCS), 2004

2. Singh, Y.,Modernization of Indian Tradition: A Systematic Study of Social Change, Faridabad: Thompson Press Limited, 1973.

3. Rudolf, L and Rudolf, S. H., Modernity of Tradition: Political Development in India,

Chicago: University of Chicago Press, 1984.

4. Moore, W.E Social Change, Prentice Hall of India, New Delhi, 1965.

5. Mishra, B Capitalism, Socialism and Planning, South Asia Books, 1998

6. Escobar, A., Encountering Development, London: Zed Books, 2012

CORE PAPER VII SOCIOLOGY OF GENDER

The biological basis to the differences between the sexes does not explain the inequalities faced by the sex groups in the society. In the society variations are marked in the roles, responsibilities, rights of and relations between sex groups depending on the social prescriptions relating to sex affiliations. The differences, inequalities and the division of labour between men and women are often simply treated as consequences of 'natural' differences between male and female humans. But, in reality the social norms, institutions, societal expectations play a significant role in deciding and dictating the behaviour of each sex group. This is the fundamental of the study of Gender and Society.

Objectives: After studying this paper, the student can

- Conceptualize what is "Gender" and what is "Sex" and draw a line of distinction between the two.
- Note the difference in gender roles, responsibilities, rights and relations.
- Trace out the evolution and institutionalization of the institution of "Patriarchy".
- Get to know the theories of Feminism that brought women issues and demands to the forefront.
- Assess the initiatives undertaken for gender development with the paradigm shift from time to time.

Learning Outcomes: This paper is expected to generate ideas and sensitivity about gender in a student which he/she can put into practice in daily life. This will lead to change the prevalent biases and gender practices and create a gender neutral social world where both men and women can enjoy their basic rights and cherish to achieve their dreams.

Unit-1: Social Construction of Gender

Gender as a Social Construct
Gender Vs. Sex
Gender Stereotyping and Socialization
Gender Role

Unit-2: Feminism

Meaning and Definitions

Origin , Growth of Feminism, Waves of Feminism
Patriarchy
Theories of Feminism-Liberal, Radical, Socialist, Marxist, Post Modernism

Unit-3: Gender and Development

Approaches -WAD, WID and GAD.
Gender Mainstreaming: Meaning, Policies and Programmes
Women Empowerment: Meaning and Dimensions: Political, Economic and Social.

Unit-4: Women in India through ages

Status of Women in Ancient Period
Medieval Period
Women in Pre- independence India
Women in Contemporary Indian Society

Suggested Text Book:

1. Bhasin, Kamla, Understanding Gender, Kali for Women,2003

Reference Readings:

1. Prabhakar,Vani Gender and Society, Wisdom Press (ISBN) (CBCS), 2012
2. Choudhury , Maitry *Feminism in India: Issues in Contemporary Indian Feminism*, Kali for Women, New Delhi,2004.
3. Walby, S.,*Theorizing Patriarchy*, John Wiley and Sons,1990.
4. John, M. E. (ed.),*Women's Studies: A Reader*, New Delhi: Penguin India, 2008.
5. Pilcher, J and Whelehan, I. , *Fifty Key Concepts in Gender Studies.*London: Sage, 2004.
6. Forbes, G. *Women in Modern India*, Cambridge: Cambridge University Press, 1996.

CORE PAPER VIII RURAL SOCIOLOGY

Rural Sociology is a specialized branch of Sociology describing the society of villages and rural areas. As the rural areas or the villages mark the beginning of human civilization, this paper is designed to bring out the distinct features of the rural society with their typologies and typicalities. In the present paper an attempt is made to introduce the student with the development of this branch overtime with its focus on the typicality of Indian villages, their structures, changing features and social problems faced by the rural people.

Objectives: After studying this paper, the student can

- Get an impression about the emergence of the sub discipline Rural Sociology and the forces contributing for its origin.
- Learn about the nature of this branch of knowledge, its subject matter andsignificance.
- Collect information and knowledge about the mooring of the sub discipline in the Indian context.
- Generate an idea about the typicality of the rural society and the institutions operating therein and their dynamics.
- Derive ideas about rural social problems of the country.

Learning Outcomes: India thrives in her villages. By going through this paper, the student can have a grip on the grass roots of Indian society. This will enable the student to understand the society in a better manner, to note the heterogeneities in culture, institutions and their functions, changes, the contrasts found between the rural urban societies and the problems faced by the people.

Unit- 1: Introduction to Rural Sociology

1.1 Meaning, Definition & Nature
Origin & Subject Matter of Rural Sociology
Importance of Rural Sociology
Evolution and Growth of Village Community

Unit- 2: Rural Social Structure

Village Community-Meaning & Types
Rural-Urban Contrast & Continuum
Agrarian Economy
Dominant Caste, Emerging class structure in rural India

Unit- 3: Rural Social Problems

Poverty
Unemployment
Indebtedness
Rural factionalism

Unit- 4: Rural Development Programmes

Community development Programmmes, Cooperative Movements and Panchayati Raj System
Swarnajayanti Gram SwarozgarYojana (SGSY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
National Rural Livelihood Mission (NRLM)
National Rural Health Mission (NRHM)

Suggested Text Books:

1. Sharma, R.N. Rural Sociology,Media Promoters and Publishers. Pvt. Ltd. 1983
2. Singh , Kartar Rural Development: Principle Policies and Management, Sage, New Delhi,1995

Reference Readings:

1. Choudhury, Anjana Rural Sciology, Wisdom Press ,2004
2. S.L. Doshi, S.L &P.C.Jain , Rural Sociology, Jajpur, Rawat,2002.
3.Maheswari, S.R Rural Development in India, Sage Publication, New Delhi,1985.
4. Ahuja, Ram Rural Sociology,Popular Prakashan Ltd; New edition 2011
5.Desai, A.R .Rural Sociology in India, Popular Prakashn, Bombay, 1997
6. Ray E. Pahl "The Rural-Urban Continuum." *Sociologia Ruralis* 6(3–4):299–327. Reprinted in R. E. Pahl, ed. *Readings in Urban Sociology*. Oxford: Pergamon, 1970

CORE PAPER- IX GLOBALISATION & SOCIETY

Globalization is the dominant process of social change in the contemporary world. It has resulted in the sinking of time and space and collapse of borders. It is a new coinage for an old process. It has its own dimensions, distinct features and impacts on society. It has given birth to new role players. All these are the focal points of discussion of this paper.

Objectives: By going through this paper, the student can

- Collect information about the meaning and nature of this process, its historical mooring.
- Amass knowledge about its dimensions and impacts, both positive and negative.
- Get introduced to the agencies that manage the process.

Learning Outcomes:

This paper is expected to acquaint the student with an ongoing social process; which can bring tremendous changes in the nations.

Unit-1: Globalisation

1.1 Meaning, characteristics of Globalisation
Emergence of Globalisation
Liberalisation- Meaning & characteristics
Privatisation- Meaning & characteristics

Unit-2: Dimensions of Globalisation

Economic
Technological
Political
Cultural

Unit-3: Consequences of Globalisation

Rising Inequality
Environmental Degradation
Consumerism
Health and Security

Unit-4: Impact of Globalisation in Indian Context:

Cultural Impacts
Impact on Education
Impact on Religion
Impact on Women

Suggested Text Books:

1. Biswas, Anupama Globalization and Society, Wisdom Press (ISBN) (CBCS)
2. Bhagawati, Jagdis, In Defence of Globalization, Oxford Univ. Press, Delhi 2004.

Reference Readings:

1. Pathak, A., Modernity, Globalization and Identity: A Reflexive Quest, Delhi: Aakar Books, 2006
2. Singh, Y. Culture Change in India: Identity and Globalization. Jaipur: Rawat, 2006.
3. Sengupta, A., Reforms, Equity and the IMF: An Economist's World, Delhi: Har-Anand Publications PVT limited, 2001
4. Jha, Avinash, Background to Globalisation, Centre for education and documentation. Mumbai, 2000
5. Arjun Appadurai, Modernity at large: Cultural Dimensions of Globalization, Delhi, OUP, 1997.
6. Joseph E. Stiglitz,Globalization & its Discontents,W.W. Norton & Company, 2002

CORE PAPER- X MARRIAGE, FAMILY& KINSHIP

This course provides a brief account of the classical approaches to the study of family and kinship. It exposes the students to the distinct aspects of these three interrelated institutions in the Indian context. Finally, it discusses some contemporary issues that pose a challenge to the normative model of these institutions.

Objectives: By going through this paper, the student can

- Understand the three institutions that are the foundations of the society.
- Comprehend the theoretical perspectives on these institutions.
- Get to know the rules governing these institutions.
- Estimate the changes coming over these institutions with the process of social change.

Learning Outcomes:

This paper is expected to instill knowledge about the foundational institutions, their governing principles and the continuity and change features of these institutions.

Unit-1: Marriage

Marriage as a social institution
Functions of marriage
Rules of marriage, Types of marriage
Changes in the institution of marriage

Unit-2: Family

Family as a social institution

Rules of Marriage and Types of family
Functions of family
Contemporary Changes in family

Unit-3: Kinship System

Meaning, Definition & Types
Kinship Terminologies & usages
Kinship system in North India & South India

Clan, Lineage

Unit-4: Contemporary Issues

Migration and its impact on family
Domestic Violence
Dowry
Divorce

Suggested Text Books:

1. Kapadia , K.M. Marriage and family in India : London, Oxford Univ. Press, 1966

Reference Readings:

1. Maya Majumdar, Maya Marriage, Family & Kinship, Wisdom Press (ISBN), (CBCS), 2005
2. Shankar Rao, C.N. Principles of Sociology: With an Introduction to Social Thought, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2006
3 Karve, Irawati Kinship Organisation in India, Poona, Deccan college, 1953
5. Robin Fox , Kinship and Marriage: An Anthropological Perspective, Pelican,1967

6. Patricia Uberoi, Family, Kinship & Marriage in India, Oxford University Press, Delhi, 1993

CORE PAPER- XI RESEARCH METHODOLOGY

Since the days of August Comte, a debate and a deliberate attempt has been initiated to provide a scientific character to social sciences. In this attempt empirical research has been introduced as an integral part of observing social reality and generalizing it objectively without any subjective predisposition. Gradually, research methods have been developed and introduced in social sciences to bring it in par with scientific observations. The essence of this paper lies in introducing the students with these methods of research to ensure objectivity as far as practicable in social research.

Objectives: By going through this paper, the student can

- Get an understanding of the nature of scientific methods, nature of social Phenomena and the way of attaining value neutrality.
- Have a grip over the basic steps involved in social research and the types of social research with their applicability
- Develop an insight into the need and types of research design and the use of sampling method for attending objectivity and scientific study.

Learning Outcomes: This paper is designed and incorporated to acquaint the students with the scientific ways of studying social phenomena. This provides them with a research insight that will enable them to capture the most relevant data in an objective manner. The market demand of this paper will be very high as the students well versed with this paper will be highly demanded in academics, fundamental research, and policy research undertaken both by Government and Non- Government agencies.

Unit-1: Meaning & Significance of Social Research

Meaning ,Definitions & Utility of Social Research
Major Steps in Social Research
Scientific Method-Characteristics
Applicability of Scientific Method

Unit-: 2 Hypothesis & Sampling

Meaning, definitions and Characteristics of Hypothesis
Types of and sources of Hypothesis
Sampling-Meaning & Characteristics
Types of sampling-probability & non-probability

Unit -3: Tools and Techniques of Data Collection

Qualitative methods and Quantitative methods
Observation
Interview Schedule, Questionnaire
Case study

Unit-:4 Data Analysis & Report Writing

Significance of Measures of Central Tendency
Mean, Median, Mode
Tabulation and Data Analysis
Report Writing

Suggested Text Books:

1. Goode William J and Paul K. Hatt. Methods in Social Research. New York: McGraw-Hill Book Co, 1952

2. Wilkinson T.S& P.L. Bhandarkar, Methodology & Techniques of Social Research, Himalaya Publishing House, 2010

Reference Readings:

1. Bajpayee, . S.R. Methods of Social Survey and Research, KitabGhar, 1960.
2. Seale, C. (ed), *Researching Society and Culture*, London: Sage, 2014.
3. Young , P.V.Scientific Social Survey and Research, Prentice Hall, New Delhi, (Ref.Book) 1939
4. Kothari, C.R Research Methodology: Methods and Techniques, Bangalore ,Wiley Eastern, 1985
5. Bryman, Alan Quality and Quantity in Social Research, Unwin Hyman, London, 1988.
6. Jayram , N. Sociology: Methods and Theory, Madras, Macmillan Madras, 1989.

CORE PAPER- XII SOCIAL MOVEMENTS IN INDIA

Movements reflect the voices raised against the prevailing practices of a society. Every society witnesses social movement in some form or the other. Movements bring social change and transformation. It is a collective effort that is driven by particular issues and brings forth changes. The present paper tries to provide a rudimentary impression to the students about the concept, nature and types of movements with a thrust on the movements witnessed by Indian society.

Objectives:

- To introduce to the students with the concept of social movements and their dynamics.
- To introduce the students to the role of social movements in social transformation.
- To help them understand the various approaches to the study of social movements.

Learning Outcomes: The very aim of this paper is to disseminate knowledge about the concept of social movements and its process and change making role in the society.

Unit-1: Social Movement

1.1 Meaning, definitions
Nature and Characteristics of Social Movement
Causes of Social Movement
Types of Social Movement- Revolutionary, Reforms, Revival

Unit-2: Peasant Movements in India

Champaran Satyagraha
The Bardoli Movement in Gujarat
The Peasant Revolt in Telengana
The Tebhaga Movement in Bengal

Unit-3: Backward Castes & Tribal Movement in India

Mahar Movement in Maharashtra
Dalit & Non-Brahmin Movement in Tamilnadu, SNDP movement in Kerala
Santhal Insurrection
Jharkhand Movement

Unit-4: Women's Movement in India

The Social Reform Movement and Women
Women in the Indian National Movement
Women in Chipko Movement
Contemporary Women's Movement

Suggested Text Books:

1. Shah, Ghanashyam Social Movements in India, Sage Publication, New Delhi, 1990
2. Rao, M.S.A.edt. ,Social Movements in India 1920-1950, OUP Delhi, 1983

Reference Readings:

1. Kumar, R.,History of Doing: An illustrated Account of Movements for Women's Rights and Feminism in India , New Delhi: Zubban, 1997.
2. Agnihotri, I. and Mazumdar, V., Changing Terms of Political Discourse: Women's Movement in India, in T. K. Oomen (ed.), Social Movements II: Concerns of Equity and Security, New Delhi: OUP,2010.
3. Geetha, V and Rajadurai, S. V., Towards a Non-Brahmin Millennium: From Iyothee Thass to Periyar. Delhi: Popular Prakashan, 1998.
4. Dhanagare D. N. Peasants Movements in India, Oxford University Press, 1983
5. Omvelt, Gail Social Movements in India, Rowman& Littlefield, INC, Oxford, 1993
6.Singh, K.S. Tribal Movements in India, Foundation Pub. New Delhi, 1982

CORE PAPER- XIII POPULATION & SOCIETY

Demography is both an index and instrument of development and change. India as a country is plagued by population explosion which retards, the economy and blocks social progress. Irrespective of several positive attempts undertaken by the government, India has failed to control its population problem. This paper is designed to provide an idea to the students about population dynamics and its impact on society.

Objectives: After going through this paper, the student can

- Understand the various facets of population studies and the theories that depict population change.

- Develop specific idea on Indian population structure, policies adopted and programmes launched in the country to check population.
- Assess the role of various agencies in population control.

Learning Outcomes: The very aim of this paper is to acquaint the students with a perennial problem of the Indian society that is population growth and the measures introduced to control it.

Unit: 1 Population Studies

1.1 Meaning & Scope of Population Studies
Population & Society-Relationship
Importance of Population Studies
Causes and effects of Population Growth

Unit: 2 Population Theories

Malthusian Theory
Optimum Theory of Population
2.4 The Theory of Demographic Transition
2.4 Applicability of Population Theories in Contemporary Scenario

Unit: 3 Determinants of Population Growth

Fertility
Migration
Mortality
Measures to control population growth

Unit: 4 Population Compositions in India

Sex Composition
Age Compositions
Literacy Composition
Rural & Urban Composition

Suggested Text Book:

1. Hans, Raj Population Studies with special reference to India, Sujeet Publication, New Delhi, 1978

Reference Readings:

1. S.N. Agarwal, Population studies with Special Reference to India,New Delhi: Lok Surjeet Publiction, 1989
2. Bose ,Ashish Demographic Diversity in India, Delhi: B.R.Publishing Corporation, 1991
3. Dubey, Surendra Nath Population of India, Delhi: Authors Press,2001
4. Chandrasekhar S. (ed) Infant Mortality, Population growth and Family Planning in India, London, George Alen and Unwin Ltd., 1974
5. Srivastava, O.S. Demography and Population Studies, Vikas Pub. House, New Delhi, 1998
6. Jain , R.K A Textbook of Population Studies, Neha Publishers & Distributors,2013

CORE PAPER- XIV SOCIAL DISORGANIZATION & DEVIANCE

No society is fully organized in character. Disorganization is apt to occur from time to time.

Disorganization is a manifestation of the deviant behavior found among some individuals. This deviance occurs when the individuals feel that the normative order of the society and its institutions are not need fulfilling in character. This present paper makes an attempt to provide an impression about the scenario of disorganization, its forms, causes and consequences with the theories explaining the situation.

Objectives: After going through this paper, the student can

- Understand the meaning, causes, consequences and forms of social disorganization.
- Learn about the theories explaining the disorganization situations.
- Comprehend the concept of crime and the existing theories of punishment.

Learning Outcomes: This paper is designed with an expectation to impress upon a student on the concept of deviant behavior leading to social disorganization, forms, theoretical foundations and criminal activities which he encounters in real life situations.

Unit-1 : Social Disorganization

1.1 Meaning and Nature
Causes and Consequences of Social Disorganization
Family Disorganization - Causes and Consequences
Personality Disorganization- Causes and Consequences

Unit- 2: Theories of Deviant Behaviour

Durkheim's Theory
Merton's Theory
Differential Association theory
Delinquent Sub-Culture theory

Unit- 3 : Crime and Punishment :

Crime-Definitions and types
Causes & Consequences of Crime
Juvenile Delinquency-Causes and consequences
Theories of Punishment: Retributive, Deterrant, Reformative

Unit-4: Social Problems:

Alcholism
Terrorism
Human Trafficking
Drug Addiction

Suggested Text Book

1. Memoria, C.B.Social Problems and Social Disorganization in India, Kitab Mahal, Allahabad, 1980.

Reference Readings:

1. Prabhakar , Vani Social Disorganization & Deviance, Wisdom Press (ISBN) (CBS) 2016
2 Ahuja, Ram Social Problems in India, Rawat, 2014

3. Sharma, R.N.Criminology & Penology, Surjit Publication, New Delhi,2008
4. Ahuja, Ram Criminology, Rawat, 2001
5. Shankar Rao , C.N.Indian Social Problems, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2015
6. Sharma, P.D.Criminal Justice Administration, Rawat, 1998

DISCIPLINE SPECIFIC ELECTIVE, PAPER-1 SOCIOLOGY OF HEALTH

Objectives: After studying this paper, the student can

- Gain knowledge on the sociology of health and medicine.
- Can get an insight on socio-cultural dimensions in the construction of illness and medical knowledge.
- Can gain understanding on health sector reforms of Government of India.
- Gain knowledge on medical pluralism for treatment of disease.

Learning Outcome: Students are expected to know the concept of health from different perspectives. They can also learn about the contemporary trend of Sociology of Health in India. By knowing various health policies and programs in India student can expand the information base and disseminate the same to others.

Unit – 1: Sociology of Health

Meaning & Definition
Emergence of Health Sociology
Scope of Sociology of Health
Social Determinants of Health

Unit – 2: Sociological Perspectives of Health

Functionalist
Marxist
Post structuralist
Feminist

Unit-3: Health Programs in India

Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)
Janani SurakshaYojana (JSY)
National Urban Health Mission
National AIDS Control Programme

Unit-4: Health Sector Reforms of the Government of India:

Health Policies of the Government of India
Role of ICDS
Protective & Preventive measures
Promotive measures (modern & indigenous)

Suggested Text Book:

1. Cockerham, William C. Medical Sociology Englewood, Cliffs, Prentice Hall 1978.

Reference Readings:

1. Dak, T.M. Sociology of Health in India, Kaveri Printers, New Delhi,1991.

2. Blaxter, M., Health, Cambridge: Polity Press, 2004.

3. White, K., An Introduction to Sociology of Health and Illness, London: Sage, 2016, third edition

4. Prasad, Purendra and Amar Jesani edt. Equity and Access Health Care Studies, Oxford University Press, 2018

DISCIPLINE SPECIFIC ELECTIVES, PAPER-2 SOCIOLOGY OF EDUCATION

Objectives: After going through this paper, the student can

- Get to know the meaning and theoretical perspectives on sociology of education
- Get familiar with the relationship between education and society.
- Get insights on role of education in Nation building.
- Get an understanding on inequality in education that persists at various levels.
- Gain knowledge on constitutional provisions and various education policies

Learning Outcomes: The students are expected to learn various perspectives on education through the contributions of both Indian and western thinkers. Knowledge on education policies and constitution provisions can prepare the students for the development of their own higher education. Students can develop academic interest by knowing the contribution of education in nation building as well as the educational inequalities which persist in the society.

Unit-1: Sociology of Education

Meaning & Concept of Sociology of Education
Interrelationship between Education and Society
Literacy & Education
Education as Social Construct

Unit-2: Perspectives on Sociology of Education

Dominant Perspectives on Sociology of Education
Functionalist
Conflict Critical Perspectives

Unit-3: Education, Social Process

3.1 Education and Socialization
Education and Social Change
Education and Social Mobility
Education and Development

Unit-4: Educational Programs, Policies & Issues in India

Educational Policies in India
Universalisation of Primary Education
Privatisation of Education
Right to Education in Contemporary India

Suggested Text Book:

1 Jayram, N., Sociology of Education in India. Rawat. Jaipur., 2015

Reference Readings:

1. Morish, I. The Sociology of Education. An Introduction. London. Unwin Publication, 1972.
2. Freire, P., *Pedagogy of the Oppressed*, New York: Seabury Press, 1970.
3. Hooks, B. *Teaching to Transgress*, New York: Routledge,1994
4. Aggarwal, J.C Yearbook of Indian Education. New Delhi, 1992
5. Dwibedi, Ramnath. Education and Society, Kalyani Publisher, New Delhi2016.
6. Kilpatrick, M.O. Philosophy of Education. McMillan Company1963

DISCIPLINE SPECIFIC ELECTIVES, PAPER-3 URBAN SOCIOLOGY

Urbanisation is an important social process that changed the face of human civilization. It was initiated with the process of modernization, transport revolution, coming up of river valley civilizations, establishment of trade links and industrial revolution. Urbanisation has brought both prosperity and problems. It is one of the earnest tasks of Sociology to trace out the evolution of the process, social; problems associated with it and policy planning and measures undertaken to overcome these challenges. This paper Urban Sociology concentrates upon these tasks.

Objectives: After going through this paper, the student can

- Understand the specific traits of urban areas, its historical patterns of growth.
- Develop knowledge about urban social institutions and problems
- Gain insight into urban development plans, programmes and efforts.

Learning Outcomes: By going through this paper, the students can get an insight into the basic features of an urban area, the way cities grow, the major problem that encounter urban population and the various urban development programmes designed by the Government of India, their implementations, achievements and limitations.

Unit-1: Introduction to Urban Sociology

Meaning, and Subject matter of Urban Sociology
Importance of Urban Sociology
Specific traits of Urban Community
Urbanism as a way of life

Unit-2: Theories of patterns of city growth:

Concentric zone theory
Sector model
Multiple nuclei theory
Exploitative Model & symbolic approach theory

Unit-3: Urban Social Problems

Urban Crime
Problem of Slums
Problem in Urban Basic Services
Urban Pollution

Unit –4: Urban Development Programmes in India

Smart City Mission (SCM)
Jawaharlal Nehru National Urban Renewal Mission (JNNURM)
Atal Mission for Rejuvenation and Urban Transformation (AMRUT)
National Urban Livelihoods Mission (NULM)

Suggested Text Book:

1.Sharma,R.N.Urban Sociology, Atlantic Publishers & Distributors Pvt Ltd,2014

Reference Readings:

1. Rao M. S. A. Urban Sociology in India: Reader and Sourcebook ,Sangam Books Limited; New edition ,1992Satish Sharma, Urban Sociology, Wisdom Press (ISBN) (CBCS)
2. Jayapalan, N . Urban Sociology, Atlantic Publishers,2002,
3. Dhandeva, M.S. Sociology & Slum, Archives Books, New Delhi, 1989.
4. Sandhu, R.S Urbanization in India: Sociological Contributions, Sage Publication, New Delhi, 2003.
5. William G. Flanagan, William G. Urban Sociology: Images and structure, Allyn & Bacon, Boston. 1999.
6. Ramachandran, R Urbanization and Urban system in India, Oxford Univ. Press, New Delhi, 1989

DISCIPLINE SPECIFIC ELECTIVES, PAPER-4

FIELD WORK AND DISSERTATION
(College can give this choice only for students with above 60% aggregate marks)

Objectives: This paper is designed

- To provide a basic exposure to the student to the fields and to acquaint him/her with the research process.
- To equip them with the capacity to browse secondary literature from right sources and with a process of reviewing relevant literature.
- To promote in them an ability to capture the right type of data and put them into documentation format.

(Dissertation: 80 marks and Viva-voce: 20 marks)

- Dissertation may be written on any social institution, problem or may be an evaluative study.
- It should be based on empirical study.
- Size of the dissertation should be around 5000 words.
- Dissertation paper will be examined jointly by one Internal and one External Examiner to be appointed by the University. Marks will be awarded jointly by the Internal and External Examiners on the basis of the written Dissertation and Viva-

voce.

OR TRIBES OF INDIA

Objectives: The present paper aims

- To provide a fair stock of knowledge to the students on the tribes and tribal life.
- To enable the students to understand the problems faced by the tribes
- To give impression and knowledge on the tribal development plans, policies and programmes.

Learning outcomes: After going through this paper it is expected that the students will gain fair idea about the Indian tribes, their demography and distribution. They will be sensitized about tribal situations and the challenges faced by them today. Finally, they can get an account of the safeguards created for them through the Constitution, legislations and programmes and the changes noted in the tribal society of the country today.

Unit-1: Tribes: Their Distribution and Demography

1.1 Tribe: definitions, characteristics and demography
Geogrpahic distribution of the tribes
N.K.Guha's Classification on Tribes
Caste and Tribe

Unit-2: Social Organisation of the Tribes

Tribal economic system
Tribal political system
Tribal religion
Women in Tribal Society

Unit-3: Challenges Faced by the Tribes

Land alienation, Migration
Alcoholism and Indebtedness
Tribal Displacement
Tribal health and Sanitation

Unit-4: Changes and Upliftment of the Tribes

Constitutional safeguards for the tribes
Legal provisions for tribes
Flagship programmes of the Government for the tribes
Recent Changes in Tribal Life

Suggested Text Books:

1. Hasnain, Nadeem, Indian Anthropology, New Royal Book Co 2011

2. Majumdar, D.N. and T.N.Madan, An Introduction To Social Anthropology, Asia Pub. House, 2010

Reference Readings:

1. Hasnain Nadeem Tribal India, New Royal Book Company, 2017 edition

2. Joshi Vidyut and Chandrakant Upadhyaya (eds), Tribal Situation in India: Issues and Development ,Rawat Publications,2017

3. Rath Govind Chandra,edt. Tribal Development in India:The Contemporary Debate, Sage Publications,2006

4. Paul Mitra, Kakali Development Programmes And Tribals Some Emerging Issues, Kalpaz Publications,2004

5. Munshi, Indra The Adivasi Question, Orient Blackswan Private Limited,2018

6. Mohanty,P.K. Development of Primitive Tribal Groups in India, Kalpaz Publications,2003

GENERIC ELECTIVE PAPER I INTRODUCTION TO SOCIOLOGY

This introductory paper intends to acquaint the students with Sociology as a Social Science and the basic concepts used in the discipline. It also focuses on the social processes and the social institutions that man encounters as a member of the society.

Objectives: After studying these two papers, the student can

- Get to know the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature and scope of the discipline and its approach.
- Develop knowledge about its historicity.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions man encounters as a member of the society.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Discipline and Perspective

Meaning, Emergence of Sociology
Definition, Subject Matter
Nature and Scope of Sociology
Relationship of Sociology with Anthropology, Political Science, History and Economics

Unit-2: Basic Concepts

Society and Community
Associations and Institutions
Social Groups and Culture
Role and Status

Unit-3: Social Stratification

Meaning, Definition, Characteristics
Forms of Stratification-Caste, class & gender
Functionalist Theorists of stratification (Parsons, Davis & Moore)
Marxian & Weberian Theories of stratification

Unit-4: Socialization and Social Control

4.1 Meaning, Definitions, Stages of Socialization Process.

4.2. Agencies of Socialization

Social Control: Meaning, Definitions, importance of social control
Agencies of Social Control: Formal and Informal

Suggested Text Books:

1. Rao ,C.N.Shankar, Principles of Sociology: With an Introduction to Social Thought, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2006
2. Haralambos &Holborn , Sociology: Themes and Perspectives Harper Collins; Eighth edition, 2014

Reference Readings:

1. Mills, C.W.,*The Sociological Imagination*, Oxford: Oxford University Press, 1959.
2. Giddens ,Anthony, Introduction to Sociology, 1991
3. Rawat, H.K. Contemporary Sociology, Rawat Publication, Jaipur, 2013
4 Johnson, Harry M. Sociology: A Systematic Introduction, New Delhi, Allied Publishers, 1995
5. Smelser Neil J. *Hand Book of Sociology*, Sage Publications, Inc. 1998
6. Dasgupta,Samir and Saha,Paulomi An Introduction to Sociology,Pearson,2014

GENERIC ELECTIVE PAPER II INDIAN SOCIETY

Every society has its own peculiar structure and there are some institutions universal to every society, but with their unique manifestations in each society. There are some change agents and initiatives that enable the society to change with the passage of time. This paper focuses on the structure of the Indian society and the changing aspects with the processes operating, change agents and initiatives.

Objectives: After studying these two papers on Indian society, the student can

- Get an impression about the basic composition of Indian society, its historical moorings, basic philosophical foundations of the society and the institutions.
- Learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.

Learning Outcomes: This paper is expected to bring familiarity in a student about Indian society. It will present a comprehensive, integrated and empirically –based profile of Indian society. It is hoped that the structure and processes operative in the society, the change agents operating in Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

Unit-1: Composition of Indian Society and Approaches to the study of Indian society:

Composition of Indian Society: Religious, Linguistic and Racial
Unity in diversity
National Integration--Meaning & Threats (Communalism, linguism, regionalism)
Approaches to the study of Indian society: Structural-Functional, Marxian and Subaltern

Unit-2: Historical Moorings and Bases of Hindu Social Organization

Varna Vyavastha and relevance
Ashrama and relevance
Purusartha and relationship with Ashramas
Doctrine of Karma

Unit-3: Marriage and Family in India

Hindu Marriage as Sacrament, Aims of Hindu marriage, Forms of Hindu Marriage
Hindu Joint Family-Meaning & disintegration
Marriage among the Muslims & Tribes
Changes in Marriage and Family in India

Unit-4: The Caste System in India

Meaning, Definitions & features of Caste
Functions & Dysfunctions of Caste
Factors affecting caste system
Recent Changes in Caste System

Suggested Text Book:

1. Rao ,C.N.Shankar, Sociology of Indian Society, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2004

Reference Readings:

1. Shah, A.M., The Household Dimension of the Family in India: A Field Study in a Gujarat Village and a Review of Other Studies, Delhi: Orient Longman, 1973.
2. Uberoi, P. (ed.), Family, Kinship and Marriage in India, New Delhi: Oxford University Press, 1993.
3.. Y. Singh , Modernisation of Indian Tradition, Jaipur: Rawat Publications, 1986
4..Ram Ahuja, Indian Social System, Rawat Publications, 1993
5. Sharma, KL. Indian Social Structure and Change, Rawat Publication, 2008
6. Srinivas, M.N. India: Social Structure. New Delhi: Hindustan Publishing Corporation, 1980

GENERIC ELECTIVE PAPER III

SOCIAL CHANGE AND DEVELOPMENT

Change is the law of nature and every society is subject to change. Social change has always been a central concern of Sociological study. Change takes different forms. Change has its pattern which is spelt out by various theories. Change is often propelled by various factors. This paper is designed to provide some ideas to the student about such process, theories and factors.

Objectives: After going through this paper, the student can

- Derive knowledge about the meaning, nature, forms and patterns of change.
- Get an idea about the theories that explain change and their adequacy in explaining so.
- Get an impression about the factors that propel change in the society.

Learning Outcomes: This paper is expected to provide a wholesome idea to the students about the process of social change. They can relate their experience with the theoretical explanations.

Unit-1: Social Change:

Meaning and Nature.
Social Evolution & Social Progress: Meaning and features
Social Development: Meaning and Features
Factors of Change: Cultural, Technological, Demographic

Unit-2: Theories of Social Change:

Evolutionary theory
Functionalist theory
Conflict Theory
Cyclical Theory

Unit-3: Models of development:

Indicators of Social Development
Capitalist
Socialist
Gandhian

Unit-4: Processes of Social Change in Indian Context:

Sanskritsation
Westernisation
Modernisation

1.5 Secularisation

Suggested Text Books:

1. Steven, Vago, Social Change, Pearson Prentice Hall, 2003 5thRev.Edt

Reference Readings:

1. Jairam Kansal , Social Change & Development, Wisdom Press (ISBN) (CBCS), 2004
2. Singh, Y., *Modernization of Indian Tradition: A Systematic Study of Social Change*, Faridabad: Thompson Press Limited, 1973.
3. Rudolf, L and Rudolf, S. H., *Modernity of Tradition: Political Development in India*,Chicago: University of Chicago Press, 1984.
4. Moore, W.E Social Change, Prentice Hall of India, New Delhi, 1965.
5. Mishra, B Capitalism, Socialism and Planning, South Asia Books, 1998
6. Escobar, A., *Encountering Development*, London: Zed Books, 2012

GENERIC ELECTIVE PAPER IV RURAL SOCIOLOGY

Rural Sociology is a specialized branch of Sociology describing the society of villages and rural areas. As the rural areas or the villages mark the beginning of human civilization, this paper is designed to bring out the distinct features of the rural society with their typologies and typicalities. In the present paper an attempt is made to introduce the student with the development of this branch overtime with its focus on the typicality of Indian villages, their structures, changing features and social problems faced by the rural people.

Objectives: After studying this paper, the student can

- Get an impression about the emergence of the sub discipline Rural Sociology and the forces contributing for its origin.
- Learn about the nature of this branch of knowledge, its subject matter andsignificance.
- Collect information and knowledge about the mooring of the sub discipline in the Indian context.
- Generate an idea about the typicality's of the rural society and the institutions operating therein and their dynamics.
- Derive ideas about rural social problems of the country.

Learning Outcomes: India thrives in her villages. By going through this paper, the student can have a grip on the grass roots of Indian society. This will enable the student to understand the society in a better manner, to note the heterogeneities in culture, institutions and their functions, changes, the contrasts found between the rural urban societies and the problems faced by the people.

Unit- 1: Introduction to Rural Sociology

1.1 Meaning, Definition & Nature
Origin & Subject Matter of Rural Sociology
Importance of Rural Sociology
Evolution and Growth of Village Community

Unit- 2: Rural Social Structure

Village Community-Meaning & Types
Rural-Urban Contrast & Continuum
Agrarian Economy
Dominant Caste, Emerging class structure in rural India

Unit- 3: Rural Social Problems

Poverty
Unemployment
3.4 Indebtedness
3.4 Rural factionalism

Unit- 4: Rural Development Programmes

Community development Programmmes, Cooperative Movements and Panchayati Raj System
Swarnajayanti Gram SwarozgarYojana (SGSY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
National Rural Livelihood Mission (NRLM)
National Rural Health Mission (NRHM)

Suggested Text Books:

1. Sharma, R.N. Rural Sociology,Media Promoters and Publishers. Pvt. Ltd. 1983
2. Singh , Kartar Rural Development: Principle Policies and Management, Sage, New Delhi,1995

Reference Readings :

1. Choudhury, Anjana Rural Sciology, Wisdom Press ,2004
2. S.L. Doshi, S.L &P.C.Jain , Rural Sociology, Jajpur, Rawat,2002.
3. Maheswari, S.R Rural Development in India, Sage Publication, New Delhi,1985.
4. Ahuja, Ram Rural Sociology,Popular Prakashan Ltd; New edition 2011
5. Desai, A.R .Rural Sociology in India, Popular Prakashn, Bombay, 1997
6. Ray E. Pahl "The Rural-Urban Continuum." *Sociologia Ruralis* 6(3–4):299–327. Reprinted in R. E. Pahl, ed. *Readings in Urban Sociology*. Oxford: Pergamon, 1970

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Areas of Training

Sl. No.	Name of the Paper	Units needing a coverage under training	Days required	Total no. of training sessions needed
1.	Sociology of Environment	4 units	4 days	16
2.	Research Methodology	2 units	2 days	8
3.	Social Movements in India	4 units	4 days	16
4.	Population & Society	2 units	2 days	8
5.	Sociology of Health	4 units	4 days	16
6.	Sociology of Education	4 units	4 days	16
Total	06 Papers	20 Units	20 Days	80 sessions

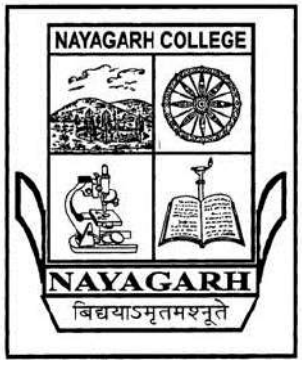
Criteria 1.1.3

APPENDIX-III

ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ବିଭାଗ

Nayagarh Autonomous College

Nayagarh



ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ବିଭାଗ

ଏମ୍.ଏ. ପାଠ୍ୟକ୍ରମ

Nayagarh Autonomous College, Nayagarh

ଏମ୍.ଏ. ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମ (2019-2020)

(ନିୟମିତ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପାଇଁ)

For Regular Students

Two years of Four Semester Course Design Syllabus for choice based credit system

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

COURSE STRUCTURE

01. Group- A Papers	:	CORE PAPERS (Compulsory Papers)	8 to 10
02. Group- B	:	Core Elective Papers (Special Papers)	4 to 6 Papers

03. Group – C : Allied Elective Courses. 4 to 6 Papers

(Open to students of all the Department as well as of allied disciplines)

04. Group- D : Free Elective in 3rd Semester 2to 6 Papers

(The student may purse such a course in his own Department or in other Department)

05. Group- E : Audit Papers: (No Credit Points)

Total Papers	:	18
Total Marks	:	1800
Total Credit Points	:	72

(Each paper: 4 Credits 4×18=72)

INSTRUCTION :

Each Paper	:	100 Marks
• Internal Assessment	:	100 Marks
• Semester Examination	:	70 Marks
Total	:	100 marks

FIRST SEMESTER

Group-"A"

Paper Code	CORE PAPERS-Compulsory Papers Course Name (Core Papers)	Marks	Cr
1.1	ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟ କବିତା	100	4
1.2	ଆଧୁନିକ କାବ୍ୟ କବିତା	100	4
1.3	କଥା ସାହିତ୍ୟ	100	4
1.4	ଗଦ୍ୟ ସାହିତ୍ୟ	100	4
	Total credit 4 x 4=16 Total Marks 100 x 400=400		

SECOND SEMESTER

Group-"A"

Paper Code	Core Paper-Compulsory Papers Course Course Name (Core Paper)	Marks	Cr
2.1	ଭାଷା ବିଜ୍ଞାନ	100	4
22.	ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ	100	4
2.3	ଓଡ଼ିଆ ନାଟ୍ୟ ସାହିତ୍ୟ	100	4
2.4	ତୁଳନାତ୍ମକ ସାହିତ୍ୟ ସମୀକ୍ଷାତତ୍ତ୍ୱ, ଅନୁବାଦ ସାହିତ୍ୟ	100	4
	Total credit: 4 x 4 = 16 Total Marks 100 × 4 = 400		

THIRD SEMESTAR

Group- “B & C”

Paper Code	Core Elective- Special Paper Course Name(Core Elective)		Mark	Cr
3.1	ଭାଷାତତ୍ତ୍ୱ- ୧		100	4
3.2	ଭାଷାତତ୍ତ୍ୱ- ୨		100	4
3.3	ରଙ୍ଗମଞ୍ଚ ଓ ନାଟ୍ୟତତ୍ତ୍ୱ	*(D)	100	4
3.4	ନାଟକ ଓ ନାଟ୍ୟକାର	*(D)	100	4
3.5	ଆଧୁନିକ କାବ୍ୟ କବିତା	*(D)	100	4
3.6	ଆଧୁନିକ ଗଦ୍ୟ ସାହିତ୍ୟ	*(D)	100	4
3.7	ଓଡ଼ିଶାର ଧର୍ମଧାରା	*(D)	100	4
3.8	ଓଡ଼ିଶାରେ ବୈଷ୍ଣବଧର୍ମ	*(D)	100	4

Any Six to be opted by the students.

Total credit : 4 x 6 = 24 Total Mark 100 x 6 = 400

*D : Free Elective Papers

FOURTH SEMESTER

Group-"A & B"

Paper Code	Course Name (Core Papers)		Marks	Cr
4.1	ଲୋକ ସାହିତ୍ୟ	(*D) Core Course	100	4
4.2	ଗବେଷଣା ପଦ୍ଧତି		100	4
4.3	ଗବେଷଣା ନିବନ୍ଧ ପ୍ରସ୍ତୁତି ଓ ମୌଖିକ ପରୀକ୍ଷା		200	8
4.4	ଗ୍ରନ୍ଥ ସଂପାଦନା ଓ ଆଲୋଚନା	Elective Core (Any one)		

Credit= 4x2=08 Total Credit-16

Credit 8x1-08 Total Marks 400

*D: FREE ELECTIVE PAPERS

GROUP - E

Audit Course (No Credit)

1. Creative Writing (Poetry, Short Story)
2. Performing Arts (Drama)
3. Computer Application

DETAILED SYLLABUS

ସର୍ବଶେଷ ପାଠ୍ୟକ୍ରମ

1ST SEMESTER Group - A (Cort Course)

COURSE CODE - 1.1

ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟ କବିତା

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୨୦

ୟୁନିଟ୍ – ୧ ସାରଳା ମହାଭାରତ - ସ୍ୱର୍ଗାରୋହଣ ପର୍ବ ।

ୟୁନିଟ୍ – ୨ ଭାଗବତ - ଜଗନ୍ନାଥ ଦାସ – ରାସପଞ୍ଚାଧ୍ୟାୟ

ୟୁନିଟ୍ – ୩ ଲାବଣ୍ୟବତୀ – ଉପେନ୍ଦ୍ର ଭଞ୍ଜ – ୧, ୫, ୨୨ ଛାନ୍ଦ

ୟୁନିଟ୍ – ୪ ପ୍ରାଚୀନ କବିତା (ପ୍ରାଚୀନ-ମଧ୍ୟକାଳୀନ କବିତା . ସଂ. ଡ଼ ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ - ପ୍ରାଚୀ ସାହିତ୍ୟ ପ୍ରତିଷ୍ଠାନ)

(କେଶବ କୋଇଲି, ଗ୍ରୀଷ୍ମବର୍ଣ୍ଣନା, ଘେନାଇ ଆମ୍ଭେ ଯେତେ କହିଲୁରେ, ରସମାନସ ରଧ୍ୱକେଶ, ସ୍ମୃତି ଚିନ୍ତାମଣି (୧୫ଶ ବୋଲି)

ୟୁନିଟ୍ – ୫ ପ୍ରାଚୀନ ଓଡ଼ିଆ କବିତାର ସ୍ୱରୂପ

(ଚଉତିଶା, କୋଇଲି, ଭଜନ, ଜଣାଣ, ଚମ୍ପୂ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 1.2

ଆଧୁନିକ କାବ୍ୟ କବିତା

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ମହାଯାତ୍ରା - ରାଧାନାଥ ରାୟ ।

ୟୁନିଟ୍ --୨ ଉତ୍କଳିକା (ପ୍ରଥମ ୪ଟି କବିତା) – ରାଧାମୋହନ ଗଡନାୟକ

ୟୁନିଟ୍ – ୩ ଆଧୁନିକ ଓଡ଼ିଆ କବିତା - ସଂ. ପ୍ରଫେସର ସଂଘମିତ୍ରା ମିଶ୍ର

(ଆଶା, ପିତୃପକ୍ଷତର୍ପଣ, ଧରାବତରଣ, ଜହ୍ନରାତି, ଉଚ୍ଛୋଶ୍ରବା)

ୟୁନିଟ୍ – ୪ ଆଧୁନିକ କାବ୍ୟ କବିତାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

(କାବ୍ୟ, ମହାକାବ୍ୟ, ଗାଥାକବିତା, ଗୀତିକବିତା)

ୟୁନିଟ୍ – ୫ ବିଦ୍ରତାତ୍ମକ, ଶୋକଗୀତିକା, ଚତୁର୍ଦ୍ଦଶପାଦୀ କବିତା, ସମ୍ବୋଧନ ଗୀତିକା

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

‘କ’ ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକକୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ =୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

Γx୩=୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ସଂକଳ୍ପ । ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨= ୧୦

COURSE CODE - 1.3

କଥା ସାହିତ୍ୟ

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ - ୧ ରୁଦ୍ର ସୁଧାନିଧି - ନାରାୟଣାନନ୍ଦ ଅବଧୂତ ସ୍ୱାମୀ – ରୁଦ୍ର ସୁଧାନିଧିର ଜନ୍ମ ପର୍ଯ୍ୟନ୍ତ

ୟୁନିଟ୍ - - ୨ ଭୀମାଭୂୟାଁ - ଗୋପାଳବଲ୍ଲଭ ଦାସ

ୟୁନିଟ୍ – ୩ ଦକ୍ଷିଣାବର୍ତ୍ତ – ଶାନ୍ତନୁ କୁମାର ଆଚାର୍ଯ୍ୟ

ୟୁନିଟ୍ – ୪ ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି

ୟୁନିଟ୍ –୫ ହାତ, ଡାକମୁନସୀ, ନିଜସଞ୍ଜି, ମୋକ୍ଷ, ଲକ୍ଷ୍ମୀର ଅଭିଶାର

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨× ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 1.4

ଗଦ୍ୟ ସାହିତ୍ୟ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଜୀବନପଥେ - ରମାଦେବୀ (ପ୍ରଥମ ୨୦ଟି ଅଧ୍ୟୟ)

ୟୁନିଟ୍ – ୨ ଆମେରିକା ଅନୁଭୂତି - ଗୋଲୋକ ବିହାରୀ ଧଳ

ୟୁନିଟ୍ – ୩ ଆମ ଓଡ଼ିଶାର ଗର୍ବ ଓ ଗୌରବ- ସଂ. ପଠାଣି ପଟ୍ଟନାୟକ (ପ୍ରଥମ ୫ଟି ଅଧ୍ୟାୟ)

ୟୁନିଟ୍ – ୪ ପ୍ରବନ୍ଧ କତିପୟ - ସ. ଡ଼. ବିଷ୍ଣୁପ୍ରିୟା ଓତା- କିତାବ ମହଲ

(ଓଡ଼ିଆ ଜାତୀୟତା, ସୌନ୍ଦର୍ଯ୍ୟ ଓ ପ୍ରେମ, ଆର୍ଯ୍ୟଜୀବନ, କ୍ଷମା, ଭାରତୀୟ ନାରୀର ଆଦର୍ଶ)

ୟୁନିଟ୍ – ୫ ପ୍ରବନ୍ଧ, ଜୀବନୀ, ଆତ୍ମଜୀବନୀ ଓ ଭ୍ରମଣ କାହାଣୀର ତତ୍ତ୍ୱ ।

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨x୩=୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

‘ଗ’ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫x ୨ = ୧୦

2ND SEMESTER

Group - A (Core Course)

COURSE CODE - 2.1

ଭାଷା ବିଜ୍ଞାନ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଭାଷାର ସଂଜ୍ଞା, ପ୍ରକାରଭେଦ, ଉତ୍ପତ୍ତି ସଂପର୍କୀୟ ମତବାଦ

ୟୁନିଟ୍ – ୨ ବାଗ୍‌ଯନ୍ତ୍ର ଓ ତା’ର ବିଭିନ୍ନ ଅଂଶର ପରିଚୟ, ବାଦ୍ୟଯନ୍ତ୍ରର ଭୂମିକା

ୟୁନିଟ୍ – ୩ ଅର୍ଥ ପରିବର୍ତ୍ତନ ଓ ଧ୍ୱନି ପରିବର୍ତ୍ତନର ବିଭିନ୍ନ କାରଣ ଓ ଦିଗ

ୟୁନିଟ୍ – ୪ ଇଣ୍ଡୋ-ୟୁରୋପୀୟ ଭାଷା ପରିବାର, ଭାରତୀୟ ଆର୍ଯ୍ୟ ଭାଷାଗୋଷ୍ଠୀ, ଓଡ଼ିଆ ଭାଷାର କ୍ରମବିକାଶ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ଭାଷା ଉପରେ ବିଭିନ୍ନ ଭାଷାର ପ୍ରଭାବ (ଇଂରାଜୀ, ଯାବନିକ, ଦ୍ରାବିଡ଼)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

‘କ’ ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮
× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 2.2

ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ପ୍ରାକ୍ ସାରଳା ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୨ ସାରଳା ଓ ପଞ୍ଚସଖା ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୩ ରୀତି ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୪ ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୫ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ (ଗଳ୍ପ, ଉପନ୍ୟାସ, ନାଟକ,କବିତା)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨
× ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 2.3

ଓଡ଼ିଆ ନାଟ୍ୟ ସାହିତ୍ୟ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ କାଞ୍ଚିକାବେରୀ - ରାମଶଙ୍କର ରାୟ

ୟୁନିଟ୍ – ୨ ଭାତ - କାଳୀଚରଣ ପଟ୍ଟନାୟକ

ୟୁନିଟ୍ – ୩ ଅରଣ୍ୟ ଫସଲ – ମନୋରଞ୍ଜନ ଦାସ

ୟୁନିଟ୍ – ୪ ଶୋଣିତ ସ୍ୱାକ୍ଷର - ବିଜୟ କୁମାର ଶତପଥୀ

ୟୁନିଟ୍ – ୫ ଏକାଙ୍କିକା - ସଂ, ନାରାୟଣ ସାହୁ

(ଲେଭେଲ କ୍ରସିଙ୍ଗ, ପ୍ରବେଶ ପ୍ରସ୍ଥାନ, ସଂଧ ଆସରର ଭୂତ, ଦୁଃସମୟ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ

୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 2.4

ତୁଳନାତ୍ମକ ସାହିତ୍ୟ, ସମୀକ୍ଷାତତ୍ତ୍ୱ ଅନୁବାଦ ସାହିତ୍ୟ

ସଂଖ୍ୟାସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପରିସର

ୟୁନିଟ୍ – ୨ ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ଉପଯୋଗିତା ଓ ବିଚାରଧାରା

ୟୁନିଟ୍ – ୩ ସମୀକ୍ଷାତତ୍ତ୍ୱ (ରସବାଦୀ, ଜାତିବାଦୀ, ନନ୍ଦନତାତ୍ତ୍ୱିକ, ଶୈଳୀତାତ୍ତ୍ୱୀକ)

ୟୁନିଟ୍ – ୪ ଅନୁବାଦ ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)

ୟୁନିଟ୍ – ୫ ଅନୁବାଦର ପ୍ରୟୋଗ

(ଅନୁବାଦର ବର୍ଣ୍ଣବିଭା – ସଂ. ପ୍ରଶରତଚନ୍ଦ୍ର ରଥ)

ତୁହିପରା, ତପସ୍ୱିନୀ, To the Cuckoo Geetanjali)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ।

ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮ x ୩= ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

3RD SEMESTER

(Group - B & C)

CORE ELECTIVE (SPECIAL PAPERS) (ANY SIX)

COURSE CODE - 3.1 (Any Six)

ଭାଷାତତ୍ତ୍ୱ - ୧ (linguistics – 1)

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଭାଷା ଓ ଭାଷାତତ୍ତ୍ୱ ସଂପର୍କୀୟ ଆଲୋଚନା, ଭାଷାତତ୍ତ୍ୱ ଅଧ୍ୟୟନର ବିଭିନ୍ନ ଦିଗ (ଐତିହାସିକ, କାଳାନୁକ୍ରମିକ, ବର୍ଣ୍ଣନାତ୍ମକ ଓ ତୁଳନାତ୍ମକ)

ୟୁନିଟ୍ – ୨ ଭାଷିକ ଧ୍ୱନି ମାନଙ୍କର, ପ୍ରେରଣ ଓ ଗ୍ରହଣ ପ୍ରକ୍ରିୟା, ବାକ୍ୟଯନ୍ତ୍ରର ବିଭିନ୍ନ ଅଂଶର ପରିଚୟ ଓ କାର୍ଯ୍ୟକାରିତା

ୟୁନିଟ୍ – ୩ ଓଡ଼ିଆ ଭାଷିକ ଧ୍ୱନିମାନଙ୍କର ବର୍ଗୀକରଣ, ଇଂରାଜୀ ଧ୍ୱନିମାନଙ୍କର ପରିଚୟ ଓ ବିଭାଗୀକରଣ

ୟୁନିଟ୍ – ୪ ଫୋନିମ୍ ର ସଂଜ୍ଞା ଓ ପ୍ରକାରଭେଦ, ଓଡ଼ିଆ ଧ୍ୱନି ଗ୍ରାମଗୁଡ଼ିକର ପରିଚୟ

ୟୁନିଟ୍ – ୫ ଆର୍ନ୍ତଜାତୀୟ ଧ୍ୱନ୍ୟାତ୍ମକ ଲିପିର ପରିଚୟ ଓ ଧ୍ୱନ୍ୟାତ୍ମକ ପ୍ରତିଲିଖନ

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । । ୧୨
× ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮
× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫
× ୨ = ୧୦

COURSE CODE - 3.2

ଭାଷାତତ୍ତ୍ୱ - 2

linguistics – 2

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଧ୍ୱନିନିୟମ (ଗ୍ରୀମସ୍, ବର୍ଷାର, ରାୟ) ଶବ୍ଦ ବିଜ୍ଞାନ ଓ ରୂପବିଜ୍ଞାନ

ୟୁନିଟ୍ – ୨ ଭାଷାର ଅର୍ଥତାତ୍ତ୍ୱିକ ବିଚାର, ଭାଷାର ବାକ୍ୟାତାତ୍ତ୍ୱିକ ବିଚାର

ୟୁନିଟ୍ – ୩ ଭାଷିକ ଧ୍ୱନିର ଦୈର୍ଘ୍ୟ, ବଳାଘାତ, ସ୍ୱରଲହର

ୟୁନିଟ୍ – ୪ ଶୈଳୀ ବିଜ୍ଞାନ ଓ ତାହାର ବିଭିନ୍ନ ଦିଗ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ଭାଷା ବିଜ୍ଞାନ ଚର୍ଚ୍ଚାର ପରଂପରା

ଭାଷା ବିଜ୍ଞାନୀ (ପାଣିନୀ, ଗୋପୀନାଥ ନନ୍ଦଶର୍ମା, ଗୋଲୋକ

ବିହାରୀ ଧଳ, ଜନବିମ୍ସ, ଗ୍ରୀୟର ସନ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨=୧୦

COURSE CODE - 3.3

ରଙ୍ଗମଞ୍ଚ ଓ ନାଟ୍ୟତତ୍ତ୍ୱ

Stage and Dramaturgy

ପୂର୍ବସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ନାଟକର ଉତ୍ପତ୍ତି, ପ୍ରକାର ଭେଦ ଓ ଗଠନକୌଶଳ, ପ୍ରାଚ୍ୟପାଶ୍ଚାତ୍ୟ ନାଟ୍ୟତତ୍ତ୍ୱ

ୟୁନିଟ୍ – ୨ ରଙ୍ଗମଞ୍ଚର ପ୍ରକାରଭେଦ, ମଞ୍ଚକଳାର ବୈଶିଷ୍ଟ୍ୟ

(ବେଶ ରଚନା, ସାଜସଜ୍ଜା, ଆଲୋକ ସଂପାତ, ବିଭିନ୍ନ ପ୍ରକାର ଅଭିନୟ)

ୟୁନିଟ୍ – ୩ ଲୋକନାଟ୍ୟ ପରଂପରା (ଲୀଳା, ଦଣ୍ଡନାଟ, କଣ୍ଢେଇନାଟ,ଧନୁଯାତ୍ରା)

ୟୁନିଟ୍ – ୪ ବିଭିନ୍ନ ନାଟ୍ୟଧାରା (ପ୍ରତୀକବାଦୀ, ଅସ୍ତିତ୍ୱବାଦୀ, ବାସ୍ତବବାଦୀ, ଅଭିବ୍ୟକ୍ତିବାଦୀ)

ୟୁନିଟ୍ – ୫ ଏକାଙ୍କିକା ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ଗଠନରୀତି)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x୨ = ୧୦

COURSE CODE - 3.4

ନାଟକ ଓ ନାଟ୍ୟକାର

Drama & Dramatist

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ବିକାଶଧାରା

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ଜଗନ୍ମୋହନ ଲାଲା, ରାମଶଙ୍କର ରାୟ, ଅଶ୍ୱିନୀ କୁମାର ଘୋଷ, କାଳୀଚରଣ ପଟ୍ଟନାୟକ)

ୟୁନିଟ୍ – ୩ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ବିକାଶଧାରା

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ମନୋରଂଜନ ଦାସ, ବିଜୟ ମିଶ୍ର, ଗୋପାଳ ଛୋଟରାୟ, ରାମଚନ୍ଦ୍ର ମିଶ୍ର)

ୟୁନିଟ୍ – ୫ ସାଂପ୍ରତିକ ନାଟକର ଗତି ଓ ପ୍ରକୃତି

(ମୁକ୍ତ ଧାରାର ନାଟକ, ମିଥ୍ ଧର୍ମୀନାଟକ, ନାଟକରେ ଲୋକ ଉପାଦାନ, ଛୋଟ ନାଟକ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ =୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨= ୧୦

COURSE CODE - 3.5

ଆଧୁନିକ କାବ୍ୟ କବିତା

Modern Odia Poetry

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଆଧୁନିକ ଓଡ଼ିଆ କାବ୍ୟଧାରା (ରାଧାନାଥଙ୍କଠାରୁ ସ୍ୱାଧୀନତା ପର୍ଯ୍ୟନ୍ତ)

(ରୋମାଣ୍ଟିକ୍ କାବ୍ୟଧାରା, ଜାତୀୟତାବାଦୀ ଚିନ୍ତାଧାରା, ମାନବବାଦୀ ଓ ପ୍ରଗତିବାଦୀ କାବ୍ୟଚେତନା)

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ଗୋପବଂଧୁ, ନୀଳକଣ୍ଠ, କାଳିନ୍ଦୀ ଚରଣ, ବୈକୁଣ୍ଠନାଥ)

ୟୁନିଟ୍ – ୩ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତାରେ ପ୍ରୟୋଗ ଓ ପରୀକ୍ଷାର ସ୍ୱର

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ସଚ୍ଚିଦାନନ୍ଦ, ବେଣୁଧର, ଗୁରୁପ୍ରସାଦ, ଭାନୁଜୀ)

ୟୁନିଟ୍ – ୫ ବିଶେଷ ଅଧ୍ୟୟନ (ରମାକାନ୍ତ, ସୀତାକାନ୍ତ, ସୌଭାଗ୍ୟ, ଦୀପକ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ, ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 3.6

ଆଧୁନିକ ଗଦ୍ୟ ସାହିତ୍ୟ

Modern Odia Prose

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ରମ୍ୟରଚନା, ଜୀବନୀ, ଆତ୍ମଜୀବନୀ, ଭ୍ରମଣକାହାଣୀ, ଗଳ୍ପ ଓ ଉପନ୍ୟାସର ତତ୍ତ୍ୱ

ୟୁନିଟ୍ – ୨ ବିଶେଷ ଅଧ୍ୟୟନ (ବିଶ୍ୱନାଥ କର, ନୀଳକଣ୍ଠ ଦାସ, ଗୋପାଳ ପ୍ରହରାଜ, ଗୋବିନ୍ଦ ତ୍ରିପାଠୀ)

ୟୁନିଟ୍ – ୩ ବିଶେଷ ଅଧ୍ୟୟନ (ଗାଳ୍ପିକ ଫକୀରମୋହନ, କାଳିନ୍ଦୀ ଚରଣ, ଔପନ୍ୟାସିକ ଗୋପୀନାଥ ମହାନ୍ତି, ଶାନ୍ତନୁ କୁମାର ଆଶ୍ଚର୍ଯ୍ୟ)

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଅଧ୍ୟୟନ (ବିବେକୀ, ଭାଗବତ ଟୁଙ୍ଗୀରେ ସଂଧ୍ୟା (୧୩),କଳାଶକ୍ତି, ପୃଷ୍ଠପୁରରେ ବର୍ଷାବରଣ)

ୟୁନିଟ୍ – ୫ ବିଶେଷ ଅଧ୍ୟୟନ (ଛ' ମାଣ ଆଠ ଗୁଣ୍ଠ, ଅନ୍ଧଦିଗନ୍ତ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୮× ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ × ୨ = ୧୦

COURSE CODE - 3.7

CORE ELECTIVE

ଓଡ଼ିଶାର ଧର୍ମଧାରା

Religious Trends in Odisha

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଓଡ଼ିଶାରେ ବିଭିନ୍ନ ଧର୍ମଧାରାର ଉନ୍ମେଷ ଓ ବିକାଶ

ୟୁନିଟ୍ – ୨ ବୌଦ୍ଧ ଓ ଶାକ୍ତ ଦର୍ଶନ, ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

ୟୁନିଟ୍ – ୩ ନାଥଧର୍ମ ଦର୍ଶନ ଓ ଓଡ଼ିଆ ନାଥ ସାହିତ୍ୟ

ୟୁନିଟ୍ – ୪ ଶୈବ ଧର୍ମ ଦର୍ଶନ ଓ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

ୟୁନିଟ୍ – ୫ ମହିମା ଓ ବ୍ରାହ୍ମଦର୍ଶନ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ତାର ପ୍ରତିଫଳନ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨× ୩ =୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୫x୨ = ୧୦

COURSE CODE - 3.8

CORE ELECTIVE

ଓଡ଼ିଶାର ବୈଷ୍ଣବଧର୍ମ

Vaishnavism in Odisha

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ମୁଖ୍ୟ ବୈଷ୍ଣବ ସଂପ୍ରଦାୟ (ରାମାନୁଜ, ନିମ୍ବାର୍କ, ବଲ୍ଲଭାରାର୍ଯ୍ୟ, ମାଧ୍ୱାଚର୍ଯ୍ୟ)

ୟୁନିଟ୍ – ୨ ବିବିଧ ଧର୍ମର ତତ୍ତ୍ୱ (ଜ୍ଞାନମିଶ୍ରା ଭକ୍ତି, ଶୂନ୍ୟତତ୍ତ୍ୱ, ପିଣ୍ଡ ବ୍ରହ୍ମାଣ୍ଡ ତତ୍ତ୍ୱ,ରାଧାକୃଷ୍ଣ ତତ୍ତ୍ୱ)

ୟୁନିଟ୍ – ୩ ଶୁଦ୍ଧଭକ୍ତି ଧର୍ମର ପୃଷ୍ଠଭୂମି ଉଦ୍ଭବ ଓ ବିକାଶ

ୟୁନିଟ୍ – ୪ ବିଶେଷ ଆୟନ (ରାଧାତତ୍ତ୍ୱ, ଗୋପୀତତ୍ତ୍ୱ, ସତତ୍ତ୍ୱ, ରାସତତ୍ତ୍ୱ)

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଜ୍ଞାନମିଶ୍ରା ଓ ଶୁଦ୍ଧାଭକ୍ତିର ପ୍ରତିଫଳନ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

‘ଖ’ ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

COURSE CODE - 3.9

Shree Jagannath Cult

ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତିର ପୃଷ୍ଠଭୂମି ଓ ବିକାଶଧାରା

ୟୁନିଟ୍ – ୨ ବିଭିନ୍ନ ସଂସ୍କୃତି ସହିତ ଜଗନ୍ନାଥ ସଂସ୍କୃତିର ସଂପର୍କ (ବୌଦ୍ଧ, ଜୈନ)

ୟୁନିଟ୍ – ୩ ଓଡ଼ିଶାର ବୈଷ୍ଣବ ସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ୟୁନିଟ୍ – ୪ ଓଡ଼ିଶାର ଆଦିବାସୀ ସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଶାର ଲୋକସଂସ୍କୃତି ଓ ଶ୍ରୀଜଗନ୍ନାଥ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮ × ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ।

୫x୨= ୧୦

COURSE CODE - 3.10

CORE ELECTIVE

ଶ୍ରୀଜଗନ୍ନାଥ ସାହିତ୍ୟ

Shree Jagannath Literature

ପୂର୍ଣ୍ଣସଂଖ୍ୟା- ୭୦

ୟୁନିଟ୍ – ୧ ଓଡ଼ିଶାର ଲୋକସାହିତ୍ୟ ଓ କିମ୍ବଦନ୍ତୀରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୨ ଓଡ଼ିଆ ପୁରାଣ ଓ ପ୍ରାଚୀନ କାବ୍ୟକବିତାରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୩ ମଧ୍ୟକାଳୀନ ଓ ଆଧୁନିକ କାବ୍ୟକବିତାରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୪ ଓଡ଼ିଆ ଗଳ୍ପ ଉପନ୍ୟାସରେ ଶ୍ରୀଜଗନ୍ନାଥ

ୟୁନିଟ୍ – ୫ ଓଡ଼ିଆ ନାଟକ ଓ ପ୍ରବନ୍ଧରେ ଶ୍ରୀଜଗନ୍ନାଥ

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୧୨ × ୩ = ୩୬

"ଖ" ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ। ୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫× ୨ = ୧୦

(Any Six to be opted by the students)

Total credit 4 x 6 = 24, **Total Marks 100 x 6 = 600**

4TH SEMESTER

CORE COURSE

COURSE CODE - 4.1

ଲୋକସାହିତ୍ୟ (Folk Literature)

ପୂର୍ଣ୍ଣସଂଖ୍ୟା – ୭୦

ୟୁନିଟ୍ – ୧ ଲୋକସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ଅଧ୍ୟୟନ ବିଭିନ୍ନ ଦିଗ

ୟୁନିଟ୍ – ୨ ଲୋକଗୀତ ଓ ଲୋକଗଳ୍ପର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

ୟୁନିଟ୍ – ୩ ଲୋକନାଟକର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

ୟୁନିଟ୍ – ୪ ଲୋକତତ୍ତ୍ୱର ବିଭିନ୍ନ ଉପାଦାନ (ମୋଟିଫ, ଟାଇପସ୍, ମରପେଠାଲଜି)

ୟୁନିଟ୍ – ୫ ଲୋକସାହିତ୍ୟର ବ୍ୟାବହାରିକ ଦିଗ (ରୂଢି, ପ୍ରବାଦ ପ୍ରବଚନ)

<u>ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା</u>

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୮x ୩ = ୨୪

'ଗ' ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ୫ x ୨=୧୦

4th SEMESTAR

CORE COURSE

COURSE CODE - 4.2

ଗବେଷଣା ପଦ୍ଧତି

Research Methodology

ପୂର୍ଣ୍ଣସଂଖ୍ୟା - ୭୦

ୟୁନିଟ୍ – ୧ ଗବେଷଣାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ

ୟୁନିଟ୍ – ୨ ସାହିତ୍ୟ ଗବେଷଣାର ଐତିହ୍ୟ ଓ ସାଂପ୍ରତିକଧାରା

ୟୁନିଟ୍ – ୩ ଗବେଷଣାର ବିଭିନ୍ନ ଦିଗ ଓ ପର୍ଯ୍ୟାୟ

ୟୁନିଟ୍ – ୪ ତଥ୍ୟ ସଂଗ୍ରହର ବିଭିନ୍ନ ଭତ୍ସ

ୟୁନିଟ୍ – ୫ ଗବେଷଣାର ବିଭିନ୍ନ ଅଙ୍ଗ (କ୍ଷେତ୍ର ପରିକଳ୍ପନା, ତଥ୍ୟ ସଂଗ୍ରହ ପଦ୍ଧତି, ନଥିପତ୍ର ପର୍ଯ୍ୟବେକ୍ଷଣ)

ପ୍ରଶ୍ନ ସମ୍ପର୍କୀୟ ସୂଚନା

'କ' ବିଭାଗ (୭୦୦ ରୁ ୧୦୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ଟିର ଉତ୍ତର ଆବଶ୍ୟକ ।

୧୨ × ୩ = ୩୬

'ଖ' ବିଭାଗ (୪୦୦ ରୁ ୫୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ୫ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୩ ଟିର ଉତ୍ତର ଅବଶ୍ୟକ ।

୮× ୩ = ୨୪

'ଗ ବିଭାଗ (୧୫୦ ରୁ ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ) ଉପରୋକ୍ତ ୟୁନିଟ୍ ଗୁଡ଼ିକରୁ ୪ଟି ପ୍ରଶ୍ନ ଆସିବ । ତନ୍ମଧ୍ୟରୁ ୨ଟିର ଉତ୍ତର ଆବଶ୍ୟକ । ୫ x ୨ = ୧୦

COURSE CODE - 4.3

DISSERTATION

CORE ELECTIVE

ଗବେଷଣା ନିବନ୍ଧ

ପୂର୍ଣ୍ଣସଂଖ୍ୟା : ୧୦୦

ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି (ପ୍ରାୟୋଗିକ, ସମାଲୋଚନାଧର୍ମୀ ସନ୍ଦର୍ଭ ରଚନା) ପ୍ରତ୍ୟେକ ପରୀକ୍ଷାର୍ଥୀ ଅନ୍ୟୂନ ୮୦ ପୃଷ୍ଠାର ଏକ ସମାଲୋଚନାଧର୍ମୀ ସନ୍ଦର୍ଭ ପ୍ରସ୍ତୁତ କରି ପରୀକ୍ଷା ଆରମ୍ଭ ପୂର୍ବରୁ ବିଭାଗମୁଖ୍ୟଙ୍କ ନିକଟରେ ଦାଖଲ କରିବାକୁ ହେବ । ଏହି ସାହିତ୍ୟ କୃତିଗୁଡ଼ିକର ବିଷୟ ତଥା ଶୀର୍ଷକ ବିଭାଗ ଦ୍ୱାରା ଅନୁମୋଦିତ ହେବା ଆବଶ୍ୟକ ।

COURSE CODE - 4.4

(Seminar Presentation with Viva)

ପାଠଚକ୍ର ଉପସ୍ଥାପନ ଓ ମୌଖ ପରୀକ୍ଷା

ପୂର୍ଣସଂଖ୍ୟା : ୧୦୦

୧. ପରୀକ୍ଷା ଆରମ୍ଭର ଯଥେଷ୍ଟ ପୂର୍ବରୁ ପରୀକ୍ଷାର୍ଥୀ ବିଭାଗଦ୍ୱାରା ଅନୁମୋଦିତ ପ୍ରବନ୍ଧ ପ୍ରକଳ୍ପ ସମ୍ବନ୍ଧୀୟ ପ୍ରସ୍ତୁତି କରିବେ ।
(୫୦)

୨. ପ୍ରସ୍ତୁତ ପ୍ରକଳ୍ପ ସମ୍ପର୍କରେ ଏକ ମୌଖିକ ପରୀକ୍ଷା କରାଯିବ।
(୫୦)

କିମ୍ବା

ଗ୍ରନ୍ଥ ସଂପାଦନା ଓ ସମାଲୋଚନା

(Editing & Textual Criticism) **(100 + 100)**

Course Code 4.3 : Editing **(100)**

Course Code 4.4 : Textual Criticism **(100)**

Group - E

Audit Course (No Credit)

1. Creative Writing (Poetry, Short story)

କବିତା ଓ ଗଳ୍ପର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ଶୈଳୀ, ଭାଷା, ପ୍ରାୟୋଗିତ ଆଲୋଚନା

2. Performing Arts (Drama)

ନାଟକର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ, ବିଭିନ୍ନ ପ୍ରକାର ଅଭିନୟ

ମେକଅପ୍, ସାଜସଜ୍ଜା, ରିହରସଲ, ପ୍ରାୟୋଗିକ ଆଲୋଚନା

3. Computer Application

Computer Software, Hardware, System Software, Application Software, CPU, Memory RAM, ROM, Input & Output Device, Floppy Disk, Hard Disk, CD, Mouse, Keyboard etc.

MASTER OF COMMERCE

M. COM.

(Master Degree Course under CBCS)

For the Admission Batch : 2019-20

NAYAGARH AUTONOMOUS COLLEGE,

NAYAGARH-752 069

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

MASTER OF COMMERCE (Choice Based Credit System)

DEPARTMENT OF COMMERCE, NAYAGARH AUTONOMOUS COLLEGE, NAYAGARH,
AFFILIATED TO UTKAL UNIVERSITY

Semester-I

Code	Course Name	Marks	Credit	Category
MCC-101	Management Concepts and Practices	100	4	A
MCC-102	Statistics for Management	100	4	A
MCC-103	Corporate Financial Accounting	100	4	A
MCC-104	Financial Management	100	4	A
MCC-105	Accounting for Managerial Decision Making	100	4	A
MCC-106	Risk and Insurance Management	100	4	A
Total		**600**	**24**	

Semester-II

Code	Course Name	Marks	Credit	Category
MCC-201	Business Environment	100	4	A
MCC-202	Organization Behavior	100	4	A
MCC-203	Marketing Management	100	4	A
MCC-204	Managerial Economics	100	4	A
MCC-205	Small Business Management	100	4	A
MCC-206	Social Survey and Research Methodology	100	4	A/C/D
Total		**600**	**24**	

Category: A- Core, C- Open to Allied subjects, D- Open to All

Semester-III

Code	Course Name	Marks	Credit	Category
MCC-301	Project Report (Report -100, Presentation and Vive voce -100)	200	8	A
MCC-302	Strategic Management	100	4	A
MCC-303	Financial Institutions and Markets	100	4	A
MCC-304	Economic Analysis for Decision Making	100	4	A
	Any ONE group from the following			
	(A)Accounting			
MCEA-309	Advanced Accounting	100	4	B/C
MCEA-310	Corporate Tax	100	4	B/C
MCEA-311	planning	100	4	B/C
	Advanced Auditing			
	(B)Finance			
MCEB-312	Merchant Banking & Financial	100	4	B/C
MCEB-313	Services International Finance	100	4	B/C
MCEB-314	Security Analysis	100	4	B/C
	(C)Marketing			
MCEC-315	Services marketing	100	4	B/C
MCEC-316	Retail Management	100	4	B/C
MCEC-317	Customer Relationship Management	100	4	B/C
	(D)International Business			
MCED-318	International Business	100	4	B/C
MCED-319	International Finance	100	4	B/C
MCED-320	Global Risk Management	100	4	B/C
	(E) Entrepreneurship			
MCEE-321	Entrepreneurship in MSMEs	100	4	B/C
MCEE-322	Project Appraisal & Implementation Accounting & Finance for small Entrepreneurs	100	4	B/C
MCEE-323		100	4	B/C

Category: A- Core, B- Elective, C-Open to Allied Subjects, D-Open to All

Semester-IV

Code	Course Name	Marks	Credit	Category
MCC-401	Corporate Governance & Business Ethics	100	4	A
MCC-402	Management of Financial Institutions	100	4	A
	Any ONE group from the following			
	(A)Accounting			
MCEA-409	International Accounting	100	4	B/C
MCEA-410	Accounting Standards & Corporate Reporting	100	4	B/C
MCEA-411	Accounting for NPOs	100	4	B/C
	(B)Finance			
MCEB-412	Portfolio Management	100	4	B/C
MCEB-413	Risk Management & Derivatives	100	4	B/C
MCEB-414	Financial Regulations	100	4	B/C
	(C)Marketing			
MCEC-415	Product Planning & Sales Force Mgt.	100	4	B/C
MCEC-416	International Marketing	100	4	B/C
MCEC-417	Product & Brand Management	100	4	B/C
	(D)International Business			
MCED-418	International Accounting	100	4	B/C
MCED-419	International Marketing	100	4	B/C
MCED-420	International Financial Services	100	4	B/C
	(E) Entrepreneurship			
MCEE-421	Entrepreneurship : Innovation & Strategy	100	4	B/C
MCEE-422	Statistics for Business Decision Making	100	4	B/C
MCEE-423	Entrepreneurship & Information Technology	100	4	B/C

Category: A- Core, B- Elective, C-Open to Allied Subjects, D-Open to All

Audit Courses

i) Management of Personal Finances

ii) Capital Market Instruments

iii) Financial Inclusion

iv) Accounting for small Business organizations

v) Personal Taxation & Planning

(Credit will be assigned if the student opts to go through the examination process. But it will not be considered for CGPA) (Cumulative Grade Points Average)

Evaluation: End Term: 70 Marks

Unit Test and Quiz: 20 Marks, Assignment and Presentation: 10 Marks

Project Report: Thesis: 100 marks, Presentation & Viva-Voce: 100 marks

Minimum Total Marks= 2500

Minimum Credit Points: Core 76 + Elective 24 = 100

FIRST SEMESTER

MCC - 101. MANAGEMENT CONCEPTS AND PRACRTICES (Credit – 4)

Objective

To familiarize the students with the developments of management principles and practices.

Course Inputs

UNIT-I **Basic Concepts of Management:** Management in Antiquity, Historical development of management thought- Classical, Neo-Classical and Modern Schools, Tasks of a professional manager, Managerial roles.

UNIT-II Planning: Nature and significance, developing planning premises, planning exercises and limitations,

Decision Making: Types of decision, decision making process, models, techniques and conditions, creativity exercises.

UNIT-III Organizational Design: Organization structure-mechanistic and organic, Products Functional, and Project and Matrix structure, Centralization versus Decentralization of Authority, Informal Organization, and Organization Effectiveness.

UNIT-IV Management of Human Resources: Manpower planning, Job Analysis, Recruitment & Selection, Training and Development, Performance Appraisal

UNIT-V Management Control: Process, Tools and Techniques, Behavioral Implication of Control, Management in a Global Environment Case Study.

References:

1. Rabbins, “Management”, Pearsons Education, New Delhi.
2. Koontz & Weihrich, “Essentials of Management “-McGraw Hill
3. Gibson JL etal: Organisations, Behaviour, Structure and Process-McGraw Hill
4. Rao & Narayana ; Principle & Practice of Management – Konark Publishing
5. Stoner & Freeman : Management-PHI
6. Prasad L.M. : Principles & Practice of Management – Sultan Chand.
7. Prasad Manmohan,” Management : Concepts and Practices, Himalayan.
8. Terry, George R,” Principles of Management”, Richard D Irwin.

MCC - 102. STATISTICS FOR MANAGEMENT (Credit – 4)

Objective

The objective of this course is to make the students learn the application of statistical tools and techniques for decision making.

Course Inputs

UNIT-I Partial Correlation, Multiple Correlation, Multiple Regression, Interpolation & Extrapolation.

UNIT-II Probability Theory: Probability- classical, relative and subjective probability; Addition and multiplication probability models; Conditional probability and Baye's theorem.

Probability Distributions: Binomial, Poisson and normal distributions: Heir characteristics and applications.

UNIT-III Statistical Decision Theory: Decision Environment; Expected profit under uncertainty and assigning probabilities; Utility Theory; Decision Tree analysis.

Sampling: Sampling and Sampling (probability and non-probability) methods; Sampling and non-sampling errors; Law of large numbers and central limit Theorem; Sampling distributions and their characteristics.

UNIT-IV Statistical Estimation and Testing: Point and interval estimation of population mean, proportion and variance; Statistical testing-hypotheses and errors; sample size; Large and small sampling tests- Z tests, T tests and F tests.

UNIT-V **Non Parametric Tests:** Chi-square tests; Sign tests; Wilcoxon Signed – Rank tests;

Statistical Quality Control: Causes of variations in quality characteristics; Quality control chart- purpose and logic; Constructing a control chart- computing the control limits (X and R charts); Process under control and out of control; Control charts for attributes- fraction defectives and number of defects; Acceptance sampling.

References:

1. Levin, Richards I, and David S Rubin: Statistics of Management, Pearson Education, Delhi.
2. Lawrence B. Morse: Statistics for Business & Economics. Harper Collins, NY.
3. Watsnam Terry J. and Keith Parramor: Quantitative Methods in Finance, International Thompson Business Press.
4. Hien, L.W: Quantitative Approach to Managerial Decisions, Pearson Education, Delhi.
5. Gupta, S.P.; Statistical Methods, Sultian Chand, Delhi.
6. Sharma, Anand; Quantitative Techniques for Decision Making, Himalaya Publishing House.
7. Arora P.H., Sumeet etc.; Comprehensive Statistical Methods, S. Chand.
8. Anderson, Sweener, Williams, Statistics for Business and Economics, Thompson.
9. Agarwal, D.R.; Quantitative Methods, Urinda Publication.

10. Heinz Kohler: Statistics for Business & Economics, Harper Collins, New Delhi.
11. Hooda, R.P: Statistics for Business and Economics, Macmillan, New Delhi.

MCC - 103 CORPORATE FINANCIAL ACCOUNTING (Credit – 4)

Objective

The objective of this course is to expose students to advanced accounting issues and practices such as maintenance of company accounts, valuation of goodwill and shares, and handling accounting adjustments.

Course Inputs

UNIT-I **Final Accounts and Financial Statements of Companies:** Corporate problems with special reference to published Accounts.

UNIT-II **Valuation of Goodwill and Shares:** Funds Flow and cash flow statements.

UNIT-III **Accounting Issues:** Relating to Amalgamation, absorption, and reconstruction of companies both external and internal.

UNIT-IV **Accounts:** Relating to liquidation of companies. Investment Accounts. Lease Accounting.

UNIT-V **Human Resource Accounting:** Meaning, Approaches & Assumptions, Methods of human Resource Accounting.

References:

1. Beams, F.A.: Advanced Accounting, Pearson Education, New Delhi.
2. Dearden, J. and S. K Bhattacharya: Accounting for Management, Vikas, New Delhi.
3. Engler, C., L.A. Bemstein. And K.R L Lambet: Advanced Accounting, lrwin, Chicago.
4. Fischer, P.M., W.J Taylor and J.A Leer: Advanced Accounting, South-Western, Ohio.
5. Gupta, R.L: Advanced Financial Accounting, S. Chand & Co., New Delhi.
6. Horngreen," Introduction to Financial Accounting:, Pearson Education, New Delhi.
7. Keiso D.E. and J.J Weygandt: Intermediate Acounting, John Wiely and Sons, NY.
8. Maheshwaari, S.N: Advanced Accountancy- Vol. II, Vikas Publishing House, New Delhi.
9. Monga, J.R: Advanced Financial Accounting, Mayoor Paperbacks, Noida.
10. Tulsian, P.C.: Financial Accounting, Pearson Education, New Delhi.
11. Neigs, R.F: Financial Accounting, Tata McGraw Hill, New Delhi.
12. Shukla, M.C. and T.S. Grewal: Advanced Accountancy, Sultan Chand & Co., New Delhi.
13. Warren, C.S. and P.E Fess: Principles of Financial and Managerial Accounting, South-Western, Ohio.

MCC - 104 FINANCIAL MANAGEMENT (Credit – 4)

Objective

The objective of this course is to enable the students to understand the fundamentals of financial management in the context of a corporate entity. It attempts to acquaint them with different dimensions of financial management with a focus on the application of the relevant tools and techniques of financial decision-making aimed at shareholder's wealth maximization.

Course Inputs

UNIT-I **Introduction:** Nature and Scope of Financial Management; Financial Goals-Conflict of interest between the stakeholders; Functions of Financial Manager, Changing Financial Environment, Emerging Challenges faced by the Finance Manager.

UNIT-II Financing Decisions: Sources of Long term Capital-Equity, Dept., Term Loan, Preference share, Hybrid Securities, Internal Funds-Innovative sources of Domestic and Foreign Capital-Issues relating Financing Decisions.

UNIT-III Leverage and Capital Structure Analysis: Analysis of Operating Leverage and Financial Leverage- Combined Financial and Operating Leverage Concept of Capital Structure- Determinants – Theories of Capital Structure- Relevance and Irrelevance- Capital Structure Decision and Shareholder's Value Maximization.

UNIT-IV Long Term Investment Analysis: Investment Idea Generation-Tools and Techniques of investment analysis-Risk Analysis in Capital Investment Decisions

Dividend Decisions: Issues in Dividend Decisions-Models and Theories of Dividend- Forms of Dividend-Corporate Dividend Behavior.

UNIT-V Short Term Asset Management: Strategic Planning and Estimation of Short Term Funding Needs-Financing Sources-Computation of Cost of Short Term Fund.

Management of Cash, Inventory and Receivables.

References:

1. Bhattacharya,H.,"WorkingCapitalManagement:StrateglesandTechniques".Pear son Education, Delhi.
2. Brealey, Richard A and Steward C.Myers: Corporate Finance, McGraw Hill., Int.ED, New York.
3. Chanda, Prasanna:Financial Management, Tata Mc Graw Hill, Delhi,
4. Pandey, I.M: Finanncial Management, Vikas Publishing House, Delhi.
5. Van Home, J.C.and J.M.Wachowicz Jr.: Fundamentals of Financial Management, Pearson Education, New Delhi.
6. Van Home, James C, "Financial Management and Policy" Pearson Education, New Delhi.
7. Pinches, George E:Essentials of Financial Management; Harper and Row, New York.
8. Khan MY, Jain PK:Financial Management; Tata Mc Graw Hill, New Delhi.
9. Archer, Stephen H., Choate G Marc, R.George; Financial Management; John Wiley, NY.
10. Block, Stanley B.Geoffrey A Hilt; Foundations of Financial Management; Richard D. Irwin, Homewood,lllinois.

MCC - 105 ACCOUNTING FOR MANAGERIAL DECISION MAKING
(Credit – 4)

Objective

The objective of this course is to acquaint students with the accounting concepts, tools and techniques for managerial decisions.

Course Inputs

UNIT I **Accounting Information and Managerial Decision Making:** Financial accounting; Accountant's Position, role, and responsibilities.

Analysis Financial Statements: Horizontal and Vertical Analysis, Ratio analysis.

UNIT II Marginal Costing and Break-even Analysis: Concept of marginal cost; Marginal costing and absorption costing; cost- volume-profit analysis; Break-even analysis; Decisions regarding sales-mix, make or buy decisions and discontinuation of a product line etc.

UNIT III Budgeting : Features of a budget; Essentials of budgeting; Types of Budgets- functional, master budgets, etc; Fixed and flexible budget; Budgetary control; Zero-base budgeting; Performance budgeting.

UNIT IV **Standard Costing and Variance Analysis:** Standard costing as a control technique; setting of standards and their revision; Variance analysis- meaning and importance, kinds of variance and their uses- materials, labour, overhead and sales variance; Disposal of variances.

Accounting Plan and Responsibility Centres: Meaning and significance of responsibility accounting; Responsibility centers – cost centre, profit centre and investment centre; Objective and determinants of responsibility centers.

UNIT V Activity-based costing; Reporting to Management; Balanced Score Card

References:

1. Homgren Charies T. George Foster and Srikanta M. Dattar: Cost Accounting: A Manegerial Emphasis, Pearson.
2. Banerjee, B.Cost Accounting. PHI
3. Jawahar Lal, Cost Accounting, Tata McGraw
4. Homgren, C.T.Gary L.Sundem and William O. Stratton: Introduction to Management Accounting, Pearson
5. Khan, M.Y., and Jain, P.K., Cost Accounting, Tata McGraw
6. Maheswari, S.N., Principles of Cost Accounting, Sultan Chand
7. Lall, B.M., and I.C, jain; Cost Accounting Principles and Practice, PHI
8. Pandey, I.M, Management Accounting, Vani
9. Kaplan, Management Accounting , PHI.
10. Kishore, R.M., Cost and Management Accounting, Taxman
11. Druty, C., Management and Cost Accounting. Thomsom.
12. Shukla, Grewal & Gupta, Cost Accounting, S. Chand.

MCC - 106 **INSURANCE MANAGEMENT** **(Credit – 4)**

Objective

The course aims at developing necessary skills for applying the principles of financial analysis to management of funds by commercial banks and the insurance sector.

Course Inputs

UNIT I **Basic Concepts of Risk Management and Insurance**: Meaning of risk,Basiccategories of risk, methods of dealing with risk; Meaning and objective of risk management; Concepts and features of Insurance; Types of insurance contract and fundamental principles of Insurance; Cost benefit of Insurance to the society.

UNIT II **Insurance regulatory Act, 1999 and Insurance Market;** IRDA Act. 1999, Meaning, Objectives, Duties, Powers and Functions of Authority, Globalization of Indian Insurance, Privatization and Challenges before the Insurance Industry, Need for Reforms and Reforms Strategy.

UNIT III Life Insurance: Definition, Features and Principles of Life Insurance, Procedure for taking a policy, policy conditions, Premium Plans, Calculation of Premium. Settlement of Claims.

UNIT IV Fire and Marine Insurance: Principles, Policy conditions, Types of policies, of fire & Marine Insurance, Clauses and factors of Marine Insurance, Settlement of claims (Both Fire and Marine Insurance).

UNIT V Re-Insurance and Investment: General Features, Common terms, Features and Objects, Rights and Liabilities of Re-Insurance, Principles of Re-Insurance, Methods.

Investment: Investment Principles, Types, Legal and Social aspect of Investment, Policies of Insurance Companies.

References:

1. Arif, “Theory and Practice of Insurance” Educational Book House.
2. Sharma R.S., “Insurance Principles and Practice” Vora, Delhi.
3. Greene and Trieschemann, “Risk Insurance”, south Western Publishing Co.
4. Grieder and Beadies, “Principles of Insurance”
5. Mishra M.N. “Insurance priniciples & Parctice”, S.Chand.
6. Palande, Shah & etc “Insurance in India” changing policies & Emerging Opportunities, Response Books.
7. Study Material of Insurance Institute of India, Bombay.
8. Ganguly Anand “Insurance Act”, New Age International Publication.
9. Insurance Law Manual, Taxman, Delhi.
10. Holyake, “Insurance Management”, AITBS Publication.
11. Darfman, Introduction to Risk Management and Insurance.

SECOND SEMESTER

MCC - 201 BUSINESS ENVIRONMENT (Credit – 4)

Objective

The Course develops ability to understand and scan business environment analysis opportunity and take decisions under uncertainty.

Course Inputs

UNIT I **Theoretical Framework of Business Environment:** Concept, Significance and Nature of business environment; Elements of environment; Techniques of environmental scanning and monitoring. Global environment and its rationale merits and demerits.

UNIT II Economic Environment of Business : Significance and elements of economic environment; Economic systems and business environment; Economic Planning in India; Government Policies- Industrial Policy, Fiscal Policy, Monetary Policy, Public Sector and Economic Development.

UNIT III Political and Legal Environment of Business: Critical elements of political environment; Government and Business; Changing dimensions of legal environment in India.

Socio-Cultural Environment: Critical elements of socio-cultural environment; Social Institution and systems; Social values and attitudes; Indian business system; Social responsibility of business; Consumerism in India.

UNIT IV International and Technological Environment: Multinational Corporations; Foreign Collaborations and India business; International economic Institutions – WTO, World Bank, IMF and their importance to India; Foreign Trade Policies; TRIPS, TRIMS, Anti-dumping. Dispute Settlement.

UNIT V Economic Reforms: - Need for economic reforms, Main features of reforms, structural changes, Deregulation, privatization and globalization impact of reforms, Human faces of reforms, Future trends of reforms, **MNCs**- Definition, advantages, disadvantages, Control over **MNCs.**

OPTIONAL: Trade Block & Business Centres

EEC, NAFTA, ASEAN, SFTA, SAARC

References:

1. Adhikary, M; Economic Environment of Business, Sultan Chand & Sons, New Delhi
2. Ahluwalia, I.J: Industrial Growth in India, Oxford University Press, Delhi.
3. Alagh, Yoginder K: Indian Development Planning and Policy, Vikas Pub. New Delhi
4. Aswathappa, K: Legal Environment of Business, Himalaya Publication, Delhi
5. Chakravarty, S: Development Planning, Oxford University Press, Delhi.
6. Ghosh, Blswanath: Economic Environment of Business, Vikas Pub. New Delhi.
7. Govt. of India: Economis Survey, Various Issues.
8. Raj Agrawal and Parag Diwan, Business Environment; Excel Books, New Delhi.
9. Ramaswamy, V.S. and Nama Kumari; Strategic Planning for Corporate Success, Macmillan New Delhi
10. Sengupta. N.K: Government and Business in India, Vikas Publication, New Delhi.
11. Daniels “International Business, Environment and Operations”, Pearson Education, Delhi.

MCC - 202 ORGANISATION BEHAVIOUR (Credit – 4)

Objective

The objective of this course is to help students understand the conceptual framework of Interpersonal and organizational Behaviour.

Course Inputs

UNIT I **Organisational Behaviour:** Organisational behavior-concept and significance; Relationship between management and organizational behavior; Attitudes; Perception; Learning; Personality.

UNIT II Group Dynamics and Team Development: Interpersonal and Group Behaviour, Group dynamics-definition and importance, types of groups, group formation, group development, group composition, group performance factors; Group decision making merits and demerits.

Motivation: Process of motivation; Theories of motivation – Need hierarchy theory, theory X and theory Y, two factor theory,Alderfer's ERG theory, McClelland's learned need theory, Victor Vroom's expectancy theory, Stacy Adams equity theory.

UNIT III Leadership: Concept; Leadership styies; Theories- Trail theory, Behavioural theory, Fiedler's contingency theory; Hersey and Blanchard's situational theory; Managerial grid; Likert's four sy7stems of leadership.

UNIT IV Interpersonal and Organisational Communication: Concept of two-way communication; Communication process; Barriers to effective communication; Types of organizational communication; Improving communication; Transactional analysis in communication. Stress Management.

UNIT V Organisational Conflict: Dynamics and management; Sources, patterns, levels, and types of conflict; Traditional and modem approaches to conflict; Functional and dysfunctional organizational conflicts; Resolution of conflict.

References:

1. Robbins, Stephen P. and Mary Coulter; Management, Pearson Education, Delhi.
2. Grifin, Ricky W; Organisational Behaviour, Houghton Mifflin Co. Boston.
3. Robbins, Stephen P: Organisatinal Behaviour, Pearson Education, Delhi.
4. Hellreigel, Don, John W. Slocum, JR., and Richard W. Woodman: Organisational Behaviour; South Western College Publishing,Ohio. Utillsing Human Resources, Prentice Hall, New Delhi.
5. Hersey, Paul, Kanneth H. Blanched and Dewey E.Johnson; Management of Organisational Behaviour; Utilisaing Human Resources, Prentice Hall, New Delhi.
6. Ivancevich; John and Michael T. Matheson: Organisational Behaviour and Management, Business Publication Inc. Texas.
7. Koontz, Harold, Cyrill O'Donnell and Heinz Weihrich; Essentials of Management. Tata McGraw=Hill, New Delhi.
8. Luthans, Fred; Organizational Behaviour, McGraw-Hill, New York.
9. Newstrom, John W, and Keith Davis; OrganiZational Behaviour; Human Behaviour at work, Tata McGraw-Hill, New Delhi.

MCC - 203 MARKETING MANAGEMENT (Credit – 4)

Objective

The objective of this course is to facilitate understanding of the conceptual framework of marketing and ita applications in decicion making under various environmental constraints.

UNIT I **Basics of Marketing:** Meaning, Importance, Scope of Marketing; Marketing elements and Strategies, Marketing Environment; Marketing and Economic Development Process; Marketing Organisation.

UNIT II Marketing Management and Studying Consumers Behaviour; Marketing Management Process:- Planning & Market Segmentation, Marketing Research & Marketing Information System; Consumers Behaviour and Marketing Strategies.
Buyer's Decision process and consumer Behaviours

UNIT III Production Management & Pricing Strategies: Meaning and importance of product decision, Product Classification, Product Life Cycle (PLC) and marketing Strategies; Branding & Packaging; Pricing objectives, factors of pricing methods, and pricing policies and Strategies

UNIT IV Promotion & Placement Strategies: Meaning and importance of Communication and Promotion, elements of communication, tools of promotion, Objectives and Strategies of Promotion; Meaning and importance of Distribution. Physical Distribution System, Wholesaling and Retailing practices in India.

UNIT V Marketing in Indian Practice: Rural & Agricultural Marketing; International Marketing; Cyber Marketing; Co-operative Marketing; Green Marketing, Services Marketing

Reference:

1. Etzel, M.J, Marketing-Concepts and Cases, Tata McGraw Hill, New Delhi.
2. Keegan: Global Marketing Management, Pearsons, New Delhi.
3. Kotler Philip and Armstrong Gary; Principles of Marketing, Pearsons, New Delhi, 2006
4. Kotler, P.: Marketing Management, Pearsons, New Delhi.
5. Kumar: Marketing & Branding,Pearsons, New Delhi.
6. Majumdar, Ramanuj : Product Management in India, Prentice : fall, New Delhi
7. Mathur; Stragic Marketing Management, McMillan.
8. Motr : Marketing of Higher Technology Products and Innovations, Pearsons, New Delhi
9. Perreault, W.D. and Mc Carthy, E.J: Basic Marketing, Tata McGraw Hill, 2007. New Delhi
10. Ramaswamy, Namkumari : Marketing Management, McMillan, New Delhi.
11. Ramaswamy, Namkumari : Marketing Management, McMillan, Calcutta.
12. Saxena, R: Case Studies in Marketing, The Indian Context. PH, New Delhi.
13. Srinivasan: Case Studies in Marketing, Prentice Hall of India, New Delhi.
14. Stanton, William: Fundamental of Marketing; Tata Mc Graw Hill Publication, New Delhi.
15. Mc Carthy; Marketing Management, Tata-Mc Graw Hill, New Delhi
16. Karunakaran K – Marketing Management, Himalaya Publishing House, New Delhi.

MCC - 204 MANAGERIAL ECONOMICS (Credit – 4)

Objective

This course develops managerial perspective to economic fundamentals as aids to decision making under given environment.

Course Inputs

UNIT I Fundamental Concepts & Principles: Introduction to Managerial Economics; Scope and Subject matter. Basic Concepts and Techniques, Nature of Managerial and Economic Problems, Nature of Economic Analysis, Rote and responsibility of managerial economic; Implicit and explicit costs.

UNIT II The Theory of Firm: The circular flow of Economic Activity. The nature of the firm. Objectives of the firm, Maximising versus satisfying, the concept of economic profit, theories of profit- Accounting and economic interpretation of profit. Policies on profit maximization, Profits for control.

UNIT III Demand Analysis: The demand schedule and demand curve. The demand function. Price elasticity of demand. Interpretation of elasticity of demand. Income and crose elasticities of demand, business and economic forecasting. Method of forecasting: Expert opinion. Market experiments, Surveys.

UNIT IV Theory of Production. The production function. One variable input production function – Empirical estimation and managerial uses. Two- veriable input production function , Isoquants – Characteristies. Features and managerial use. Formulation of a Cobb- Douglas production function.

UNIT V The Theory of Cost: Cost Concepts- meaning and managerial use. Cost function – cost curves – Empirical estimation of a short – run cost function. Cost Reduction and Control.

References:

1. Craig Peterson. H.Cris Lewis, W.:Managerial Economics, Pearson Education, Delhi.
2. Mehta P.L.Managerial Economics Analysis, Problems and cases, sultan Chand and Sons.
3. Mukherjee Sampat: Business and Managerial Economics. New Central Book Agency, Calcutta.
4. Baumol W. J., : Economic Theory and Operations Analysis, Prentice Hall of India LTD.
5. Johnson J; Economic Methods, New York, McGraw Hill.
6. Reddy, P.N. & Appannaiah, H.R., Essential Managerial Economics. Himalaya Publishing House.
7. Joal Dean: managerial Economics, PHI, New Delhi.
8. Case , “Priniciples of Economics”, Pearson Education, Delhi.

MCC - 205 SMALL BUSINESS MANGEMENT & PROJECT APPRAISAL
(Credit – 4)

Objective

The objective of the present course is to sensitize the student about then role of SME sector in the economic development of the country. The present course also include discussion on various functions of a small scale units including tools and techniques of project preparation and appraisal.

Course Inputs

UNIT I **SME** ; Enterprise Evolution & Function; Definition of SSI Unit and SSI units Entrepreneur, Scope and Objective of SSI Units, Advantages & shortcomings of Small Industries, Small Industry and economic development, Developing Entrepreneurial Skill.

UNIT II Project Management: Project and Project Management, Project Identification, Project Formulation, Project Selection, Project implementation, Techno-Economic feasibility analysis, Social-cost-benefit analysis, Project Report.

UNIT III Small Industry Support system: Needs and important of support system, NSIC, SIDO, SSIB, SISI, DIC, SIDBI, Comercial Banks, Venture Capital, Lease Financing.

UNIT IV Management Process in Small Business and Legal Francewark: Planning Process, Organising, Leading and Motivating, Management of Time. The Factories Act, The Empoyees Provident Fund Act, Industrial Dispute Act, Payment of Wages Act, Workmen's compensating Act.

UNIT V Global Competition: Global Competitiveness, Strategies for SSis; Sickness in Small Scale Industries- Sympotoms, Reasons and Remedies; Future Growth Potential for SSIs.

References:

1. Dollinger, "Entrepreneurship-strategies and Resources", Pearson Education, Delhi.
2. Khamka, S.S "Entrepreneurship Development" S.Chand & Co
3. Cantillon, Richard "Entrepreneurship and Economic development" The Free Press, New York.
4. Gupta , C.B. and Khamka S.S. "Entrepreneurship and Small Business Management", S chand & Sons, Delhi.
5. Gupta C.B, & Srinivasan N.P."Entrepreneurship Development", S. Chand & Sons, Delhi.
6. Desal Vasant; "Dynamic of Entreprenial Development and Management, Himalaya Publishing House
7. Deshpande, M.U,; "Entrepreneurship of small Scale Indusstries", Deep & Deep Publication New Delhi.
8. Shrama, R.A. : "Entreprenial Change in Indian History", staling Publisher, New Delhi.

MCC - 206 SOCIAL SURVEY & RESEARCH METHODOLOGY (Credit–4)

Objective

The Objective of this course is to acquaint students the concepts Social Survey and Research. They will also be provided inputs research methods, research methodology, process of research the process of research the process of report writing.

Course Inputs

UNIT I **Research:** Meaning and Objectives, Type of Research, Role of research in functional areas; Accounting, Finance, Marketing, HR etc. Research Methods, Research Methodology Research Process.

UNIT II **Defining Research Problems:** Setting Objectives, Formulating Hypothesis, Research Design, Sample Design.

UNIT III **Social Survey:** Collection of Primary and secondary data, Design of questionnaire.

UNIT IV Data Processing: Classification, Tabulation, Editing, Analysis and interpretation of data, Uni-variate, Bi-variate and Multi-variate Analysis.

UNIT V **Report Writing:** Calegories of report, parts of a report, presentation of a report.

References:

1. Young. P.V.Sehrid, C.F.Scientific Social Survey and Research
2. Seltiz Claire, et: Research Methods in Social Relation, Hold, Tinchart & Willton, New York.
3. Good and Halt, Methods in Social Research, McGraw Hill.
4. Kothari, C.R. Research Methodology Techniques, Wishwa Prakashan, New Delhi.
5. Cooper and Schindler, Business Research Methods, MsGraw Hill.
6. Wilkinsor & Bhandarkar, Methodology of Research in Social Sciences, Himalaya.
7. Paneerselvan R. Research Methodology, PHI.
8. Bajpal SR, research Methodology in Social Science.

THIRD SEMESTER

MCC - 301 PROJECT REPORT (Credit -8)

Objective : The objective of this is to make a survey and prepare a report on current issues.

MCC - 302 STRATEGIC MANAGEMENT (Credit - 4)

Objective

The objective of this course is to enhance decision making abilities of students in situation of uncertainty in a dynamic business environment.

UNIT I **Concept of Strategy:** Defining strategy, levels at which strategy operates; Approaches to strategic decision making; Mission and purpose, objectives and goals; strategic business unit (SBU); Functional level strategies.

Environmental Analysis and Diagnosis: Concept of environment and its components; Environment scanning and appraisal; organizational appraisal; Strategic advantage analysis and diagnosis: SWOT analysis.

UNIT II Strategy Formulation and Choice of Alternatives: Strategies-stability, growth, modernization, diversification, integration; Merger, take-over and joint strategic, Turnaround, divestment and liquidation strategies; Factors affecting strategic choice; Generic competitive strategies-cost leadership, differentiation focus, value chain analysis, bench marking service blue printing.

UNIT III Functional Strategic : Marketing, Production/Operations and R & D plans policies.
Personnel and Financial plans policies.

UNIT IV Strategy Implementation: Inter-relationship between formulation and implementation; Issues in strategy implementation, Resource allocation.

Strategy and Structure: Structural considerations, structures for strategies Organisational design and change.

UNIT V Strategy Evaluation: Overview of strategic evaluation; Strategic control; Techniques of strategic evaluation and control, Problem in management and evaluation, Global issues in Strategic Management.

References:

1. David, “Strategic Management”, Pearson Education, New Delhi.
2. Bhattachary, S.K. and N.Venkataramin; managing Business Enterprises; Strategies structures and systems, Vikas Publishing House, New Delhi.
3. Budhiraja. S.B. and M.B. Athreya: Cases in strategic Management, Tata McGraw Hill, New Delhi.
4. Christensen, C.Roland, Kenneth R. Andrews, Joseph L. Bower, Rochard G. Hamermesh, Michael E. Porter; Business Policy; Text and cases, Richard D. Irwin, Inc, Homewood.
5. Coulter, Mary K: Strategic Management in Action, Prentice Hall New Jersey.
6. David, Fred R: Strategic Management, Prentice Hall, New Jersey.
7. Glueck, William F. and Lawrence R. Jauch: Business Policy and Strategic Management, McGraw Hill, International Edition.
8. H.Igor, Ansoff: Implanting Strategic Management, Prentice Hall, New Jorsey.

9. Kazml, Azhar: Business Policy and Strategic Management, Tata McGraw Hill, Delhi.
10. Srinivasan : Strategic Management – The India Context-PHI.

MCC - 303 FINANCIAL INSTITUTIONS AND MARKETS (Credit - 4)

Objective

This course aims at providing students with an understanding of the structure, organization and working of financial markets and Institutions in India.

Course Inputs

UNIT I **Nature of Financial System:** Its function Components of Financial System, Evolution of India financial system-Measuring the efficiency of India financial system-Innovations in India Financial System.

Types of Financial Markets: Money Market and Capital Market. Role, Players, Instruments, Constituents and recent development Review of the Securities Market in India; Role of SEBI.

UNIT II Commercial Banking in India: Structure, and Functions., Balance-sheet Analysis,, Risk exposures, Basel Norms, Diversifications in Commercial Banking functions, Role of Commercial Banks in the Money Market, Bank Marketing. A SWOT Analysis of Indian Commercial Banks.
Rural Banking and Micro Finance: Problem and Prospects.

UNIT III Development Financial Institutions: Structure- Role and Objective- Promotional Functions – Emerging Problems & Development Banks- Strategic Options – Concept of Universal Banking.

Insurance Sector: Nature of Insurance Organization, Types of Insurance Products – Basics of Insurance Contracts – Insurance Sector Reforms- Problems of Market Structure – Risk Management and Insurance- Role of IRDA- Emerging Scenario.

UNIT IV Non-Banking Financial Companies: Concept and role in Financial Market- Regulation and Roles of leasing. Hire Purchase and Housing Finance Companies- Venture Capital Companies.
Mutual Funds: Concept, Features and different types of Mutual Funds. Regulation of Mutual Funds- Marketing of Mutual Funds- Problems and Prospects. Latest Scenario of Mutual Funds Industries.

UNIT V **Merchant Banking:** Concept, function- SEBI guidelines.
Depository System: Objectives, participants and operating mechanism.
Derivative Markets: Basic features of SWAPs, options, Forwards and Future Market.
Foreign investments: Role in economy, Trends, Implications and problems.

Reference:

1. Avdhant: Investment and Securities Markets in India, Himalaya Publication, Delhi.
2. Bhole, L.M. : Financial Markets and institutions, Tata McGraw Hill, Delhi.
3. Ghosh, D.Banking Policy in India, Allied Publication, Delhi.
4. Khan, M.Y: India Financial System, Tata McGraw Hill, Delhi.
5. Varshney, P.n:India Financial System, Sultan Chand & Sons, New Delhi.
6. Srvastava R.M:Management of Indian Financial institution, Himalaya Publishing House, Mumbai.

7. Verma JC: Guide to Mutual Funds and Investment Portfolio, Bharat Publishing House, New Delhi.
8. Gorden and Natarajan,"Financial Markets and Services". Himalayan Publishing House, N.Delhi.
9. Benton, E Gup,'Financial Intermediations; An introduction', Response books.

MCC - 304 ECONOMIC ANALYSIS FOR DECISION MAKING (Credit - 4)

Objective

This course develops managerial perspective to economic fundamentals as aids to decision making under given environment.

Course Inputs

UNIT I Pricing Theory: Market structure and competitive Behaviour, Perfect Competition – Imperfect completion; monopoly, monopolistic competition and Oligopoly Pricing decisions under various market structure.

UNIT II Pricing Policies and Practices: Cost plus pricing. Skimming price and penetration price. Pricing products of lasting distinctiveness pricing products of perishable distinctiveness pricing standard products when competitor's and few, Pricing and practice.

UNIT III Product Diversification: Meaning and Scope. Product Life Cycle. Opportunity for multiple products. Specification product addition criteria. Policy on dropping old products.

UNIT IV Economic Environment: The Macro-Economic Scenario in India, Problems of Growth, Business Cycles: Cause and consequences – Measures to curb them. Balance of Payment problems. New Trade policy, WTO-critical evaluation and short coming.

UNIT V Economic Reforms: Need for economic reforms, Main features of reforms. Structural changes. Deregulation, Privatization and globalization, Impact of reforms-Human face of reforms. Future of economic reforms.

References:

1. Cralg Peterson, H.Cris Lewis, W.:Managerial Economics, Pearson Education, Delhi.
2. Joel Dean: Managerial Economics. PHI.
3. Agarwal A.N.:Indian Economy problems of Development and Planning, New AGE International Pvt. Ltd., New Delhi.
4. Gupta G.S.:Macro Economic Theory and Application, Tata McGraw Hill publishing Company Ltd. New Delhi.
5. McGulgn J.R.and Charies Moyer, Managerial Economics. The Drycon Press, Hinadale
6. Michael Edgament:Macro Economics Theory and Policy, PHI ltd.
7. Ghosh Alok:Indian Economy, S.Chand & Co.
8. Greene,"Econometric Analysis", Pearson Education, Delhi.
9. Sydsaeter "Mathematics for Economis Analys". Pearson Education, Delhi.

MCE - 305 BUSINESS COMMUNICATION AND SOFT SKILL (Credit - 4)

Objectives

The objectives of the paper is to enable students to:

- Appreciate the importance and need of soft skills in personal and personal life
- build a repertoire of functional vocabulary and to move from the lexical level to the syntactic level
- summon words, phrases relevant to the immediate communication tasks in class as well as office
- comprehend the concept of communication
- learn the four basic communication skills – Listening, Speaking, Reading and Writing

Course Inputs:

UNIT – I Recap of language skills – vocabulary, phrase, clause, sentence.

UNIT - II Fluency Building – word match, reading aloud, recognition of attributes, parts of speech in Listening and reading, listening – reading comprehension.

UNIT –III Principles of Communication – Communication as coding and decoding – signs and symbols – verbal and non –verbal symbols – Language AND communication; language VS communication – media/channels for communication

Individual Communication – Self advertising – Over stating and under stating – Overcoming shyness – Writing curriculum vitae, Statement of Purpose – Talking about oneself; interview.

UNIT- IV Types of Communication- functional, situational, verbal and non-verbal, interpersonal, group, interactive, public, mass line, dyadic – with illustrations

Intermediary Communication – Overcoming mental blocks, prejudices and hotspots of the addressee – telephone, teleconferencing, and web chat – greeting, introducing –memos, reports, minutes, business correspondence.

UNIT - V LSRW in Communication – Listening – Active vs Passive (Talk less, listen more); Speaking - Speech vs Enunication (mind your tone); Reading –Focus on the structure not on the theme alone; Writing – Precise, not only précis writing

Social Communication – Etiquette in LSRW – polite yet assertive, tackling questions, seeking permission, expressing gratitude – gender fair language – discourse and transactional analysis – empathy.

References :

1. Dignen, Flinders and Sweeney. English 365. Cambridge University Press
2. Goleman, Daniel. 1998. Working with Emotional Intelligence. Bantam Books. New York
3. Hall and Shepheard. The Anti-Grammar Grammar Book: Discovery Activities for Grammar Teaching. Longman
4. Hewings, Martin. 1999. Advanced English Grammar: A Self-Study Reference and Practice Book for South Asian Students. Reprint 2003. Cambridge University Press. New Delhi
5. Jayakaran. 2000. Everyone's Guide to Effective Writing. 2 M Publishing International, Chennai.
6. Jones, Leo and Richard Alexander. 2003. New International Business English. Cambridge University Press
7. Lewis, Norman. 1991. Word Power Made Easy. Pocket Books

8. Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw- Hill. New Delhi
9. Sasikumar.V and P.V. Dhamija. 1993. Spoken English: A Self-Learning Guide to Conversation Practice. 34th Reprint. Tata McGraw-Hill. New Delhi
10. Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York
11. Windshuttle, Keith and Elizabeth Elliot.1999. Writing, Researching and Communicating: Communication Skills for the Information Age. 3rd Reprint. Tata McGraw-Hill. Australia

MCE - 306 ENTREPRENEURSHIP DEVELOPMENT(Credit - 4)

Course Inputs

UNIT –I **Problems in Entrepreneurship Development:** Dot com entrepreneurship, role of Govt. in entrepreneurship Development - R & D, Science technology & Entrepreneurship development.

UNIT –II **Specialized institutions involved in entrepreneurship Development** Business incubation & venture capitalists, Entrepreneurship development efforts in India-Issues & cases

UNIT –III **Change in concept of entrepreneurship:** Entrepreneurship within organization, corporate strategy**,** Entrepreneurship.

UNIT –IV **Business idea search:** Project identification, project design, Network analysis, Business model PERT, Critical path method, Creativity & Innovation, Meaning & importance & role in developing a new business

UNIT – V **Issues in project management:** Project direction, co-ordination & control, project cost**,** Evaluations & cost control, Interface with industrial sickness, Project monitoring & MIS.

References:

1. S.S. Nadkarni-Developing new Entrepreneurs, EDII, Ahmadabad.
2. N.P.Singh- Entrepreneurs v/s Entrepreneurship Asian society for ED.
3. Desai Vasant –Dynamics of Entrepreneurial development & management, HPH.
4. Khairka S.S. Entrepreneurial Development , S.Chand & Co, New Delhi.
5. Moharana Drant Desai- Entrepreneurship Development, RBSA Publishers, Jaipur.
6. Paul Jose,Kumar N.Paul T.M. Entrepreneurship Development, HPH, New Delhi.
7. Saini J.S. Rathore B.S. Entrepreneurship Theory & Practice.

MCF - 307 MANAGEMENT OF PERSONAL FINANCES (Credit - 3)

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT -II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNIT-III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT- IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT - V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

1. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
2. Financial Education By Reserve Bank of India - rbi.org
3. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
4. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
5. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

MCF - 308 CAPITAL MARKET INSTRUMENTS (Credit - 3)

Objective

To equip the students with an opportunity to understand the role of Capital Market Instruments like Stock, Bond etc.

Course Inputs

UNIT -I Origin, Nature and Role of Capital Markets-Globalization of Capital Markets, Capital Markets in India- Stock Exchange.

UNIT –I I Financial Instruments : Definition & Meaning, Classification of Financial Assets & Liabilities , Share Warrants or Options, Hedging Instruments.

UNIT- III Stocks, Bonds, Debentures – Convertible Debentures, ADR, GDR, ETFs, Units of Mutual Funds.

Unit-IV Derivatives – Basic Features : Role of Derivative Markets, Forward and Futures, Commodity Futures, Stock Futures and Index Futures

Unit-V Options, Stock Options and Index Options, Swaps, Currency Swaps and Interest rate Swaps.\

References :

1. Financial Institutions and Markets – Bhole L. M.- TMH
2. Financial Markets – M. Y. Khan
3. Financial Derivatives – Dr. G. Kotreshwar

MCEA - 309 ADVANCED ACCOUNTING (Credit - 4)

Objective

The objective of the course is to expose the students to advanced company account as well as specialized accounts for different types of organization.

Course Inputs

UNIT I **Holding Company Accounting:** Meaning, Definitions and requirement, Philosophy of consolidation; Minority Interest, Cost Control, Revaluation of Assets and Liabilities, Bonus shares & Dividends, Consolidation of P/L Account and Balance Sheet.

UNIT II Double Account System: Meaning, definition and distinction between single and double account system, Final accounts under double account system, Revenue account, net revenue account, capital account & General Balance Sheet, Electricity Supply Act.

UNIT III Banking Company Accounts: Different systems of Posting, Different statutory books to be maintained. P & L account and p & L appropriation account & balance sheet as per Banking Regulation Act 1949.

UNIT IV Insurance Company Accounts: Life Insurance Companies & the statutory books to be maintained. Statutory provisions in preparing the revenue account, valuation balance sheet and balance sheet. Marine & Fire Insurance Accounts.

UNIT V Government Accounts: Commercial Accounts and Government Accounts, Accounting methods & financial statements, Basic principles of government accounts in India, classification of government accounts in India, Accounting for fire & marine insurance claims & losses construction contracts.

References:

1. Advanced Accounting – Vol. II,III & IV R.L.Gupta & M.Radhswamy (S.Chand)
2. Advanced Accounting – Arunanandan & Raman (Himalaya)
3. Advanced Accounting – Maheswari & Maheswari (Vikash)
4. Practice in Accountancy – Basu and Das (Rabindra Library)
5. Fundamentals of Advanced Accounts-Vol. II- Francis Xavier (TMH)
6. Advanced Accounting – Vol II, Hanif & Mukherjee (Tata McGraw Hill)

MCEA - 310 CORPORATE TAX PLANNING (Credit - 4)

Objective

To provide a conceptual idea about the various provisions of the Income Tax Act. Related to the corporate sector and study the implications of these provisions on the tax planning of the companies.

Course Inputs

UNIT I Corporate Tax in India, Assessment of Corporate Assesse- Head wise

UNIT II MAT, TDS, Advance Payment Tax, Self assessment, Tax Planning as Residential Status, Basis of Tax Planning, Tax avoidance, Tax Management and Tax evasion

UNIT III Tax Planning with reference to: Depreciation, Capital gain, House Property, Amalgamation

UNIT IV Tax planning for setting up new undertaking: Basis of Location, Basis of nature of Business

UNIT V Tax Provisions of Merger and Demerger, Transfer Pricing, Double Taxation, Provision for GST in India (if any).

References:

1. R.N.Lakhotia and Subash Lakhotia," Tax planning for non-resident Indians", Vision books (P) ltd.
2. R.N.Lakhotia, "Corporate Tax Planning", "Vision books (P) ltd.
3. Singhania, V.K.Direct Taxes: Law and Practic, Taxman's Publication, Delhi.
4. Bhagabati Prasad,"Direct Tax Laws & Practices".

MCEB - 311 Advanced Auditing (Credit - 4)

Objectives

To gain expert knowledge of current audit practices and procedure and apply them in auditing engagements.

Course Inputs

UNIT-I **Audit Strategy, Planning and programming :** Planning the flow of audit work, drafting of reports, audit strategy planning, programme and importance of supervision, review of audit reports and working papers, control of quality of audit work.

UNIT-II **Documentation and Internal Control,** Audit Working Papers , Audit Files, Permanent and Current Audit Files, Ownership and Custody of Working Papers, Elements of Internal Control, Evaluation of Internal Control System, Internal Control Questionnaires, Internal Check List, Test of Control, Concept of Internal Audit.

UNIT- III **Audit of Impersonal Hedger:** Capital Expenditures, Deferred Revenue Expenditure, Revenue Expenditure, Outstanding Expenses and Incomes, Repairs and Renewals, Distinction Between Reserves and Provisions, Implications of Change on the Basis of Accounting.

UNIT - IV **Audit Reports** ; Qualification , Notes on Accounts, Distinction Between Notes and Qualifications, Detailed Observations by the Statutory Auditor to the Management vis-avis Obligations of reporting to members, Special Reports on offer Documents.

UNIT-V **Government Audit :** Constitutional Framework in India, Comptroller and Auditor General of India (Duties, Power and Conditions of Service) Act1971, Audit Procedures adopted by CAG; Audit of public Sector Undertakings- Audit of Commercial Accounts, Auditor of Government Companies, Audit report of CAG on Accounts of Union or State or Central Govt.

References –

1) Saxena R. G.- Principles and Practice of Auditing, Himalaya Publishing House
2) Gupta Kamal – Contemporary Auditing – Tata McGraw Books
3) Emite Woset et al – Advanced Auditoring and Investigation-McDonald & Evans, UK
4) Emile Woolf – Auditoring Today- Prentice Hall

MCEB - 312 Merchant Banking and Financial Services(Credit - 4)

Objective

To know conceptual, functional, and regulatory aspects of India Capital Market and Merchant Banking activities.

Course Inputs

UNIT I **Indian Financial System & Financial Services**: Introduction to Indian Financial system and Securities Market, Market Structure; Market Participants; Financial Instruments; Regulations.

UNIT II Capital Market Operations: New Issues Market and Development,Growth of Stock Market operations in India; Organization and Functioning of Regional Stock Exchange, National Stock Exchange and OTCEI; Trading and Settlement mechanism.

UNIT III Growth of Merchant Banking in India & Issue Management; Meaning, nature, role and functions, regulations; Project Appraisal and Management; Pre-issue and Post-issue management.

UNIT IV Marketing of Financial Services: Depository Services, Credit Rating, Housing Finance, Credit Cards, Mutual Fund.

UNIT V Assets Financial Services: Leasing and Hire Purchase; Factoring, Forfating and Bills Discounding.

References:

1. Fabozi. F.J.,"Capital Market", prentice Hall of India, New Delhi.
2. Femando, A.C., "Indian Financial System", Pearson education, New Delhi.
3. Mishkin, Eakins., Financial Markets & Institutions", Pearson", Pearson education, New Delhi.
4. Fabozl. F.J.,"Foundations of Financial Markets and Institutions".pearson education, New Delhi.
5. Khan, M.Y., "Indian Financial System", TataMc-Graw Hills, New Delhi.
6. Srivastava, R.M., and Nigam, D. "management of Indian Financial institutions", Himalayan Publishing House, New Delhi.
7. Pathak, "Indian Financial System", Pearson education, New Delhi.
8. Desai, "Merchant Banking", Himalayan Publishing House, New Delhi
9. Abdhani, V.,"Marketing of Financial Service", Himalayan Publishing House, New Delhi.
10. Machraju,"Merchant Banking and Financial Services," Willey Eastern Publication, New Delhi.
11. Indian Institute of Bankers, "Merchant Banking", Mac millan, New Delhi,
12. Ravichandran K. – Merchant Banking- Financial Services – Himalaya Publishing House, New Delhi.

MCEB - 313 **INTERNATIONAL FINANCE** **(Credit - 4)**

Objective

To provide a theoretical and practical understanding of the issues involved in international finance from the perspective of a company engaged in international trading.

Course Inputs

UNIT I **Forex Market:** Structure, Exchange Rates, Player, Types of transactions – Risks in Forex Market – problem of market Imperfection and MNC's – International Monetary System – The concept of Balance of Payment – Challenges in International Finance.

UNIT II Types of Forex Market: Spot and Forward. Currency options and currency futures – Hedging with currency options and futures, International parity relationship.

UNIT III Management of Forex Exposure: Transaction Exposure, Operating/Economic Exposure, Accounting/Transaction exposure.

UNIT IV International Financial Market: Equity Market, Bond Market, International Financing Decisions – Cost of capital, Debt vs. Equity Decisions.

UNIT V Financing International Trade: Letter of Credit, Bill of Lading, Govt. Programmes to Finance International trade – Counter trade – Forms of counter trade.

References:

1. IAN.H.Glddy "Global Financial Markets" (AITBS Publishers and Distributors (1997) New Delhi).
2. P.G. Apte "International Financial Management" (Tata McGraw Hill, New Delhi, 1995).
3. Solink B.H."International Investment" (Addisonnwesley publishing Co. Rending Mass).
4. Rajaram S."Forex Guide to Traders and Bankers" (R.Rajaram Madras).
5. Alan, C.Shapiro,"Multinational Financial Management" IAllyn and Bacon Inc,Boston).
6. Jain, Peyrand & Yadav" International Financial Management" (McMillan India Ltd.)

MCEB - 314 **SECURITY ANALYSIS** **(Credit - 4)**

Course Inputs

Unit-I **Meaning and Definition of Investments, Security Portfolios, Returns and Risks –** Risk Elements, Measurement of Risk, Capital Assets Pricing Model, Arbitrage Pricing Theory.

Unit-II **Security Pricing –** Factors Influencing Valuation, Constant Growth Model, Capitalisation of Dividends, Security Pricing Models, Dividend Discounting Methods, P/E Ratio Model and Graham's Approach, Valuation of Securities in India.

Unit-III **Trading in Securities :** -Meaning and Characteristics of Options, Types of owth and Advantage of Derivative Markets – Speculation & hedging.

Futures Trading – Futures and Options, Index Futures, Valuation of Index Futures, Arbitrage Trading & Hedging- derivative trading in Securities.

Unit-IV **Analysis of Securities : -** Fundamentals Analysis, Technical Analysis and Efficient Market Theory.

Unit-V **Portfolio Management:-** What is a Portfolio, Risk and Return in Portfolio Theory, Risk Return analysis- Return on Portfolio, Risk on a Portfolio, Expected Returns, Concept of Alpha, Beta, Correlation Coefficient, Regression Equation- Basics of Portfolio Analysis in India- Markowitz Model, Modern Portfolio Theory- Portfolio Management in Mutual Funds.

References-

1. Avadhani V.A. "Securities Analysis & Portfolio Management", Himalaya Publishing House, Mumbai.
2. Singhi Preeti, "Investment Management", Himalaya Publishing House, Mumbai.
3. Sudhindra Bhat, "Securities Analysis & Portfolio Management", Excel Books, Mumbai.
4. Prasanna Chandra, "Investment Analysis and Portfolio Management", Tata McGraw Hill, India.
5. Fischer Jordan, "Securities Analysis & Portfolio Management", Pearson
6. Avadhani V.A. "Investment Management", Himalaya Publishing House, .

MCEC - 315 SERVICES MARKETING (Credit - 4)

Objective

The objective of this paper is to get the students conceptually clarified and getting them being acquainted with applications of the marketing concepts and strategies to services.

Course Inputs

UNIT I **Introduction to Services:** Meaning, definition, features and classification of services, Products Vs. Services; Service Sectors and Economic development, Evolution & Growth of Service sector in India; Services Marketing Elements; Services Marketing Triangle;

UNIT II Services Marketing Planning: GAP Model; Services Marketing Management Process,Service Marketing Research; Service Marketing Planning, Market Segmentation (STP) and positioning; Consumer Behavior, Customer Expectations, and Perception; Managing Demand of Services; Service Encounter Management; Strategic Services Marketing and development Service Competitive Advantage (SCA).

UNIT III Services Marketing Strategies: Gap Model and Service Quality Management; Service Expectations and Service Product Planning, Blue Printing and Interactive Marketing; Pricing of Services; Customer Education and Promotion of Services; Service Location and Placement of Services; Internal and External Marketing.

UNIT IV Customer Relationship Management: Managing People, Process and Physical Evidence; Basics of Customer Relationship Management-Understanding Customers expectations, Perceptions and Building Customers Relationship. Services Recovery and Managing Customer Waiting lines and Reservations..

UNIT V Marketing of Services in India: Financial services, Tourism Services, Education and Professional Services, Health services and I.T. & Communication services.

References:

1. Lovelock, C., “Services Marketing, Pearson Education Inc, New Delhi,
2. Zethimal, V.A., and Bitner, M.J., “Services Marketing “. Tata MacGraw Hill, New Delhi.
3. Shajahan, S., “Services Marketing”, Himalayan Publishing House, New Delhi.
4. Rao, R., “Services Marketing”, Pearson Education Inc, New Delhi.
5. Jha, S.M., “Services Marketing”, Himalayan Publishing House, New Delhi.
6. Shanker, Ravi. “Services Marketing “, Excell Book, New Delhi.
7. Apte,G., “Services Marketing”, Oxfoed Publication, New Delhi.
8. Dyche, Jill., “The CRM Hand Book”, Pearson Education Inc, New Delhi.
9. Mukharjee, Kaushik., “Customer Relationship Management”, PHI Publication, New Delhi.
10. Balaji, B., “Services Marketing and Management”, S.Chand & Company Ltd, New Delhi.
11. Mohamed, H.P., “CUSTOMER RELATIONSHIP MANAGEMENT”, Vikas Publishing House, New Delhi.
12. Jha, S.M., “SOCIAL MARKETING”, Himalayan Publishing House, New Delhi.

MCEC - 316 **RETAIL MANAGEMENT** **(Credit - 4)**

Objective

The objective of this course is to facilitate understanding of the conceptual framework of retail management and its applications in decision making under various environmental constraints.

Course Inputs:

UNIT I **Introduction:** Basic on Retailing; Meaning, Importance, Recent Trends Types, Opportunities, Ret. MgF. Decision Process; Retail Organizations; Retail Customers; Retailing in India; Retail Philosophies & Theories, Retailing; Marketing (Gilbert Book); Retail Marketing – Mi (II)

UNIT II Retailing Management Decisions: Retail Market Segmentation and Location Study, Understanding, Retail Customers Buying Behaviors; Retail Marketing; Strategy, Retail Locations and Site Selection; Financial Strategy; Management of Services and Quality in retailing.

UNIT III Product and Pricing Strategies Management IN Retailing: Product and Merchandise Management, Buying Systems, Buying Merchandise Pricing Strategies.

UNIT IV Retail Promotion: Store Management, Relationship Marketing: Atmosphere and Retail Stores Management; Organization- Miq; Store Layout and Management International Retailing; Customer Servicing Retail Customers; Retail Operations; Consumerism and Ethics in Retailing.

UNIT V Supply Chin Management: Introduction, Demand Management, Operation Management, Procure Management, Logistic Management. Information Technology, Performance measurement & Control; Information System and Supply Chain Management; Retail Management Information Systems; Application of IT in Retail Marketing; Challenges, Solutions, Operations, Planning, Designing; Understanding and Improving S.Chains and Supply Chain Processes; Internal Integration Managing Information Flows within the Organizations; Financial Impact of SCM; Customers/Supplier Integration and New Product Day;
Introduction and Basics of Supply Chain: Meaning Supply Chain Performance and Scope, Designing the Supply Chain Network Sourcing, Transporting and Technology in Supply Chain.

References:

1. Chitan Bajaj, Rajnish Tal, Nidhi Srivastava: Retail Management.
2. Michael Levy, Barton A Weitz, Tata Mc Graw Hill.
3. Swapna Pradhan, Tata Mc Graw Hill; Retail Management.
4. Barry Burman, J.E.Evans, Pearson: Retail Management.
5. David Gilbert, Pearson; Retail Management.
6. David A. Taylor, Pearson: Supply Chain.
7. Rahul V.Altekar, PHI: Supply Chain Management Sunil Chopra, Peter Meinal:
8. R.B.Handfield, E.L.Nichols: Supply Chain Redesign
9. Sunil Chopra, Peter Meinal: Supply Chain Management
10. J.R.Ogdon, D.T.Ogden, Biztantra Pub: Integrted Retail Management.

MCEC - 317 CUSTOMER RELATIONSHIP MANAGEMENT (Credit - 4)

Course Inputs

UNIT -I Introduction to marketing, Customer Services and Customer Relationship Management :- Basics of CRM; Customer Values & Customer Satisfaction; CRM & Sales Cycle : Cost of Acquiring Customer; CRM in Marketing; CRM & Customer Services; The of CRM; Building CRM; Types of CRM

UNIT-II Management of CRM :-CRM Objectives, Planning Strategy & Building Blocks; Tools of CRM; CRM Success; CRM Business Plan; CRM Functionality;; Technological Requirements; CRM Process; CRM Complementation.

UNIT-III CRM Implementation:- Safeguarding CRM Failure, Pre-Implementation & Implementation ; CRM Development Team ; CRM Saboteaurs ; CRM Roadblocks ; CRM Challenges.

UNIT-IV E-CRM : Basic , Benefits, Praceolure, CRM in Internet, Factors in e-CRM; Analytical CRM; CRM in e-Business ; Integration of CRM with ERP System, with Data Warehouse, With call Centres; Sales Force Automation.

UNIT-V CRM in Practice – Manufacturing Banking Insurance, Airlines, Hotels, Telecom, SMB Segment, HRM in CRM.

References:-

1. Anton Dr. Jone, Kalia Dr. Shalini Petouh off- Natalie l. “CRM: The Bottamline to Optimizing your ROI”, Pearson Publication, New Delhi.
1. Mukherjee Kaushik, CRM- A Strategic Approach, PHI, New Delhi, 2007.
2. Dyche, Jill The CRM Handbook – “A Business Guide to CRM”. Pearson Publication, New Delhi.
3. Mohamed, H. P. and Sagadevon, A.,”CRM – A step by step Approach”. Vikash Publication, New Delhi.
4. Bhat, Govind K. “CRM”, Himalayan Publishing House, New Delhi.

MCED - 318 INTERNATIONAL BUSINESS (Credit - 4)

Objective

The objective of the course is to help students understand the conceptual framework of international business and thereof make financial decisions.

Course Inputs

UNIT I **Nature of International Business:** Relevance of International Business, Process of Internationalization, Collaborative Strategies, Strategies For International Business. Barriers to trade- Tariff and Non-Tariff, Triad and International Business.

UNIT II International Environment: Economic Environment: Economic System, Structure, FDI, Fee Trade, Competition, Privatization, Deregulation, Cultural Environment, Political & Legal Environment.

UNIT III Export Import Strategies: Export Challenges, Choice of Entry Mode, Factors Favoring Export, Stages of Export, Pitfalls, Selection of market, Export intermediaries, Key Export Documents, Import Strategies, Import documentation, Third Party intermediaries- Direct selling. Direct Exporting, Indirect selling, Export management and Trading companies.

UNIT VI International Trade Theories: comparative Cost Theory, Theories of Specialisation. Theory of Country size, Factor Proportion Theory, Product Life Cycle Theory, Country similarities Theory.

UNIT V Financing of Foreign Trade and Institutional infrastructure: Financing of Operation, Management of Foreign Exchange Risk, Settlement of International Transaction, Uses of Bills of Exchange, Forfaiting, Letter of Credit & Settlement, Factoring, IMF, World Bank, UNCTAD.

References:

1. International Business- Daniels, Radebaugh & Sullivan, Pearson Education
2. International Business- Rugman & Hodgetts, Pearson Education
3. International Business- Bennett, Pearson
4. International Business Environment- Cherunijam, Himalaya
5. International business- Sharan
6. Justin, P., International Businaess, PHI
7. Cherunillum, International Business, PHI.

MCED – 319 INTERNATIONAL FINANCE (Credit - 4)

Objective

To provide a theoretical and practical understanding of the issues involved in international from the prospective of a company engaged in international trading.

Course Inputs

UNIT I **Forex Market:** structure, Exchange Rates, Player, Types of Transactions –Risks in Forex Market –Problem Of Market imperfection and MNC's –International Monetary System; The concept of Balance of Payment –Challenges in International Finance.

UNIT II Types of Forex Market: Spot and Forward. Currency options and Currency Futures –Hedging With currency options and futures, International parity relationship.

UNIT III **Management Of Forex Exposure:** Transaction Exposure, Operating /Economic Exposure ,Accounting/Transaction Exposure.

UNIT IV International Financial Market: Equity Market, Bond Market, International Financing Decisions-Cost of Capital, Debt vs Equity Decisions.

UNIT V Financing International Trade: Letter of Credit, Bill of Lading, Govt. Programmes to Finance International trade-Counter trade-Forms of counter trade.

References:

1. Apte ,p g: International Financial Management, Tata McGraw Hill, New Delhi.
2. Buckley, Adrian: Multinational Finance , Prentice Hall, New Delhi.
3. Eitman D.K and A.I Stonehill, Eitman, Multinational Business Cash Finance, Addition Wesley New York.
4. Sharan V., International Financial Management PHI, New Delhi.
5. Clark, E., International Finance, Thomspon.
6. Henning C.N.,W Piggot and W.H. scolt; International financial Management , McGraw Hill, International Edition.
7. Levi, Maurice D; International Finance, McGraw Hill, International Edition.
8. Rodriqufe R.M. and E.E. Carter: International Financial management, Prentice Hall, International Edition.
9. Shaprio Alan C: Multinational Financial Management, Prentice Hall, New Delhi.
10. Yadav S., P.K.Jain and Max P., foreign Exchange Markets, Macmillan, New Delhi.
11. Zeneff D. and J Zwick: International Financial Management, Prentice Hall, International Edition.
12. O, Connor DJ, Bueso At: International Dimensions of Financial Management; Macmillan, New Delhi.
13. Plibeam Keith: International Finance: MacMillan Press, Hong Kong.
14. Melvin "International Money and Finance "Pearson, New Delhi.

MCED – 320 **PROJECT RISK MANAGEMENT** **(Credit - 4)**

Course Inputs

UNIT-I **Introduction :-** Corporate Growth Strategies and Types of Projects, Major features of the manufacturing and source projects, Importance of project risk management, Project risk management process, Planning project risk management , Importance.

UNIT – II Identifying Project Scope Risk :- Sources of Scope Risk, Risk levels, Assessment tools, Documenting the risk.

Identifying Project Schedule Risk :- Sources of schedule risk, Estimating activity duration, Activity sequencing, Documenting the schedule risk.

UNIT-III Identifying Project Resource Risk :- Source of resource risk, Resource planning outsourcing, Cost estimation and budgeting, Documenting the project resource risk.

Managing the Project Constraints & Documenting Risk :- Analysing constraints, Managing opportunities, Scope medication, Resource modification, Assessing options & updating plans, Seeking missing risks.

UNIT-IV Quantifying and Analysing Activity Risk:- Quantitative and qualitative risk analysis, Risk probability, Risk impact, Qualitative & quantitative risk assessment.

Managing Activity Risk :- Cause analysis, Categories of risk, Risk avoidance, Risk mitigation and risk transfer , Implementing Preventive ideas, Contingency planning and risk acceptance.

UNIT – V Quantifying and Analysing Project Risk :- Project level risk, Aggregating risk response, Questionnaire & surveys, Analysis of scale, Project appraisal.

Managing Project Risk :- Project documention, Project start up & project implementation, Specification of change management.

Monitoring & Controlling Risky Project-

Reference:

1. Patel M. Bhavesh " Project Management" Vikash Publishing
2. Kendrick Tom "Identifying & Managing Project Risk", PHI
3. Koster Kathrin " Interantional Project Management" Sage Publication.
4. Bary Bentor "Project Management and Leadership Skill", The Fair mound Press.
5. Daniel Brandon " Project Performance Measurement" John Wiley & Sons
6. Capels Thomas M. "Financially Focussed Project Management", J. Ross.
7. Kevin R. Callahan " Essentials of Strategic Project Management" John Wiley & Sons
8. Chapman Chris et. El. " managing Project Risk & Uncertainly" John Wiley & Sons.
9. Cleland David " Project Management: Strategic Design & Implementation". TMH
10. Cooper Dale F et. el. " Project risk Management Guidelines : Managing risk in large Projects & Complex Procurements" John Wiley & Sons.

MCED – 321 **ENTREPRENEURSHIP IN MSMEs (Credit - 4)**

Objective : The purpose of this paper is to prepare a ground where the students view Entrepreneurship as a desirable and feasible career option. In particular the paper seeks to build the necessary competencies and motivation for a career in Entrepreneurship.

Course Inputs :

UNIT- I Entrepreneurship-Enterprise: Conceptual Issues, Entrepreneurship vs. Management, Roles and functions of in relation to the enterprise and in relation to the economy, Entrepreneurship is an interactive process between the individual and the environment, Small business as seedbed of Entrepreneurship. The teachers should emphasize to students the desirability as well as feasibility of a career in Entrepreneurship in the Indian scenario, Entrepreneurs competencies, Entrepreneur motivation, performance and rewards, The teachers may make use of Entrepreneurship Development Institute of India's Inventory of Entrepreneur Competencies and National Institute of Entrepreneurship and Small Business Developments training kit for arousing Entrepreneur motivation and capacity and capability building.

UNIT- II Opportunity scouting and idea generation : Role of creativity and innovation and business research. Sources of business ideas, Entrepreneur opportunities in contemporary business environment, for example opportunities in net-work marketing, franchising, business process outsourcing in the early 21 century, The students be advised to visit various product/service franchises, BPO concerns and meet up/down links in the net-work marketing.

UNIT- III The process of setting up a small business ; Preliminary screening and aspects of the detailed study of the feasibility of the business idea and financing/ non-financing support agencies to familiarize themselves with the policies/programs and procedures and the available schemes, Preparation of project report and Report on Experiential Learning of successful and unsuccessful entrepreneurs, The students may be advised to develop a structured instrument for conducting surveys of the various aspects of entrepreneur/enterprise, They may also be advised to prepare a comprehensive business plan. The desirability and feasibility of liaison with relevant funding and non-funding agencies may also be explored.

UNIT – IV Management roles and functions in a small Business: Designing and re-designing business process, location, layout, operations planning and control. Basic awareness on the issues impinging on quality, productivity and environment, Managing business growth, The pros and cons of alternative growth options: internal expansion, acquisitions and mergers, integration and diversification, Crisis in Business growth.

UNIT – V Issues in small business marketing : The concept and application of product life cycle, advertising and publicity, sales and distribution management, The idea of consortium marketing, competitive

bidding/tender marketing, negotiating with principal customers, The contemporary perspectives on Infrastructure Development, Product and Procurement Reservation, Marketing Assistance, Subsidies and other Fiscal and Monetary Incentives. National state level and grass- root level financial and non-financial institutions in support of small business development.

References

1. Brandt, Steven C., The 10 Commandments for Building a Growth Company, Third Edition, Macmillan Business Books, Delhi, 1977
2. Bhide, Amar V., The Origin and Evolution of New Business, Oxford University Press, New York, 2000.
3. Dollinger M.J., 'Entrepreneurship strategies and Resources', 3rd edition, Pearson Education, New Delhi 2006.
4. Desai, Vasant Dr. (2004) Management of small scale enterprises New Delhi: Himalaya Publishing House,
5. Taneja, Gupta, Entrepreneur Development New Venture Creation,: 2nd ed.

MCED – 322 PROJECT APPRAISAL & IMPLEMENTATION (Credit - 4)

Objective

The objective of the course is to acquaint the students with the concepts, tools and techniques as well as the methods of project planning and use as the strategy in the financial management.

Course Inputs

UNIT I **Project:** Meaning, Lifecycle, Types of project, Scope of project, Pre- investment studies. Feasibility studies and reports, project report and its contents.

UNIT II Project Appraisal and Evaluation: Material appraisal, technical appraisal, Manpower appraisal, Marketing appraisal, Financial appraisal, Preparation of appraisal reports, techniques of methodology of appraisal.

UNIT III Estimation of Cost of Project: Financing and financial closure, Estimation of profitability and techniques of evaluation.

UNIT IV Administrative Approval: Project organization, Administration, engagement of consultants, preparation of technical specifications and contract finalization.

UNIT V Project Implementation: Scheduling and monitoring and Contract, Post emplitia Audit and evaluation, Capitalisation of Amount of price.

References:

1. Narendra Singh: Project Management & Contract
2. Vasant Desai: Project Management
3. Bhavesh Patel : Project Management
4. Feasibility Studies, IDBI Manuals for the Preparation of Industrial Project.

MCED – 323 ACCOUNTING & FINANCE FOR SMALL ENTREPRENEURS
(Credit - 4)

UNIT – I	Principles of double-entry book-keeping: journal entries, cash- book, pass book,and Bank Reconciliation Statement, ledger accounts, trail balance, Preparation of final accounts: Trading and Profit and Loss Account; Balance-sheet. Brief introduction to Single-Entry system of record keeping.
UNIT- II	Financial statement analysis techniques – Ratio analysis and Inventory Valuation and estimation.
UNIT - III	Funds flow statement & Cash flow statement analysis, Sources of long term finance.
UNIT- IV	Meaning, scope, aims and objectives of financial management;finance function;Sources of risk/venture such as leasing and factoring.capital, fixed capital, working capital and a basic awareness of financial services
UNIT- V	Capital budgeting- concepts, risk analysis of capital investments, cost of capital. Capital Structure: Planning & Theories; Marginal Costing & Profit Planning; Cost volume profit Analysis.

References:

1. Maheshwari, S.N. (2001). Management Accounting and Financial Control.*Sultan Chand and Sons*, New Delhi.
2. Bhattacharya, S.K. and Dearden, J. (1996). Accounting for Management: Texts and Cases. *Vikas Publishing*, New Delhi.
3. **Bhattacharya** (2003). **Financial Accounting for Business Managers**.*Prentice Hall of India*, New Delhi.
4. **Pandey, I.M.** (2003).**Finance: A Management Guide for Managing Company Funds and Profits**.*Prentice Hall of India*, New Delhi.

FOURTH SEMESTER

MCC - 401 CORPORATE GOVERNANCE & BUSINESS ETHICS (Credit- 4)

Objective

The objective of the paper is to provide a theoretical understanding of the issues involved in corporate governance and business ethics from the perspective of a company manager engaged in welfare of the stakeholders.

Course Inputs

UNIT I **Corporate Governance (CG):** Meaning, Historical Perspective, Issues In CG, Theoretical basis of CG, CG Mechanism, CG Systems, Good CG.

UNIT II **Landmarks in the emergence of CG:** CG Committees, World Bank on CG, OECD Principles, Sarbanes- Oxley Act, 2002, Indian Committees and Guidelines, CII Initiatives.

UNIT III Agents & Institutions in CG: Rights & Privileges of Shareholders, Investors Problems & Protection, CG & other Stakeholders, Role of Regulators & Government.

UNIT IV Business Ethics: Importance & Need for Business Ethics, Unethical Behavior & Issues, Corporate Governance Ethics, Ethics in Global Business.

UNIT V **Ethics and CSR:** Importance & Scope of CSR, Social Responsibility & Indian Corporations, Environmental Concerns, Ethics in the Business Decisions.

Reference:

1. A.C.Femado – Corporate Governance, Pearson Education
2. L. P.Hartman – Business Ethics, Tata McGraw-Hill
3. B.H Agalgatti & S. Krishna – Business Ethics, Niraj

MCC - 402 MANAGEMENT OF FINANCIAL INSTITUTIONS (Credit - 4)

Objective

The objective of the present course is to provide a comprehensive knowledge to the students about the role of financial institutions in the economy and the way these institutions, specially the commercial banks manage the asset and liabilities side of the balance sheet.

Course Inputs

UNIT- I Introduction: Financial Intermediaries and their Economic functions, Efficiency and stability of the financial institutions – Role of financial regulation Measuring the efficiency of Financial intermediaries Challenges before the financial institutions

UNIT-II Management of Capital and Liabilities: Risk based Capital Standards _ Composition of bank capital – Basel norms. Bank Liabilities – Composition – Funding costs and Banking risk.

UNIT -III Management of Loans and Investments: Loan Management – Principles of sound bank lending – Credit analysis and pricing of Commercial loan, Management of Non-performing Assets.

UNIT I-V Management of Income and Liquidity: Income determination – Structure of Income and Expenditure – Allocation of Income – Determining factors of Income allocation.

UNIT- V Liquidity; Sources of liquidity – Asset vs. liability liquidity – Estimation liquidity needs and liquidity management theories – Management of Primary reserve Secondary reserve – Problems of liquidity management.

References:

1. Srivastava R.M and Nigam Divya “Management of India Financial Institution” Himalaya Publishing House>
2. Altman, Edward “Handbook of Financial Markets and Institutions “ Wiley New York
3. Fabozzi, Frank J & Franco M.G” Financial Markets and Institutions” Prentice Hall
4. Read, Edward W”Commercial Bank Management” Harper and Row New York
5. Robicheck A.A Coleman A.B and Hempal G.H “Management of Financial Institutions – Notes and Cases” Dryden Press
6. Grosse H.D “Management policies of Commercial Banks” Prentice Hall Inc
7. Roland, Robinson “Financial Institutions” Richard D Irwin Inc Homewood Illinois
8. Bradley, S.P and Dnignt B.C “Management of Bank Portfolio” John Wiley and Sons Inc
9. Cooper S.K & fraser D.R “The Financial Market Place” Adison – Wisley Publishing Company
10. Levison Marc “Guide to Financial Markets” The Economists
11. Rose and fraser “ financial Institutions “ Business Publication Inc
12. Jadhav Narendra “Challenges to Indian Banking : Competition. Globalisation and Financial Markets “ Mc Millan India

MCE - 403 IT & BUSINESS APPLICATION (Credit - 4)

Objective

The objective of this course is to provide an understanding of computers, computer operating system, and application of relevant software in managerial decision making.

Course Inputs

UNIT I **Computer Hardware & Software:** Computer system as Information processing system, Computer System, different types of computer systems, hardware options – CPU, input devices, output devices, storage devices, communication devices, configuration of hardware devices and their applications. Memory, Software, Different types software, Programming Languages.

UNIT II Modern Information Technology: Basic idea of Local Area Networks (LAN) and Wide Area Networks (WAN), E-mail, Internet technologies, access devices, concept of a World Wide Web and internet browsing. Multimedia.

UNIT III Introduction to Operating System: What is Operating System? Functions of Operating system, Types of Operating System. Windows, Word Processing : Introduction and working with Ms-WORD in Ms- Office, Word basic commands, Formatting-text and documents, Sorting and Tables, Working with graphics, Introduction to mail- merge.

UNIT IV Spread Sheets: Working with EXCEL- formatting, function, chart features, working with graphics in Excel, Using worksheets as database in accounting, marketing, finance and personal areas.

Presentation with Power Point: Power-Point basics, creating presentations the easy way, working with graphics in Power Point, Show time, sound effects and animation effects.

UNIT V **Introduction to Accounting Packages:** Company Creation, Group and Ledger Creation, Voucher Entry, Maintenance of accounting books and final accounts, financial reports generation, Practical Knowledge on Tally.

References:

1. Diennes, shells S: Microsoft Office, Professional for windows 95, Instance reference, BPB Publication, Delhi
2. Mansfield, Ron: The Compact guide to Microsoft office, BPB Publication , Delhi.

MCE - 404 CORPORATE LEGAL FRAMEWORK (Credit - 4)

Objective

The objective of this course is to familiarize students with the relevant provisions of various laws influencing business.

Course Inputs

UNIT -I **Indian Contract Act,** Negotiable Instruments Act, Indian Stamp Act

UNIT -II **Workmen Compensation Act** ,Consumer Protection Act, Patent Act.

UNIT- III Indian Competition Act 2002,**,** Sick Industries Companies Act.

UNIT -IV **FEMA – 2000,** Exim-Policies. Information Technology Act,

UNIT -V Indian Companies (Amendment) Act, Trademark Act. , Copy Right Act.

References:

1. Avadhani V. A: SEBI Guidelines and Listing of Companies, Himalaya Publishing House, Delhi
2. Indian Contract Act, 1872.
3. SEBI Act 1992, Nabhi Publication, Delhi.
4. Securities (Contract and Regulation) Act, 1956.
5. Taxman's Company Act, (Latest), V.S.Datey.
6. Taxman's Masters Guide to Companies Act, 1998
7. Taxman's Mercantile Law, (Latest).
8. The Companies Act, 1956.
9. The Negotiable Instruments Act, 1881.
10. Singh, Avtar, Law Relating to Monopol;ies, Restrictive and Unfair Trade Practices, Eastern Book' Co.
11. Bhandari ML: Guide to Company Law Procedure- Vols I, II and III; Jain Book Agency, New Delhi.
12. Ramalya A; Guide to Companies Act; Wadhwa Publishing, Nagpur.

MCE - 405 CORPORATE RESTRUCTURING (Credit - 4)

UNIT - I Concept, Types and motives behind corporate restructuring, Economic Rationale behind Major types of Mergers, Merger Theories. Evaluating the Success of Mergers and Acquisitions. Recent Trends and Challenges In corporate restructuring.

UNIT - II Strategic Approach to Value Creation-Competitive Strategy Vrs Diversification Strategy-Value Creation in Horizontal mergers, vertical Mergers, and Conglomerate Acquisitions-Value creation in Consolidating Fragmented Industries.

UNIT- III Deal Structuring, Valuation Financing M & A-Due Diligence, Selection of Target Company- Methods of Valuation-Paying for Acquisition-Accounting and Taxation Issues in M & A.

Unit: - IV Forms of Restructuring and Divestiture-Spin-offs, Split-ups, Target Stocks, Equity Carve-outs, Going Private and Leverage Buy Outs, Joint Ventures and Alliances, Share Repurchase, Cross Border Acquisitions.

UNIT- V Regulating Takeover Bids, -Bid Strategies and Tactics, Defenses against Takeovers, Post Acquisition Integration, Risks Associated with Mergers and Acquisitions.

REFERENCES-

1. **Jha Nisikanta** "Mergers, Acquisitions and Corporate Restructuring" Himalayan Publishing House.
2. **Weston. J.Fred & Weaver Samuel "**Mergers and Acquisitions" Tata McGraw Hill.
3. **Boeh Kevin & Beamish Paul** "Mergers and Acquisitions- Text and Cases" Sage South Asia Edition.
4. **Sudarsanam Sudi** "Creating Value from Mergers and Acquisitions- The Challengers" Pearson Education.
5. **Weston J Fred, Siu Juan & Johnson Brian** "Takeovers, Restructuring and Corporate Governance" Pearson Education.
6. **Chandrasekhar Krishnamurthy & Viswanath S.R** "Mergers, Acquisitions and Corporate Restructuring "Response Business Books.
7. **Weston J Fred, Chung S Kwang & Hoag. E Susan** "Mergers, Restructuring and Corporate Control" Prentice Hall of India.
8. **Das Bhagaban, & Rakshit** "Corporate Restructuring" Himalayan Publishing House.
9. **Sundarsanam. P. S.** "The essence of Mergers and Acquisitions" Prentice Hall of India.
10. **Shiva Ramu. S** "Corporate Growth Through Mergers and Acquisitions" Response Books.

MCE - 406 WEALTH MANAGEMENT (Credit - 4)

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT-II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNIT- III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT- IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT -V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

1. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
2. Financial Education By Reserve Bank of India - rbi.org
3. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
4. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
5. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

MCE - 407 AGRI- BUSINESS (Credit - 4)

UNIT- I **Agricultural Business Practices:-** Characteristics of Agriculture Business- Nature of Indian, Agriculture – Government policies related to agricultural Business- Problems and prospects of Agricultural Business –Agricultural Taxation policy.

UNIT- II **Agricultural products and Farms Services:-**Nature and disposal of Agricultural by-products-Farm waste cost of recycling of farm waste.

UNIT- III **Allied agricultural business :-** Dairy Poultry – Bio – Manures, etc WTO and its impact on agri-business Practices.

UNIT- IV **HRM in Agri Business Management :-**

a) Development of Human Resource through Agricultural Training

b) Importance of Human Resource in Agricultural

c) H. R. M. development program for Agribusiness

UNIT-V **Emerging Trends In ABM** :-

a) Agro Tourism

b) Organic Farming

c) Contract Farming

d) Herbal Farming

REFERENCES-

1. Principles of Business Orgnisation Acharya Govekar A.R. Sheth and Co
2. Principles of Practice of Marketing Mamoria, Joshi Kitab Mahal
3. Regulated Markets W. R. Natu
4. Marketing Co-Operative Way G.S. Kamat Maharastra state Co-op Union
5. Future Trading and Control Ram Desai
6. Bombay Money Market H.T.Y.B.A Parekh
7. Commodity Marketing and P.L. Gadgil Shubhada Sarswat,Distributive Trade Pune

MCEA - 408 FINANCIAL INCLUSION (Credit - 4)

UNIT –I Financial Inclusion and Economic Development, Savings, Investment and Capital Formation

UNIT – II Dimensions of Financial Inclusions: Micro-credit, Micro- saving and Micro-insurance

UNIT – III Financial Inclusion and Financial Literacy: Awareness Campaign by Government

UNIT – IV Financial Regulatory and Financial Inclusion: Government Directives, RBI Directives

UNIT – V Commercial Banks and Financial Inclusions: Branch Expansions, Technology and Schemes

References

1 Financial Education By Reserve Bank of India - rbi.org

2 Personal Finance Columns in the Economic Times, the Business Lines and Financial Express Daily News Papers.

3. Information Bulletin of Post Offices, Banks, Mutual Funds, Insurance Companies.

4. Internal Sources: BSE, NSE, SEBI, RBI, IRDA, MFI etc.

MCEA - 409 INTERNATIONAL ACCOUNTING (Credit - 4)

Objective

To acquaint the students regarding the international dimensions of accounting, foreign currency translation, transactional reporting and efforts at harmonization.

Course Inputs

UNIT I International Dimensions of Accounting: Meaning, Importance & Scope of International Accounting, Internationalization of the Accounting in Select Countries.

UNIT II Foreign Currency Transalation: The Need for translation, Transaction of Foreign Currency, Financial Statement- Forward Exchange Contracts.

UNIT III International Dimensions of Financial Reporting: Transactional Reporting, Reporting Practices, Consolidation of Financial statements.

UNIT IV Harmonization of Accounting Practices: The Need for Harmonisation, Methods of achieving Harmonisation, Impediiments to Harmonisation, The Harmonisation Process at work; Regional and Global Harmonisation, International accounting standards, Indian accounting standards.

UNIT V Analysis of Foreign Financial Statement: Techniques of Financial Statement Analysis, Analysing global financial statements. Evaluation of Performance.

References:

1. Shirin Rathore; “International Accounting “ PHI
2. A.K. Basu; “International Accounting Harmonisation” University of Calcutta.
3. B.Banerjee; “Contemporary Issues in Accounting Research “ IAA Research Foundation.
4. Meigs & Meigs ; “Accounting : The Basis for Business Decisions” McGraw Hills.
5. Belverd e, Needles Jr. “ Financial Accounting”. Pub. Houghton & Middlin.

MCEA – 410 ACCOUNTING STANDARDS AND CORPORATE REPORTING
(Credit - 4)

Objective

To provide an understanding of the accounting standards of ASB and IASB, and to study the corporate reporting practices in India.

Course Inputs

UNIT I **Accounting Standards:** Meaning and Importance, Historical development, Need for harmonization and standardization. Accounting Standards in India: Objectives, Process of Standard Setting**.**
IASB & IFRS: International Accounting Standards.

UNIT II **Brief idea:** About first fifteen accounting standards developed by ASB. (Special emphasis on AS- 1, 2, 3, 6, 10 and 14)

UNIT III **Brief idea:** About other Accounting Standards, Developed by ASB. (Special emphasis on AS- 17, 18, 20, 25 and 28)

UNIT IV **Corporate Disclosure:** Statutory and Non-Statutory, Modern Trends in Corporate disclosure.

UNIT V **Project Work in Accountancy/ Case Studies**

References:

1. N. Das gupta: Accounting Standards: Indian International, Sultan Chand
2. L.S.Porwal: Accounting Theory, Tata McGraw
3. S. Rathore: International Accounting, Tata McGraw
4. E.R.Brown Lee II, K.R.Ferris & M.E.Haskins: Corporate Financial Reporting, Irwin
5. D.S.Rowat: Students' Guide to Accounting Standards, Taxman
6. A.K.Basu (University of Calcutta): International Accounting Harmonisation.
7. Jawahar Lal: Corporate Financial Reporting, Taxman.

MCEA – 411 ACCOUNTING FOR NPOs (Credit - 4)

Course Inputs

UNIT- I Accounting Language & Information System: Generally Accepted Accounting Principles (GAAP), Methods of Accounting; Cash & Accrual.

UNIT- II Books of Accounts: Cash Book & Bank Account, Bank Reconciliation Statement.

UNIT – III Types of Assets: Depreciation, Grants & Donations, Expenditures.

UNIT - IV Final Accounts: Receipt & Payments A/C, Income & Expenditure A/c, Balance Sheet

UNIT - V Financial Statement Analysis & Reporting, Audit Reports

References:

1. Finance & Legal Handbook for NPOs – CA Manoj Fogla, FMSF, 2012.
2. Financial Accounting – Prof. Jawaharlal –Himalaya Publishing House P Ltd
3. 2-Shankarnarayana-Financial Accounting.(Cengage Learning)
4. 3-Bruns-Financial Reporting and Management Accounting(Cengage Learning)
5. 4-Stice-Financial Accounting reporting and analysis.(Cengage Learning)

MCEB - 412 PORTFOLIO MANAGEMENT (Credit - 4)

Objective

The objective of this course is to help students understand various in security analysis & portfolio management.

Course Inputs

UNIT I **Investments:** Nature and scope of investment analysis, element of investment, avenues of investment.

Security Markets: Primary and secondary market; Primary market- role functions and methods of selling securities in primary market.

Secondary Market: Role, importance, type of brokers, trading mechanism, listing of securities in stock exchange, Depository-role and need.

UNIT II **Fundamental Analysis:** Trends, indicators, indices and moving averages applied in technical analysis.

Technical Analysis: Trends, indicators, indices and moving averages applied in technical analysis.

UNIT III **Efficient Market Hypothesis:** Weak, semi-strong and strong market and its testing techniques.

UNIT IV **Portfolio Analysis:** Estimating rate of return and standard deviation of portfolio. Effect of combining the securities; Markowitz Risk-return optimization; single Index Module or Market Module; Portfolio total risk, portfolio market risk simple Sharpe's optimization solution.

UNIT V **Capital Market Theory:** Capital market line, Security market line, risk free lending and borrowings; factor Models; Arbitrage pricing theory, two factor and multi factor models.

Portfolio Performance Evaluation: Measure of return, risk adjusted measures of return, market timing, evaluation criteria and procedures.

References:

1. Amling; fundamentals of Investment Analysis, Pearson Education, Delhi
2. Bhalls: Investment Analysis, S.Chand & Co. Delhi.
3. Chandratre K.R.: Capital Issue, SEBI & Listing, Bharat Publishing House, New Delhi.
4. Clark James Fransis, Investment – analysis and management, McGraw Hill, International Edition.
5. Donal e. fisher and Ronal J. Jorden: Security Analysi and Portfolio management. PH. New Delhi.
6. Fabozzi Frank J: investment Management, Pearson Education, Delhi
7. Gupta L.C: Stock Exchange Trading in India; Society for Capital Market Research and Development, Delhi .
8. Machi Raju, H.R: Merchant banking; Wiely eastern Ltd., New Delhi
9. Machi Raju, H.R.; Working of Stock Exchanges in India; Wiley eastern Ltd., New Delhi.
10. Sharpe Willam F., Gordon J Alexander and J.V.Bailly: Investments, Pearson Education, Delhi
11. Sharpe William F: Portfolio Theory and Capital Markets; McGraw Hill, NY.

MCEB - 413 RISK MANGMENT & DERIVATIVES (Credit - 4)

Objective

This course will familiarize the students in the application of various tools and techniques of financial risk management.

Course Inputs

UNIT I **Risk:** Definition, types of Risk, Process of Risk Management, The tools of risk Management.
Derivatives: Definition and Evolution of derivatives, Derivatives Markets, Types of Derivatives, Derivatives in India.

UNIT II Futures Market: Functions of futures market, Speculation and hedging, Price spread and hedging, futures and price stabilization, tests of efficiency, Financial futures as a mechanism of risk transference, spot and futures prices.

UNIT III Financial Futures: Interest Rate futures, Currency Futures, (Foreign Exchange) Stock index futures and Financial Futures in India. Risk Management with Futures, Cost of Carry Model, Index Arbitrage, Purchasing Power Parity Theorem.

UNIT IV Options: Terminology and methodology of trading, Types of Options, Option pricing, Swaps, types of Swaps, Swap Valuation, and other derivatives, Speculation with options, Risk management with options & futures.

UNIT V Regulatory Framework of Futures & Derivatives: Regulatory bodies in Major international Markets, Regulatory framework in India, regulatory instruments and needs, Accounting for derivative transactions.

References:

1. John C.Hill : Options, Futures & other derivatives, Pearsons.
2. T.V. Somanathan, Derivatives, Tata McGraw Hill.
3. Redhead, Financial Derivatives, Prentice Hall.
4. Lasys Walter, Lexinton, Speculation, Hedge and Commodity Price Forecasting.
5. Miller, H., Financial Innovation and Markets.
6. Hill J. and T. Schneelesis, Risk reduction and Potential of Financial Futures.

MCEB - 414 FINANCIAL REGULATORY FRAMEWORK (Credit - 4)

Course Inputs

UNIT –I Banking Regulation Act, 1949:- Provisions relating to: Definition (Sec -5) Functions of banking companies (Sec -6), Restrictions on business of banking companies (Sec -8, 19 and 20) ,Powers of the RBI (Sec -21, 35 and 36 to 36 AD), Winding up of a banking company (Part III and III-A of the Act), Applicability of the act to cooperative banks (Sec- 56).

UNIT-II The Reserve Bank of India Act, 1934 :-Provisions relating Incorporation, Capital management and Business (Sec 3 to 19),Central Banking functions ((Sec -20 to 45):Regulatory and Supervisory, Collection and furnishing of credit information (45 A to 45 G) Penalties, (Sec 58 B to 58 -G), Changing role of the RBI.

UNIT- III Securities & Exchange Board of India (SEBI):- SEBI Act 1992 – Powers & Functions – Collectives, Investment scheme - Registration of intermediaries-Finance, Accounts & Audit of SEBI-Penalties for failure default, Inside trading & Non-disclosure of Acquisition of shares & Takeovers- securities Appellate Tribunals

UNIT – IV Insurance Regulatory and Development Authority (IRDA), IRDA Act, 1999, Establishment and incorporation of authority and duties, powers and functions of authority

UNIT- V Pension Fund Regulatory and Development Authority Act, 2003(PFRDA)
Forward Market Commission in India (FMC)

References

1. Tannan's 'Banking', Law and Practice in India Banking
2. P.N. Varshney, Banking: Law and Practice
3. Justin Paul and Padmalatha Suresh: Management of Banking and FinancialServices
4. All relevant and recent Bare Acts
5. Indian Institute of Bankers: Laws and Practices relating to banking
6. All journals published by Indian Institute of Banking and Finance
7. Reserve Bank of India functions and working (latest edn.) R.B.I.
8. Monetary Economics for India, Dr. Narendra Jadhav
9. Central Banking for emerging market economies, A. Vasudevan
10. Monetary and financial sector reforms in India : A central banker's perspective, Dr. Y.V. Reddy
11. Indian economy : Essays on money and finance, Dr. C. Rangarajan.
12. Annual Report on Trend and Progress of Banking in India. Reserve Bank of India Bulletin

MCEC - 415 PRODUCT PLANNING AND SALES FORCE MANAGEMNT
(Credit - 4)

Objective

The objective of the course is to acquaint the students with the concepts, tools and techniques as well as the methods of project planning and use as the strategy in the financial management.

Course Inputs

UNIT I **Project:** Meaning, Lifecycle, Types of project, Scope of project, Pre- investment studies. Feasibility studies and reports, project report and its contents.

UNIT II Project Appraisal and Evaluation: Material appraisal, technical appraisal, Manpower appraisal, Marketing appraisal, Financial appraisal, Preparation of appraisal reports, techniques of methodology of appraisal.

UNIT III Estimation of Cost of Project: Financing and financial closure, Estimation of profitability and techniques of evaluation.

UNIT IV Administrative Approval: Project organization, Administration, engagement of consultants, preparation of technical specifications and contract finalization.

UNIT V **Project Implementation:** Scheduling and monitoring and Contract, Post emplitia Audit and evaluation, Capitalisation of Amount of price.

References:

1. Narendra Singh: Project Management & Contract
2. Vasant Desai: Project Management
3. Bhavesh Patel : Project Management
4. Feasibility Studies, IDBI Manuals for the Preparation of Industrial Project.

MCEC – 416 INTERNATIONAL MARKETING (Credit - 4)

Objective

The objective of this course is to expose students to the conceptual framework of international marketing management.

Course Inputs

UNIT I **Introduction to International Marketing:** Nature significance; Scope of international marketing; International market orientation framework and EPRG Model. International market entry strategies: Export entry and Non-export entry modes, Bases of International Marketing **International Marketing Environment:** International Marketing Environment; External environment-geographical, demographic, economic, socio-cultural, political and legal environment; Impact of environment on international marketing decisions.

UNIT II **Foreign Marketing Selection:** Global market segmentation; Selection of Export markets; International positioning **International Marketing Planning,** Organising and Control: Issues in international marketing planning; International marketing information system; Organising and controlling; International marketing operations.

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Product Decisions: Product planning for global markets; New product development; Management of international brands; Packing and labeling; Provision of sales related services.

UNIT III Pricing Decisions: Objectives, Factors, Methods and Strategies of Pricing; Financing and Methods of Payment.

Promotion Decisions: Promotional practices in international Marketing, personal selling, sales promotion and public relations, Promotion and Marketing Communication

UNIT IV Distribution Channels and Logistics: Functions and types of channels; Channel selection decisions; Selection of foreign distributors/agents and managing relations with them; International logistics decisions, Organization of International Marketing Activities, Supply Chain Management (SCM)

UNIT V Emerging Issues and Developments in International Marketing: Ethical and social issues; international marketing of services; Information technology and international marketing; Impact of globalization; WTO andDevelopment of International Marketing.

References:

1. Czinkota, M.R: International Marketing, Dryden Press, Boston.
2. Fayerweather, John: John: International Marketing, Prentice Hall, New Delhi.
3. Jain, S.C: International Marketing, CBS Publications, New Delhi.
4. Keegan, Warren J.; Global Marketing Management, Prentice Hall, New Delhi.
5. Onkvisit, Sak and John J. Shaw: International Marketing: Analysisand Strategy, Prentice Hall, New Delhi.
6. Paliwoda, S.J (ed): International Marketing Reader, Routledge, Lodon.
7. Pallwoda, Stanley J.: The Essence of International Marketing, Prentice Hall, New Delhi
8. Sarathy, R and V Terpatra: International Marketing, Dryden Press. Boston.
9. Vasudeva P.K., International Marketing: Excel Books, New Delhi.
10. Gerald Albaum and Edwin Duerr- International Marketing and Export Management, Pearsons

Publication
New delhi

MCEC – 417 PRODUCT AND BRAND MANAGEMENT (Credit - 4)

UNIT- I Basics of Product : Meaning, Importance, product Classification, Product –mix, Product Strategy, Product Planning, Product Life Cycle and Marketing, marketing Environment, product and Brand Management, Product Market Strategies for Leaders/Challenges,

UNIT – II New Product Development, Product Positioning Strategies, Packaging Management, Creative Spark, Concept Testing and Test Marketing.

UNIT- III Issues & Concept of Branding :- Meaning, Significance, Function, Creating a Brand, Brand Building, Branding Decision, Anatomy of Brands, Types of Brands, Re-branding, Logo-Changes, Brand Re-launch, Repositioning, Brand Culture, Brand Rituals, Brand and Consumer Psychology,

UNIT- IV Brand Building, Brand Equity, Brand Extension, Global Brands, Brand Placement , Product and Brand Failures, Consumer Protection, Marketing Organisations, Leveraging Plants, Brand Personality, Brand Extensions, Service brands;

UNIT – V Positioning :- Perceptual space and Positioning, Positioning relating to Product Class, Consumer Segmentation, Perceptual Mapping, Brand Benefits and Attributes, Positioning S, Advertising and Positioning Brand, Celebrity Endorsement

References :-

1) Chunawalla, S. A., " Product Management", Himalaya Publishing House, New Delhi.
2) Rao, K. Venugopal, " Product and Brand Management- Text and Cases", Himalaya Publishing House, New Delhi
3) Sengupta, Subrato : "Brand Positioning", Tata Mc Graw Hill Publishing House, New Delhi.
4) Gupta S. L. , "Brand Management- Text & Cases", Himalaya Publishing, New Delhi.
5) Chunawalla, S. A., "Compendium of Brand Management", Himalaya Publishing House, New Delhi

MCED - 418 INTERNATIONAL ACCOUNTING (Credit - 4)

Objective

To acquaint the students regarding the international dimensions of accounting, foreign currency translation, transactional reporting and efforts at harmonization.

Course Inputs

UNIT I **International Dimensions of Accounting:** Meaning, Importance & Scope of International Accounting, Internationalization of the Accounting Profession, Accounting Profession in Select Countries.

UNIT II Foreign Currency Translation: The Need for transalation, Transaction of Foreign Currency, Financial Statements- Forward Exchange Contracts.

UNIT III International Dimensions of Financial Reporting: Transactional Reporting, Reporting Practices, Consolidation of Financial statements.

UNIT IV Harmonization of Accounting Practices: The Need for Harmonisation, Methods of achieving Harmonisation, Impediments to Harmonisation, The Harmonisation Process at work: Regional and Global Harmonisation, International accounting standards, Indian accounting standards.

UNIT V Analysis of Foreign Financial Statements: Techniques of Financial Statement Analysis, Analysing global financial statements. Evaluation of Performance.

Reference:

1. Shirin Rathore; “International Accounting” PHI
2. A.K.Basu; “International Accounting Harmonisation” University of Calcutta.
3. B.Banerjeee; “Contemporary Issues in Accounting Research” IAA Research Foundation.
4. Meigs & maigs; “Accounting: The Basis for Business Decisions” McGraw Hills.
5. Belverd Needles Jr, “Financial Accounting”. Pub. Houghton & Mifflin.

MCED - 419 **INTERNATIONAL MARKETING** **(Credit - 4)**

Objective

The objective of this course is to expose students to the conceptual framework of international marketing management.

Course Inputs

UNIT I **Introduction to International Marketing:** Nature significance; Scope of international marketing; International marketing orientation framework; International market entry strategies.

International Marketing Environment: International Marketing Environment; External environment-geographical, demographic, economic, socio-cultural, political and legal environment; Impact of environment on international marketing decisions.

UNIT II Foreign Market Selection: Global market segmentation; Selection of foreign markets; International positioning.
Product Decisions: Product planning for global markets; New product development; Management of international brands; Packing and labeling; Provision of sales related services.

UNIT III Pricing Decisions: environment Influences on pricing decisions; International pricing policies and strategies.
Promotion Decisions: Promotional practices in international Marketing, personal selling, sales promotion and public relations.

UNIT IV Distribution Channels and Logistics: Functions and types of channels; Channel selection decisions; Selection of foreign distributors/agents and managing relations with them; International logistics decisions.
International Marketing Planning, Organising and Control: Issues in international marketing planning; International marketing information system; Organising and controlling; International marketing operations.

UNIT V Emerging Issues and developments in international marketing: Ethical and social issues; international marketing of services; Information technology and International marketing; Impact of globalization; WTO;

References:

1. Czinkota, M.R; International Marketing, Dryden Press, Boston.
2. Fayerweather, John: International Marketing, Prentice Hall, New Delhi.
3. Jain, S.C: International Marketing, CBS Publications, New Delhi.
4. Keegan, Warren J: Global Management, Prentice Hall, New Delhi.
5. Onkvisit, Sak and John J.Shaw: International Marketing: Analysisand Strategy, Prentice Hall, New Delhi.
6. Paliwoda, S.J (ED) : International Marketing, Reader, Routledge, London.
7. Paliwoda, Stanley J.: The Essence of International Marketing, Prentice Hall, New Delhi.
8. Sarathy, R and V terpstra: International Marketing, Dryden Press, Boston.
9. Vsudeva P.K., International Marketing: Excel Books, New Delhi

MCED - 420 INTERNATIONAL FINANCIAL SERVICES (Credit - 4)

Objectives

- To introduce the field of international financial services to the students and provide an in depth knowledge on various financial services
- To provide an understanding of global financial environment operations of business.

UNIT - 1 Evolution of International Financial Services – its impact on Indian Financial System – Formal Financial System and Informal Financial System – International Financial Institutions –Banking Companies and Non Banking Companies – Classification of Non Banking Companies

– Classification of Activities of Non Banking Finance Companies- Fund Based Activities – Fee Based Activities – concepts, growth, current issues and trends of fee Based and Fund Based activities.

UNIT - II Introduction, Definition, Concept, Players involved in International Securitisation and its Processes, structure, Difference between Pass Through Certificate and Pass Through Securities, International Instruments of Securitisation, Developments and hurdles in Securitisation with recent trends

UNIT - III International Credit Rating and Agencies: Introduction – Concept of Credit Rating – Meaning of Credit rating – Definition, Scope – need and Importance of credit rating in developing countries – Types of credit rating –Kinds of instruments, Credit rating symbols – Credit Rating advantages and disadvantages and the reliability on its rating.

Credit rating agencies in India (CRISIL, CARE, ICRA and Fitch India) vis–a-vis Global rating agencies– Process of Credit Rating and Methodology credit rating agencies – services rendered by credit rating agencies – Solicited rating and unsolicited rating – Equity assessments us Equity grading – rating, Methodology for Financial services, Manufacturing companies, Banks and financial companies, Mutual funds, Insurance companies and IPO grading – Registration and Regulation of Credit rating agencies

UNIT - IV Overview of Global Depository Systems vs. Key features of Depository system in India – depository – legal framework – Eligibility criteria to become a global depository- Agreement between Depository and Issuers – Rights and Obligation of Depositories- Records maintained by Depository – Services of and functions of Global Depositories.

UNIT - V Core International Financial Services- Account opening- Types of Accounts – Types of Application Forms- Dematerialisation Process – Rematerialisation Process. Trading and Settlement –Off-Market Trade,

– Market Settlement-Dematerilisation of Shares

Special Services -Pledge and Hypothecation-Procedure for pledge/Hypothecation-procedure of confirmation of creation of Pledge/Hypothecations by Pledge-Closure of a Pledge/Hypothecation by Pledgor-Invocation of Pledge by Pledge Stock lending and Borrowing – Corporate actions

References:

1. Agarwala&Agarwala, Bulls Bears 7 the Mouse, Macmillan
2. Apte, P.G., International Financial Management, Tata McGraw Hill, 2006.
3. B. L. Mathur, Changing Profile of Financial Services, Bookman Associates
4. Dr. J. C. Verma, Credit Rating, Bharat Publication
5. Eitman, David K., Stonehill, Arthur, Moffet, Michael H., Multinational Business Finance, Pearson Education, 2007
6. I. M. Pandey, Venture Capital – The Indian Experience, Prentice Hall India
7. J. C. Verma, Venture Capital Financing in India, Response Books
8. J. K. Dietrich, Financial Services and Financial Institutions, Prentice Hall India
9. Journal of Financial Services

10. Journal of Investing
11. Journal of Structure Finance
12. Khan M.Y. Financial Services, Tata Mc Graw Hill

MCED - 421 ENTREPRENEURSHIP : INNOVATION AND STRATEGY
(Credit - 4)

UNIT - I Entrepreneurial Growth: Economic & Non-economic Factors, Government Policy and Actions, Entrepreneurial Development Programmes, Youth Entrepreneurship and Women Entrepreneurship.

UNIT- II Innovation: Innovative Project Identification and Selection, Project Formulation, Entrepreneur and Innovation.

UNIT- III Support : Innovative Financing, New sources of finance, Lease Financing and Hire Purchase , Institutional Support and Taxation Benefits , Outsourcing.

UNIT- IV Management : Production and Operations Management, Working Capital Management, Total Quality Management, Creative Destruction for Value Addition.

UNIT- V Strategy : Growth Strategies in Small Business, Marketing Strategies, Sickness in Small Business, Small Enterprises in International Business, E-Commerce.

References :-

1. Nanda, S. K., Lenka T. K., (Ed) Entrepreneurship : Innovations and Strategy, Himalaya Publishers.
2. Khanka, S. S., Entrepreneurial Development, S. Chand

MCED - 422 STATISTICS FOR BUSINESS DECISION MAKING (Credit - 4)

Objective :

This course shall acquaint the students with the concepts and techniques used in Statistics and enable them to apply this knowledge in business decision- making.

UNIT -I Statistics; Characteristics, functions, limitations and scope; statistics in business management; Data collection and presentation, frequency distribution and analysis

UNIT- II **Measure of central tendency and dispersion,** correlation and regression.

UNIT- III **Basic concepts of Probability** and probability distribution binomial poisson and normal

UNIT – IV **Probability and non-probability sampling,** samplinfg distribution of means and proportions, estimation.

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UNIT – V **Hypothesis testing** of means and proportions for large and small Samples.

References:

1. **Pillai R S N and Bagavathi**, Statistics, S Chand and Co., New Delhi
2. **Sharma J K**, Business Statistics, Pearson Education
3. **Gupta S P**, Statistics, S Chand & Company, New Delhi
4. **Hooda R P**, Statistics for Business and Economic, Macmillan.

MCED - 423 ENTREPRENEURSHIP & INFORMATION TECHNOLOGY
(Credit - 4)

Objective

The objective of this course is to provide an understanding of computers, computer operating system, and application of relevant software in managerial decision making.

Course Inputs

UNIT I **Computer Hardware & Software:** Computer system as Information processing system, Computer System, different types of computer systems, hardware options – CPU, input devices, output devices, storage devices, communication devices, configuration of hardware devices and their applications. Memory, Software, Different types software, Programming Languages.

UNIT II Modern Information Technology: Basic idea of Local Area Networks (LAN) and Wide Area Networks (WAN), E-mail, Internet technologies, access devices, concept of a World Wide Web and internet browsing. Multimedia.

UNIT III Introduction to Operating System: What is Operating System? Functions of Operating system, Types of Operating System. Windows, Word Processing : Introduction and working with Ms-WORD in Ms- Office, Word basic commands, Formatting-text and documents, Sorting and Tables, Working with graphics, Introduction to mail- merge.

UNIT IV Spread Sheets: Working with EXCEL- formatting, function, chart features, working with graphics in Excel, Using worksheets as database in accounting, marketing, finance and personal areas.
Presentation with Power Point: Power-Point basics, creating presentations the easy way, working with graphics in Power Point, Show time, sound effects and animation effects.

UNIT V **Introduction to Accounting Packages:** Company Creation, Group and Ledger Creation, Voucher Entry, Maintenance of accounting books and final accounts, financial reports generation, Practical Knowledge on Tally.

References:

1. Diennes, shells S: Microsoft Office, Professional for windows 95, Instance reference, BPB Publication, Delhi
2. Mansfield, Ron: The Compact guide to Microsoft office, BPB Publication ,Delhi.

Audit Courses

Management of Personal Finances

Objectives

The objective of this paper is to make the students familiar with the basics of personal financial management, Personal Savings and Investment Mans, retirement savings plan a computation of risk & return of personal Investments.

Course Inputs:

UNIT-I **Basics of Personal Financial Management** : Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Personal Income Tax Planning, Case Studies on Personal Financial Planning of Individuals.

UNIT-II Personal Savings and Investments in Investment Criteria-Liquidity, Safety Financial Assets and profitability.
Saving Instruments of Post Office and Banks, Investment in Shares Debentures, Corporate and Government Bonds, Mutual Funds, Chit Funds.

UNITt-III Personal Investments in Non-Financial Assets : Investment in Physical Assets – Real Estate. Gold and Silver, Risk and Return associated with Investment in Financial and Non-Financial Assets.

UNIT-IV Computation of Return and Risk of Personal Investment : Present Value and Future Value, Computation of Interest, Dividend and Capital gains on Personal Investments.

UNIT-V **Retirement Savings Plan :** Pension Plans : Defined Contribution plan and defined benefit plan, Provident Fund, Gratuity. Life Insurance Plans, General Insurance Plans, Reverse Mortgage Plans.

References :-

5. Personal Finance by Jack R. Kapoor, Les R. Dlabay and Robert J. Hugus, Tata McGraw –Hill Publishing Company ltd. New delhi.
6. Financial Education By Reserve Bank of India - rbi.org
7. Personal Finance Columns in the Economic Times, The Business Lones and Financial Express Daily News Papers.
8. Information Bulletin of Post Offices, Banks , Mutual Funds, Insurance Companies.
9. Internal Sources : BSE, NSE, SEBI, RBI, IRDA, MFI etc

CAPITAL MARKET INSTRUMENTS

Objective

To equip the students with an opportunity to understand the role of Capital Market Instruments like Stock, Bond etc.

Course Inputs

UNIT-I **Origin, Nature and Role of Capital Markets**-Globalization of Capital Markets, Capital Markets in India- Stock Exchange.

UNIT-II Financial Instruments : Definition & Meaning, Classification of Financial Assets & Liabilities , Share Warrants or Options, Hedging Instruments.

UNITt-III Stocks, Bonds, Debentures – Convertible Debentures, ADR, GDR, ETFs, Units of Mutual Funds.

UNIT-IV Derivatives – Basic Features : Role of Derivative Markets, Forward and Futures, Commodity Futures, Stock Futures and Index Futures

UNIT-V **Options, Stock Options and Index Options**, Swaps, Currency Swaps and Interest rate Swaps.\

References :

1. Financial Institutions and Markets – Bhole L. M.- TMH
2. Financial Markets – M. Y. Khan
3. Financial Derivatives – Dr. G. Kotreshwar

FINANCIAL INCLUSION

UNIT –I Financial Inclusion and Economic Development, Savings, Investment and Capital Formation

UNIT – II Dimensions of Financial Inclusions: Micro-credit, Micro-saving and Micro-insurance

UNIT – III Financial Inclusion and Financial Literacy: Awareness Campaign by Government

UNIT – IV Financial Regulatory and Financial Inclusion: Government Directives, RBI Directives

UNIT – V Commercial Banks and Financial Inclusions: Branch Expansions, Technology and Schemes

References

1. Financial Education By Reserve Bank of India - rbi.org
2. Personal Finance Columns in the Economic Times, the Business Lines and Financial Express Daily News Papers.
3. Information Bulletin of Post Offices, Banks, Mutual Funds, Insurance Companies.
4. Internal Sources: BSE, NSE, SEBI, RBI, IRDA, MFI etc

Accounting for small Business organizations

Course Inputs

UNIT- I Accounting Language & Information System Generally Accepted Accounting Principles (GAAP), Methods of Accounting; Cash & Accrual.

UNIT- II Books of Accounts : Cash Book & Bank Account, Bank Reconciliation Statement.

UNIT – III Types of Assets, Depreciation, Grants & Donations, Expenditures.

UNIT - IV Final Accounts : Receipt & Payments A/C, Income & Expenditure A/c, Balance Sheet

UNIT - V Financial Statement Analysis & Reporting, Audit Reports

References :

1. Finance & Legal Handbook for NPOs – CA Manoj Fogla, FMSF, 2012.
2. Financial Accounting – Prof. Jawaharlal –Himalaya Publishing House P Ltd
3. 2-Shankarnarayana-Financial Accounting.(Cengage Learning)
4. 3-Bruns-Financial Reporting and Management Accounting(Cengage Learning)
5. 4-Stice-Financial Accounting reporting and analysis.(Cengage Learning)

PERSONAL TAXATION & PLANNING

UNIT – I Basic Concept : Assessee, Person, Income, Connotation of income, Taxable income, tax free income, Gross total income, Assessment year, Previous year, Residential status of assesse, Basis of Charge of Income Tax.

UNIT- II Income from Salary: Income from salary- basis of charge, place of charge, component of salary, partially taxable salary, pension, gratuity, retrenchment, voluntary retirement compensation, PF, profit lieu of salary, fully exempted, salary payment,

UNIT- III Income from house property and Business or Profession: Chargeable income, deemed owner, co-owner, fair rent, annual rent. Standard rent, calculation of annual value, and net annual value for rented and self-coupled houses, deductions.
Computation of Business Profits, Concept of Deemed Profits, Deductions, Valuation of Stock, Treatment of Depreciation

UNIT-IV Income from Capital Gain and Other Sources: Transfer of Capital Assets, Cost of Acquisition, STCG, LTCG, Deemed Capital Gain, Exempted Capital Gains,

UNIT – V Computation of Tax Liability and Planning: Aggregation of Income, Deduction to be made in Computing Total Income, Set-off and Carry Forward of Losses, surcharge, Difference between exemption, deduction and rebate, Tax Evasion and Tax Avoidance, Methods of Tax Planning.

Reference Book:

1. *Gaur and Narang- Income Tax Laws and Practice- Kalyani Publishers.*
2. *Singhania- Direct Laws and Practice- Taxman's Publication, New Delhi.*
3. BhagabatiPrasad,"Direct Tax Laws & Practices".

(Credit will be assigned if the student opts to go through the examination process. But it will not be considered for CGPA (Choice Based Credit System)

Evaluation: End Term: 70 Marks

Unit Test and Quiz: 20 Marks, Assignment and Presentation: 10 Marks

Project Report: Thesis: 100 marks, Presentation & Viva-Voce: 100 marks

Minimum Total Marks= 2500

Minimum Credit Points: Core 68 + Elective 28 = 96

Mutual Fund And Portfolio Management

Objective

The objective of the course is to impart conceptual knowledge and skills relating to mutual fund and portfolio Management.

Course Input

Unit-I Portfolio : Risk & Return, Measurement & Analysis , Non –satiation and risk aversion, diversification, borrowing and lending, utility theory and indifference curves, choice of portfolio and efficient set theorem.

Unit-II Portfolio Analysis : Market Optimization, Sharpe's Optimization, Significance of Beta in the Portfolio, Investment Objectives, Process and Policies.

Unit-III CAPM : Factor Models, APT, Construction of Portfolio, Investment Strategy, Execution, Assets Pricing, Revision and Measures of Return and Performance

Unit-IV Managed Portfolio ; Investment timing, Performance Measurement and Evaluation (different techniques), Foreign Portfolio Investment in India : Issues, Trends, Policies and Techniques.

Unit-V Mutual Funds : Concepts, Origin, Types, Regulation and Operations, Risk Factors, Performance Evaluation.

References :

1. SK,. Barua, V. Raghunathan ans J. R. Varma : Portfolio Management, TMC
2. Elton. Edwin J. and M. J. Gruser : Modern Portfolio Theory and Investment Analysis, John Wiley & Sons.
3. Graham, Benjamin & Davia L. Dodd : Security Analysis, M. Graw Hill
4. V. K. Bhalla : Investment Management, S. Chand, New Delhi
5. Fischer, Donald E. Jordan : Security Analysis Portfolio Management.
6. S. francis, Jack Clarice ; Portfolio Analysis
7. Sharpe, Alexander, Belly : Investment , Prentice Hall of India.
8. Russel J. Fuller, Farrel, Jr. Modern Investment and Security Analysis. Tata McGraw Hill
9. Lee Chang. F. Joseph : Security Analysis & Portfolio Management
10. M. Y. Khan : Indian Financial System, McGraw Hill.
11. Resort A. Strang : Portfolio Construction and Protection.

Financial Derivatives and risk Management

Objective

The Course will familiarize the students in the application of various tools and techniques of Financial Risk Management.

Course Input

Unit-I Risk : Definition, Types of risk, Process of risk Management, The Tools of Risk Management.

Derivatives : Definition and Evolution of Derivatives, Derivatives Markets, Types of Derivatives, Derivatives Market in India

Unit-II Futures Market : functions of Futures Market ,Speculation and hedging, Price, Spread and hedging, futures and price stabilization, Tests of Efficiency, Financial futures as a mechanism of risk transference, Spot and future Prices.

Unit- III Financial Futures : Interest Rate Futures , Currency Futures(Foreign Exchange) Stock Index Futures and Financial Futures in India, Risk Management with Futures, Cost of Carry Model, Index Arbitrage, Purchasing Power Parity Theorem.

Unit-IVOptions : Terminology and Methodology of Trading, Types of Options, Option Pricing, Swaps, Types of Swaps, Swap Valuation, and other Derivatives, Speculation with Options, Risk Management with options & Futures.

Unit- V Regulatory Framework of Futures & Derivatives ; Regulatory bodies in Major International Markets, Regulatory framework in India, Regulatory Instruments and needs, Accounting for Derivative Transactions.

References :

1. John C. Hull : Options, Futures & Other Derivatives, Pearsons
2. T. V. Somanathan : Derivatives, Tata mc Graw Hill
3. Redhead : Financial Derivatives, Prentice Hall
4. Lasys Walter, Lexinton : Speculation, Hedg & Commodity Price Forecasting.
5. Hill J. and t. Schneelesis ; Risk Reduction, Potential of Fina ncial Futures.
6. Jarrow and Rudd. Lrwin ; Optional Pricing, Homewood, Irwin.
7. Dubofsky and Miller, derivatives : Valuation and Risk Management, Oxford University Press, New York.
8. Watsham. T., Futures and Options in Risk Management, Thompson, Asia
9. Wilmott. P., The Theory and Practice of Financial Engineering, John Wily and Sons, England.
10. Gupta. S. L., Financial Derivatives, PHI
11. Kumar, Financial Derivatives, PHI
12. Cox, J. and Rubinstein M. " Options Market" PHI
13. Tucker, A. L.: "Financial Futures, Options and Swaps" , West Publishing Co, St paul Minn.

Advanced Auditing

1.Auditing concepts Basic Principles governing an audit- Relationship of auditing with other disciplines -Audit Programme-Vouching, -Verification and Valuation.

2 Auditing and Assurance Standards

Overview-Standard setting process-Role of International Auditing and Assurance Standard Board and Auditing and Assurance Standard Board in India.

3 Risk Assessments and Internal Control

Evaluation of internal control procedures; techniques including Questionnaire; flowchart; internal audit and external audit, coordination between two.

4 Audits of Limited Companies

Preliminaries to the audit of limited company-Audit of share capital Transactions, Debentures and other transactions-Audit report with special Reference to CARO 2003 *Profit and divisible profit-Dividends- Investigation under Companies Act, 1956.

5 Audit Committee and Corporate Governance

Corporate Governance: Introduction-Verification of Compliance of Corporate Governance.

Audit Committee: Constitution-Powers of Audit Committee-CEO/CFO Certification to Board-Report on Corporate Governance.

Recommended Books:

1) Spicer and Peglar : Practical Auditing
2) Kamal Gupta: Contemporary Auditing
3) R.C. Saxena : Auditing (Himalaya)
4) Basu : Auditing
5) Jagadish Prasad: Auditing: Principles
6) M.D.Paula : The Principles of Auditing
7) B.N. Tondon: A Handbook of Practical Auditing
8) The Institute of Accountants of India : Auditing assurance Standards

Sales & Sales Force Management

Unit-I Introduction to Sales Management: Meaning, Nature, Importance and Scope of Sales Management, Role of Sales in, Sales Process and Personal Selling; Selling & Sales Management; Sales Strategic Ethics in Sales Management.

Unit-II Sales Techniques and Selling Skills : Direct Marketing and Relationship Selling; Sales Channels and Industrial, Commercial, Public Authority Selling; Selling for resale and selling Services ; Sales Promotion, Public Relations, Sales Strategic ; Personal Selling Theories.

Unit-III Sales Force Management: Job analysis, Recruitment Selection; Training; Compensation and Motivation; Monitoring and Performance Evaluation; Salesmanship and sales Promotions.

Unit-IV Sales Planning: Job of Sales Manager; Sales Planning, Sales Organizations and Compensation, Sales Quota and Sales Forecasting; Territory Management.

Unit-V Sales Control – Monitoring & Performance Evaluation; Sales Control & Cost Analysis; Controlling the Sales Efforts through Sales Budgeting, Sales Quota, Sales Territories; Institutional Sales Management.

References:-

1. Spiro, R. L. Stunton , W.J. , Rich, G. A., " Management of Sales Force", Tat McGraw Hill, new Delhi.
2. David Jobbes, and Geoff Lancaster, "Selling and Sales Management, Pearson Publications, New Delhi.
3. Chunawalla, S. A. "Sales Management", Himalaya Publishing House, Mumbai.
4. Keskar, Anil and Abhayankar, Suresh, "Sales Management and Personal Selling". Himalaya Publishing House.
5. A. Keskar, and S. Abhankar, "Sales Management and personal Selling", Himalaya Publishing House, New Delhi.
6. Khan Martin, "Sales & Distribution Management", Excel Books.
7. Gupta S. L. "Sales & Distribution Management", Excel Books.
8. Tanner Jeff, Honeycutt, Earl De, Erffmeyer, Robert C.,"Sales Management", Pearson Publications, New Delhi.
9. Still, Richard R., Edward Cunoliff W., Norman Govani A. P., "Sales Management: Decision Strategy and Cases", Pearson Publication: New Delhi.

BUSINESS LANGUAGE AND COMMUNICATION SKILLS

Websites

www.tatamcgrawhill.com/digital_solutions/monippally
www.dictionary.cambridge.org

www.wordsmith.org

UTKAL UNIVERSITY COURSES OF STUDIES, REGULATIONS & SYLLABUS FOR THE MASTER OF ARTS IN SOCIAL WORK (2019 - 2020)

Nayagarh Autonomous College
Nayagarh

COLOUR SCHEME OF MAPPING THE SYLLABI FOR ENTREPRENEURSHIP, EMPLOYABILITY AND SKILL DEVELOPMENT

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

UTKAL UNIVERSITY REGULATION
For the
M.A. in SOCIAL WORK (MSW) EXAMINATIONS
(Semester Scheme)

REGULATIONS

1. Introduction:

1.1. The two year post graduate degree course leading to the Master of Arts in Social Work (MSW) of Utkal University shall be spread over a period of two academic years. Each academic year comprises of two semesters namely the Odd and Even Semester.

1.2. A candidate for the Master of Social Work shall be required to pass the following

examinations.

- End Semester Examination – I
- End Semester Examination – II
- End Semester Examination – III
- End Semester Examination – IV
- Internal Assessment for Fieldwork in semesters I – IV
- External Examination for Fieldwork in semesters I – IV
- Internal Assessment for Dissertation in semester IV
- External Examination for Dissertation in semester IV

1.3. A candidate shall be eligible to appear for the oncoming semester courses subsequent to the first semester University examinations respectively irrespective of declaration of the results in the previous semester but.

1.4. Candidate who fails in the odd semester examinations shall be eligible to appear for the examination in which s/he has failed in the next odd semester and vice versa.

1.5. Students who have failed in a semester or are desirous to improve their performance will be allowed a single chance in the subsequent semester examination of the following year. Thus in no case the course completion will go beyond three years.

1.6. A candidate for the Master of Arts in Social Work Examination shall be required to enroll himself / herself under these conditions as a student in one of the colleges affiliated to this University.

2. Admission Criteria:

2.1. Any person who has passed the Under Graduate Degree in any subject with a minimum of 50% marks (General candidates) and 45% marks (SC/ST/OBC candidates) from an examination conducted by a recognized University is eligible to be admitted to the 1st Semester of this course. Students from SC/ST/OBC background have to apply with valid caste certificate.

3. Duration:

3.1 Odd semester shall be from July to December (I and III Semesters).

3.2 Even semester shall be from January to June (II and IV).

3.3 There shall be not less than 90 working days for each semester. This excludes the days for the conduct of University end semester examinations and other holidays.

3.4 A student would be required to complete the course within a maximum of three (Ref. 1.5 above) academic years from the date of admission.

4. Course:

Each course is well designed under lectures / tutorials / fieldwork / seminar / assignments / report writing so that it achieves the goals of effective teaching and learning needs of the students.

5. Contents in the Courses of Study:

5.1 The Master of Social Work programme of study consists of a number of contents. The term 'course' is applied to indicate a logical part of the subject matter of the programme and is invariably equivalent to the subject matter of a 'Paper' in the conventional sense. The following are the various categories of courses suggested for the Master of Social Work programme.

5.2 There are six Foundation papers.

5.3 Core compulsory papers comprise of twenty two courses. These are compulsory for all students.

5.4 There are eleven elective courses spread over two semesters III and IV. Out of the given electives student can choose any two of his or her interest for study in the respective semester.

6. Attendance:

Students must have 75% of attendance in each theory paper and 100% attendance in fieldwork and in related assignments. This is mandatory for appearing in the examination.

7. Examinations:

7.1 There shall be examinations at the end of each semester.

7.2 Examination for odd semesters shall be conducted in the month of November – December.

7.3 Examination for the even semesters shall be held in the month of May – June.

7.4 A candidate who does not pass the examination in any of the papers shall be permitted to appear in such failed papers in the subsequent examination to be held either in November – December or May – June as the case may be.

8. Pass Marks and Classification of Successful Candidates

8.1 Aggregate marks for passing the examination of the Degree of Master of Arts is Social Work (MSW) shall be the sum total of the aggregate of all the four semester Examinations taken together.

8.2.1 Divisions will be awarded on the basis of Utkal University Regulations for the M.A. Examination.

8.2.2 A candidate to be considered as Pass has to secure a minimum of 50% marks in the Field Work. Each of the field-work components namely Observation Visits, Concurrent Field Work in Community and Agency settings, Rural Camp and Block Placement has to be compulsorily completed to be considered as Pass.

8.3.a If a candidate is marked absent in a sitting(s) of an examination, such a candidate shall have to reappear in that paper (s) of the course in order to be considered as having completed the course.

.b If a candidate does not complete the requisite field-work days in a semester and does not appear for Field Work evaluation, Field Work Seminar and Viva Voce then he/she will be considered as not having completed the course and thereby ineligible to receive the M.A. degree.

8.3.b A candidate failing to secure a minimum of 30% in any Compulsory and a minimum of 50% in the Practical (Field Work - Ist, IInd & IIIrd & IVth) either in the First, Second, Third or Final examination of this University may be allowed to appear in those papers in not more than one chance (examination) immediately following that examination for which he/she was registered, in order to clear the back paper(s) on the payment of prescribed fees.

COURSE STRUCTURE UNDER THE SEMESTER SYSTEM – MSW

Semester – I

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
01	SWFC – 01	Foundations of Social Work: History, Philosophy, Ethics, and Theories in Social Work	4	60	100
02	SWFC – 02	Social Science Concepts I: social structure, social institutions and social change	4	60	100
03	SWFC – 03	Social Science Concepts II: Political Judicial and Economic System,	4	60	100
04	SWFC – 04	Social Science Concepts III: Poverty, Inequality and Social Exclusion	4	60	100
05	SWFC – 05	Social Science Concepts IV: Psychological Concepts, Human Behavior and Relationships	4	60	100
06	SWFC – 06	Orientation Visit Group Lab Concurrent Field Work	8	120	200
TOTAL			28	420	700

Semester – II

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
07	SWCP - 01	Working with Individuals	2	30	50
08	SWCP - 02	Working with Groups	2	30	50
09	SWCP - 03	Working with Communities	4	60	100
10	SWCP - 04	A Human Rights Approach to Social Work Practice	4	60	100
11	SWCP - 05	Social Welfare Administration	4	60	100
12	SWCP - 06	Social Work Research and Statistics	4	60	100
13	SWCP - 07	Concurrent Field Work + Rural Camp	8	120	200
TOTAL			28	420	700

Semester – III

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
14	SWCP - 08	Child Protection and Child Rights	4	60	100
15	SWCP - 09	Social Work with Women: Issues of gender and development	4	60	100
16	SWCP - 10	Ethnic Sensitive Social Work Practice in India	4	60	100
17	SWCP - 11	Rights of persons with Disabilities and their Rehabilitation.	4	60	100
18	SWCP - 12	Community Health and Social Workers	4	60	100
19	SWCP - 13	Social Management	4	60	100
20	SWCP - 14	Concurrent Field Work	8	140	200
21	SWEP – 01 SWEP – 02 SWEP – 03 SWEP - 04 SWEP - 05 SWEP - 06 (Any One)	School Social Work Working with Women Working with Alcoholics and Substance Abusers Correctional Social Work Counseling in Social Work Social Work with the Elderly	2	30	50
TOTAL			34	530	850

Semester – IV

Paper	Course Code	Course Title	Credit	Total Instruction Hours	Marks
22	SWCP - 15	Development Theories and Strategies: Issues Challenges and Responses	4	60	100
23	SWCP - 16	Social Work Practice in Rural Areas	4	60	100
24	SWCP - 17	Social Work Practice in Urban Areas: Migration, Unorganized Labour and Livelihoods	4	60	100
25	SWCP - 18	Social Policy, Planning and Implementation	4	60	100
26	SWCP - 19	Development Communication	4	60	100
27	SWCP - 20	Sustainable Agriculture	4	60	100
28	SWCP - 21	Dissertation: Research Project	4	70	100
29	SWCP - 22	Concurrent Field Work + Block Placement	2	340	100
30	SWEP - 07 SWEP - 08 SWEP - 09 SWEP – 10 SWEP – 11 (Any One)	Entrepreneurship Development NGO Management Project Management Disaster Management People Centred Advocacy.	2	30	50
TOTAL			34	740	850

Examination Question Paper Pattern:

There shall be three types of questions – Essay / Descriptive, Short Answer & Objective.

Distribution of Marks for courses carrying 100 Marks:

Five Essay type questions carrying 12 Marks each

(Out of a choice of seven) (Answer in 700 – 1000 Words) 5 x 12 Marks = 60 Marks

Four short type questions carrying 6 Marks each

(Out of a choice of six) (Answer in 150 – 200 Words) 4 x 6 Marks = 24 Marks

Eight objective type questions carrying 2 Marks each

(Out of a choice of ten) (Answer in one or two sentences) 8 x 2 Marks = 16 Marks

Social Work Practice (Fieldwork):

Fieldwork is an integral component of the course of Master of Social Work. A student shall have to undertake his/her fieldwork for 20 hours in every week in the semester. Students shall do the fieldwork under the guidance of a faculty supervisor. Fieldwork is mandatory for all students of social work.

Field Work Schedule:

Sl. No.	Semester	Field Practicum Component	Duration	Credits
1	SWFC - 06 MSW(I)	1. Observation Visit	10 Organizations	2
		2. Concurrent Fieldwork (Community Placement)	20 hrs/week (16 hrs in the field + 4 hrs report writing)	6
2	SWCP- 07	1. Concurrent Fieldwork (Community Placemen)	20 hrs/week (16 hrs in the field +	6

	MSW (II)		4hrs report writing).	
		2. Rural Camp	10 days	2
3	SWCP- 14 MSW (III)	1. Concurrent Fieldwork (Agency Placement)	20 hrs/week (16 hrs in the field + 4hrs report writing).	8
4	SWCP- 22 MSW (IV)	1. Concurrent Fieldwork (Agency Placement)	20 hrs/week (16hrs in the field + 4 hrs report writing).	2
		2. Block Placement	One Month before the end of the semester	2

Evaluation of Fieldwork: Regulation of Fieldwork:

At the end of each semester, the Chairman of the Board of studies shall call for the submission of the Field Work Attendance Record of the students, Field Work Report files of the students, the Fortnightly Reports on the students and the Self Evaluation Report of the students. This is to facilitate the external examiners to mark the performance.

Fieldwork carries 200 marks in Semester1, 2&3 and 100 marks in Semester 4. It is divided into internal and external.

The internal evaluation carries 50% marks and it shall be evaluated by the Faculty Supervisor on the basis of field-work records, practical fieldwork and reports.

The external carry 50% marks and it shall be evaluated by the external examiners on the basis of fieldwork seminar and practical knowledge gained by the student. The external examiner shall be any person authorized by the Chairman of the Board of studies for Social Work of Utkal University.

The minimum pass mark in the fieldwork shall be 50% in both the internal and the external examinations taken together in each semester. Both these marks together will comprise the university mark for field-work.

Field Work Assessment: [SL. No. 1 and 2 will be evaluated internally. Sl. No.3, 4 & 5 will be evaluated by an external examiner appointed by the Utkal University]

Sl. No.	Criteria for Assessment	Weightage In %
1	Field Work Reports	25%
2	Fortnightly Reports by Faculty	25%
3	Self-Evaluation Report by student	25%
4	Field Work Seminar	15%
5	Viva Voce	10%
	Total	**100%**

Evaluation of the Dissertation:

Students to practice Social Work Research Methodology shall submit a Dissertation in any area of their interest by working on a research project under the supervision of a faculty supervisor.

Total marks assigned for project work shall be 100. This total mark is distributed equally among internal and external evaluations. The internal marks of 50 and external marks of 50 shall be calculated in the basis of the Objective, Methodology, Analysis, Findings, Presentation and Viva-Voce. It is mandatory that it be the original work of the student.

HARD CASE RULE

The Hard Case Rule mentioned on the item No.5.2.4 (I,II,&III) in the correction ship No-1222 of Utkal University as amendments to the Regulation governing 2 Years Degree Course (Master of Arts, Science, Commerce Examinations) effective for the students admitted to such courses during the Academic 2002-2003 and 2003-2004,

shall be applicable to all the Compulsory and theory papers of Ist, IInd Year Examinations while computing the Final result of Master of Social Work Examinations. In case of any new regulation added to the Hard Case Rule by the University for 2 year Degree Course (Master of Arts, Science, Commerce Examinations) shall be applicable to the 2 years Degree Course of Master of Social Work.

REGULATION FOR FIELD-WORK

Introduction:

The student of the M.A in Social Work through field work practice is supposed to be committed to the people and social institutions in which they are placed. They are expected to serve individuals, families and communities through effective practice guided by qualified field-work supervisors (with MSW degrees) and by the social- work faculty in each college affiliated to this university.

Goals of Field Work:

1. To critically assess their own roles in field-work by conducting themselves ethically and professionally and by utilizing supervision & self-reflection.
2. To develop knowledge, skills and values required to engage in quality practice with individuals, families, groups, organizations and communities.
3. To demonstrate their ability to engage practically in problem solving as change agents in a variety of settings.
4. To demonstrate knowledge and ability to apply social theories and theories of human behavior and conceptual frameworks to assess, intervene and evaluate social work practice in the individuals, families and groups.
5. To recognize and understand various forms of discrimination and oppression as they apply to members of diverse groups and communities and advocate for social and economic justice for individuals, families, groups and communities.

Semester – I:

Observation Visits: 10 social work / welfare agencies have to be compulsorily visited. In each observation visit to an agency of community organization the student must be exposed to different field Situations. This observation visit will provide an opportunity to have an exposure and orientation to the services being offered by various Organisations/ Social institutions/ Agencies and open communities such as slums / rural settings as a response to community member's needs.

Understanding the Community: To understand the dynamics of the communities specifically the slum and the rural setting. This would imply comprehending the Socio-Cultural dynamics, economic and health status, being familiar with the problems of the communities, their causes, and observing how the people respond to such situations.

Semester – II:

Work with Individuals: Students shall be placed in slums or villages. They need to identify any issue affecting an individual and apply the principles and process of social case work. Similarly two separate case work should be done. The report should reflect learning derived from these two case work.

Work with Groups: Students shall be placed in slums or villages. They need to identify groups, study them well and carefully identify dysfunction if any in them and apply the principles and process of social group work.

Students may also start new groups such as Self Help Groups, children groups, Youth Clubs, integrated groups for person with disabilities, widows groups, senior citizens, adolescent girls group, study groups and etc. The purpose of this group formation is to learn group interaction, goal setting and group dynamics. The students should demonstrate principles and processes of group work. The reports should reflect on the learning derived out of it.

Community Organisation: Students shall be placed in a slum or village in a team of 4. Students shall be trained to demonstrate the skills and process of community organization. Each team shall identify a community issue along with the participation of the people and organize a programme that aims at resolving the community issue. The purpose of this fieldwork is to ensure students learning on community organization through demonstration and also for the students to learn to work in a team.

Rural Camp: All students shall compulsorily participate in a rural camp. This camp provides ample opportunity to learn about the community through experiences of living with them. It is to be a continuous 10 days camp and students and teachers are expected to stay in the rural area for all the10 days continuously.

Semester – III:

Understanding Formation and Management of Social Welfare Agencies: Each student shall be linked with an agency promoting social welfare. These agencies may be either Governmental or Non-Governmental or Privately managed Corporate houses. Reports of students should reflect on their learning related to the above mentioned areas. Daily Report, Consolidated fieldwork report should be submitted by every student individually. Students will work under a Faculty Supervisor and Agency Supervisor.

- To provide an opportunity to work with social welfare agencies.
- To understand the agency as an organization, its structure, functions, activities sources of funding and management.

Semester – IV:

Students shall be directed to learn about the formation, legal formalities, taxation related formalities, project formulation, resources mobilization techniques, project management, Documentation, POSDCORB, Evaluation, Need Analysis, Problem Tree Analysis, Logical Frame Analysis and so on.

- To develop an understanding of the problem and opportunities in an organisational setting.
- To develop an understanding of the problems and opportunities of the organisation and the methods they adopt to respond to their environment.

Block Placement (On the Job Training): The students of Social Work will be assigned an agency. This agency setting should be located anywhere within or out of the State. Students will work in the agency and obtain on the job training experience. This training lasts for a continuous 25 days prior to the semester examination. It is compulsory for all.

Course Title: HISTORY, PHILOSOPHY, ETHICS AND THEORIES IN SOCIAL WORK

Course Code: SWFC – 01

Level: MSW (I)

Objectives:

- To understand the historical development of the philosophy of Social Work and its emergence as a profession.
- To understand the ethical and value base of Social Work.
- To bring clarity to the basic concepts of Social Work.
- To briefly introduce Social Theory relevant to Social Work practice.

Unit I: History and Evolution of Social Work Practice

History of Social Welfare in the West (UK and USA): The Elizabethan Poor Law (1601), Charity Organisation Society (1869) Settlement House Movement, The Poor Law Commission of (1905), Beveridge Report (1941); The development of Social Work as a profession; Development of the definition of Social Work; (From Charity to Human Rights and Social Justice); History of Social Work education in India: YMCA School of Social Work Lucknow, TISS Mumbai, Delhi School of Social Work

New Delhi; Voluntary Social Work in India.

Unit II: Philosophy of Social Work and Social Work Ethics

The Traditional religious doctrine of Charity; Scientific Naturalism; Liberalism; Scientific Charity; The ideological base of the Welfare state. (with specific reference to the Indian Constitution); Gandhian ideals in Social Work Practice in India; Ambedkar's ideals in Social Work Practice in India; Professional Code of Ethics: IFSW and IASSW code of Ethics; The meta-ethical dimension of Social Work Ethics; Ethical Dilemmas in specific contexts.

Unit III: Basic Concepts in Social Work

Social Work: Concepts, Definitions, Objectives & Functions, and Methods; Contributions of Social Sciences to Social Work; Traditional Social Work and

Radical Social Work; Social Service and Social Welfare Service; Social Welfare and Social Security; Social Reform and Social Justice ; Human Rights and Human Development; Social Inclusion & Empowerment; Social Change and Social Development; Social Action and Social Movements

Unit IV: Theories relevant to Social Work Practice

Social Welfare Theory: Emile Durkheim, Herbert Spencer and Max Weber; Social Justice Theory: Distributive and Retributive Justice, Rawls Theory of Justice, Nozick's Theory of Social Justice; Radical and Marxist perspective in Social Work: L. Althusser; Anti-discriminatory and Anti-oppressive Perspective; Communication Theory: J. Habermas, Erving Goffman; Critial Theory: J. Adorno; Structure Theory: Anthony Giddens & P. Bourdieu; The Ecological Perspective; The Generalist Perspective.

Reading List:

- Beilharz, Peter (Ed) (1991): Social Theory: A Guide to Central Thinkers.
- Elliot, Anthony (Ed) (2010): The Routledge Companion to Social Theory.
- Payne, Malcolm(1997), Modern Social Work Theory and Social Work Practice.
- Mulally, Robut P. (1993), structural Social Work: Ideology, Theory and Practice.
- Reamer, G.G.(2013), Social Work Values and Ethics.
- Hugman, Richard and Smith, David(Ed)(19950 Ethical Issues in Social Work.
- Tnattner, Walter I. (1998) From Poor law to Welfare State: A History of Social Welfare in America.
- Reisch, Michael (2002), The Road not Taken: A History of Radical Social Work in the United States.
- Zastow, C(2009) Introduction to Social Work and Social Welfare: Empowering People.
- Pierson, John( ), Understanding Social Work: History and Context.
- Hering.S and Waaldijk (Eds); History of Social Work in Europe(1900-1960)
- Basanquet, Helen Dendy, Social Work in London, 1869-1912; A History of the Charity Organization Society.
- Queen, S.A, Social Work in the Light of History.

Course Title: SOCIAL SCIENCE CONCEPTS - I: SOCIAL STRUCTURE, SOCIAL INSTITUTIONS AND SOCIAL CHANGE

Course Code: SWFC – 02

Level: MSW (I)

Objectives:

- This introductory course seeks to familiarize the students with Sociology as a social science and the basic concepts necessary in understanding the social and cultural processes. It is organized in such a way that even students without previous exposure to sociology could acquire an interest in the subject and follow it. Understand the role of individual in the society and importance of various social Institutions and their impact. Get a scientific insight about the social structure, stratification and issues related to caste & class. Develop clarity about social issues and challenges in the social work field.

Unit – I: Basic Concepts

- Sociological Concepts: Society, Community, Association and Institution, social organisation.
- Social Group: Meaning, Types: Primary, Secondary, In-group - Out-group, formal and informal group, pressure group and reference group.
- Tradition: Little Tradition and Great Tradition, Parochialisation and Universalization.

Unit - II: Social structure and culture

- Concept of Social Structure and function.
- Social stratification: varna, caste, class, occupation, tribe and gender.
- Social Interaction and Social Processes: Associative and Dissociative Social Processes
- Culture: definition and types, norms & values, patterns of culture, culture and personality.

Unit - III: Social institutions and Socialisation

- Marriage and Family: Characteristics, types and functions, Rules of Marriage.

- Kinship: Meaning, Definition, Types, Functions.
- Social Process: Socialisation, Acculturation, Enculturation, Assimilation Resocialisation, Anticipatory, Adult socialisation and agency of socialisation.
- Status and Role: Multiple Roles, Role Set, Status Set, Role Conflict.

Unit – IV: Social change and Mobility

- Concepts, processes and theories of social change,
- Meaning and nature of Social change,
- Factors of social change: Sanskritisation, Westernisation, Modernisation, Orthogenetic and Heterogenetic factors of social change; Social Mobility: Horizontal & Vertical,

Reading List:

- Abrahim Francis, Contemporary Sociology, Oxford University Press, 2006.
- Ahuja Ram, Indian Social System, Rawat Publication, Jaipur,1993
- Ahuja Ram, Social Problems in India, Rawat Publication, Jaipur,1997
- Ahuja Ram, Society in India, Rawat Publication, New Delhi,2010
- Kuppuswamy, Social Change in India, 1998
- Beteille, Andre, *Sociology: Essays on Approaches and Method*, New Delhi: OUP, 2002
- Bose, N.K. 1967, Culture and Society in India, Bombay: Asia Publishing House.
- Bottomore, T.B.: Sociology: A Guide to Problems and Literature, Blackie and Sons, Bombay, 1986.
- Desai,A.R.(Ed), *Rural Sociology in India,* Popular Praakshan, 2008
- Dube S C, *Indian Society*. New Delhi: NBT 1995
- Dube, S.C. 1995, Indian Village (London : Routledge)
- Dumont L, *Homo Hierarchicus : The Caste System and its Implications*, Chicago University Press, 1970
- Gupta Dipankar (ed). *Social Stratification*, New Delhi: Oxford University Press,. 1991

- Jodhka, S.S. (ed), *Village Society,* New Delhu: Orient BlackSwan, 2012
- Karve, Irawati, 1961 : Hindu Society : An Interpretation(Poona : Deccan-College)
- Kothari, Rajni, *Caste in Indian Politics in Manoranjan Mohanty* (ed.) Class, Caste, Gender: Readings in Indian Government and Politics, New Delhi, Sage. 2004
- Maclver & Page, Society, Introductory Analysis, MacMillan, Delhi, 2001.
- Madan & Majumdar, An Introduction to Social anthropology, Mayur, 1999.
- Madan, Vandana. *Village in India*, India: OUP, 2003.
- Mandelbaum David,G, *Society in India,* Popular Prakashan, 2008
- Mukherjee Ramakrishna, *Sociology of Indian Sociology,* Allied Publishers, 1979
- Satish Deshpande, *"Contemporary India A Sociological View"*, Viking Publishers, New Delhi, 2003.
- Singer Milton, B, *When a Great Tradition Modernises. An Anthrapologicl Approach to Indian Civilization,* Praeger Publishers, 1972
- Srinivas, M.N, *Caste and its New Avatar,* Penguin, 1996
- Srinivas, M.N. 1963: Social Change in Modern India (California, Berkeley: University of California Press).
- Srinivas, M.N. *Caste in Modern India and Other Essays,* Bombay Asia Publishing House, 1962
- Uberoi, Petricia, *Family Kinship and marriage in India*, OUP, 2005

Course Title: SOCIAL SCIENCE CONCEPTS II: POLITICAL JUDICIAL AND ECONOMIC SYSTEM

Course Code: SWFC - 03

Level: MSW (I)

Objectives:

1. To impart knowledge about the political institutions that regulate people's life and promote their interests.
2. To Understand the basic economic concepts, principles, theories & its application in social work profession.
3. To Understand and analyze economic problems on social work perspective.

Unit - I: System of Governance

- Indian Constitution: Objective(Preamble) Characteristic Features and Amendment Process, Fundamental Rights, Fundamental Duties and Directive Principles of State Policy.
- Indian Political System: Parliamentary Democracy, Federalism and Issue of State Autonomy, Coalition Government and Role of Bureaucracy in Administration.
- India- A Welfare State: Social Policy and Social Legislation, Increasing Partnership between Government Agencies and Private Voluntary Organization.
- Judiciary: Judicial Review, Judicial activism and P.I.L.

Unit – II: Social structure and Democratic Process

- Features of Indian Democracy: Multiparty System, Role of National Partie,s Regional Parties and Pressure Groups.
- Grassroots Democracy: Panchayati Raj System and Empowerment
- Issues Concerning Religion, Language, Caste, Problem of Gender, Illiteracy and Reservation.
- Institutions: Bureaucracy, National Planning, Election and Participation.
- Socio-Political Movements: Peasant Movement, Trade Union Movement, Tribal Movement, Women's Movement, and Dalit Movement

Unit – III: Development Economic

- Development Economics: Meaning Nature and Significance, Contemporary Development, Problems: Poverty and Inequality.

  Economic Systems: Capitalism, Socialism, Mixed Economy – Definitions, Features, Advantages and Disadvantages.
- Rural and Urban economy: Nature and structure of rural economy; rural financial structure-formal and informal; Regional Rural Banks Policy and Planning concerning development of rural area.

  Urban economic growth: State and local policies; and urban poverty-policy responses.

Unit – IV: Indian Economy and Financial Institutions

- Indian economy: Nature and Characteristics

  Inflation and Over population: Meaning, magnitude, causes and consequences; Programmes for alleviation of poverty and unemployment.

- Economic Planning and Reforms: Rationale, Features and Objectives; Globalization, Privatization and Liberalization and their impact on Agriculture and Marginalized sections of India.

  Meaning and concept of Free trade, Special Economic Zone and its impact on Indian social concerns.

- Financial Institutions: National and International Financial Institutions and their Role in Social Welfare- World Bank, International Monetary Fund (IMF), Reserve Bank of India (RBI), World Economic Forum, NABARD, Commercial Banks; Role of Non Bank Financial Institutions; and National and International Funding agency for social development.

Reading List:

- Kashyap Subhash(ed), 1993, Perspective on the Constitution, Shipra Publication, Delhi.
- Basu D. D., 1992, Introduction to the Constitution of India, Prentice Hall of Indi Pct. Ltd., New Delhi.
- Kaushik Sushila, 1993, Women and Panchayati Raj, Har Anand publication, New Delhi.
- Kulkarni P.D, Social Policy and Social Development in India.
- Reed Elaw, Social Welfare Administration.
- ND Kumble, Ashish, Deprived Castes and Their Struggle for quality, Publishing House, New Delhi.
- Murthy(ED),Planning for Change- Council for Social Development , Aspects of Social Development.
- Setty Krishna, K.R. Chaitanya, Fundamental Rights and Socio Economic Justice in the Constitution, Publishing House, Allahabad.
- Singh M.P. and Roy Himanshu, Indian Political System, Structures, Policies, Development, 1995, Jnanada Prakashan (P & D), New Delhi.
- Misra & Puri : Advanced economic theory
- Mitchell A Seligson & John T Passé Smith, Development & Underdevelopment- The political economy of global inequality
- Agarwal A.N., Indian economy- Problems of development & planning
- A Vaidyanathan : India's economic reforms & development
- Patel Surendra J: Indian economy towards the 21st century

- Lekhi R.K.: The Economics of Development and Planning
- Dhar P.K.: Indian Economy: Its Growing Dimensions
- Datt Rudra & KPM Sundharam: (2004), Indian Economics Theory: S, Chand & Co New Delhi.
- K.G Karmakar, Rural Credit And Self Help Groups: Microfinance Needs and Concepts in India: Sage publication.
- Thakur S.N., (1988): Economic theory of profile of Indian Economy: Deep & Deep Publication, New Delhi.

Course Title: SOCIAL SCIENCE CONCEPTS III: POVERTY, INEQUALITY AND SOCIAL EXCLUSION

Course Code: SWFC – 04

Level: MSW (I)

Objectives:

- To develop clarity and understanding on the various perspectives about the concept of poverty, Inequality and social exclusion.
- To discuss policy interventions that aim to reduce poverty, inequality and exclusion.

Unit – I: Understanding Poverty

- Concept of Poverty, Different types of poverty: relative, absolute, material and social; culture of poverty, theories of poverty; Deprivation.
- Poverty Measurement: Indicators of poverty, PQLI, HDI, Poverty lines.
- Anti-poverty programmes in India.

Unit – II: Understanding Inequality

- Equality, inequality, capability, post-industrial structuralism, norm of structural exclusion, inequality and globalization;
- Bases of inequality in India: religion, caste, ethnicity, gender, disability, merit, region, language, culture, migrants.
- Diversity & Inequality: Socio-cultural and geological analysis

Unit – III: Understanding Social Exclusion

- Definitions and Concepts, Evolution of the concept of Social Exclusion; Dimensions of Social Exclusion, Theories of Social Exclusion;
- Social Exclusion and the role of: Religion, Race, Caste, Ethnicity; Gender; and Disability.
- Relationship of Social Exclusion and Discrimination

UNIT – IV:

- Social policy response to combat Poverty. Inequality and Social Exclusion in India.
- The role of social work in addressing issues of poverty, inequality and social exclusion.

Reading List:

- Sen, Amartya 2000 Social Exclusion: Concept, Application and Scrutiny. Social Development Papers NO.1. Asian Development Bank.
- Sen, Amartya "Poverty as Capability Deprivation," chapter 4 in Development as Freedom, OUP, 2000.
- Sullivan, Elizabeth 2002 Social Exclusion, Social Identity and Social Capital: Reuniting the Global, the Local and the Personal. De Montfort University, UK.
- Silver, Hilary and S.M. Miller 2003 Social Exclusion: The European Approach to Social Disadvantage. Indicators.2.2: 1-17.
- Haan, Arjan de 2001 Social Exclusion: Enriching the Understanding of Deprivation. Institute of Development Studies and Poverty Research Unit, University of Sussex. Sussex. UK
- O'Brien, D, Joanna Wilkes, Arjan de Haan, Simon Maxwell Poverty and Social Exclusion in North and South. Institute of Development Studies and Poverty Research Unit, University of Sussex. Sussex. UK.
- Kabeer, Naila 2006 Social Exclusion and the MDGs. The Challenge of 'Durable Inequalities' in the Asian Context. Institute of Development Studies and Overseas Development Studies Institute.
- Beall, Jo 2002 Globalization and Social Exclusion in Cities: Framing the Debate with Lessons from Africa and Asia. Development Studies Institute, LSEP, London.
- Chebolu, Radha Mohan 2007 Corporate Quotas: The Myth Action'. Pravartak. 2:2: 159-165.
- Saith, Ruhi 2001 Social Exclusion: The Concept and Application to Developing Countries. QEH Working Paper Series -72.
- Loury, G.C 2000 Social Exclusion and Ethnic Groups: The Challenge to Economics. Annual World Bank Conference on Development Economics 1999. The International Bank for Reconstruction and Development! The World Bank.

- Jenkins, Robert 2006 Social Exclusion of Scheduled Caste Children from Primary Education in India; UNICEF India. New Delhi.
- Sen, Amartya 1992 Inequality Re-examined, New Delhi Oxford University Press. Byrne,David 1999 Social Exclusion. Buckingham: Open University Press.

Course Title: SOCIAL SCIENCE CONCEPTS IV: PSYCHOLOGICAL CONCEPTS, HUMAN BEHAVIOUR AND RELATIONSHIPS

Course Code: SWFC – 05

Level: MSW (I)

Objectives:

- To understand the concept of human behavior
- To understand the basic concepts and factors of human behavior
- To understand the relevance of psychology in social work
- To understand the concept of personality and its application in social work education

UNIT – I: Nature and Scope of Psychology

Meaning and definition of psychology – Schools of psychology: Structural, Functional and Behaviourist, Importance of psychology in social work practice, Factors influencing Human Behaviour-Heredity, Enviournment and Self

UNIT – II: Human growth and development

Human growth and development: Meaning and principles; Social, Emotional, Cognitive and Physical Stages in Life Span approach from Conception to Old Age: characteristics, needs, tasks and problems at each stage.

UNIT – III: Personality

Meaning of personality, Theories of personality: Trait and Type theories; important concepts of the contributions of Freud, Jung, Adler, Maslow and Ericson: factors influencing personality Development Psychological Processes in Behaviour: Perception, Emotion, Motivation, Attitude; Processes of Adjustment: Concept and Factors; Coping Mechanism, Defence Mechanism

UNIT – IV: Theories of Human Development

Psychoanalytic theory: Psycho-sexual theory by Freud, Psycho-social theory by Erickson.

Behavioural theory: Classical conditioning by I P Pavlor, Operant.

Humanistic theory: Abrahm Maslow and Carl Rogers, Alfred Adler. Cognitive theory: Jean Piaget's theory

Reading List:

Davidoff.L.L.: Introduction to Psychology, Aucklan; McGraw Hill Inc:1881

Morgan, C.T.& King, R.A:Introduction to psychology New York.

Weix;J.R& Schopler J: McGraw Hill;7th Ed.,1986.

Munn,N.A.:psychology-The fundamentals of human Behaviour;Londan;

Hurlock E. B: Developmental psychology, New Delhi, Tata Mcgraw Hill 5th Ed.1971

Rayner,Eric: Human Development,Londan;George Allen and Unwin,1978.

Sareswathi T.S,Dutta R:Development psychology in India, Delhi;Sage publications, 1987.

Kuppusamy B: An Introduction to social Psychology; Bombay; Media Promoters and pub.Pvt.Ltd.,1980.

Coleman, J.C: Abnormal Psychology and Modern Life

Fair-weather George W.: Social Psychology Treating in Mental Illness, Sydney, Jhon Wiley and Sons

Course Title: WORKING WITH INDIVIDUALS

Course Code: SWCP – 01

Level: MSW (II)

Objectives:

- To develop theoretical knowledge and understanding about working with individuals
- To critically examine the application of social case work method in human

personality and development.

Unit - I: Basics of Case Work

Social Case Work: nature, assumptions, values and principles. Components of social case work: person, place, problem & process. History of social case work.

Unit – II: Client Worker Relationship

Need and importance of Relationship: nature and ways to establish. Psychoanalytical theory. Ego - functions and defense mechanisms. Concept of Human needs, stress, social role and adaptation

Unit – III: Process of Case Work

Process of social case work- study, assessment, goal formation, planning, treatment, evaluation, termination. Techniques of social case work: interviewing, support, encouragement, clarification, correcting perception, reality orientation; resource mobilization, home visit, interpretation, topical shift, logical reasoning, crisis intervention, burnout. Transference and Counter-Transference and its use in case work. Supportive techniques. Referral: its use in social case work. Recording: types and format.

Unit – IV: Models of Case Work

Models of social case Work practice: Problem solving, Psycho- social, Task oriented. Rational Emotive Therapy in social case work. Discussion on role of case worker from the records in school, family and marriage settings. Presentations and discussions on cases and practical questions.

Readings List:

Banarjee, G.R. TISS Series 23. Papers on Social Work: An Indian Perspective; Tata Institute of Social Sciences, Mumbai. TISS(Series 23).

Batra, Sushma & Marlin Taber, 1996. Social strains of Globalization in India, Mittal Publication, New Delhi.

Biestek, F.P. 1970. The Case Work Relationship: London: Unwin University Books, Impression.

Bogo, Mario, 2006-07. Social Work Practice: Concepts, Processes and Interviewing. Columbia University Press-2006. Indian Reprint by Rawat Publication : New Delhi,2007.

Friedlander, W.A. 1964. Concepts and Methods of Social “Work, New Delhi: Prentice Hall of India Pvt. Ltd.

Fisher, J, 1978. Effective Case Work Practice: An Effective Approach, New York McGraw Hill Book Co.

Florence, H., 1964. Case Work: A Psycho social therapy, Random House, New York.

Farard, M.L. & N.K. Hunnybun, 1962 The Case Work's use of relationship London, Tavistock. Pub.

Goldstein, H., 1970. Social Work Practice: A Unitary Approach, Carolina: Univ. of S. Carolina Press.

Grace, Methew, 1992. Introduction to School Case Work, Tata Institute of Social Sciences, Mumbai.

Hamilton, G., 1946. Principles of Social Case recording, New York: Columbia University Press.

Himilton, Gordon, 1959. Theory & Practice of Social Case Work, New York: Columbia University Press, VI Ed.

Husband. E.(ed) New Developments in Social Case Work Reading in Social Work, Vol. III, London: Georque Allen & unwin Ltd.

Mishra, P.D., 1985. Samajik Vijyaktik Sewa Karya (Hindi) Uttar Pradesh Hindi Sansthan, Lucknow.

Perlman, 1957 Social Case Work-A Problem solving Process, Chicago: The University of Chicago Press, V Impression.

Pathak, S.H. 1966. Records in Social Case Work, Delhi School of Social Work, Delhi.

Pinkus, Helen, 1971. Case Records for Teaching Purposes, Faculty as social Work, M.S. University, Baroda.

Roberts R.W. Nee, R.H. 1972 Theories of Social Case Work, the Uni. Of Chicago

Press, Chicago, London.

Reid, W.K. & Anne W. Shyne, 1969 Brief and Extended Case Work: New York:

Columbia Uni. Press.

Scott Briar and Henry Miller, 1971 Problems and issues in social Case Work: Columbia University Press, New York.

Timmis, N., 1964. Social Case Work: Principles and Practice, London; Rout ledge and Kegan Paul.

Timmis, N., 1972. Recording in Social Work, London, Rout ledge & Kegan Paul.

Terner, F (Ed) 1974. Social Work Treatment, New York: The Free Press.

Upadhyay, R.K. 1991. Samajik Vijyaktik Karya (Hindi) Haryana Sahitaya Academy, Chandigarh.

Upadhyay, R.K. 1993. Indian Philosophical Concepts in Clinical Social work, Kurukshetra Press, Kurukshetra.

Upadhyay, R.K. 2003. Social Case Work, Rawat publications, New Delhi, Jaipur.

Course Title: WORKING WITH GROUPS

Course Code: SWCP – 02

Level: MSW (II)

Objectives:

- To understand theoretical knowledge of social group work.
- To understand group work as an instrument of change/development in individual in groups.
- To understand the relevance of group work in different settings.

Unit – I: Social Group Work:

Definition, objectives and scope - Models of Social Group Work- Historical Development of Group Work, Principles of Group Work, Values, Significance, Limitation of social group work practice in India.

Social Groups and Development: Definition, Characteristics, Types of Groups and Functions of a Group - Basic Human Needs met by Groups at Different Stages of Group Development - Group Process : Bond, Acceptance, Isolation, Rejection, Sub- Group Formation, Withdrawal, Behaviour Contagion, Conflict and Control.

Unit – II: Approaches to the Practices of Group Work:

Group Therapy, Group Psychotherapy, Use of Home Visits and Collateral Contacts. Leadership: Concepts, Definition, Characteristics, Functions, Qualities of Leader, Types and Theories of Leadership, Training for Leadership - Sociometry and Sociogram - Group Work Supervision: Meaning, Purpose and Functions. Skills of social group worker.

Unit – III: Group Work Programme Planning:

Meaning and Definition of Programme, Principles and Process of Programme Planning and the place of Agency in Programme Planning - Programme Laboratory: Values and Techniques (Games, Singing, Dancing, Dramatics, Street play, Puppetry, Group Discussions, Excursion, Psychodrama, Socio drama, Role play, and Brain Storming); Rural Camp: Planning, Organizing, Executing, Evaluating and Reporting.

Unit – IV: Group Work Recording:

Meaning, Purpose, Principles, types of group work recording; Steps and Criteria for Good Group Work. Application of Group Work Methods in Different Settings: Community Settings, Medical and Psychiatric Settings, De-Addiction Centres, Correctional Institutions, Schools, Industries, Physically Handicapped and Aged Homes.

Reading List:

Alissi, A.S.1990 Perspectives on Social Group Work Practice: A Book of Readings, New York, The Free Press.

Balgopal, P.R. and Vassil. Groups in social Work- An Ecological Perspective, New York, Macmillan Publishing Co. Inc.

Bhatt, P.M.1970 Records of Group Work Practice in India, faculty of Social Work, M.S. University, Baroda.

Brandler S & Roman CP 1999 Group work, Skills and Strategies for Effective

Interventions, New York. The Haworth Press.

Brandler S & Roman CP 1991. Group work, Skills and Strategies for Effective

Interventions, New York. The Haworth Press.

Garland, J.A.(Ed) 1992. Group Work Reaching Out: People, Places and Power, New York, The Haworth Press.

Garwin, C 1987. Contemporary Group Work, New York Prentice- Hall Inc.

Golpelwar, Banmala, 2007 social Group Work, Indian Institute of Youth welfare, Nagpur.

Kemp, C.G. 1970. Perspectives on the Group Process, Boston: Houghton Mifflin C.

Klein, A.F.1970. Social Work Through Group Process,: School of Social Welfare-Albany: State University of New York.

Konopka, G 1963. Social Group Work: A Helping Process, Englewood Cliff, NJ Prentice Hall, Inc.

Kurland, R & Salmon, R 1998. Teaching a Methods Course in Social Work with

Groups Alexandria: Council on Social Work Education.

Middleman, R, R 1968. The Non- Verbal Methods in Working with Groups.

Northen, H 1969. Social Work with Groups, New York: Columbia University Press.

Pepell, C.P & Rothman B. Social Work with Groups, New York: The Haworth Press.

Sundel, M,Glasser, P sari, Individual change Through Small R., Vinter, 1985 Groups. The Free Press.

Samuel, T. Gladhing 1999. Group Work: A Counseling Specility, Simon& Schaster, NJ Printice Hall Inc.

Siddiqui H.Y.2005. Group Work, theories and Practice, Rawat Publication New Delhi.

Toseland RW 1998. An introduction to Group Work Prectice, New York Macmillan Publication Co.

Trecker, Harleigh B 1990. Social Group Work: Principles and Practice, New York: Association Press.

Wilson, G. Ryland, G 1949. Social Group Work Practice, Boston: Houghton Miffin, Co

Course Title: WORKING WITH COMMUNITIES

Course Code: SWCP– 03

Level: MSW (II)

Objectives:

- To provide theoretical and conceptual understanding of community organization as a method in social work.
- To practice and critically examine the steps and process of community organization in various community setting.

Unit – I: Community and Community Organisation

Community: Concept, characteristics, types and functions. Understanding of community organisation practice: Definition, values, ethics and principles; Historical development of community organisation practice; Community organization as a method of social work intervention; Role and skills of Community Organizer

Unit – II: Models and Strategies of Community Organization

Models and Strategies of Community Organization - Locality Development Model - Social Planning Model - Social Action Model - Select methods of public interest mobilization, litigation, protests and demonstrations, Dealing with authorities, Public Relations, Planning, Monitoring and Evaluation - Roles in different models attributes and attitude.

Unit – III: Community Organization Practice in the Context of Various Settings

Health, Education, Residential institutions, Livelihood and work, Natural resource management, Sustainable development, Working with tribal and Dalit populations, in rural and urban communities, Displaced population and rehabilitation, Community organization in disaster preparedness and response, Peace building and national integration .

Unit – IV: Social Action

Social work and social action, History of social action in India, Radical or emancipatory social work; Rights based approach, Different forms of protest, various contributions to the theory of social action (Lees, Saul Alinsky, Paulo Friere, Mahatma Gandhi's (Sarvodaya and Siddique) Strategies for social action from various social movements.

Reading List:

- Gangrade, K. D. 1971. Community Organization in India, Mumbai;Parkashan, 1971.
- Karamer, R.M. & Spech,H. Reading in Community Organization Practice-Hall Inc. Englewood Cliffs, 1983.
- Murphy C. G.: Community Organization Practice, Boston; Houghton Miffin Co. Ross, 1954
- Patil, S.H. Community Dominance & Political Modernization; Mittal Publication; New Delhi; 2002.
- Rashmi Dewas & R. Community Participation & Empowerment in Primary Education; Mittal Publication New Delhi; 2003.
- Sengupta, P.K.; Community Organization Process in India, Kiran Publishers, 1976.
- Selgen, S. Empowerment & Social Development Issues in Community Participation; Mittal Publication: New Delhi; 2005.
- Speech, H & Karmer: R.M; 1969 Reading in Community; Englewood Cliffs: Prentice Hall.
- Surya Rao: Under Development with community initiative retrospect & prospect: mittal Publication: New Delhi, 2000.

- Zastrow Charles: 1978. Introduction to social Welfare Institution Social Problems, services & Current Issues (Social work Community Practices Part-3 Chapter-10) Ontario: The Dorsey Press.
- Butcher H. 2007: Critical community Practice.
- Kothari M 2006: Development and Social Action, Rawat Publication, New Delhi.
- Grundy M : Community Work, Rawat Publication, New Delhi,
- Siddiqui. H.V., Social Action in India.

Course Title: A HUMAN RIGHTS APPROACH TO SOCIAL WORK PRACTICE

Course Code: SWCP – 04

Level: MSW (II)

Objectives:

- To understand Human Rights and engage in critical self-reflection and correction for professional development.
- To recognize the extent to which a culture's structures and values may oppress, marginalize, exclude and enhance power and privilege.
- To engage in processes that advance social and economic justice.
- To critically analyse how the intersection of Human Rights Values with Social Work influences practice

UNIT I: **Introduction to Human Rights**

- Historical evolution and normative framework of the Universal Human Rights System: The UN Charter, Universal Declaration of Human Rights, the ICCPR and ICESCR.
- The generations of Rights
- UN vs National perspectives: Issues of cultural relativism: Rights and. Duties, Rights of Indigenous Peoples and Rights of the Scheduled Tribes, Racial discrimination and Caste based discrimination, Right to Self-determination.

UNIT II: **Human Rights in the Indian Constitution: Interpretation and Application**

- The Preamble, the Fundamental Rights and the Directive Principles of State Policy;
- Special provisions for vulnerable groups: Scheduled Castes, Scheduled Tribes, Women, Religious, cultural and linguistic minorities.

- Role of the Judiciary in responding to Human Rights issues in India: The case of Niyamgiri, Reservations to OBCs, Women's issues, etc
- Role of the National Commissions on: Human Rights, Women, Scheduled Castes, Scheduled Tribes, Minorities, Backward Classes.
- Role of Human Rights NGOs.

UNIT III: Monitoring Human Rights

- Who monitors human Rights?: Social Work Professionals, Medical Professionals, the Police, Lawyers and Judges;
- How to monitor? : prisons, trials, hospitals, cemeteries, vulnerable groups;
- How to investigate? : practical steps on gathering evidence;
- How to report? : How to write a report, How to take a statement, How to collate evidence;
- Commissions of Enquiry; the NHRC
- International and National Reporting and Complaints Procedure.

UNIT IV: Human Rights in Social Work Practice

- The elements of the Human Rights approach and its value to Social Work: Respecting principles of Equality and non-Discrimination; incorporating the Gender perspective.
- The Right to Development: Application to International Agencies and NGOs; ensuring participation of service users; accountability of service providers and empowerment of all stakeholders.
- Applying Human Rights approach to Advocacy in the context of Social Work: Legislation; funds to respond to identified social needs; follow-up; public campaigns; networking.

Reading List:

- Youth for Human Rights (2010). What are human rights? http://www.youthforhumanrights.org/what-are-human-rights.html
- Ife, J. (2001). Local and global practice: Relocating social work as a human rights profession in the new global order. European Journal of Social Work, 4(1), 5-15.

- United Nations. (1948). The Universal Declaration of Human Rights. Retrieved from http://www.un.org/en/documents/udhr/
- United Nations. (1994). Human rights and social work: A manual for schools of social work
  - and the social work profession. Geneva: United Nations Centre for Human Rights.
- Ife, J. (2012). Human Rights and Social Work: Towards Rights based Practice, CUP: London.
- Reichert, E. (2011). Social Work and human Rights: A Foundation for policy and practice, Columbia University Press.
- Lundy, Colleen (2011). Social Work, Social Justice and Human Rights: A Structural Approach to Practice. University of Toronto Press.
- Mullaly, Bob. () Challenging Oppression and Confronting Privilege, OUP.
- Wronka, Joseph. M. () Human Rights and Social Justice: Social Action and Service for the Helping and Health Professions, Sage publications.
- Hokenstad, Healy, M. and Segal, Uma A (2013). Learning to Teach, Teaching to Learn.

Course Title: SOCIAL WELFARE ADMINISTRATION

Course Code: SWCP – 05

Level: MSW (II)

Objectives:

- To have conceptual clarity about social welfare Administration.
- To understand the principles, structure and functioning of the social welfare Administration system in India.
- To understand the role of voluntary agencies/NGOs in social welfare administration.

Unit – I: Concept: Administration

- Evolution, Meaning Nature, Bureaucratic Human Relations, Philosophy of Social

Welfare Administration, Distinction between Welfare Administration and Public Administration.

- Structure of Social Welfare Administration in India: Departmental Administration in the Government of India; Ministry of Social Justice and Empowerment; Ministry of Women & child Development; Ministry of Rural Development; etc.

Unit – II: Principles and Techniques

- Planning: meaning and process.
- Organizing: Meaning, types of organizational structure, Delegation and Decentralization, Personnel Policy of the organization.
- Staffing: Recruitment and selection process, Terms and conditions of service Probation, confirmation, promotion, Human Relations in Social Welfare Agencies,
- Budgeting: Formulation, controlling mechanism, Problems of budgeting in welfare agencies.
- Commitment of Personnel.

Unit – III: Voluntary Agencies/NGOs

- Voluntary agencies/NGOs in Social Welfare: mandate, role and functioning.
- Administrative structure of voluntary Agencies/NGOs: General Body, Board of Management / Executive Committee, Directors, Secretary Policy formulation, Fund raising, public relations, challenges.
- Voluntary Organizations in the Welfare Section: Helpage India, Child Relief and you, Spastic Society of Northern India, etc.

Unit – IV: Institutions of Social Welfare

- Structure & functions of Central Social Welfare Board.
- State Social Welfare Advisory Board.
- Rehabilitation Council of India
- National Commission for Scheduled Tribes, National Commission for Scheduled Castes, National Commission for Ministries, etc.
- National Institute of Social Defense.

- National Institute of Public Cooperation & Child Development (NIPCCED) etc.
- Welfare Schemes of the various departments of the government of Odisha and the Department for SC,ST, OBC and Minorities Development.

Reading List:

- Choudhry Paul, Social Welfare Administration
- Sharma Urmila & Sharma S K: Public Administration, Atlantic Publishers and Distributors New Delhi.
- Arora Ramesh K. and Goyal rajni, 1995, Indian Public Administration Institutions and Issues: Viswa Prakashan, New Delhi.
- Ramachandran Padma, 1996, Public Administration in India: National Book Trust New Delhi.

Course Title: SOCIAL WORK RESEARCH AND STATISTICS

Course Code: SWCP-06

Level: MSW (II)

Objectives:

- To develop understanding about the components involved in the social work research methodology.
- To improve the ability to link between practice, research, theory and their role in enriching one another.
- To make students understand the importance of statistical tools and techniques and help them to arrive at better research conclusion.

Methods of Social Work Research

Unit-I

Social Work Research: Meaning and Objective. Ethical, Political and cultural context of Social Work research. Social Work research fields: professional practices research, contextual research, system research, trend research, community based participatory research. Qualitative vs. Quantitative research. Research process:

Feasibility issues influencing the research process. Research problems, questions, variables and hypotheses: Conceptualisation and operationalization. Critiquing knowledge bases and reviewing the literature.

Unit-II

Research Design: Matching design to purpose. Designs for evaluating policies, programs & practices: Single Subject Design, Case studies, Survey design, Experimental and Quasi experimental design. Finding research subjects: Sampling: Probability and non probability sampling. Sources of data and data collection techniques: Observation, Interview, Questionnaire, Focus Group Discussion, Brain storming, Delphi method and Projective techniques. Writing research abstract and research report: components of research report.

Methods of Data Analysis

Unit-III

Qualitative Analysis: Thematic analysis, Content analysis, Triangulation, *Phenomenology*, **and** *Hermeneutical Analysis.* Quantitative Analysis: Choosing and Understanding Statistical Tests: Levels of Measurement, Descriptive Statistics-Measures of Central Tendency: Mean Median and Mode, Measures of Dispersion: Standard deviation and variances.

Unit-IV

Inferential Statistics and Hypothesis Testing: Correlation and regression analysis, hypothesis testing and test of significance. Bi-variate Statistics: t-tests, ANOVA and Chi Square. Introduction to SPSS for analyzing quantified data. Critical Reflections in Data Analysis: looking for anomalies, discussing findings, analyzing limitations and biases of the study and considering future directions for research.

Reading List:

Anderson, J. Durston H. S & Pooram (1992) Thesis and Assignment Writing; Wiley Eastern Ltd, New Delhi.

Baper, L.T. (1998) Doing Social Research, McGraw Hill, Singapore.

Bryman, Alan & Duncan Cramer (1990) Qualitative data analysis for Social Scientists, Rutledge, London.

Denzin, K Norman & Lincoln, S Yuonna., **(**1998), Collecting and Interpreting Qualitative Materials, Sage publications, New Delhi.

Denzin, K Norman & Lincoln, S Yuonna.(2000), Hand book of qualitative research, Sage publications, Thousand Oaks.

Gupta, S. P (1992) Elementary Statistical methods sultan chand & sons, New Delhi.

Goode & Hatt (1981) Methods in Social Research, McGraw Hill, New Delhi.

Laldas, D.K (2000) Practice of Social Research, Rawat, Jaipur.

Nachmias & Nachmias (1981) Research methods in the Social Sciences; St. Martin"s press, New York.

Richard, G.., et al, (2003) Scaling Procedure –issues and applications, Sage, Thousand Oaks.

Rubin & Bobbie (1993) Research Methods for Social Work, Brooks/Cole publishing Company, California.

Fundamentals of Research Methodology and Statistics by Y. K Singh , New Age International

C.R.Kothari, Research Methodology.

Mukarji Nath Ravindra, Social Research and Statistics, Vivek Prakashan, Delhi.

Kapoor B.K. & Gupta, S.C., Fundamental of Statistics, S. Chand Publication, New Delhi.

Ramchandran, P. Social Work Research And Statistics, Bombay : Allied Publishers

Gupta, S.P, Statistical Methods, Sultan Chand & Sons

Swain A.K.P.C, A First Course in Statistics With Applications, Kalyani Publishers

Patri, D., Statistical Methods, Kalyani Publishers

Bhatnagar, O.P. Reserach Methods And Measurements In Behavioral And Social Sciences, New Delhi, Agri Cole Publishing Academy

Dwivedi R.S. Research Methods in Behavioral Sciences. Delhi, Macmillan

D'cruz, Jones, Social Work Research

Ahuja Ram, Research Methods

SPSS for Social Scientists By Robert L. Miller, Ciaran Action, Deirdie A. Fullerton And John Maltby.

The SPSS Book: A Student Guide To The Statistical Package For The Social Sciences By Matthew J Zagumny

SPSS For Windows Step-By-Step: A Simple Guide And Reference By Paul Mallery And Darren George

Discovering Statistics Using SPSS by Andy Field

Drake, Brett, and Melissa Jonson-Reid. 2007*. Social work research methods: From conceptualization to dissemination.* Boston: Allyn and Bacon.

Grinnell, Richard M., and Yvonne A. Unrau, eds. 2007. *Social work research and evaluation: Quantitative and qualitative approaches.* 8th ed. New York: Oxford Univ. Press.

Rubin, Allen, and Earl R. Babbie. 2007. *Essential research methods for social work.* Belmont, CA: Thomson Brooks Cole.

Rubin, Allen, and Earl R. Babbie. *Research Methods for Social Work*. 6th ed. Belmont, CA: Thomson Brooks Cole, 2008.

Light, R. J., and D. B. Pillemar. 1984. *Summing up: The science of reviewing research.* Cambridge, MA: Harvard Univ. Press.

Course Title: CHILD PROTECTION AND CHILD RIGHTS

Course Code: SWCP – 08

Level: MSW (III)

Objectives:

- To understand the situation of children in India
- To understand the national & international efforts for child welfare
- To know the child related laws.
- To know the programmes & services for child welfare
- To understand & acquire the skills for working with children

Unit – I: Child Rights

Concept of Child Welfare and Child Rights; Demographic profile of the child in India, UN convention on the Rights of the Child, National Policy for Children(1974), National Policy on Education(1986), National Nutrition Policy (1993), National Charter for Children (2004), National Plan of Action for Children (2005) Changing trends in child welfare and protection services.

Unit - II: Problems of the Child and the response of Social Work

Social Work with: Street children, destitute, delinquent, abandoned, orphaned, child with disabilities, sexually abused child, child labour, child trafficking, children affected by natural calamity, HIV/AIDS affected and infected children, child prostitute, children in

poverty, the girl child, truant children, runaway children.

Health Problems: Causes of infant mortality and morbidity; Common childhood diseases; Development delay; Child Nutrition; Nutritional problems: PEM, Micro- nutrient deficiencies disorders, Mineral and vitamin deficiencies, Nutritional guidelines on infant and young child feeding.

Unit – III: Legal Provisions for child protection

The Constitution of India: Articles 14,15,15 (3),19 910 9a0, 21,21 (a),23,24,39(e),39(f); The Indian Penal Code, 1860: Feticide (Section 315 and 316), Infanticide (section 315), Abatement of Suicide (section 305), Exposure and Abandonment (section 317), kidnapping and Abduction (section 360 to 369),Procurement of Minor Girls (section 366-A), Selling of girls for Prostitution (section 372,373), Rape (Section 376), Unnatural sex(section 377); The Pre-natal diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994; The Juvenile Justice (Care and Protection of Children) Act, 2000; The Immoral Traffic (Prevention) Act, 1956; Child Labour (Prohibition and Regulation) Act, 1986; The Prohibition of child Marriage Act, 2006; The Commission for the Protection of child Rights Act, 2005; Protection of Children Against Sexual Offences Act,2012.

Unit - IV: Social work practice with children

Child guidance clinics; School social work; Child counselling; Life skills training; Child help lines; Adoption services; International and national NGOs working with children: UNICEF, CARE, CRY, SOS-Children's Villages.

Reading List:

- Banerjee, B. G. (1987) Child Development and Socialisation, New Delhi : Deep & Deep Publication
- Baroocha, Pramila Pandit (1999) Hand book on Child, New Delhi : Concept Publishing Com.
- Bhalla, M. M. (1985) Studies in Child Care, Delhi : Published by NIPCCD
- Bhangana. Vinita (20050 Adoption in India.
- Chaturvedi, T. N. (1979) Administration for Child Welfare, Admin, New Delhi : Indian Institute of Pub.
- Choudhari, D. Paul (1980) Child Welfare / Development, Delhi : Atma Ram & Sons.
- Deshprabhu, Rashmi (2001) Child Development & Nutrition Management, Jaipur : Book Enclave
- Ghathia, Joseph (1999) Child Prostitution in India, New Delhi : Concept Publishing Company
- Hugh, Jolly (1981) Diseases of Children, Oxford, London, Edinburgh : The English Language book society and Blackwell Scientific Publications

- Hurlock, Elizabeth B. (1968) Child Development, New Delhi : Tata McGraw Hill Pub; Com; Ltd.
- Rani, Asha (1986) Children in Different situations in India- A Review, TISSS.
- UNICEF, State of Worlds Children Annual Report
- Venkatesan S.(2004) Children with Developmental Disabilities.

Course TITLE: SOCIAL WORK WITH WOMEN: ISSUES OF GENDER AND DEVELOPMENT

Course Code: SWCP – 09

Level: MSW (III)

Objectives

- Develop an ability among students to analyze the position of women in rural and tribal society and the role of the social worker thereof.
- To develop an understanding of problems specific to women.
- To be introduced to legislative protection of women.
- To understand the concept of gender in various areas of social work practice.

UNIT-I: Construction of Gender

- Socio-Cultural Concepts: Gender, Sex, Patriarchy, Masculinity and Feminism.
- Women and Society: Status of Women in Indian society (Urban, Rural, Tribal and Dalits):
- Role of Women in Socio- Economic life: Family, Marriage, Religion, Caste, Tribe, Economy, Health and Education, Environment , Women and Media

UNIT-II: Issues and Challenges of Women in India and Odisha

- Problems of Women: Dowry, Domestic Violence, Crime against Women, Immoral Trafficking, Prostitution etc.
- Maternal Health Issues: Maternal Morbidity, Maternal Mortality, Infant Mortality, Female foeticide, Women's reproductive health and rights; and Changing concepts of Motherhood: Surrogate motherhood; Family Planning: Objectives and methods.
- Community based mental health programmes with a focus on mental health needs of women.

UNIT-III: State and Women

- Social Legislation for Women : Property Rights Act under the Hindu Succession Act,1956(Sect 6,14,15,16), Property Rights of Muslim Law, Dowry Prohibition Act,1961, Family Courts 1984, The Pre-conception and Pre-natal Diagnostic Techniques(Prohibition of Sex Selection) Act 1994, The

Protection of Women from Domestic Violence Act,2005, The Indecent Representation of Women(Prohibition)Act, 1986

- Social Policies regarding Women: National Health Policy, National Education Policies,
- Provisions, Schemes and Programmes for women empowerment.

UNIT-IV: Women's Development and Social Work

- Concept of engendering Social Work and the role of the Social Worker.
- Applications of Social Work methods for Women empowerment and Development.
- Political Empowerment of Women: Participation of Women in National Movements; Women in National and Regional politics, Panchayati Raj Institutions and Urban Local bodies.

Reading List:

- Brook E and Davis, Ann (1985) Women, The family and Social Work, London.
- Samanta, R.K (2005) Empowering Rural Women and Issues, Opportunities and Approaches, B.R world of books
- Saxena,S(2005) Crimes against Women and Protective laws, Deep and Deep Publications, Pvt.Ltd. New-Delhi
- Paul chowdhry, D Women welafarae and Development(A Source Book) Inter-India Publication, New-Delhi 1991
- Agarwal Sushila, Status of Women, Print well Publisher, New-delhi.
- Bodra Gomati, Empowerment of Tribal Women
- Baig, Tara Ali Women In India, Ministry of information and Broadcasting, Govt. Of India Publication Division, New Delhi
- Agrawal Bina, Gender And Legal Rights in Landed Property in India, Kali for Women.
- Bhargars V. Durvar, Mental Health from a Gender Perspective, Sage publication.
- Gore,M.S: Urbanisation & family Change, popular Prkashan, Bombay, 1986.
- Agarwal, R.K. Hindu Law-central Law Agency, Allahabad.
- Adhikari, A.K and Pramanik: Gender inequality and Women's empowerment, Abhijeet Publication,2006
- Sikligar, P.C:Empowerment of Tribal Women, Jaipur Mangal Deep Publications,2006.

Course Title: ETHNIC SENSITIVE SOCIAL WORK PRACTICE IN INDIA

Course Code: SWCP - 10

Level: MSW (III)

Objectives:

- To tune Social Work Practice to the values and dispositions related to the social background of the client and the behavior of the larger social system, to work towards social justice and human liberation.

UNIT – I: What is Ethnic Sensitive Practice (ESP) in Social Work?

- Definition, conceptual formulation and perspectives on ethnic sensitive practice.
- Assumptions and principles for ethnic-sensitive practice.
- The layers of understanding in ethnic sensitive practice.
- Ethnic sensitive practice with displaced populations, migrants, families, communities, students, etc.

UNIT – II: The Ethnic Scenario in India

- The Schedule Tribes (ST), particularly vulnerable tribal groups (PVTGs) and Denotified Tribes: Demographic profile, their education, health, employment and economic status.
- The Scheduled Castes (SC) and other Backward Castes (OBC): Demographic profile, their education, health, employment and economic status.
- An analysis of the caste system, and the practice of untouchability.
- Ethnic based discrimination in India with respect to public services, government schemes and employment programmes etc.
- An analysis of industrialization, urbanization, liberalization, privatization, globalization, development projects and their impact on STs and SCs land alienation, loss of forest rights, displacement, socio-cultural loss, poverty and impoverishment, indebtedness, psychological issues.

UNIT – III: Constitutional Safeguards Legal Provisions and Policies

- The Preamble, The Directive principles of state policy ensuring social safeguards: Articles 17,23,24,25,(2)(b); Economic safeguards: Articles 46, 23, 24, 244, 275(I), fifth schedule, sixth schedule; Education and cultural safeguards: Articles 15 (4), 29 (i), 350 A; Political safeguards: Articles 164 (I), 330, 332, 334, 371 A, 371 B, 371 C, 371 C, 371 F, 371 G, 371 H. Service Safeguards; Article 16 (4), 16(4a), 335, 320 (4); To ensure these safeguards Articles 338 and 338A provide for two statutory commissions: The National commission for Scheduled Castes and the National Commission for Scheduled Tribes.
- Protective Legistations: The Protection of Civil Rights (PCR) Act 1955; The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities): POA Act, 1989; The Orissa Scheduled Areas Transfer of immovable property (by ST) Regulation (1956); The Orissa Land Reforms Act (1960)
- Schemes of the Ministry of social justice and empowerment; Scheduled Caste Sub Plan (SCSP) and Schedule Tribe Sub Plan (STSP) introduced since the sixth Five Year Plan.

UNIT – IV: Strategies for Social Workers to Work for Social Justice and Rights

- Identifying the sources and dynamics of injustice, discrimination and oppression.
- Adopting the layers of understanding in ESP in all fields of social work practice.
- Adopting 'radical' change oriented methods such as: advocating human rights, affirming core social work values, affirming politics of social justice and human liberation, facilitating critical consciousness, participatory-democratic egalitarian social movements.

Reading List:

- Denove.W and Schlesinger E.G, (1999) Ethnic-Sensitive Social Work Practice.
- Yil. David. G, (1998), Confronting Injustice and Oppression.
- Thorat S.K. (2009) Dalits in India: Search for a Common Destiny.
- Thorat S.K. and Newman Kathernic S., (2010) Blocked by Caste: Economic Discrimination and Social Exclusion in Modern India.
- Constitution of India

- Website of Ministry of Social Justice and Empowerment, Government of India.
- Munshi. Indra, (2007) Adivasi Life Stories: Contexts, Constraints, Choices, Rawat Publication.
- Jain, P.C. 1991. Social Movements among Tribals, New Delhi: Rawat Publications.
- Singh K.S. (ed.). Tribal Movements in India, Vol. I & II;
- Singh, J.P. & Vyas. M.N. Tribal Development: Past Efforts and New Challenges.
- Alinsky Saul,Rules for Radicals.Vintage Books Edition, 1972
- VirginiusXaxa (2003), "Tribes in India," The Oxford India Companion to Sociology and Social Anthropology, (Ed) Veena Das, New Delhi: Oxford University Press,
- Baviskar, Amita. 1997. "Tribal Politics and the Discourses of Environmentalism," Contributions to Indian Sociology, Volume 31, Number 2.
- Abbi, Anvita. 2102. Chapter 13, "Declining Adivasi Knowledge Systems and Killing of Linguistic Diversity," Social Exclusion and Adverse Inclusion: Development and Deprivation of Adivasis In India, (Editors) Dev Nathan and VirginiusXaxa, Oxford University Press, 2012.
- Jean Dreze, Meera Samson and Satyajit Singh. 1997. Chapter 2, "Resettlement Politics and Tribal Interests," Dam and the Nation: Displacement and Resettlement in the Narmada Valley. New Delhi: Oxford University Press.
- Dev, Nathan. 2012. Chapter 17, "Displacement and Reconstruction of Livelihoods," and Chapter 18, "Community Representatives" Views on Development Processes," Social Exclusion and Adverse Inclusion: Development and Deprivation of Adivasis in India, (Editors) Dev Nathan and VirginiusXaxa, Oxford University Press, 2012.
- Xaxa, Virginius. 2008 "Protective Discrimination: Why the Scheduled Tribes Lag Behind the Scheduled Castes," State, Society and Tribes, New Delhi: Pearson Education.

Course Title: RIGHTS OF PERSONS WITH DISABILITIES AND THEIR REHABILITATION

Course Code: SWCP – 11

Level: MSW (III)

Objectives:

- To facilitate basic understanding about person living with disability
- To disseminate information about the variety of policies and programmes targeting to include persons with disabilities.
- To develop understanding on the possible rehabilitation measures.
- To develop insight into the workable models of interventions for inclusion of persons with disabilities.

UNIT – I: Understanding Disability

- Definition, types, magnitude and causes of disabilities.
- Approaches towards disability; medical, psychological, economic-vocational, socio-political, human rights and capabilities.
- Examining the impact of disability on the quality of life of persons with disabilities in the context of their family, society and environment.
- Issues related to their daily living, education, sexuality, integration, employment, interpersonal relationships, marriage and the need for social work intervention.

UNIT – II: Role of the Social Worker in the Rehabilitation and Inclusion of the Disabled

- Assessment treatment and rehabilitation of persons with disabilities through a multi-disciplinary team including the social worker.
- Inclusion of persons with disabilities in schools and educational institutions.
- Skill development and vocational rehabilitation of persons with disabilities.
- Equality of opportunity and treatment in employment and occupation of persons with disabilities.

UNIT – III: International Initiatives and National Legislations and Policies for the Empowerment of persons with disabilities

- UN Initiatives: UN convention on the rights of persons with disabilities 2006; Un standard rules on the equalization of opportunities for persons with disabilities (1993); and Darker Framework for Action.
- ILO Initiatives for enhancing support to vulnerable groups including the disabled: Global employment agenda(20030; Declaration on social justice for fair globalization 92008); Global jobs pact (20090; ILO code of practice on managing disability in the workplace (2002)
- National Legislations: Rehabilitation Council of India Act, 1992; Persons with disabilities (equal opportunities, Protection of rights and full participation Act, 1995; National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disability Act, 1999; The Rights of Persons with Disabilities Bill, 2011.
- National Policies:
  - National Policy for Persons with Disabilities (2006): Physical rehabilitation, Educational rehabilitation and Economic rehabilitation.
  - Guidelines for: Issue of disability certificates; evaluation of various disabilities and procedure for certification; space standards for barrier free built environment for disabled and elderly persons.
  - Identified posts for persons with disabilities -2007.

UNIT – IV: Role of Social Work

- Intervention strategies at individual level: counselling, building support groups, assertiveness training;
- Intervention strategies at family level: Parent counselling, parent training and family crisis intervention.
- Intervention strategies at community level: Community education, community based rehabilitation
- Intervention strategies at policy making level: Advocacy in legislative and policy makig bodies; research and influencing public opinion.

Reading List:

- Ministry of Social Justice and Empowerment; http://www.socialjusticenic.in/policeies acts3.php

- Bhumali.Anil,(2009) Rithts of disabled women and children in India, serials publications, New Delhi.
- Hans. Asha and patri.A (20030 Women Disability and Identity sage, New Delhi
- Mukhrjee, Manjumohan(20060 Problems of Disabled People, Associated Publishes, India.
- Kanna. G.N. (2001), Disability Studies in India-Retrospect's and prospects Gyan Publishing house, New Delhi.
- Buckup, s. (2009), The Piece of exclusion; The economic consequences of excluding people with disabilities from the world of work. Employment sector working paper No. 43 (genevaILO)
- O'Reilly, A. (2007) The right to decent work of persons with disabilities (geneva ILO)
- Davis, Lennard. J. (19997) The Disability Studies Reader, Routadge, NY
- Shapiro, Joseph P. (1993) No Pity: People with Disabilities Forging a New civil Rights Movements.

Course Title: COMMUNITY HEALTH AND SOCIAL WORKERS

Course Code: SWCP – 12

Level: MSW (III)

Objectives:

- To understand the basic concepts related to Health and its importance.
- Identify and understand the changing health needs of ever-changing community and organize relevant effective interventions for amelioration of health problem.
- To develop students' appreciation and a commitment to healthy and socially just ways of living.
- To develop student's knowledge and understanding about ways of enhancing personal and community health and wellbeing.

UNIT – I: Concepts of Health & Nutrition

- Definition & type (Physical & Mental) of health and its dimensions; appreciation of health as relative concept; determinants of health, changing concepts of health.
- Characteristics of agent, host and environmental factors in health and disease.
- Health situation in India and Odisha-especially the demography, mortality and morbidity profile and the existing health facilities in health services.
- Mental Health- concept, community based mental health programmes.
- Nutrition- definition, concept, balance diet nutritive values and food items.
- Genetically Engineered and modified foods.

- Nutritional Assessment and monitoring.

UNIT – II Epidemiology

- Epidemiology: definition, concepts and its role in health and disease, public health-concept& importance
- Definition of the terms used in describing disease, transmission and control.
- Epidemiology of specific diseases: Communicable and non-communicable diseases, symptoms causes and prevention of disease caused by virus: measles, chickenpox, polio, & leprosy, disease caused by bacteria: diphtheria, typhoid, tuberculosis, plague, dengue, hepatitis. disease caused by parasites: Malaria, scabies, intestinal worms. Preventive & Social Medicine: concept, meaning, programmes for controlling communicable diseases.

UNIT – III Environmental Health

- Awareness of the concept of safe and wholesome water.
- Awareness of the requirements of a sanitary source of water.
- Understanding the methods of purification of water on small scale with stress on chlorination of water.
- Disposal of solid waste, liquid waste, both in the context of urban and rural conditions in the country.
- Problems in the disposal of refuse, sullage ad sewage.
- Role of social worker in environmental health.

UNIT – IV Community Health and Role of Social Work

- Primary Health Care Services: organizations & functions
- Medical Social Work: meaning nature & scope
- Health Care in Rural and Urban areas of Odisha:
- Role & Functions of Social Worker in hospital setting and community health: individual, family and community level; communication tools and techniques.

Reading List:

- Park J. E. and Park K.: Textbook of Preventive and social Medicine Banarasi Das Bharat Publishers, Jabalpur.
- Bedi, Yash Pal (1979) Social Preventive Medicine, Atma Ram and Sons; New Delhi.
- VHAI – State of India's Health.
- Shah. Ghanshyam (1997) Public Health and Urban Development, Sage: New Delhi.

- Werne. David (1994) where there is no Doctor, VHAI.
- Sinha. A.K, (ed) (1997) Human Health and Environment, Vol. I & II, APH Publishers: New Delhi.
- John Webb (2002) Medical Social Work: The Reference Book, Trafferd Publishing.
- Gehlert, Sarah and Browne. Teri (Ed) (2011) Handbook of Health Social Work Wiley Publication.

Course Title: SOCIAL MANAGEMENT

Course Code: SWCP – 13

Level: MSW (III)

Objectives:

- To understand the eco system of communities and their market landscape to help community based organizations engage with a market based economy.
- To help build the capability needs of communities towards self reliance through sustainable community enterprises.
- To help gain fundamental principles of Management.

Unit I: Understanding the community and deciphering the market

- The village social structure: relationship between social groups, communication patterns, processes of exclusion and inclusion, culture and Social value base.
- Identifying community resources: social capital, natural resources, common- property resources, education, health & employment status.
- Institutions in the community: Social institutions, formal community based institutions for eg: clubs, SHGs, village Council, etc; PRI; Administrative Structure from Block to District level; Educational Institutions; Health and Medical Institutions
- The local market economy: Money Lenders, Small & Large traders, entrepreneurs, corporations and companies; key factors of Local Market Economy: Market Boundaries; Market Values; Market Values Chains.
- Need Assessment and mapping of village resources, producers and institutions study of the community.

Unit II: Operations and Marketing Management

- Operations Management in the context of community based enterprises-organizations: product design, process selection and design, capacity decisions, location and layout decisions, sowing, transformation and storage, quality of inputs and finished products, material handling and logistics.
- Farm, Forest and Livestock resources and their conversion to products: process & risks involved. Tools for process mapping and mapping a supply chain.
- Agricultural Products: Types and issues, value addition, pricing and distribution; Agricultural Product Buyers: Retail and Wholesaler, Consumers, Customers and key buyer characteristics.
- Key aspects of sales, marketing and planning; Negotiation and selling techniques.

Unit III: Accounting and Finance

- Accounting: Need, Meaning and objectives; role of an accountant; uses of accounting information; Origin and analysis of business transactions; accounting equation.
- Financial Statements: Balance sheet, Income statement; Recording business transactions: Double entry system, the T-accounts, principles and conventions of accounting, journal entries.
- Books of accounts: Cash book, ledger, sales register, etc; posting of transactions in books
- Trial balance: closing and balancing of accounts; locating and correcting errors; preparation of balance.
- Bank transactions and bank reconciliation: need for reconciliation, causes of difference in passbook and cash book balance, procedure for bank reconciliation statement.
- Distribution of profit: determination of distributable surplus; basis of distribution.

Unit IV: Planning and Budgeting

- Levels of Planning: Village level, cluster level community enterprise / organization level
- Planning for distribution of responsibilities among community based leaders / coordinators / facilitators.
- Planning for Product basket, their local value addition for greater shelf-life and for sale in local markets.
- Planning for marketing.
- Developing proposals considering resources, cost and time budget.
- Planning for Resource Generation: Internal resource generation and from external institutions Governant Departments, Banks, Public and Private, NGOs and INGOs
- Planning for improving technical capabilities.

- Planning for allied services like Health, Education, etc.

Reading List:

- Implementing Community Enterprise system for Sustainability of Agricultural Communities: A Manual, Nayak, Amar KJR (2012)
- A Proposal for Holistic Development at a GP Level for Long Term sustainability of Small and Marginal Farmers/Producers in the GP. Amar KJR Nayak (2011)
- Ongoing Programmes & Schemes of the State Government and the Central Government, Rabindra Kumar Gouda (2012)

Course Title: SOCIAL WORK IN SCHOOLS

Course Code: SWEP – 01

Level: MSW III

Objectives:

- To understand the Rights of the Child in the context of schools.
- To acquire necessary understanding and skills to work with children in schools.

UNIT I: Conceptual framework for Social Work Practice in Schools

- Conceptual Perspectives: Social Learning Theory, General Systems Theory, Ecological Perspective
- Models of intervention: Traditional Clinical Model, The School Change model, The Community School Model, Social Interaction Model, School-Community- Pupil Relations Model

UNIT II: Context of Social Work Practice in Schools: Legislations and Policies

- UN Rights of the Child, Commission for Protection of Child Rights Act, 2005
- Constitution of India, Article 21 A, National Policy on Education (1986), National Curriculum Framework for School Education (2000),Right to Education Act (2009)
- Constitutional provisions for the education of SC, ST and religious, cultural and

linguistic minorities, policies and programmes of the Government.

- Inclusive Education policies in the V Year Plans, Integrated Education for Disabled Children (IECD), District primary Education Programme (DPEP), Sarva Shiksha Abhijan (SSA)

UNIT III: Social Justice Issues in School

- Dealing with stereotype, bias and discrimination;
- Intervention for the vulnerable populations i.e., Challenged children, SC, ST and minority;
- Dealing with the 'Achievement gap' i.e, difference in performance between students of vulnerable and privileged backgrounds.

UNIT IV: The Role of the Social Worker

- Services to students: Dealing with social or behavioural problems (Depression, Truancy, Aggression, Trauma, Substance Abuse, Sexual Activity), poor attendance, drop-out, poor performance, offences against children.
- Services to teachers: Teacher support groups, teacher training, teaching stress;
- Services to families: Providing parent support, consultation, parenting skill classes, family programming; organizing financial support for vulnerable families;
- Services to the community: Community outreach, community involvement, village Education Councils.

Reading List:

- Allen- Meares, P., Washington, R. O., & Welsh, B. L. (1996). Social Work Services in schools. 2nd ed. Boston: Allyn & Bacon.
- Dupper. David, (2003). School Social Work: Skills and Intervention for Effective Practice, John Wiley and Sons, NJ.
- Bye. Lynn and Alvarez. Michelle (2006). School Social Work: Theory to Practice, Cengage Learning.
- Germaine. Carel B and Bloom Martin (2008). Human Behaviour in the Social Environment: An Ecological View. Columbia University Press, New York.
- Greene. Roberta R,(2010) Human Behavior Theory and Social Work Practice (Modern Applications of Social Work), Transaction Publishers, New Brunswick, New Jersey.
- Journal of School Social Work(JSSW), Chennai, India.

- NCPCR, Protection of Children against Corporal Punishment in Schools and Institutions,
- http://www.ncpcr.gov.in/Reports/Protection_of_Children_against_Corporal_Punishment in_Schools_and_Institutions_December_2008.pdf
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- Department of Education (1986).National Policy on Education, 1986. New Delhi: MHRD, GOI
- Department of Education (2000).Sarva Shiksha Abhiyan: A Programme for Universal Elementary Education. New Delhi: MHRD, GOI.

Course Title: WORKING WITH WOMEN

Course Code: SWEP – 02

Level: MSW III

Objectives

- Develop an ability among students to analyze the position of women in rural and tribal society
- Acquire understanding on problems relating to women

- Develop in them a critical understanding about the schemes related to women

Unit-1

Status of women in rural and tribal community - in the context of family

marriage, religion and economy. Sexual division of labor its impact on health, education, illiteracy, adjustment, malnutrition, early marriages.

Unit-2

Problems relating to women – dowry, domestic violence, crimes against women, female feticide, child prostitution, exploitation and abuse of domestic female lab our.

Unit-3

Women in local self government with special reference to women in decision making. Impact of 73 amendment, development schemes and women's situations, case studies of DRDA, ICDS, SHGs.

Unit -4

Role of media in projecting the images of women, women in the media- print media, radio, films, television, and advertisement and publicity, Media and self employed women

Reading List:

- Paul chowdhry,D. Women welfare and development (A source book) ; Inter-India Publication, New Delhi -1991
- Sushila Agarwal , Status Of Women Printwell publishers,Jaipur,1988
- Pandit, S.K. Women in Society, Rawat Publications, New Delhi 1998
- Brook E and Davis, Ann (1985) Women, The family and Social Work, London.
- Samanta, R.K (2005) Empowering Rural Women and Issues, Opportunities and Approaches, B.R world of books
- Saxena,S(2005) Crimes against Women and Protective laws, Deep and Deep Publications, Pvt.Ltd. New-Delhi
- Paul chowdhry, D Women welafarae and Development(A Source Book) Inter-India Publication, New-Delhi 1991
- Agarwal Sushila, Status of Women, Print well Publisher, New-delhi.
- Bodra Gomati, Empowerment of Tribal Women
- Baig, Tara Ali Women In India, Ministry of information and Broadcasting, Govt. Of India Publication Division, New Delhi
- Agrawal Bina, Gender And Legal Rights in Landed Property in India, Kali for

Women.

- Bhargars V. Durvar, Mental Health from a Gender Perspective, Sage publication.
- Gore,M.S: Urbanisation & family Change, popular Prkashan, Bombay, 1986.
- Agarwal, R.K. Hindu Law-central Law Agency, Allahabad.
- Adhikari, A.K and Pramanik: Gender inequality and Women's empowerment, Abhijeet Publication,2006
- Sikligar, P.C:Empowerment of Tribal Women,Jaipur Mangal Deep Publications,2006.

Course Title: Working with Alcoholics and Substance Abusers

Course Code: SWEP – 03

Level: MSW (III)

Objectives:

- To facilitate basic understanding about substance abuse
- To disseminate information about addiction to alcohol.
- To develop understanding about the role of social worker in rehabilitation.
- To develop insight into the role of counseling among alcoholics and substance abusers.

UNIT – I: Basics on Substance Abuse

- Substance abuse and dependence: Meaning, Definition, nature and extent of the problem in India and Odisha.
- Types of Addictive Substances: Natural, Synthetic, Narcotics, Stimulants and depressants.
- Symptoms, short term and long term impact of substance abuse.

UNIT – II: Addiction to Alcohol

- Alcohol dependence and Alcoholism: Causes, symptoms, long-term and short-term effects.
- Impact of Alcoholism on Individual, Community and Family.
- Concept of social drinking, alcoholic and relapse.

- Phases of alcohol addiction.
- Social and economic implications of addiction.
- Alcoholism among Youth-causes and remedies.

UNIT – III: Role of Social Workers in rehabilitation

- Role of Social Worker in Preventive, curative and Rehabilitative services for substance abusers.
- Multidisciplinary Approach services for substance abusers.
- Legislation Provisions and Government programmes to control drug abuse in India.

UNIT – IV: Role of counseling

- Concepts of counselling and its association with addiction; approaches to counseling: Psychoanlytical, client centred therapy. Indigenous approaches of help and self help: Yoga, Meditation, Attitude and Values, Counselling as an treatment method for substance abusers.

Reading List:

- Chopra, R.N. and Chopra, F.C., 1965: Drug Addiction with Special Reference to India, New Delhi Council of Scientific and Industrial Research.
- National Institute of Social Defence, Govt. of India, 1992: Drug Abuse.
- Single, Eric. Et. Al, 2003: International Guidelines for Estimating the Costs of Substance Abuse and Addiction.
- Delaney and Eisen Berg, 1973: The counseling Process.
- Singh, Chandra Paul,2000 Alcohol and Drug Dependence Among Industrial Worker, Delhi Shipra Publications.
- Kaur, Ravneet and Gulati, J.k., 2007: Drug Abuse: Trends and issues, International Marketing Conference on Marketing & Society, IIMK.
- Ahuja, R, College Youth and Drug Abuse: A Sociological Study of Nature and Incidence of Drug Abuse among College and University Students, University of Rjasthan Jaipur

- Gupta, R. Punjab a drugged State, Meditrack.
- Chopra, L.C. and R.N., Chopra 1957,: The use of Cannabis Drugs in Inda. Bulletin on narcotics (United Nations Publication)
- Mohan, D.A.K. Pravakar and P.N. Sharma: Prevalence and pattern of drug abuse among Delhi University students, Indian Journal of Medical Research.
- Ropar, C 2006: Social Use, abuse and addiction-site of the author University of Tekas, Austin.
- Horgan C. Substance abuse: The Nation's number one health Problem, Princeton NJ; The Robert Wood Johnson Foundation.

Course Title: CORRECTIONAL SOCIAL WORK

Course Code: SWEP – 04

Level: MSW (III)

Objectives:

- To understand crime and delinquency as a social problem.
- To study and understand the basic elements of correctional methods and approaches.
- To gain knowledge of legal provisions.
- To study and identify the practices of non-institutional services.
- To acquire skills of correctional social work and understand the role of professional social workers in correctional institutions.

Unit- 1: Crime in the context of Social problem

- Crime: Concept, Theories of Causation, Classification of crime and approaches to deal with crime and criminals.
- Crime in India and Odisha: crime against women, crime against children, Atrocities against Scheduled Castes and Scheduled tribes; Emerging patterns and trends.
- Juvenile Delinquency: Concept, Demography, Theories of causation and approaches to delinquency prevention.

Unit- 2: Criminology and Criminal Justice System

- Concept of criminology; Social, Psychological and Legal approaches
- Courts and correctional administration. Hierarchy of courts functions and powers. Lok Adalats, Lokayukta, Legal Aid, Functions of Law Commission. Analysis of the Criminal Justice System: Police, Judiciary, Prisons and Correctional Services.

Unit -3: Correctional Administration and Services

- Institutional services: Prison, observation homes, special homes, beggar homes, rescue homes, short-stay homes, protective homes, half-way homes, de- addiction centers.
- Community based corrections and non-institutional services: Early diversion and de-institutionalization, probation and parole, adoption, foster care, child guidance centers, family counselling, crisis intervention, after-care rehabilitation and reintegration of offenders; community po.

Unit- 4: Correctional Social Work

- Definition, history, philosophy: Retribution, Restitution, General Deterrence, Special Deterrence Incapitation, Just Desserts ,objectives, methods and approaches of contemporary correctional social work: Probation and Parole, Alternative to Capital Punishment.
- Correctional Social Work in India; role of professional social workers in correctional institution, crime prevention and rehabilitation of offenders: supervision, surveillance and counselling; skills unique to correctional social work; limitations of correctional social work.

Reading List:

- Gupta, M.C. & K. Chockalingam, J. Guha Roy (2001) Child Victims of Crime: Problems and Perspectives. New Delhi, Gyan Publishing house.
- Ahuja Ram. (1996) Youth and Crime. Jaipur, Rawat Publications.
- Tripathy, P. C. (2000) Crime against Working Women, APH Publishing Co., New Delhi.
- Dabir, Neela & Nigudjar, Mohua. (2005) Children in Conflict with Law. Mumbai, TISS.
- Coleman, Clive. (2000) Introducing Criminology, Willan Publication, UK

- Ahuja, Ram. (2000) Criminology, Rawat Publication, New Delhi
- Siegal, larry J. (2000) Criminology, Wadsworth Thomson Learning, New Delhi
- Schmalleger, frank. (1999) Criminology Today: An Integartive Introduction 2nd edition, Prentice Hall, New Delhi
- Alan Vand, K. Criminal Justice System – Readings
- Mehraj-ud-din, Mir, (1984) Crime and Criminal Justice System in India, Deep & Deep Publications, New Delhi
- Choudhuri, Mrinmaya. (1995) Languishing for Justice: Being a Critical Survey of Criminal Justice System, Datt Sons, Nagpur
- Chakrabarti, N. K. [Ed.] (1997) Administration of Criminal Justice (Vol.1.). New Delhi. Deep and Deep Publications.
- Robert M Carter, Daniel Glaser, Leslie T Wilkins, (1985) Correctional Institutions, Harper & Row Publishers Inc.
- Siddique, A. (1983) Criminology, Lucknow, Eastern Book Co.
- Smykla, J. Community based Corrections.
- Bart ollas Clemens, (1985) Correctional Treatment: Theory and Practice, Prentice hall, New Jersey
- Panakal, J. J & Gokhale, S. D. (1989) Crime and Corrections in India, Mumbai, TISS

Course Title: COUNSELLING IN SOCIAL WORK

Course Code: SWEP – 05

Level: MSW (III)

Objectives:

- To develop a holistic understanding of counseling as a tool for help
- To acquire knowledge of various approaches, their theoretical under-pinning for goals, values, process and techniques
- To develop skills of application to real life situations
- To develop ability to recognize and synthesize attitudes and values the enhance investment of self in the counselor's role

- To develop ability to use the tools/scales in various settings

Unit – I:

Introduction to Counseling: Meaning, Definition, Need and importance of counseling and professional counseling. Basic principles of Counseling: Participation, Individualization, Confidentiality, communication, acceptance, self confidence, self awareness and other principles governing the counseling relationship. Components of effective counseling: Personality of the counselor's skills – Role and functions of the counselors in schools, industries, family, hospital and rehabilitation institution

Unit – II:

Types of counseling – Individual and group Counseling, Family Counseling, Marital Counseling, Student Counseling and Industrial Counseling, E-Counseling: concept, conditions and importance of E-counseling; Techniques of group counseling, strategies and structure – barriers to effective counseling sessions; Counseling evaluation.

Unit – III:

Theories of counseling: Psychoanalytic, Adlerian, Client centered, Behavioural, Rational emotive, Reality, Gestalt, Transactional analysis and eclectic Theories.

Unit – IV:

Counseling process, Interview and its significance in counseling – Use of observation in counseling and understanding of emotions in counseling. Transference and counter transference. The following standardized tests must be practiced in counseling settings. Personality, intelligence, interpersonal relations, stress, anger, self esteem, anxiety, assertiveness, depression, adjustment, mental health and family intensive. Counseling in different settings: HIV/AIDS counseling, Alcohol and Substance dependence counseling and Trauma counseling.

Reading List:

- Burnett. J. : Counseling with young people
- Fred Machinery : Counseling for personal Adjustment
- Shestroin Everlett, Brammer M. Lawrence : The dynamics of counseling process.
- Tpbbert, E.L. Introduction to counseling

- Colin Fertham, Controversis in psycho therapy and counseling, Sage publications, New Delhi, 1999.
- Kathryn Geldard & David Geldard, Counseling Children, A practical Introduction, Sage publication, New Delhi, 1997.
- Fullmer, D.W. & Bernard H.W: Counseling content and process
- Harms E & Schreiber : Handbook of counseling Techniques
- Kennedt. E : On becoming a counselor – A basic Guides for non-professional counselors, Macmillan, New Delhi.
- Development theories of E.B. Harlock and Robert kegan Psychological theory(Eric Erickson, Need Hierarchy (Maslow's) Cognitive theory (Jean Piaget)

Course Title: SOCIAL WORK WITH THE ELDERLY

Course Code: SWEP – 06

Level: MSW (III)

Objectives:

- To study the basic characteristics about the elderly population
- To understand the development tasks associated with the elderly population.
- To know the various services provided at institution dealing with the elderly.
- To link social work methods in promoting welfare among the elderly.

UNIT – I: Basics about elderly

Gerontology – Definition and scope. Status of Elders in India & Odisha:- Demographic, social, cultural and economic aspects. Needs and problems of elders. Role of elders in family. Issues of Elderly in health, occupation, income retirement planning, property rights, gender issues and family supports. Constitutional guaranteed rights and policy on older persons.

UNIT – II: Developmental tasks

Developmental tasks in elderly: Issues in health care, changes in family structure, coping with aging process, challenges due to changing physiological, economic, safety, status

in the family and other issues, Healthy aging, quality of life, coping with demise of the life partner, bereavement, resolving one's death, and any other.

UNIT – III: Developmental services for the elderly

Institutional care settings for elderly: General hospitals, geriatric wards, home based care, homes for the ages, nursing homes, Day care centres, hobby centres, elder helpline, facilities for homeless elderly. Constitutional guaranteed rights and National polices on older persons. Role of National and International agencies providing developmental services to elders.

UNIT – IV: Social Work Interventions for the elderly

- Role of Social Worker in providing the legal and governmental welfare services to elders.
- Social Work intervention through Social Case Work, Social Group Work, Community Organisation and Social Welfare administration.

Reading List:

- Bali . P. Arun, 2001 Care of the Elderly in India. Shimla, Indian Institute of Advanced Studies.
- Chatterjee, S.C., Patna, Discourses on aging and Dying. New Delhi, and K.P., Charian, V. 2008., Sage Publications
- Dandekar, Kumudini. 1996 The Elderly In India, New Delhi, Sage Publications.
- Desai, Murli and Raju, Gerontological Social Work in India – Some Siva (Ed.) 2000. issues and Perspectives. Delhi, BR Publishing House,.
- Dey, A. B (Ed.) 2003 Ageing in India: Situation Analysis and Planning for the Future. New Delhi / WHO and AIIMS.
- Emmatty, Leena. M. 2008 An insight into Dementia Care in India. New Delhi, Sage Publications.
- Hurlock, Elizabeth. 1981 Developmental Psychology. 5th Edition. New Delhi, Tata McGraw Hill Publications.
- Khan M.Z. 1989 Voluntary Welfare Services for the Aged, Dept. of Social Work, New Delhi, Jamia Milia Islamia.

- Rajan, Irudaya.S., India's Elderly, New Delhi, Sage Publications. 1999.

JOURNALS.

- Indian Journal of Gerontology, C-207, Manu Marg, Tilak Nagar, Jaipur.
- R & D Journal of Helpage India . C-14, Qutab Institutional Area, New Delhi.

Course Title: DEVELOPMENT THEORIES AND STRATEGIES: ISSUES CHALLENGES AND RESPONSES

Course Code: SWCP –15

Level: MSW (IV)

Objectives:

- To be acquainted with the development discourse.
- To gain a critical understanding of the theories, models and approaches to development.
- The role of the state and the response of non-state actors to development.

Unit – I: What is Development?

- The concepts of: development, growth, human development, social development and sustainable development.
- Core values of development; Measuring development: per capita income, PQLI, choice and access, HDI, seer's criteria.
- Development and colonialism: continuity and divergence; persistence of global inequalities and dominance.

Unit - II: Theories and Models of Development

- Modernization Theory;
- Dependency Theory;
- Neoliberalism;
- Developmental State;
- Post Development

Unit - III: Theories and Approaches to Development

- Human Development;
- Capabilities Approach;

- Women, Gender and Development: WID, WAD, GAD.
- Participatory Development;
- Good Governance;
- Institutional Turn

Unit - IV: The Role of NGOs and Civil Societies and Social Movements in Development

- The failure of state-market-international aid institutions.
- NGO's and new-liberalism; Relationship of NGOs with INGOs; NGOs and the State; NGOs and the gap between theory and praxis.
- The role of Civil society in development and its relationship with the state in the Indian Context.
- The challenge of social movement to development in India.
- The Social worker as scholar- activist-practitioner.

Reading List:

- Cohen, Michael and Robert Shenton. 1995. "The Invention of Development." Pp. 27-43 in Jonathan Crush(ed),Power of Development. London and New York: Routledge.
- Esteva, Gustavo. 1991. "Development." Pp. 1-23 in Wolfgang Sachs (ed),The Development Dictionary. London: Zed Books
- Rist, Gilbert. 2002. "Definitions of Development." Pp. 8-24 inThe History of Development: From WesternOrigins to Global Faith. London and New York: Zed Books.
- Seers,Dudley. 1972. "What are we trying to Measure?"Journal of Development Studies8(3):21-36
- Myrdal,Gunnar. 1974. "What is Development?"Journal of Economic Issues8(4):729-736.
- Wallerstein,I. 1984. "The Development of the Concept of Development."Sociological Theory2:102-116
- Kothari,Uma. 2005. "From colonial administration to development studies: a post-colonial critique of the history of development studies,"Pp. 47-66 in Uma Kothari (ed),A Radical History of Development Studies: Individuals, Institutions and

Ideologies. London: Zed Books

- Cooke, Bill. 2003. “A new continuity with colonial administration: participation in development management.”Third World Quarterly24(1):47-61
- Deutsch,Karl. 1961. “Social Mobilization and Political Development.”The American Political Science Review55(3):493-514.
- Lerner,Daniel. 1958.The Passing of Traditional Society: Modernizing the Middle East. New York: The FreePress.
- Levy,Marion. 1965. “Patterns (Structures) of Modernization and Political Development.”Annals of the American Academy of Political and Social Science358:29-40.
- Bernstein, Henry. 1971. “Modernization Theory and the Sociological Study of Development,” Journal of Development Studies7(2):141-60.
- Eisenstadt, S. N. 1974. “Studies of Modernization and Sociological Theory.”History and Theory13(3):225-252.
- Huntington,Samuel. 1971. “The Change to Change: Modernization, Development and Politics.”Comparative
- Politics3(3):283-322.
- Tipps, D. C. 1973. “Modernization Theory and the Comparative Study of Societies: A Critical Perspective.”
- Comparative Studies in Society and History15(2):199-226
- Amin,Samir. 1972. “Underdevelopment and dependence in Black Africa: Origins and Contemporary Forms,”
- Journal of Modern African Studies. 10(4): 503-524.
- Cardoso, Fernando Enrique. 1972. “Dependency and development in Latin America.”New Left Review 74(July/August):83-95.
- Frank,AndreGunder. 1969. “The development of underdevelopment” Monthly Review18(4):17-31.
- Chilcote,Ronald H. 1974. “Dependency: A Critical Synthesis of the Literature.”Latin American Perspectives1(1):4-29.
- Friedmann,H. and JWayne. 1977. “Dependency Theory: A Critique.” Canadian

Journal of Sociology. Vol. 2,No. 4.

- Frank,AndreGunder. 1974. “Dependence is Dead, Long Live Dependence and the Class Struggle: An Answer
- To Critics.”Latin American Perspectives. 1(1):87-106.
- Smith, Tony. 1979. “The Underdemith, Tony. 1979. “The Underdevelopment of Development Literature: The Case of Dependency Theory.”World Politics. 31(2):247-288.
- Harvey,David. 2005.ABrief History of Neoliberalism. Oxford: Oxford University Press. (Read pages 1-6.)
- Lal,Deepak. 1985. “The misconceptions of ‘development economics’.”Finance and Development22(2):10-13.
- Peet, Richard. 2003. “Globalism and Neoliberalism.” Pp. 1-23 in Unholy Trinity: The IMF, World Bank and
- WTO. London and New York: Zed Book
- Evans, Peter. 1995.Embedded Autonomy: States and Industrial Transformation. Princeton, NJ: Princeton University Press. (Read pages 3-127,227-250.)
- Amsden,Alice. 1989.Asia’s Next Giant: South Korea and Late Industrialization. New York: Oxford University Press.
- Wade, Robert. 1990.Governing the Market: Economic Theory and the Role of Government in Taiwan’s Industrialization. Princeton,NJ: Princeton University Press.
- ÓRiain, Seán. 2000. “The flexible developmental state: globalization, information technology and the ‘Celtic Tiger’.”Politics and Society28(2):157-193.
- Ferguson, James. 1994.The Anti-Politics Machine: Development, De politicization, and Bureaucratic Powerin Lesotho. Minneapolis,MN: University of Minnesota Press
- NederveenPieterse,Jan. 2000. “After Post-Development.”Third World Quarterly21(2)175-91
- Haq, Mahbubul. 1998. “The Human Development Paradigm” and “The Advent of the Human Development
- Report.” Pp. 13-45 in Reflections on Human Development. Dehli: Oxford University Press.

- United Nations Development Programme. 2010.Human Development Report 2010: 20 years on: Pushingthe frontiers of human development. New York: UNDP and Oxford University Press.
- Sen, Amartya. 1999.Development as Freedom. New York: Anchor Books
- Kabeer,Naila. 1994.Reversed Realities: Gender Hierarchies in Development Thought. London: Verso. (Read pages 1-68.)
- Rathgeber,Eva. 1990. “WID, WAD, GAD: Trends in Research and Practice.”The Journal of Developing Areas24:489-502
- Cleaver,Frances. 2001. “Paradoxes of Participation: Questioning Participatory Approaches to Development.”
- Journal of International Development11:597-612.
- Hickey, Sam and Giles Mohan. 2005. “Relocating Participation within a Radical Politics of Development.”
- Development and Change36(2):237-262.
- Mohan, Giles and Kristian Stokke. 2000. “Participatory development and empowerment: the dangers of localism.”
- Third World Quarterly21(2):266-280
- Abrahamsen, Rita. 2000.Disciplining Democracy: Development Discourse and Good Governance in Africa.
- London: Zed Books.
- Andrews,Matt. 2008. “The Good Governance Agenda: Beyond Indicators Without Theory.”Oxford Develop-
- Ment Studies. 36(4):379-407.
- Evans, Peter. 2004. “Development as Institutional Change: The Pitfalls of Monocropping and the Potentials of Deliberation.”Studies in Comparative International Development38(4):30-52.
- Hyden, Goran. 2008. “Institutions, power and policy outcomes in Africa.” Discussion Paper No. 2, Africa
- Power and Politics Programme (APPP), London.

- Portes, Alejandro. 2006. “Institutions and Development: A Conceptual Reanalysis.”Population and Development Review32(2):233-262.
- Dill,Brian. 2010. “Community-Based Organizations (CBOs) and Norms of Participation in Tanzania: Working
- Against the Grain.”African Studies Review
- Evans, Peter. 2005. “The Challenges of the ‘Institutional Turn’: Interdisciplinary Opportunities in Development Theory.” Pp. 90-116 in Victor Nee and Richard Swedberg (eds),The Economic Sociology of Capitalist Institutions.
- Princeton,NJ: Princeton University Press
- Raka Ray, Mary FainsodKatzenstein(ed) 2005.Social Movements in India: Poverty, Power, and Politics, Rowman and Littlefield Publishers Inc.
- Shah, Ghanshyam (2004) Social Movements in India; A review of literature, Sage, India.
- Srivastava, S.K. (1988) Social Movements for Development, South Asia Books
- Rajagopal (2007) International Law from Below: Development, Social Movements and Third World Resistance, CUP

Course Title: SOCIAL WORK PRACTICE IN RURAL AREAS

Course Code: SWCP – 16

Level: MSW (IV)

Objectives

- To understand the issues faced by social workers in rural areas.
- To understand the skills necessary to practice in rural settings.
- To be acquainted with government plans and programmes for rural development in Odisha.

Unit – I: Rural Community Characteristics

Resources: natural resource, human resource, economic resources; Demography; Social structure; power structure; Political structure; Structure of rural economy; Governance structure; Presence of industries and external agencies; Indigenous knowledge systems; Needs of Rural communities: poverty landlessness, indebtedness, unemployment, migration, ill health, illiteracy, social exclusion, discrimination,

agriculture, forests.

Challenges to Rural Communities: Urbanization; deteriorating agriculture; changing land use SEZ; corporatization of agriculture and marginalization of small land holders; issues arising out of globalization.

Unit - II: Rural Development

Concept: nature, scope and significance; Approaches to Rural Development: Rural reconstruction approach, community development approach, sectoral development approach, area-specific and target group-oriented approach, economic development with social justice approach: Integrated rural development approach.

Rural local self government: Origin and development of the Panchayati Raj system in India; Salient features of 73rd Constitutional Amendment; Issues of Panchayati Raj: reservation, financial management, participation of political parties; Panchayati Raj institutions in Odisha- structure and functions. Five Year Plans and Rural Development Programmes. Poverty alleviation programmes in rural areas- MGNREGA, NRLM etc. Role of NABARD in Rural Development.

Unit - III: The Tribal Development Issue

Concept of Tribes, Indigenous peoples and Abonginals; Situational Analysis of Scheduled Tribes in Odisha: land, food security, employment/livelihood, displacement, migration, human development indices.

Scheduled Areas: Issues and Governance; Overview from Panchsheel, Tribal Sub- Plan and Special Component Plan; Other Significant Acts regarding Forest Rights, Resettlement and Rehabilitation.

Unit - IV: Response of Social Work

Building sustainable communities: indentifying strengths, weaknesses and threats: Generalist Model of Social Work Practice: work with individuals, families, systems, clusters at the communities level; Cultural Competency: understanding the value system, diversity, cultivating sensitivity, gaining trust and building relationships; Advocating Social Justice: working with the oppressed and marginalized, reducing stereotypes/discrimination based on gender, caste, ethnic background; Political advocacy: analysing policies and programmes, working for reform of polices, increasing access and better service delivery of public services.

Reading List:

- Dubey, S.C. 1995. India's Changing Villages;

- Ganguli, B.N. 1973. Gandhi's Social Philosophy. Delhi: Vikas Publishing House;
- Gore, M.S. 1993. The Social Context of Ideology: Ambedkar's Social & PoliticalT hought. New Delhi:Sage
- Kumar, Girish 2006, Local Democracy in India: Interpreting Decentralization, Sag Publications;
- Prasad, B. 2003. Rural Development: Concept, Approach and Strategy
- Sainath, P. One Hundred years of Drought
- Pandey, A.K. 1997. Tribal Society in India, New Delhi. Manak Publishing Ltd
- Agrawal, A.N. 2001. Indian Economy; Nature, Problems and Progress, VikasBiraj Prakash, New Delhi
- Chamber. Robert, 1983, Rural Development: Putting the last First, Harlow, Longman.
- Datt and Sundaram, 2002, indian Economy, S.Chand and Co, New Delhi.
- Desai, A.R., 1995 Ryral Sociology in India, ISAE, Bombay
- Dube, S.C., 1965 India's changing Villages, RKP, London
- Dubashi, P.R., 2000 Rural development Administration in India, Mumbai.
- Riley John. M, 1995. Stakeholders in Rural Development, Sage: New Delhi
- Sachinanda and Purendu, 2001, 2001, Fifty years of Rural Development in India, Firma KLM Pvt. Ltd, Kolkata.

Course Title: SOCIAL WORK PRACTICE IN URBAN AREAS: MIGRATION, UNORGANISED LABOUR AND LIVELIHOODS

Course Code: SWCP-17

Level: MSW (IV)

Objectives:

- Sensitize the students to the need and problems of urban communities;
- Develop a critical understanding among the students about the programmes of urban development

Unit - I:

Urban Communities - Features and characterization; Concept of Urban, Urbanism Urbanization – concept, causes and factors responsible for Urbanization; Urbanization in India – Historical development, Characteristics of clusters town, city, metropolis, suburbs, Satellite town, etc, Classification of cities. Growth of Urban settlement.

Urbanization and its impact on socio – economic development. Urbanization and structure of Caste. Concept of Slums Dwellers, Pavement Dwellers and Refugees, their characteristics and Problems. Changing Face of Urban communities: Infrastructural development, Growing heterogeneity, merging of fringe villages, the “global city” and socio-cultural and economic implications. Issues, Implications and Challenges

Unit - II:

Urban Problems – Congestion and overcrowding, Housing and slums, Environment pollution, lack of inadequate civic amenities, etc. - causes, magnitude, impact, etc., Measures for alleviating these problems.

Urban Development – Meaning, need, scope and Historical evolution; planning policy and programmes viz; slum clearance and slum improvement, Housing and Urban development corporation; Major urban development authorities in Odisha. Urban Community Development Programmes.

Unit – III:

Urban Informal sector Organised and Unorganised labour: Unorganised labour issues: Migrant workers, Debt Bondage and child labour, Wage Structure and Components of Wages of the unorganised labour, International and national labour scenario - ILO, WTO, Privatization and role of the State: Social Security Programmes for the unorganised labour.

Concept of Migration and characteristic of Migrants, Impact of Migration, Pattern of Migration to cities in India.

Unit - IV:

Concept and scope of livelihood, caste and traditional livelihoods; natural resource crisis and its impact on the livelihood of people: ecological, socio-cultural and economic dimensions; Gender, caste and age implications on livelihood. Urban poverty and livelihood issues; Social Work with urban communities – recent developments and future

perspectives.

Reading List:

- Aziz Abdual: Urban Poor and Urban Informal Sector, Ashish Publishing House, New Delhi, 1984.
- Bharadwai, R.K: Urban Development in India, National Book Trust, New Delhi, 1962.
- Bose Ashish: Studies in India's Urbanization (1901 to 1971), Tata McGraw Hill, New Delhi, 1973.
- Cullingworth, J.B: Problems of Urban Society, Vol 1 The Social Framework of Planning, London – George Allen and Unwin Ltd, 1973.
- Desai A.R and Pillai, S.D.(Eds): Slums and Urbanization, Popular Prakashan, Bombay.
- Diddee, Jaymala and Rangaswamy, Vimla (Eds): Urbanization – Trends Perspectives and Challenges, Rawat Publications, Jaipur 1993.
- Gangrade, K.D.: Community Organization in India, Popular Prakashan, Bombay, 1971.

Course Title: SOCIAL POLICY, PLANNING AND IMPLEMENTATION

Course Code: SWCP -18

Level: MSW (IV)

Objectives:

- Gain knowledge of policy analysis and the policy formulation process.
- Acquire skills in critical analysis of social policies and development plans.
- Develop an understanding of social policy in the perspective of national goals as stated in the Constitution, particularly with reference to fundamental right; and the directive principles of state policy.
- Critically understand the concept, content and process of social development.
- Develop the capacity to identify linkages among social needs, problems development issues and policies.
- Locate strategies and skills necessary for social development and reinforce

values of social justice, gender justice and equality.

Unit - I: Social Policy and Constitution: Concept of social policy, sectoral policies and social services- Relationship between social policy and social development-Values underlying social policy and planning based on the Constitutional provisions(i.e. the Directive Principles of State Policy and Fundamental Rights) and the Human Rights- Different models of social policy and their applicability to the Indian situation.

Unit - II: Sectoral Social Policies in India: Evolution of social policy in India in a historical perspective- Different sectoral policies and their implementation, e.g. Policies concerning education, health, social welfare, women, children, welfare of backward classes, social security, housing, youth, population and family welfare, environment and ecology, urban and rural development, tribal development and poverty alleviation.

Unit - III: Social Planning: Concept of social planning- Scope of social planning- the popular restricted view as planning for social services and the wider view as inclusive of all sectoral planning to achieve the goals fo social development-Indian planning in a historical perspective- The constitutional position of planning in India. The legal status of the planning commission- Coordination between centre and state, need for decentralization- Pancyati Raj, people participation.

Unit - IV: Social Policy Implementation and Social Work:

- Role of social policy in the Indian Development process: land reforms, PDS, employment, education, reservations.
- The social policy implementing structure in India; the lack of an integrated approach or convergence of development schemes and programmes.
- Role of social workers in social policy implementation.
- Do social workers have a major impact on social policy Implementation?

Reading List:

- Bagci, A.K. 1982 Political Economy of Underdevelopment, Cambridge; Cambridge University Press.
- Bandyopadhyay, D.1997 “People’s Participation in Planning: Kerala Experiment”,

Economic and Political Weekly, Sept. 24, 2450-54.

- Bhanti, R. 1993 Social Policy and Development in Rajasthan, Udaipur: Himnashu Publication.
- Bujmer, M,et.al., 1989 The Goals of Social Policy, London: UnwinHyman.
- Chakraborty,S.1987 Development Planning- Indian Experience, Oxford: Claredon Press.
- Dandekar, V.M. 1994 " Role of Economic Planning in India in the 1990s & Beyond", Economic and Political Weekly, Vol.29,No.24,1457-1464.
- Desai, V.1988 Rural Development (Vol.I) Mumbai: Himalaya Publishing House.
- Dimitto, D.M. 1991 Social Welfare: Politics and Public Policy, New Jersey: Prentice-Hall.
- Ganapathy, R.S. and Others 1985 Public policy and Policy Analysis In India, Delhi: Sage Publications.
- Ghosh, A. 1992 Planning In India: The Challenge for the Nineties, New Delhi: Sage Publications.
- Government of India Five Year Plan Documents (latest), New Delhi.
- Gupta, S.P. 1993 " Planning and Liberalization", Economic and Political Weekly, Vol.28 No.43, Oct.23,2349-2355.
- Jacob, K.K. 1992 Social Development Perspectives Hebsur, R.K. (Ed.) Social Intervention For Justice, Bombay: TISS.
- Huttman, E.D. 1981 Introduction to Social Policy, New York: McGraw-Hill.
- International Labour Office. 1973 Multinational Enterprises and Social Policy, Geneva, ILO.
- Jones, K.Et.al.,1983 Issues in Social Policy, London: ROutledge & Kegan paul.
- Joshi, P.C. 1976 Land Reform in India Kahn, A.E. 1973 Social Policy and Social Services, New York: Random House.
- Kulkarni, P.D, 1979 Social Policy and Social Development in India, Madras: Association of Schools of Social Work in India.
- Kulkarni, P.D.1952 Social Policy in India, New York: McGraW- Hill Book

Company.

- Kulkarni, P.D. 1975 Social Policy in India, Bombay, Tata Institute of Social Sciences.
- Leonard, P. 1997 Postmodern Welfare: Reconstructing an Emancipatory Project, London: Sage.
- Lindblom,C.E. 1980 The Policy-making Process, New Jersy; Prentice- Hall.
- Livingstane, A. 1969 Social Policy in Developing Countreis, London: Routledge & Kegan Pual.
- Madison, B. Q. 1980 The Meaning of Social Policy, London: Croom Helm.
- Macpherson, S. 1980 Social Policy in the Third World, London: Wheat- speat Brooks.
- Macpherson, S. 1982 Social Policy in the Third World, New York: John Wiley and Sons.
- Mathur. K. Bjorkman Top Policy Makers in India, New Delhi: Concept Publishing Co. Meadows, D.H. 1972 The Limits to Growth, New York: University Books.
- Mishra, R. 1977 Society and Social Policy, London: Macmillan Ltd.
- Mukherjee, N. 1993 Participatory Rural Appraisal; Methodology and Applications, New Delhi: Concept Publishers.
- Mundle, S. 1993 participatory Rural Appraisal: Metodology and Applications, New Delhi: Concept Publishers.
- Milliard, M. and Spicker. 1998 Social Policy in a Changing Society, London: Routlede.
- Philips, D.R. and Health and Development, London: Routledge and Verhasselt Yola (Eds) 1994 Kegan Paul.
- Rao, D.B. (Ed.) 1998 World Submit for Social Development Rao, V. “Social Policy: The Means and Ends Question” Indian Journal of Public Administration, Vol.50 No.1 Jan.-March, 1994.
- Rao, V. and Mander, H. An Agenda for Caring: Intervention for the Marginalized, New Delhi: VHAI.
- Rastogi, P.N. 1992 Policy Analysis and Problem-Solving for Social Systems, New

Delhi: Sage Publications.

- Roychaudhury, T. 1982 The Cambridge Economic History of India, Vol.I&II, New Delhi: Cambridge University.
- Roy, Sumit 1997 “Globalisation, Structural Change and Poverty”, Economic and Political Weekly, Aug. 16-23, 2117-2132.
- Sachs, W. 3997 Development Dictionary Singh, R.R. (Ed.) 1995 Whither Social Development? New Delhi: ASSWI.
- Singh, Y 1972 Modernization of Indian Tradition, Delhi: Thomas Press. Spicker, Paul 1998 Principles of Social Welfare: An Introduction to Thinking About the Welfare State,
- London:Routledge. The Probe Tean. 1999 Public Report on Basic Education in India New Association with Centre for Delhi: Oxford University Press. Development Economics
- Upadhyay, S.B. 1992 Urban Planning, Jaipur: Printwell. UNDP Human Development Reports, Oxford University Press.
- Vyasulu, V. Vani, B.P. 1997 “Development and Deprivation in Karnataka”, Economic and Political Weekly, Nov. 15 2970-2974.
- Weimer. D.L. and Policy Analysis: Concepts and Practice, New Vining, A.R. 1994 Jersey: Prentice-Hall.
- World Bank World Development Reports (Annual), Oxford University Press.
- Yadav, C.S. (Ed) 1986) Urban Planning and Policies- Part A, New Delhi: Concept Publishing Co. Encyclopedia of Social Sciences Encyclopedia of Social Work.
- De Haan, Anjan (20130 “The Social Policies of Emerging Economics: Growth and Welfare in China and India” IPC-JG working Paper No.110. Brasilia, International Policy Centre for Inclusive Growth.

Recommended Journals/Periodicals

- Alternatives; Development and Change; Economic and Political Weekly.

Course Title: DEVELOPMENT COMMUNICATION

Course Code: SWCP - 19

Level: MSW (IV)

Objectives :

- To study the basic issues in Communication.
- To learn about various channels of Communication
- To understand the channels of mass communication reaching to rural audience.

Unit : I

Development: meaning, concept, process and models of development – theories – origin – approaches to development, problems and issues in development, characteristics of developing societies, development dichotomies, gap between developed and developing societies. Development issues on national and regional and local level.

Unit : II

Development communication : meaning – concept – definition – philosophy – process – theories – role of media in development communication – strategies in development communication – social cultural and economic barriers – case studies and experience – development communication policy – strategies and action plans – democratic decentralization.

Unit : III

Communication with Individual Group, Traditional Communication: Streets play, Puppetry show & Folk media, Rural communication messages Development support communication: population and family welfare – health- education and society – environment and development – problems faced in development support communication.

Unit : IV

Writing development messages for rural audience: specific requirements of media writing with special reference to rural press, radio and television. Problems of Rural

Journalism, Farm Journals, Rural Press, Press Conference, Radio rural Forum, Role of Community Radio in Rural Communication.

Reading List:

Fernandes, Walter : Development with People, Indian Social Institute, New Delhi, 1988.

Jayaweera N. & Amunugama S. : Rethinking Development Communication, AMIC, Singapore, 1988.

Kumar, Kevel J. : Communication and Development : Communication Research Trends, Vol. 9, No.3, 1988.

Hoogvelt Ankie : The Third World in Global Development, Macmillan, London, 1982.

Hornik, Robert C : Development Communication : Information Agriculture and Nutrition in Third World, Longman, London/NY , 1988.

Melkote Srinivas : Communication for Development in the Third World – Theory and Practive, Prestic – Mall, New Delhi, 1991.

Sondhi, Krishan : Communication, Growth and Public Policy Breakthough, New Delhi, 1983.

Schramm, Wilbur : Mass Media and National Development, Stanford UP, Stanford, 1964.

Course Title: SUSTAINABLE AGRICULTURE

Course Code: SWCP - 20

Level: MSW (IV)

Objectives:

- To Understand the Indian Agricultural Policy and the Crisis in Agriculture.
- To be acquainted with sustainable agricultural practices.
- To effectively respond to the problem of food and nutritional security at the level of the farmer/community.

Unit-I: Principles & Policy for Sustainable Agriculture

Social Work in Rural-Agro ecological Communities;

History & Evolution of Agricultural Practices;

Principles of Sustainable Agriculture;

Policy & Practice of Sustainable Agriculture;

Principles of Industrial Agriculture;

Policy & Practice of Industrial Agriculture.

Unit-II: Soil Health & Water Management Soil Health:

On Farm Biomass;

Cattle Dung;

Earth Worm;

Soil Health Enhancement Techniques;

Organic Carbon Measurement.

Water Management:

In-situ water conservation;

Methods to reduce flow of rain water;

Mulching;

Moisture Management.

Unit-III: Seeds & Cropping Pattern Seeds:

Seed in the context of a micro-ecosystem;

Significance of Diversity in Seed;

Types of Seeds;

Politics of Seed Control;

Techniques of preserving seeds with Farming Communities.

Cropping Pattern:

Multiple cropping patterns & Soil Health;

Soil-climate & cropping patterns;

Cropping Patterns as enhancing photosynthesis process.

Unit-IV: Integration & Ecological Agriculture

Integration of Agriculture:

Interrelated Activities of Agriculture;

Stages of Integration;

Processes of Integration;

Programs available for Integration.

Ecological Agriculture:

Principles of Ecological Agriculture;

Transition from Integrated Agriculture to Ecological Agriculture.

Reading List:

Randhawa M.S, A History of Agriculture in India, Vol. I, II, III & IV, ICAR.

Asian Agri-History Foundation (1999), Krishi Parashara, ISRISAT.

Subramaniam. C (1995) Hand of Destiny: The Green Revolution (Vol.2) Bharatiya Vidya Bhavan.

Shina Vandana, The Violence of the Green Revolution.

Roy. B. C, Chattopadhyay, G.N, And Tirado.R; Subsidising Food Crisis. www.greenpeaceindia.org.

Howard. Albert, An Agricultural Testament, Other India Press.

Howard. Albert & Wad. Yeshwant D, The Waste Products of Agriculture- Their utilization as humus.

Howard. Albert and Berry. Wendell (1945), Soil and Health, http://www.journeytoforever.org/

Fukuoka. M. (2009) The One Straw Revolution, OIB

Fukuoka. M. (1996). The Road Back to Nature: Regaining the Paradise Lost, OIB.

Dabholkar. S. A. (2001) Plenty for All, OIB.

Save. Bhasker, The Great Agricultural Challenge, OIB.

Green Foundation, Janadharya Seed Savers.

Green Foundation, Seed to Food.

Alvares. Claude (2009), The Organic Farming Sourcebook, Other India Press.

Course Title: DISSERTATION

Course Code: SWCP - 21

Level: MSW (IV)

Dissertation

The student has to prepare and submit a dissertation under the guidance of a faculty. The student should exhibit ability to review relevant literature formulate a research question, choose appropriate methodology, develop data collection tools, analyze and interpret data and prepare the research report. The length of the dissertation excluding contents and Bibliography should not exceed ten thousand words.

Evaluation Criteria

Sl. No.	**Item**		**Weightage**
1	Choice of Topic Review of relevant literature	Scope, Research Potential Comprehension, quality, quantity	10
2	Objective and Hypothesis/Question	Relevance, clarity, relation to topic Research Design/Methodology Appropriateness, selection of variables sample and description	20
3	Tools Used	Appropriateness, use	10
4	Data analysis and interpretation	Scheme, Application of Statistical techniques, use of tables and figures relating findings to objectives and literatures, discussion on findings	20
5	Summary	Synthesis of findings Implications	10
6	Report Presentation	Cauterization, chapter size, structuring of paragraphs vocabulary, clarity, coherence, Bibliography	10
7	Viva-voce	Ability to explain the research process & defend research work	20
Total			**100**

Course Title: ENTREPRENEURSHIP

Course SWEP - 07

Level: MSW (IV)

Objectives

- To familiarize Social Work students to entrepreneurship
- To give them basic skills and competencies to encourage entrepreneurship through their Social Work practices.

Unit – I : What is Entrepreneurship?

Entrepreneurship- conceptual issues; Entrepreneurship and Development: Entrepreneurship motivating factors, competencies, performance and reward. Status of entrepreneurs in India, problems and concerns of entrepreneurs

Unit – II : How to be an Entrepreneurship?

Opportunity scouting and idea generation: creativity and innovation; the process of setting up a small business: Preliminary screening and detailed study of the feasibility of the business idea: financing/non-financing support agencies; Schemes of assistance from government and non-governmental agencies, policies/programs and procedures and the available schemes

Unit-III : Management Roles of an Entrepreneur

Management roles and functions in a small business; Designing and re-designing business process, location, layout, operations, planning and control. Issues of quality, productivity and environment; Managing business growth; Issues in marketing sales and distribution. Consortium marketing; competitive bidding/tender marketing negotiating with principal customers. Marketing Assistance, Subsidies and other Fiscal and monetary Incentives. National state level and grass-root level financial and non-financial institutions in support of small business development.

Unit – IV : Accounting

Principles of double-entry book-keeping: Journal entries, cash-book, pass book, and Bank Reconciliation Statement leader account trail balance and preparation of final accounts: Trading and Profit and Loss Account; Balance-sheet. Brief introduction to Single-Entry system of record keeping. Sources of risk/venture capital, fixed capital, working capital and a basic awareness of financial services such as leasing and factoring

Reading list:

Sivakama Sundari, S. Entrepreneurship Development of Rural Women (Vol.I) Asian and Pacific for Transfer of technology, New Delhi.

Heggade, O.D. Developing rural women entrepreneurship, Mohit publications, New Delhi

Santhawali, A.Y. Entrepreneurship Development – Publications, Jaipur.

Bhide, Amar V. The Origin and Evolution of New Business, Oxford University Press, New York, 2000

Dollinger M.J., 'Entrepreneurship strategies and Resources', 3rdedition, Pearson Education, New Delhi 2006

Desai, Vasant Dr. (2004) Management of small scale enterprises New Delhi: Himalaya Publishing Company

Taneja, Gupta, Entrepreneur Development New Venture Creation: 2ndedition Galgotia Publishing Company

Holt, David H., Entrepreneurship: Strategies and Resources, Illinois , Irwin, 1955.

Panda, Shiba Charan, Entrepreneurship Development, New Delhi, Anmol Publications

Patel, V.G., The Seven Business Crises and How to Beat Them, Tata-Mcgraw, New Delhi, 1995

SIDBI Report on Small Scale Industries Sector[latest edition]

Verma, J.C.., and Gurpal Singh, Small Business and Industry-A Handbook for Entrepreneurs, Sage, New Delhi, 2002

Course Title: NGO MANAGEMENT

Course Code: SWEP – 08

Level: MSW (IV)

Objectives:

- To understand the role of NGOs in society
- To gain clarity about the operating environment of NGOs
- To understand the issues involved in the internal management of NGOs

Unit I: Introduction to NGOs

Definitions, History, Roles in Society; Description of the NGO sector; Theoretical Perspectives on Organization and Management of NGOs.

Unit II: The legality of NGOs in India

Societies Registration Act, 1860, Indian Trust Act, 1882, Cooperative Societies Act, 1912, Company Act, 1956 (Some Relevant Part), FCRA: Foreign Contribution Regulatory Act, Income tax Act 1961, Income Tax Exemption: Under Sections 11 and 12, Rebate under Sections 80G and 35AC of Income Tax Act.

Unit – III: The operating environment of NGOs

Understanding the environment in which NGOs function: Economic, Political, Socio-Cultural and Ideological macro level forces that influence NGOs, Globalization and Foreign aid system. Principal Players and their Relationships: Governments, Markets, NGOs, Donors; Importance of partnerships.

Unit – IV: Internal Management of NGOs

Governance structure, Vision and Mission; Internal management needs of a NGO; strategies/plans for action; Managing Resources: Human and Financial; Measuring performance, participation, evaluation; Accountability to multiple stakeholders; Ethical issues faced by NGO managers; Scaling up and sustainability of NGOs; creating a learning environment

Reading List:

Lewis, David. 2007. The Management of Non-Governmental Development Organizations, second edition. New York: Routledge.

Edwards, M. and Fowler, A. (2003) The Earthscan Reader on NGO Management. London: Earthscan Publications, Ltd.

Salamon, L.M. 1994. The Rise of the Nonprofit Sector.Foreign Affairs 74 (3): pp. 109–122

Lewis, D. 2007. Advocacy and Service Delivery: Managing the Main NGO Activities in
The Management of Non-governmental Development Organizations,Second Edition

Fowler, A. 1997. Understanding International Development in Striking a Balance: A Guide to Enhancing the Effectiveness of Non-governmental Organizations in International Development London: Earthscan Publications, Ltd.,

Course Title: PROJECT MANAGEMENT

Course Code: SWEP – 09

Level: MSW (IV)

Objectives:

- To understand the fundamentals of Project management and how to initiate, plan, execute and close a project.

Unit - I: Fundamentals of Project Management

What is a Project? Definition, meaning, principles and types; What is project management? meaning, coverage and scope; Who is the project manager?; Project phases and knowledge areas. Planning and its importance; who should be involved in planning?

Unit - II: Initiating Projects and Project Identification

How to get a project started; Setting a mandate, finding a project sponsor and creating a
project team: team dynamics and running meetings.

Project Identification: Needs assessment: listening, interviewing, focus group discussions, community mapping; Capacity assessment: human, social, natural, physical, economic, cultural

Unit - III: Planning and Executing Projects

Work Breakdown Schedule (WBS), Project estimating and scheduling techniques-sequencing tasks, identifying the path of the project, considering resources; Risk planning methods; Cost planning; Communications plan; final project plan.

Team management; identifying and involving all stakeholders, user groups, interest groups, beneficiaries, decision makers; Primary and Secondary stakeholders; levels of participation;

Unit - IV: Closing a Project

Closing of a successful project; stakeholder acceptance; writing a final report; Techniques of identifying lessons learned and their analysis; acknowledging successes and failures; and identifying areas for further projects.

Reading List:

Verzuh, Eric. The Fast Forward MBA in Project Management. Published by John Wiley and Sons, Inc.

Project Management Body of Knowledge, 5th Edition. Published by Project Management Institute (PMI)

Blackman, Rachel. 2003. Project Cycle Management. UK: Tearfund.

Preskill, Hallie and Russ-Eft, Darlene. 2005. Building Evaluation Capacity. London: Sage Publications.

Capezio, Peter. 2000. Powerful Planning Skills. Mumbai: Jaico Publishing House.

Smith, Steve. 2002. Plan to Win. New Delhi: Kogan Page India Pvt. Ltd.

Dale, Reidar. 2001. Evaluation Frameworks for Development Programmes and Projects. New Delhi: Sage Publications.

Loehle, Craig. 2000. Thinking Strategically. New Delhi: Foundation Books.

Padaki, Vijay. 1995. Development Intervention and Programme Evaluation. New Delhi: Sage Publications.

Course Title: CLIMATE CHANGE, DISASTER MANAGEMENT AND REHABILITATION

Course Code: SWEP –

10 Level: MSW (IV)

Objectives:

- To understand the challenges of Climate change
- To gain a comprehensive understanding of the Disaster Management Cycle.
- To get acquainted with Disaster Management Policies and Laws in India.

Unit I:

- **Climate Change:** Concept, nature and severity of climate change. Causes of climate change. Impact of climate change: globally in general and Odisha in particular. Greenhouse effect, climate change and disaster.
- **Disaster Management:** Definition, Types of disaster (natural and manmade disaster) mining disaster, tropical cyclone, storms, floods, lightning, forest fire, tsunami and earthquakes.

Unit II:

- **Concepts associated with Climate Change and Disasters:** air pollution

and acid rain, ozone depletion, bio-diversity extinction, de-forestation and loss of biological diversity, land degradation, deserts and desertification, groundwater over exploitation, dryness and wildfires, population growth and explosion, habitat related problems.

- **Social Systems, Ecological Networks and Disasters**: a socio-political ecology of disasters, nature of human communities, community as an ecological network.

Unit III:

- **Disaster Management Cycle:** Disaster phase, Response phase, Recovery phase, Risk reduction phase, Preparedness phase.
- **The Process of Disaster Management**: mitigation, preparedness, response and recovery.
- **Majors Disasters in Odisha**: Flood, cyclone, drought, tsunami, etc
- **Disaster Management Programs and System in India**: Nation Disaster Management Act (2005), National Policy on Disaster Management (2009), Disaster Management in the Xth Five Year Plan onwards, different bodies National Disaster Management Agency (NDMA), State Disaster management Agency (SDMA), National Disaster Response Force (NDRF), National Institute of Disaster Management (NIDM), India Disaster Resource Network (IDRN). Community based disaster management and community based disaster management practices (case studies), The role of INGOs and NGOs.
- **Disaster Warning and Evacuation**: Factors influencing evacuation and some policy considerations, media and other sources of information, Phases of evacuation: Preparation, Decision

Unit IV:

- **Environmental Legislation and Regulations associated with Disaster Management:** Environment Policy of the Government of India: Five Year Plans, Environment Protection Act (1986),The Environment (Sitting for Industrial Projects) Rules (1999), The Indian Forest Act (1927 and Amendment 1984), The Indian Forest (Conservation) Act (1981), Coastal Regulation Zone Notification (1991).
- **Rehabilitation**: Need for rehabilitation, Government and Non-government programs for rehabilitation, role of NGOs for rehabilitation programmes, Critical review of programmes, Role of Social Work in minimizing the effects of disaster.

Reading List:

Anandha Kumar K.J and Ajinder Walia (2013) India Disaster Report, NIDM: New

Delhi.

Gupta. Anil K et, al (Ed) (2014). Training Module Mainstreaming Climate Change Adaptation and Disaster Risk Reduction into District Level Development Plans, NIDM : New Delhi.

Satendra and Kaushik. D (2013) Forest Fire Disaster Management NIDM: New Delhi.

Vogelbacher (2013) Flood Disaster Risk Management NIDM: New Delhi.

Kaushik. A.D. (2012) Flood Risk Mitigation and Management: A Training of Trainers Module, NIDM: New Delhi.

Course Title: People-Centered Advocacy

Course Code: SWEP – 11

Level: MSW (IV)

Objectives:

1. To acquire conceptual clarity and theoretical knowledge about linkages between state, civil society and market, governance and social policy processes
2. To acquire conceptual clarity about Social Advocacy as a method for bringing about social change to achieve equality and social justice goals enshrined in the Constitution using non-violent methods
3. To become aware of the democratic institutions, actors and the processes of democratic decision making
4. To acquire necessary skills for strategy planning to engage in Social Advocacy
5. To internalize values and attitudes necessary for working at micro, meso and macro levels and with diverse individuals and groups by following the Constitutional and democratic processes

Unit 1: Understanding People Centred Advocacy

- Politics in Social Advocacy and its role in democratic decision making
- Advocacy vis-à-vis Social Revolution and Social Action
- Relevance and importance of people centered advocacy and rights based approaches in India
- Power, politics and public arguments
- Personal and institutional benefits of Social Advocacy

Unit 2: Role of Information, Networking and the Media in Advocacy

- Power of Information in People Centered Advocacy

- Identifying incidents, collecting information and framing issues
- Mobilizing support and importance of coalitions
- Role of organization and campaign strategies
- Building favorable public opinion and putting pressure on decision makers
- Understanding the politics of media and its role in consensus and conflict creation
- Developing material for the media and its diverse audience
- Exploring alternate media for pro-people advocacy

Unit 3: Advocacy with the Legislature and Executive

- Understanding channels between legislators and advocacy groups
- Knowing the actors within and outside legislative bodies
- Role of bureaucracy in policy making, operationalization and implementation.
- Finding policy hooks and political angles. Understanding phases of policy making
- Implications of transparency and accountability vis-à-vis elected representatives and the bureaucracy
- Practical tips and strategies for advocating with legislatures and the bureaucracy

Unit 4: Advocating with the Judiciary and with the reference to the International framework.

- Understanding central and state laws and function of various courts in India
- Role of Information and PILs in Judicial Advocacy
- Post 2015 agenda, post MDG frameworks
- Making post 2015 matter for socially excluded groups in India

Reading List

NCAS.resource material and documented case stories on People Centred Advocacy

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN COMMERCE (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

U.G. Commerce Common Syllabus, Odisha

Paper	Subject	Paper Code	Full Marks	End-term Marks	Mid-term Marks	Credit Points
	Semester I					
1.1	Environmental Science	AECC -1	100	80	20	4
1.2	Financial Accounting	CORE-1	100	80	20	6
1.3	Business Law	CORE-2	100	80	20	6
1.4	Micro Economics	GE-1	100	80	20	6
	Total		**400**			**22**
	Semester II					
2.1	Communicative English/MIL	AECC-2	100	80	20	4
2.2	Cost Accounting	CORE-3	100	80	20	6
2.3	Corporate Law	CORE-4	100	80	20	6
2.4	Macro & Indian Economy	GE-2	100	80	20	6
	Total		**400**			**22**
	Semester III					
3.1	Corporate Accounting	CORE-5	100	80	20	6
3.2	Income-tax Law and Practice	CORE-6	100	80	20	6

3.3	Management Principles and Application	CORE-7	100	80	20	6
3.4	Business Statistics	GE-3	100	80	20	6
3.5	E-Commerce	SEC-1	100	80	20	4
	Total		**500**			**28**
	Semester IV					
4.1	GST and Indirect Taxes	CORE-8	100	80	20	6
4.2	Fundamentals of Data Management (End Term Exam = 60, Practical = 25, Mid-term = 15	CORE-9	100	60+25	15	6
4.3	Management Accounting	CORE-10	100	80	20	6
4.4	Principles of Marketing	GE-4	100	80	20	6
4.5	Entrepreneurship Development and Business Ethics	SEC-2	100	80	20	4
	Total		**500**			**28**
	Semester V					
5.1	Computerized Accounting& E-filling of Tax Returns (End Term Exam = 60, Practical = 25, Mid-term = 15	CORE-11	100	60+25	15	6
5.2	Fundamentals of Financial Management	CORE-12	100	80	20	6
5.3	Elective I (Any *one* of the following)	DSE-1	100	80	20	6
	A. Financial					

	Accounting and Finance	Markets, Institutions &Services					
	B. Banking and Insurance	Indian Banking and Insurance System					
	C. Management	Human Resource Management					
5.4	Elective II (Any *one* of the following)		DSE-2	100	80	20	6
	A. Accounting and Finance	Financial Statement Analysis and Reporting					
	B. Banking and Insurance	Merchant Banking and Financial Services					
	C. Management	International Business					
	Total			**400**			**24**
	Semester VI						
6.1	Auditing and Corporate Governance		CORE-13	100	80	20	6
6.2	Business Mathematics		CORE-14	100	80	20	6
6.3	Elective III (Any *one* of the following)		DSE-3	100	80	20	6
	A. Accounting and Finance	Fundamentals of Corporate Tax Planning					
	B. Banking and Insurance	Fundamentals of Investment					
	C. Management	Consumer Affairs and Customer Care					
6.4	Business Research Methods and Project work	End Term Exam = 50 Project = 30 Viva-voce = 20	DSE-4	100	50 30 Project 20 Viva-voce		6
	Total			**400**			**24**
	Grand Total			**2600**			**148**

COMMERCE

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non commerce students– 4 papers.
(Universities can exercise option of prescribing 2 GE in which case from the list of GEs given in the syllabus GE1 and GE2 only are to be taken.
Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks for papers without practical; For papers with Practicals the mark distribution would be 60+25+15
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

(CORE – 1) FINANCIAL ACCOUNTING

Objectives: The objective of this paper is to help students to acquire conceptual knowledge of financial accounting and to impart skills for recording various kinds of business transactions.

Unit - I. (a) Basics of Accounting

i. Accounting as the language of business and an information system, the users of financial accounting information and their needs. Qualitative characteristics of accounting information, Functions, advantages and limitations of accounting. Branches of accounting. Bases of accounting: cash basis and accrual basis.
ii. The nature of financial accounting principles – Basic concepts and conventions: entity, money measurement, going concern, cost, realization, accruals, periodicity, consistency, prudence (conservatism), materiality and full disclosures and Accounting Equation.

(a) Accounting Process

From recording of business transactions to the preparation of trial balance including adjustments: journal, sub-division of journal, ledger accounts, trial balance.

Unit – II: Reporting Standards &Business Income

1. Concepts of AS, Ind AS (Indian Accounting Standards), IFRS (International Financial Reporting Standards) & XBRL (extensible Business Reporting Language)
2. Measurement of business income-Net income: the accounting period, the continuity doctrine and matching concept. Objectives of measurement and revenue recognition.
3. Depreciation Accounting: The accounting concept of depreciation. Factors in the measurement of depreciation. Methods of computing depreciation: straight line method and diminishing balance method; Disposal of depreciable assets-change of method. Salient features of Accounting Standard 6 (AS- 6) issued by ICAI

Unit – III: Final Accounts

Capital and revenue expenditures and receipts, Preparation of financial statements of Sole Trade and Partnership Business with adjustments

Accounting for Partnership Firm: Accounting of Admission of partner, Retirement and Death of partner and Dissolution of the Partnership Firm Including Insolvency of partners

Unit – IV:

i. Hire Purchase and Instalment Systems and Accounting for Branch & Department
ii. Concepts of operating and financial lease (theory only)
iii. Departmental Accounting and Branch Accounting including foreign branch (Theory and Problem)
iv. Hire purchase and Instalment System

Learning Outcomes: The course structure of this paper would equip the students to get in-depth knowledge of financial accounting along with its practical application thereby giving an opportunity to gain easy access to this competitive business world.

Text Books Recommended

1. Financial Accounting I and Financial Accounting II: Mukherjee, Oxford University Press
2. Jain, S.P. and K.L. Narang. Financial Accounting, Kalyani Publishers, New Delhi

Suggested Readings:

1. Financial Accounting, R.K. Mittal , M.R. Bansal, V.K, Global Publication.
2. Bal Ranjan Kumar, Financial Accounting – S. Chand
3. Text Book of Financial Accounting-Anil Kumar and Mariappa- Himalaya Publishing House
4. Financial Accounting - P. C. Tulsiani, Pearson Publication
5. Anthony, R.N. Hawkins, and Merchant, Accounting: Text and Cases. McGraw-Hill Education.
6. Bansal.K.M- Financial Accounting – Taxman Publication
7. Horngren, Introduction to Financial Accounting, Pearson Education.
8. Maheshwari, S.N. and. S. K. Maheshwari. Financial Accounting. Vikas Publishing House, New Delhi.
9. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi
10. N.Godwin and D. Sanyal, Financial ACCT, Cengage Learning

(CORE – 2) BUSINESS LAW

Objective: The objective of the course is to impart basic knowledge of the important business laws along with relevant case laws.

Unit I: The Indian Contract Act, 1872

1. Contract – meaning, characteristics and kinds, Essentials of a valid contract
2. Offer and acceptance (Definition, Rules, Communication and Revocation of offer and acceptance)
3. Consideration (Definition, Elements, Types, Rules), "No Consideration No Contract" and its exceptions; Capacity to Parties (Definition and Types)
4. Consent, Free consent, Coercion, Undue Influence, Fraud, Misrepresentation, Mistake
5. Legality of objects and Consideration
6. Void and Voidable agreements – Definition, Types and Distinction
   Discharge of a contract – Modes of discharge, Breach and Remedies against breach of contract

7. Specific Contracts - Contingent contracts, Quasi, Contract of Indemnity, Guarantee, Bailment, Pledges

Unit II: The Sale of Goods Act, 1930

1. Contract of sale, meaning and difference between sale and agreement to sell
2. Conditions and warranties
3. Transfer of ownership in goods including sale by a non-owner
4. Unpaid seller – meaning, rights of an unpaid seller against the goods and the buyer

Consumers Protection Act, 1986 and Right to Information Act

a. Objectives and features of Consumers Protection Act
b. Definitions – Complainant, Complaint, Consumer, Consumer Dispute, Defect, Deficiency, District Forum, Person
c. Unfair trade practices
Consumer Protection Council (Central, State and District – their constitutions and objectives

Unit III: Partnership Laws

A. The Partnership Act, 1932
a. Definition – Partner, Partnership
b. Nature and Characteristics of Partnership
c. Types of Partners
d. Registration of a Partnership Firms and consequences of non-registration
e. Rights and Duties of Partners
f. Dissolution of firms – meaning and grounds
B. The Limited Liability Partnership Act, 2008
a. Definition
b. Salient Features of LLP
c. Advantages and disadvantages of LLP
d. Differences between: LLP and Partnership, LLP and Company
e. Incorporation of LLP

Unit IV: The Negotiable Instruments Act 1881

a. Definition, Features, Types, Parties of Negotiable Instruments: Promissory Note, bill of exchange, Cheque (Definition and Types)
b. Endorsement: Meaning and Types of Endorsement
c. Holder and Holder in Due Course, Privileges of Holder in Due Course.
d. Dishonour of Negotiable Instruments: Modes, Consequences, Notice of Dishonour; Noting and Protesting
e. Discharge of Negotiable Instruments: Meaning and Modes

Learning Outcomes: The students would be able to deal with the legal aspect of different business situations.

Text Books Recommended

1. Business Law, Garg K.C., Saareen,Sharma, Kalyani Publishers
2. Kumar, R. Legal Aspects of Business, Cengage Learning

Suggested Readings:

1. Arora Sushma – Business Law – Taxmann Publication
2. A Book of Business Laws-Jena B and Mohapatra-Himalaya Publishing House
3. Business Law, Ashok Sharma, V.K. Global Publication.
4. Business Laws: Das & Roy, Oxford University Press
5. Business Law- S K Matta, Geetika Matta, Vrinda Publications (P) Ltd
6. Business Law - Tejpal Singh, Pearson Publication
7. Kuchhal, M.C. and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi.
8. Tulsian, P.C, Business Law, S.Chand
9. Maheshwari & Maheshwari, Business Law, National Publishing House, New Delhi.

(Core-3)

COST ACCOUNTING

Objective: To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment.

CONTENTS:

Unit- 1:

Introduction to Cost Accounting: Meaning, concept, scope, objectives, principles, importance and limitations of cost accounting; Implementation of costing system; Methods & Techniques of costing; Cost concepts and Cost Sheet, Job costing and Batch Costing.

Unit – II:

Accounting for Material: Concept and technique of accounting for material; Methods of pricing of materials issues – FIFO, LIFO and Average; Treatment of material losses; Techniques of material control – level setting, Economic Ordering Quantity, ABC Analysis, VED Analysis, Perpetual inventory system, & Just-In-Time.

Unit – III:

Accounting for Labour:

Accounting for labour cost, control procedure, labour turnover, idle time, overtime, Methods of wage payment and the Incentive schemes- Halsey, Rowan, Taylor's Differential piece wage plan.

Accounting for Overheads:

Classification, Allocation & Apportionment of production overheads; Re-apportionment of Service department overheads; Absorption of overheads, methods of absorption – actual and predetermined rates, blanket and multiple rates, choice of an overhead absorption rate; Administration, selling and distribution overheads; Under absorption and over absorption of overheads.

Unit – IV:

Methods of Costing: Contract costing: Features and procedure of contract costing, uncompleted contract profit determination, Escalation clause, cost plus contracts.Process costing: Meaning and characteristics of Process costing, Procedure for process costing, treatment of process losses and wastages.

Learning Outcome: After the completion of this paper, the students will be able to have confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

Text Books Recommended

1. Cost Accounting-Arora MN A- Himalaya Publishing House
2. Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.

Suggested Reading:

1. Jain, S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani Publishers, Jalandhar.
2. Cost accounting, S.P. Gupta/ A Sharma- V.K. Global Publishing Pvt. Ltd.
3. Cost & Management Accounting I: Mitra, Oxford University Press.
4. Cost & Management Accouning, Taxmann Publications
5. Colin Drury, Management and Cost Accounting, Cengage Learning
6. Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi.
7. Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House, New Delhi.
8. Lal, Jawahar. Advanced Management Accounting Text and Cases. S. Chand & Co., New Delhi.
9. Cost Accounts - Datar and Rajan, Pearson Publication

(Core-4) CORPORATE LAWS

Objectives: The objective of the course is to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 1996. Case studies involving issues in corporate laws are required to be discussed.

Contents:

Unit – I: INTRODUCTION TO COMPANY

Meaning and Definition – Features –, High Lights of Companies Act 2013 - Body Corporate ,Kinds of Companies (Concept, Definition and Features) – One Person Company, Private Company, Public Company, Company limited by Guarantee, Company limited by Shares, Holding Company, Subsidiary Company, Government Company, Associate Company, Small Company, Foreign Company, Listed Company, Dormant company

FORMATION OF A COMPANY

Steps in formation of a Company, Promotion Stage, Meaning of Promoter, Position of Promoter & Functions of Promoter, Incorporation Stage – Meaning, Contents, Forms of

Memorandum of Association & Articles of Association and its alteration, Distinction between Memorandum of Association and Articles of Association, Certificate of Incorporation, Subscription Stage – Meaning & contents of Prospectus, Types, Mis- statement in prospectus and its consequences.

Unit - II: COMPANY ADMINISTRATION

Director (Concept and Definition), DIN, Qualification, Disqualification, Appointment, Position, Rights, Duties, Power, Resignation, Liabilities, Removal and Resignation of director, Key Managerial Personnel (Definition, Appointment and Qualifications) – Managing Director, Whole time Directors, the Companies Secretary, Chief Financial Officer, Resident Director, Independent Director, Women director.

Unit - III: SHARE CAPITAL & DEBENTURE

Share and Share Capital - Types and Definition, Allotment and Forfeiture, Calls on Shares, ESOP, Buyback, Sweat Equity, Bonus, Right, Capital Reduction, Share Certificate, Demat System, Transfer and Transmission, Redemption of Preference Shares, Debenture – Definition, Types, Rules Regarding Issue of Debenture, Rules regarding Dividend and distribution of dividend.

Unit - IV: CORPORATE MEETINGS

Corporate Meetings - Shareholder and Board, Types of Meetings – Annual General Meeting Extraordinary General meeting, Minutes of Proceedings of General Meeting, Meeting of BOD and other meetings (Section 118), Requisite of Valid Meeting- Notice, Agenda, Chairman, Quorum, Proxy, Resolutions, Minutes, Postal Ballot, E- voting, Video Conferencing,

Learning Outcomes: Students would acquire knowledge about the legal framework and the ways and means to deal with the legal aspect of different situations of corporate sector.

Text Books Recommended

1. Corporate Laws-Maheswari, Maheswari- Himalaya Publishing House
2. Corporate Law, Ashok Sharma, V.K. Global Publishing Pvt. Ltd., New Delhi

Suggested Readings:

1. **A** Compendium of Companies Act 2013, along with Rules, by Taxmann Publications.
2. Corporate Law, Gupta,Garg,Dhingra, Kalyani Publication
3. Company Law: Roy & Das, Oxford University Press.
4. Kumar, R., Legal Aspects of Business, Cengage Learning
5. Corporate Law– S K Matta, Geetika Matta, Vrinda Publications (P) Ltd
6. Arora &Banshal, Corporate Law – Vikash Publication
7. Gogna, P.P.S – Company Law, S. Chand
8. MC KuchhalCorporate Laws, Shri Mahaveer Book Depot. (Publishers).
9. GK Kapoor& Sanjay Dhamija, Company Law, Bharat Law House.

(Core-5) CORPORATE ACCOUNTING

Objectives: To help the students to acquire the conceptual knowledge of the corporate accounting and to learn the techniques of preparing the financial statements.

Contents:

Unit – I

Meaning of Company; Maintenance of Books of Accounts; Statutory Books; Annual Return Company – Issue of Shares – issue, forfeiture, reissue, issue other than cash consideration and issue to the promoters; Pro-rata issue of shares. Issue of Right and Bonus Share – Rules,

Accounting for debentures: Issue of debenture, Underwriting of shares and debentures: Determination of Underwriters Liability – with marked, unmarked & firm underwriting; Accounting of Employee Stock Option Plan – meaning; rules; Vesting Period; Exercise Period, Accounting for ESOP and Accounting of ESPS.

Unit – II: Redemption of Preference shares & Debentures

Buy Back of Securities: meaning, rules and accounting.

Redemption of Preference Shares – Rules and Accounting (with and without Bonus Shares) ; Redemption of Debenture – Important Provisions, Redemption of debenture Accounting for Redemption: by conversion, by lot, by purchase in the open market (cum and ex-interest), held as Investment and Use of Sinking Fund

Unit – III: Company's Final Accounts

Introduction to Schedule III of Companies Act 2013; Treatment of Tax; transfer to reserve, Dividend and applicable tax (out of current profit, out of past reserve); Preparation of Statement of Profit & Loss and Balance Sheet. (tax on net profit without recognizing deferred tax)

Valuation of Goodwill & Shares

Goodwill – valuation using different methods, i.e., Average Profit, Super Profit, Capitalization and Annuity.

Shares – Valuation using different methods: Asset approach, Earnings approach, Dividend Yield, Earnings-Price, Cum-div and Ex-div, Majority and Minority view and Fair Value

Unit – IV: Liquidation

Meaning of liquidation, modes of winding up, consequences of winding up, statement of affairs, liquidator's final statement of account, list 'B' contributories

Learning Outcomes: This paper can provide conceptual clarity about the techniques to prepare financial statements of companies along with accounting treatment of various situations viz. floating of shares, amalgamation and liquidation of companies.

Text Books Recommended

1. Jain, S.P. and K.L. Narang. Corporate Accounting. Kalyani Publishers, New Delhi.
2. Maheshwari, S.N. and S. K. Maheshwari. Corporate Accounting. Vikas Publishing House, New Delhi.

Suggested Readings:

1. Sehgal, Ashok and Deepak Sehgal. Corporate Accounting. Taxman Publication, New Delhi.
2. Corporate Accounting, R.K. Mittal? S. Ahuja- V .K. Global Pub. Pvt. Ltd, New Delhi.
3. Corporate Accounting – Anil Kumar, Mariappa- Himalaya Publishing House
4. Tulsian, P.C, Corporate Accounting, S. Chand
5. Monga, J.R. Fudamentals of Corporate Accounting. Mayur Paper Backs, New Delhi.
6. Gupta, Nirmal. Corporate Accounting. SahityaBhawan, Agra.
7. Bhushan Kumar Goyal, Fundamentals of Corporate Accounting, International Book House

(Core-6)

INCOME TAX LAW AND PRACTICE

Objective: To provide basic knowledge and equip students with the application of principles and provisions of Income Tax Act 1961.

Contents:

Unit I :

a) **Basic Concepts and Definitions under IT Act**: Assessee, Previous year, Assessment year, Person, Income, Sources of income, Heads of income, Gross total income, Total income, Maximum marginal rate of tax, Tax Evasion, Tax avoidance and Tax planning
b) Residential Status and Incidence of Tax, Residential status of all persons except company
c) Incomes which do not form part of Total Income Except section 10AA.
d) Agricultural Income Definition, determination of agricultural and non-agricultural Income, assessment of tax liability when there is both agricultural and non-agricultural income

Unit II:

Heads of Income and Provisions governing Heads of Income

a) Income from Salary
b) Income from House property

Unit III:Heads of Income and Provisions governing Heads of Income

a) Profits and Gains of Business and Profession Special emphasis on sec. 32, 32AC, 32AD, 35, 35D, 36(i)(ib), (ii), (iii), (iv), (vii), 37, 37(2B), 40A(2), 40A(3), 43B, (Excluding presumptive taxation)
b) Capital Gains
Meaning and types of capital assets, basic concept of transfer, cost of acquisition, cost of improvement and indexation, computation of STCG and LTCG, exemptions u/s 54

54B, 54EC and 54F, capital gain on transfer of bonus shares, right entitlement and right shares, taxability of STCG and LTCG.

c) Income from Other Sources
Basis of charge excluding deemed dividend

Unit IV:

a) **Income of other Persons** included in Assessee's Total Income Remuneration of spouse, income from assets transferred to spouse and Son's wife, income of minor.
b) Set off and Carry Forward of Losses
Mode of set off and carry forward, inter source and inter head set off, carry forward and set off of losses u/s 71B, 72, 73, 74, 74A.
c) Deductions from Gross Total Income
Basic concepts, deductions u/s 80C, 80CCC, 80CCD, 80CCE, 80D, 80DD, 80DDB, 80E, 80G, 80GG, 80GGC, 80TTA, 80U
d) Rebate u/s 87A

Computation of Total Income and Tax Payable

a) Rate of tax applicable to individual assessee
b) Computation of tax liability of an individual
c) Provision for Filing of Return Date of filing of return, relevant forms of return, different types of returns, return by whom to be signed, PAN, TAN
d) Assessment of Return Self assessment u/s140A, Summary assessment u/s 143(1), Scrutiny assessment u/s 143(3) and Best judgement assessment u/s 144.
e) Advance Tax Who is liable to pay, due dates and computation of advance tax (excluding corporate assessees)
f) Interest & Fees Section 234A, 234B, 234C, 234F
g) TDS Provisions regarding TDS from salary, interest on securities, horse racing, lottery.

Learning Outcomes: This paper would provide the understanding of various provisions of Income Tax Act as well as equip the students to make practical applications of the provisions for taxation purpose.

Text Books Recommended

1. Gour and Narang, Income tax: Law and practice, kalyani Publishers
2. Dr. Vinod Kumar Singhania, e-filing of Income Tax Returns and Computation of Tax,
3. Taxmann Publication Pvt. Ltd, New Delhi. Latest version.

Suggested readings:

1. Income tax Law and practice, Makta Jain/ Rakesh Jain, V.K. Global Pub. Pvt. Ltd., New Delhi
2. Income Tax Law and Pratcice-Saha, Dash- Himalaya Publishing House.
3. Pagare, Dinkar. Law and Practice of Income Tax. Sultan Chand and Sons, New Delhi.
4. Lal, B.B. Income Tax Law and Practice. Konark Publications, New Delhi.

(Core-7)

MANAGEMENT PRINCIPLES &APPLICATIONS

Objective:

The objective of the course is to provide the student with an understanding of basic management concepts, principles and practices.

Unit-I: Introduction:

Management-definition, importance, functions, nature-as profession, science and art, universality of management; levels of management; managerial tasks and skills

Different Schools of Thoughts: Classical School-contributions of Taylor and Henri Fayol; Neo-classical school-Human Relations approach and Behavioural Science Approach; Modern School; System approach and Contingency approach

Unit-II: Planning:

Concept, importance, steps, types, premises, barriers to effective planning and remedial measures; strategic planning-concept forecasting –concept, techniques.

Organizing:

Concept, importance, principles, different organization models-line and staff; Functional; Departmentation-need, basis, principles, Delegation of Authority-elements, steps barriers; Centralization and Decentralization of Authority; Span of Management; concept and determining factors

Unit-III: Directing and Staffing:

Directing: concepts, importance of directing, Leadership: Concept, importance, types, leadership traits, Tannenbaum & Schmidt's Model and Blake & Mouton's Model.

Staffing: concepts, importance

Unit- IV: Motivation, Co-ordination and Control:

Motivation: Concept, importance, importance of need theory, and contributions of McGregor, Maslow, Herzberg.

Coordination: concepts, importance, principles and implementation techniques. Control: concepts, importance and tools of control.

Learning Outcomes: Students would be able to make use of different management principles in the course of decision making in different forms of business organizations.

1. Pany Tushar K , Management Principles and Application, Kalyani

Text Books Recommended

1. Pany Tushar K , Management Principles and Application, Kalyani

2. Prasad, L.M. Principles and Practice of Management, Sulatan Chand

Suggested Readings:

1. Sharma gupta , Management: Principles and application , Kalyani Publishers
2. R. K . Singhal, Management Principle and application, V.K. Global Pub. Pvt. Ltd, New Delhi.
3. Management Principles and Applications-Jhunjhunwala J Mohanty- Himalaya Publishing House
4. Principles of Management: Mitra, Oxford University Press.
5. Griffin, R.W. – Management :Principles& Practices, Cengage Learning
6. Gupta R.N - Principles & Practice of Management – S. Chand
7. A K Jha, Management Principles and Application - Vrinda Publications (P) Ltd.
8. Chandan J.S – Management Concepts of Strategy – Vikash Publication
9. B.P. Singh and A.K.Singh, Essentials of Management, Excel Books
10. TN Chhabra, Management Concepts and Practice, DhanpatRai& Co. (Pvt. Ltd.), New Delhi
11. Peter F Drucker, Practice of Management, Mercury Books, London

(Core-8)

GST & INDIRECT TAX

OBJECTIVE:

The objective is to equip students with the principles and provisions of Goods and Services Tax (GST), which is, implemented from 2017 under the notion of One Nation, One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge.

Unit I- INTRODUCTION TO GOODS AND SERVICES TAX (GST)

Introduction to GST : Introduction, Constitutional provisions regarding Taxation In India, Pre-GST Indirect Taxation Structure in India, What is GST, Need for GST in India, Overview and Genesis of GST IN INDIA, GST objectives, **Scope of GST**, Salient features of GST, GST and Centre-State Financial Relations, The Constitution (122nd Amendment) Bill, Constitutional Amendments required for introduction of GST Indirect Taxes subsumed Post- GST : Principles for subsuming taxes under Goods & Services Tax (GST) in India, Indirect Taxes and Levies subsumed in GST, Events that have led to the introduction of GST, **DUAL GST : Benefits of Dual GST**, Structure Of Dual Model of GST , Key Features of Dual Model of GST, Benefits of implementing GST, CENTRAL GST – STATE / UNION TERRITORY GST – INTEGRATED GST and GST Cess, Pre-GST Regime Vs. GST
Regime, Indirect Taxes

Unit II- GST ACTS: (Structure & Terminology)

Salient features of CGST Act, SGST Act (Odisha State), IGST Act, Meaning and Definition of various terms used under GST

(Coverage- Provisions and Illustration)

PROCEDURE RELATING TO LEVY OF, COLLECTION AND EXEMPTION FROM, TAX

PROCEDURE RELATING TO LEVY OF, COLLECTION AND EXEMPTION FROM, TAX: (CGST & SGST)- **Meaning and Scope of 'Supply' under GST Law**, Taxable Person, Time of supply, Place of supply and Value of supply. Computation of Taxable Value and Tax Liability, Composition scheme; INPUT TAX CREDIT; PROCEDURE RELATING TO LEVY, COLLECTION AND EXEMPTION OF IGST; PAYMENT OF TAX, TCS, TDS; PRACTICAL PROBLEMS.

(Coverage- Provisions and Illustration)

Unit III- REGISTRATION, RETURNS AND ASSESSEMENT

REGISTRATION - Persons liable for registration, Persons not liable for registration, Types: Compulsory registration, Voluntary registration, Deemed registration - Procedure for registration, Special provisions for Casual taxable persons and Non-resident taxable persons; CLASSIFICATION OF GOODS & SERVICES- HSN, SAC; TAX INVOICE AND OTHER SUCH INSTRUMENTS IN GST - Debit Note, Credit Note, Vouchers, Invoice; ACCOUNTS AND RECORDS; RETURN- Process of Return Filing, Furnishing details of outward supplies and inward supplies, First return, Claim of input tax credit, Matching reversal and reclaim of input tax credit, Annual return and Final return; REFUND; **OFFENCES AND PENALTIES**; ASSESSMENT; AUDIT; APPEALS AND REVISION.

Unit IV- GST Council AND REGULATORY FRAMEWORK

GST COUNCIL: Structure, Powers and Functions. Provisions for amendments; ROLE OF CBEC; Division of Administrative Powers; GST AND TECHNOLOGY- GST Network, GST ECO SYSTEM, GSP, ASP; NATIONAL ANTI-PROFITEERING AUTHORITY IN GST; COMPLIANCE RATING.

Text Books Recommended

1. Swain AK & Agrawal – GST: Concepts and Applications, Himalayan Publishing House.
2. GST Manual:Taxman's Publication Ltd., New Delhi.

Suggested Books:

1. GST and Indirect Taxes,Sanjeet Sharma, V.K. Global Pub. Pvt. Ltd, New Delhi.
2. Mishra, Padhi and Bera – Text Books on GST & Practice, Vikash Publishing House Pvt. Ltd. New Delhi.

(Core-9)

FUNDAMENTALS OF DATA MANAGEMENT

Unit I: Word Processing

Working with word document- Editing text, Find and Replace text, Formatting, Spell check, Autocorrect, Auto text; Bullets and numbering, Tabs, Paragraph Formatting, Indent, Page Formatting, Header and footer, Macros, Drop cap; Tables: Inserting, Filling and formatting a Table, Inserting Pictures and Video; Mail Merge- including linking with Database, Printing documents. Creating Business Documents using the above facilities

Preparing Presentations

Basics of presentations: Slides, Fonts, Drawing, Editing; Inserting: Tables, Images, texts, Symbols, Media; Design; Transition; Animation, Hyperlink and Slideshow. Creating Business Presentations using above facilities

Unit II: Spreadsheet and its Business Applications

Managing worksheets- Formatting, Entering data, Editing, and Printing a worksheet; handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs, Pivot Table

Spreadsheet Functions: Mathematical [SUMIF, SQRT, SUBTOTAL, SUMPRODUCT etc.], Statistical [AVERAGE, STDEV, VAR, CORRELATION, REGRESSION etc.], Financial [PMT, RATE, PV, FV, NPER, IRR, NPV, Data Table Etc.] Logical [AND, OR, IF etc.], Date and Time, lookup and reference, Database and Text functions.

Creating Spreadsheet in the area of : Loan and Lease statement; Ratio Analysis; Payroll Statements; Capital Budgeting; Depreciation Accounting; Graphical Representation of Data; Frequency Distribution and its Statistical Parameters; Correlation and Regression

Unit III: Database Management System

Creation of Tables, Multiple Table Handling-Defining Relationship [Foreign Key], Simple and Conditional Queries, Types of Queries [Update, Delete, Append], Forms, Reports, Introduction to SQL through Basic Commands.

Applying DBMS in the areas of Accounting, Inventory, HRM and its accounting, managing the data records of Employees, Suppliers and Customers

Unit IV: Website Designing

Introduction to HTML; Tags and Attributes: Text Formatting, Fonts, Hypertext Links, Tables, Images, Lists, Forms, Frames, Cascading Style Sheets.

Text Books Recommended

1. Coronel and Rob, Database Principles, Cengage Learning
2. Fundamentals of Data Management –Saha RG- Himalaya Publishing House

Suggested Readings

1. Thareja, IT & Application, Oxford
2. Aurora, Computer Fundamentals, Vikash
3. Sinha & Sinha, Fundamentals of Computers, BPB Publications
4. Dhar, P., Fundamental of IT and Its Application in Business, APH

Practical Aspects:

- **Preparation of Project report and business letters using Ms Excel and its various features**
- **Preparing PPT using Ms PowerPoint for presentations**
- **Using Ms Excel for various data analysis, Graphical Representation of Data, etc.**

pivot tables and their analysis

- **Maintenance of accounting data records and its management by applying DBMS**
- **Practical application of various web designing tools**

(Core-10)

MANAGEMENT ACCOUNTING

Objective: To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making.

CONTENTS:

Unit – I:

Management Accounting: Meaning, nature, scope, and importance of management accounting; Role of management accounting; management accounting vs. financial accounting; Role of management accounting in modern business; Tools and techniques of management accounting.

Unit – II: Ratio Analysis & Cash flow

statement Ratio Analysis:

Meaning and utility of ratios; significance of Ratio analysis; Classification of Ratios – Profitability ratios, Efficiency Ratios, Liquidity Ratios, Solvency Ratios; Advantages and limitations of Ratio Analysis.

Cash flow Statements:

Cash Flow Statements: Meaning and utility of Cash flow statements; Preparation of Cash flow statements – Indirect method; Limitations of Cash flow statements; Cash flow statements vs. Funds flow statements. (Reference to Revised AS-3 and Ind AS-7)

Unit – III:

Absorption & Marginal Costing: P/V Ratio, Break-even analysis, Margin of safety, angle of incidence; Marginal and differential costing as a tool for decision making – make or buy, change of product mix, exploring new markets, shut down decisions.

Unit – IV:

Budgeting & Standard Costing: Concept of budget and budgetary control; objectives, merits and limitations of budgetary system; Master budget, Functional budget, Fixed and Flexible budgets; Zero based budgeting. Standard Costing & Variance Analysis: Meaning of standard cost and standard costing, Advantages and disadvantages of standard costing and variance analysis: Material, Labour, & Overhead.

Learning Outcome: After the completion of this paper, the students will be able to have

confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

Text Books Recommended

1. Management Accounting, S swain/ S.P. Gupta/ A Sharma, V.K. Global Pub. Pvt. Ltd.,
2. Horngreen, Charles T., Gary L. Sundem. Introduction to Management Accounting.
3. Prentice Hall.

Suggested Reading:

1. Jain & Narang, Management Accounting, Kalyani Publications
2. Management Accounting-M Wilson- Cost Accounting-Jena B,Bal S and Das A-Himalaya Publishing House
3. Narasimhan M.S. , Management Accounting, Cengage Learning
4. Cost & Management Accouning, Taxmann Publications
5. Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House, New Delhi.
6. Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri Mahabir Book Depot, New Delhi.
7. Lal, Jawahar. Advanced Management Accounting Text and Cases. S. Chand & Co., New Delhi.
8. Khan, M.Y. and P.K. Jain. Management Accounting. Tata McGraw Hill, Publishing

(Core-11)

COMPUTERIZED ACCOUNTING & E-FILING OF TAX RETURNS

Unit – I: Computerized Accounting Package: Using Generic Software

a. Company creation, ledger creation, order processing, accounting voucher, inventory voucher, memorandum voucher, invoicing, multiple godown handling, Transfer of materials across go downs, Bank Reconciliation

b. Cost Centre, Cost Category, Bill of Material (BoM), Budget and Controls

c. Payroll Accounting

d. TDS, GST

.e. Back up & Restore, Export and Import data

Unit II: Designing Computerized Accounting System

(a) Introduction to DBMS Package – Table, Query, Form and Report

(b) Designing Computerized Accounting System using DBMS Package

Creating a voucher entry Form, Preparing ledgers, trial balance, profit & loss a/c, and

Balance Sheet with Form wizard and Report

Designing Payroll System for Accounting using Form, Query, and Repo

Unit-III: E-filing of Tax return

(a) Preparation and submission online form 10E [Relief u/s 89(1)] (a) Preparation and submission of the Income Tax Return (ITR) offline/online for individual Taxpayer [e-filing without using DSC and with using DSC, EVC]

(b) View form 26AS, Upload return, View e-file returns, e-verification

(c) Use of e-tax calculator (including interest calculation u/s 234A, 234B, 234C)

(d) E-Pay tax (Challan No./ITNS 280, ITNS 281)

(e) Preparation and submission online form 10E[Relief u/s 89(1)]

Text Books Recommended

1. Software: Singhania, V.K., E-Filing of Income Tax Returns and Computations of Tax, Taxmann

2. Book of Computerized Accoounting and E Filling of Tax Returns-Mohanty R, Dash ALN- Cost Accounting-Jena B,Bal S and Das A- Himalaya Publishing House

Suggested Readings

1. Software: "Excel Utility", incometaxindiaefiling.gov.in

Practical Aspects:

- **Creation of company and ledger accounts, voucher entries, payroll accounting,& data management in accounting software packages including TDS and GST**
- **Use of DBMS Package for various accounting database, designing of Payroll and report generation**
- **Preparation and submission of online Income Tax Returns, E-payment of tax, E-verification of returns, and viewing of 26AS.**

(Core-12)

FUNDAMENTALS OF FINANCIAL MANAGEMENT

Objective: To familiarize the students with the principles and practices of financial management.

Contents:

Unit – I: Introduction& Basic Concepts

Important functions of Financial Management, Objectives of the firm: Profit maximization

vs. Value maximization, Role of Chief Financial Officer. Financial environment in which a firm has to operate, Time Value of Money: concept and reasons, Compounding and Discounting techniques, Concepts of Annuity and Perpetuity. Risk-return relationship (concepts only)

Unit – II: Sources of Finance and Cost of Capital/ Financing Decisions

Different sources of finance; long term and short term sources, Cost of capital: concept, relevance of cost of capital, Implicit and Explicit cost, specific costs (its computation) and weighted average cost (its computation) , rationale of after tax weighted average cost of capital, marginal cost of capital (its computation).

Unit – III: Capital Expenditure Decisions / Long term Financial Decisions & Dividend Decisions

Capital Expenditure Decisions / Long term Financial Decisions

Objectives of Capital Budgeting Process, Concept of Cash flow, Methods of long term investment decisions - Discounted Payback Period, Net Present Value, Profitability Index, Average Rate of Return / Accounting Rate of Return, Internal Rate of Return (Including relative merits and demerits of each of the methods)

Dividend Decisions

Meaning, Natureand Types of Dividend, concept of pay-out ratio, retention ratio Decisions and growth, Dividend policies and formulating a dividend policy, Dividend Theories: Walter's Model, Gordon's Model

Unit – IV: Working Capital Management/ Liquidity Management

Meaning and various concepts of Working Capital, Management of Working Capital and Issues in Working Capital, Estimating Working Capital Needs; Operating or Working Capital Cycle, Policies relating to Current Assets – Conservative, Aggressive and Balance, Various sources of finance to meet working capital requirements

Learning Outcome: After the completion of this paper, students will be able to understand finance in a better way along with giving them insight to practical management of long and short finance for real business houses.

Text Books Recommended

1. Rostogi, Fundamentals of Financial Management, Taxmann Publications
2. Fundamental of Financial Management, Sharma, Gupta, Kalyani Publishers**, New Delhi.**

Suggested Readings

1. Fundamentals of Financial Management, Vandana Dangi, V.K. Global Pvt. Ltd., New Delhi
2. Parasuraman – Financial Management : A Step by Step Approach, Cengage Learning

3. Pandey, I.M. Financial Management. Vikas Publications.
4. Financial Management, Himalaya Publishing House
5. BhallaV.K – Financial Management – S.Chand
6. Horne, J.C. Van and Wackowich. Fundamentals of Financial Management. 9th ed. New Delhi Prentice Hall of India.

(Core-13)

AUDITING AND CORPORATE GOVERNANCE

Objective: To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards and to give an overview of the principles of Corporate Governance and Corporate Social Responsibility

Unit-I

Auditing: Introduction, Meaning, Objects, Basic Principles and Techniques; Classification of Audit, Audit Planning, Internal Control – Internal Check and Internal Audit; Audit Procedure – Vouching and verification of Assets & Liabilities

Unit-II

Audit of Limited Companies:

Company Auditor- Qualifications and disqualifications, Appointment, Rotation, Removal, Remuneration, Rights and Duties Auditor's Report-Contents and Types. Liabilities of Statutory Auditors under the Companies Act 2013

Special Areas of Audit:

Special features of Cost audit, Tax audit, and Management audit; Recent Trends in Auditing: Basic considerations of audit in EDP Environment; Standard on Auditing(SA); Relevant Case Studies/Problems;

Unit-III

Corporate Governance : Conceptual framework of Corporate Governance, Corporate Governance Reforms. Major Corporate Scandals in India and Abroad: Common Governance Problems Noticed in various Corporate Failures. Codes & Standards on Corporate Governance

Unit-IV

Corporate Social Responsibility (CSR): Strategic Planning and Corporate Social Responsibility; Corporate Philanthropy, Meaning of CSR, CSR and CR, CSR and Corporate Sustainability, CSR and Business Ethics, CSR and Corporate Governance, Environmental Aspect of CSR, CSR provision under the Companies Act 2013, CSR Committees

Learning Outcome: At the end of the paper student will have detail knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities.

Text Books Recommended

1. Gupta, Kamal and Ashok Arora. Fundamentals of Auditing. Tata Mc-Graw Hill Publishing Co. Ltd., New Delhi.
2. Auditing and corporate governance, Pradeep kumar , Klayani Publishers , New Delhi.

Suggested Readings:

1. Auditing and corporate governance, A. Sharma, V.K. Global Pvt. Ltd.,New Delhi
2. SATHEESH KUMAR Corporate Governance, Oxford University Press.
3. Shikha, N. and Sharma, G. Corporate Governance in India : Principles and Policies, CENGAGE Learning
4. Jha, Aruna. Auditing. Taxmann.
5. Tandon, B. N., S. Sudharsanam and S. Sundharabahu. A Handbook of Practical Auditing. S. Chand and Co. Ltd., New Delhi.
6. Ghatalia, S.V. Practical Auditing. Allied Publishers Private Ltd., New Delhi.
7. Singh, A. K. and Gupta Lovleen. Auditing Theory and Practice. Galgotia Publishing Company.
8. Alvin Arens and James Loebbecke, Auditing: an Integrated Approach
9. MC KuchhalCorporate Laws, Shri Mahaveer Book Depot. (Publishers). (Relevant Chapters)
10. Khanka – Business Ethics & Corporate Governance – Vikash Publication
11. Auditing Principles and Techniques- S. K. Basu, Pearson Publication

(Core-14)

BUSINESS

MATHEMATICS

Objective: The objective of this course is to familiarize the students with the basic mathematical tools with emphasis on applications to business and economic situations.

Contents:

Unit I Matrices and Determinant

Algebra of matrices., Inverse of a matrix, Matrix Operation – Business Application Solution of system of linear equations (having unique solution and involving not more than three variables) using matrix inversion Method and Cremer's Rule.

Unit II

Calculus

Calculus I

Mathematical functions and their types- linear, quadratic, polynomial, exponential,

logarithmic and logistic function. Concepts of limit and continuity of a function, Concept and

rules of differentiation, Maxima and Minima involving second or higher order derivatives

Calculus II

Integration: Standard forms. Methods of integration – by substitution, by parts and by use of partial fractions, definite integration, Finding areas in simple cases, Application of Integration marginal analysis. Consumer's and Producer's Surplus, Rate of Sales and the Learning Curve.

Unit III Mathematics of Finance

Compounding and discounting of a sum using different types of rates. Types of annuities, like ordinary, due, deferred, continuous, perpetual, and their future and present values using different types of rates of interest. Depreciation of Assets (General annuities to be excluded)

Unit IV Linear Programming (Use of Excel spreadsheet & Other mathematical software)

Formulation of linear programming problems (LPP): Graphical solution to LPPs. Cases of unique and multiple optimal solutions, Unbounded solutions and infeasibility, Solution to LPPs using Simplex method – maximization and minimization cases, PERT and CPM (simple Problem)

Learning Outcome: After reading this subject the students will be able to understand basic concepts in the areas of business calculus and financial mathematics and to connect acquired knowledge with practical problems in economic practice.

Text Books Recommended

1. Business Mathematics, Patri and Patri, Kalyani Publishers, New Delhi
2. Business Mathematics - S K Sahoo, Vrinda Publications (P) Ltd.

Suggested Readings:

1. Arora P.N. Business Mathematics – S.Chand
2. Business Mathematics, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd., New delhi.
3. GHOSH & SINHA BUSINESS MATHEMATICS & STATISTICS, Oxford university press.
4. Francis, J. Business Statistics, Cengage Learning
5. Anthony, M. and N. Biggs. Mathematics for Economics and Finance. Cambridge University Press.
6. Arora S.R & Gupta K. – Business Mathematics – Taxmann Publication
7. Ayres, Frank Jr. Theory and Problems of Mathematics of Finance. Schaum's Outlines Series. McGraw Hill Publishing Co.
8. Mizrahi and John Sullivan. Mathematics for Business and Social Sciences. Wiley and Sons.
9. Zamirudeen&Bhambri – Business Statistics – Vikash Publication
10. Wikes, F.M. Mathematics for Business, Finance and Economics. Thomson Learning.
11. Prasad, Bindra and P.K. Mittal. Fundamentals of Business Mathematics. Har-Anand

Publications.

12. Thukral, J.K. Mathematics for Business Studies. Mayur Publications.
13. Soni, R.S. Business Mathematics. Pitambar Publishing House.
14. Singh J. K. Business Mathematics. Himalaya Publishing House

DSE – 1

Elective – I (Any one of the following Groups)

Group – A: Accounting & Finance

Financial Markets, Institutions, & Services

Objectives: To enable the students to understand the financial institutions operating in India and services provided by them.

Unit-I

Basic Theoretical Framework: The financial system and its technology; The factors affecting the stability of the financial system; Development finance vs. universal banking; Financial intermediaries and Financial Innovation; RBI-Central Banking.

Unit-II: Financial Institutions & Non-Banking

Financial Institutions Financial Institutions:

A brief historical perspective. An update on the performance of IDBI, ICICI, IFCI and SFCs, LIC &GIC, Banking Institutions: Commercial banks - the public and the private sectors - structure and comparative performance, problems of competition; interest rates, spreads, and NPAs. Bank capital - adequacy norms and capital market support.

Non-banking financial institutions:

Evolution, control by RBI and SEBI. A perspective on future role, Unit Trust of India and Mutual Funds, Reserve bank of India Framework for/Regulation of Bank Credit . Commercial paper: Features and advantages, Framework of Indian CP Market, effective cost/ interest yield.

Unit-III

Financial services: Asset/fund based Financial services - lease finance, consumer credit and hire purchase finance, factoring definition, functions, advantages, evaluation and forfeiting, bills discounting, housing finance, venture capital financing. Fee-based / Advisory services: Stock broking, credit rating.

Unit-IV

Operations: Financial Assets/ Instruments Rights issues, issue of Debentures, issue of Equity shares - pre-issue activity, post-issue activities. The regulatory framework: SEBI and Regulation of Primary and Secondary Markets, Company Law provisions.

Learning Outcome: After completion of this paper, the students will be able to understand the role and benefits of financial institution and services.

Text Books Recommended

1. Financial Markets, Institutions & Services-Gordon, Natrajan-Himalaya Publishing

House
2. Pathak: Indian Financial Systems Pearson Education

Suggested Readings

1. Financial Market and Int. , A. goyal and M. Goyal, V.K. Global Pvt. Ltd., New Delhi
2. Financial Markets , Institutions and Services, Kaur, Talwar, KAlyani Publishers, New Delhi.
3. BHATTACHARYYA INDIAN FINANCIAL SYSTEM 2e, Oxford University Press.
4. M.Y.Khan, Financial Services, Tata McGraw-Hill, New Delhi, 2004.
5. H.R Machiraju, Indian Financial Systems, Vikas Publishing House Pvt. Ltd.2002.
6. Madura, J., Financial Institutions and Markets; Sharma R. and Mehta K. Financial Services, Cengage Learning

DSE – 1

Group B: Banking & Insurance

INDIAN BANKING AND INSURANCE SYSTEM

Objectives: To enable the students to acquire knowledge about basics of banking and insurance.

Unit-I: Concept of Bank and Banking & Types of Customers and Account holders Concept of Bank and Banking:

Historical Evolution of Banking: Origin and Development of Banking - Structure of Banking in India – Banks and Economic Development –Functions of Commercial banks (conventional and innovative functions) – Central Bank – RBI – functions – Emerging trends in Banking.

Types of Customers and Account holders:

Procedure and practice in opening and operating the accounts of customers - individuals including minors - joint account holders -Partnership firms - joint stock companies - executors and trustees-clubs and associations

Unit-II

Introduction to insurance: Purpose and need of insurance, insurance as a social security tool - insurance and economic development - Principles of insurance -various kinds of insurance - life, marine, fire, medical, general insurance - features.

Unit-III

Life Insurance - Law relating to life Insurance; General Principles of Life Insurance Contract; Proposal and policy; assignment and nomination; title and claims; General Insurance - Law relating to general insurance; different types of general insurance; general insurance Vs life insurance – Insurance business in India.

Unit-IV

Fundamentals of Agency Law: Definition of an agent; Agents regulations; Insurance intermediaries; Agents' compensation. Procedure for Becoming an Agent: Pre-requisite for obtaining a license; Duration of license; Cancellation of license; Revocation or

suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions

of the Agent: Proposal form and other forms for grant of cover; Financial and medical underwriting; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.

Learning Outcome: After the completion of this paper, the student will acquired practical knowledge of working mechanism of banking and insurance industries in India.

Text Books Recommended

1. M.N. Mishra: Insurance Principles and Practice, S. Chand & Company Ltd, Delhi.
2. Indian Institute of Bankers (Pub) Commercial Banking Vol-I/Vol-II (part I&II) Vol- III.
3. Hota P.K., and Das S.K. Financial Literacy and Banking, Kalyani Publishers

Suggested Readings

1. Dr. P. Periasamy: Principles and Practice of Insurance, Himalaya Publishing House, Delhi.
2. Mishra S. Banking Law and Practice – S Chand
3. Prasad – Banking Insurance – Vikash Publication
4. Inderjit Singh, RakeshKatyal& Sanjay Arora: Insurance Principles and Practices, Kalyani Publishers, Chennai.
5. Sheldon H.P :Practice and Law of Banking.
6. Bedi. H.L :Theory and Practice of Banking.
7. Maheshwari. S.N. :Banking Law and Practice.
8. Shekar. K.C :Banking Theory Law and Practice.
9. Pannandikar&Mithami': Banking in India.
10. Radhaswamy&Vasudevan: Text Book of Banking.
11. Varshaney: Banking Law and Practice.
12. G. Krishnaswamy : Principles & Practice of Life Insurance
13. Kothari &Bahl : Principles and Pratices of Insurance.

DSE – 1

Group – C: Management

Human Resource Management

Objective: The objective of the course is to acquaint students with the techniques and principles to manage human resource of an organization.

Contents:

Unit I: Nature and Scope & Human Resource Planning

Nature and Scope

Concept and meaning of IR &HR, Understanding the Nature and Scope of IR & HRM, Functions and importance

Human Resource Planning

Definition, Need and Features of Human Resource Planning, factors affecting Human Resource Planning

Unit II: Recruitment and Selection

Definition of Recruitment, Source, need and importance of Recruitment, Recruitment Policy process – sources of Recruitment Definition of Selection, Steps in selection.

Unit III: Training and Development

Training and Development Meaning and purpose of training, Benefits of training to organizationand employees -Training methods

Unit IV: Job Evaluation and Performance Appraisal

Job evaluation - objectives, scope, method, Job analysis, Job description, Job Specification - basic concept and significance, Performance Appraisal - Concept

Learning Outcomes: This paper can enhance the capability of the students to manage the most important assets of organization i.e. human beings which is much needed to ensure growth of that organization.

Text Books Recommended

1. Rao V.S.P - Human Resource Management. Vikash Publication
2. Human Resource Management, Sagun Ahuja, V.K. Global Pvt. Ltd., New Delhi

Suggested Readings:

1. Human Resource Management-Satapathy, Taheer and Mohanty—Himalaya Publishing House P Ltd.
2. Human Resource Management, Gupta, Joshi. Kalyani Publishers, Ne4w Delhi
3. Marketing Management & Human Resource Management: Verma et.al, Oxford University press.
4. Sinha, P. R. N. Shekhar, S.P.Human Resource Management, Cengage Learning
5. Human Resource Management -Gajendran, A K Jha, Vrinda Publications (P) Ltd
6. DeCenzo, D.A. and S.P. Robbins, "Personnel/Human Resource Management", Prentice Hall of India, New Delhi.
7. Khanka S.S. Human Resource Management. S Chand.
8. Ivancevich, John M. Human Resource Management. McGraw Hill.
9. reather and Davis. Human Resource Management. Pearson Education.

DSE-2

Group B: Banking & Insurance

MERCHANT BANKING AND FINANCIAL SERVICES

Objectives: To enable the students to understand the basic knowledge about the financial services available in India.

Unit-I

Merchant Banking: Nature and scope of Merchant Banking - Regulation of Merchant Banking Activity - overview of current Indian Merchant Banking scene - structure of Merchant Banking industry - primary Markets in India and Abroad - professional Ethics and code of conduct - current Development

Unit-II

Financial Services: Meaning and Definition, Role of Financial Services in a financial system. Leasing: Meaning and features. Introduction to equipment leasing: Types of Leases, Evolution of Indian Leasing Industry. Legal Aspects of Leasing: present Legislative Framework. Hire purchase: concept and characteristics of Hire purchase. Difference between hire purchase and leasing

Unit-III

Factoring: concept, nature and scope of Factoring - Forms of Factoring - Factoring vis-à-vis Bills Discounting - Factoring vis-à-vis credit Insurance Factoring vis-à-vis Forfeiting- Evaluation of a Factor - Evaluation of Factoring - Factoring in India current Developments.

Unit-IV

Securitization / Mortgages: Meaning, nature and scope of securitization, securitization as a Funding Mechanism, securitization of Residential Real Estate - whole Loans - Mortgages - Graduated-payment. Depository: Meaning, Evolution, Merits and Demerits of Depository. Process of Dematerialization and Dematerialization, Brief description of NSDL and CDSL

Security Brokerage:

Meaning of Brokerage, types of brokers. Difference between broker and jobber, SEBI Regulations relating to brokerage business in India.

Learning Outcome: After the completion of this course, the student will be able to understand the structure and function of mercantile banking and various financial services available in the present business world.

Text Books Recommended

1. Machiraju, Indian Financial System, Vikas Publishing House, 2nd Edition, 2002.
2. Merchant banking and financial services, Gupta /Gupta, Kalyani Publishers, New delhi

Suggested Readings:

1. M.Y.Khan, Financial Services, Tata McGraw-Hill, 11th Edition, 2008
2. Gopal C.R – Management Financial Service – S.Chand
3. NaliniPravaTripathy, Financial Services, PHI Learning, 2008
4. J.C.Verma, A Manual of Merchant Banking, Bharath Publishing House, New Delhi.
5. Varshney P.N. & Mittal D.K., Indian Financial System, Sultan Chand & Sons, New Delhi.
6. Sasidharan, Financial Services and System, Tata Mcgraw Hill, New Delhi, 1st Edition, 2008.
7. Website of SEBI.
8. Merchant Banking and Financial Services-Sharma M--Himalaya Publishing House
9. Sharma R. and Mehta K. Financial Services, Cengage Learning

DSE – 2

Group – C: Management

INTERNATIONAL BUSINESS

Objective: The objective of the course is to familiarize the students with the concepts, importanceand dynamics of international business and India's involvement with global business. The coursealso seeks to provide theoretical foundations of international business to the extent these arerelevant to the global business operations and developments.

Unit I: Introduction to International Business

a. Introduction to International Business: Globalization and its importance in world economy; Impact of globalization; International business vs. domestic business: Complexities of international business; Modes of entry into international business
b. International Business Environment: National and foreign environments and their components - economic, cultural and political-legal environments,
Issues in International Trade

Unit –II Theories of International Trade and International Organizations

a. Theories of International Trade – an overview (Classical Theories, Product Life Cycle theory, Theory of National Competitive Advantage); Commercial Policy Instruments - tariff and non-tariff measures – difference in Impact on trade, types of tariff and non tariff barriers (Subsidy, Quota and Embargo in detail) ; Balance of payment account and its components.
b. International Organizations and Arrangements: WTO – Its objectives, principles, organizational structure and functioning; An overview of other organizations – UNCTAD,; Commodity and other trading agreements (OPEC).

Unit –III International Financial Environment

a. Regional Economic Co-operation: Forms of regional groupings; Integration efforts among in Europe, North America and Asia (NAFTA, EU , ASEAN and SAARC) .
b. International Financial Environment: International financial system and institutions (IMF and World Bank – Objectives and Functions) ; Foreign exchange markets and risk management; Foreign investments - types and flows; Foreign investment in Indian perspective

Unit –IV Foreign Trade Promotion and Financing of foreign trade

a. Foreign Trade Promotion Measures and Organizations in India; Special economic zones(SEZs) and export oriented units (EOUs), ; Measures for promoting foreign investments into and from India; Indian joint ventures and acquisitions abroad.
b. Financing of foreign trade and payment terms – sources of trade finance (Banks, factoring, for faiting, Banker's Acceptance and Corporate Guarantee) and forms of payment (Cash in advance, Letter of Credit, Documentary Collection, Open Account)

Text Books Recommended

1. Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business.

2. Pearson Education
3. Cherunilam, Francis. International Business: Text and Cases. PHI Learning

Suggested Readings:

1. Charles W.L. Hill and Arun Kumar Jain, International Business. New Delhi: McGraw Hill Education
2. Johnson, Derbe., and Colin Turner. International Business - Themes & Issues in the Modern
3. Global Economy. London: Roultedge.
4. Michael R. Czinkota. et al. International Business. Fortforth: The Dryden Press.
5. Peng and Srivastav, Global Business, Cengage Learning
6. Subba Rao P – International Business-Himalaya Publishing House
7. JOSHI INTERNATIONAL BUSINESS SITKIN INTERNATIONAL BUSINESS, Oxford University Press.

DSE – 3

Elective – III (Any one of the following Groups)

Group – A: Accounting & Finance

Fundamentals of Corporate Tax Planning

Objective: To provide a conceptual idea about the various provisions of tax planning related to corporate sector.

Contents

Unit-I:

Corporate Tax in India–Concept of Tax planning, Tax management, Tax avoidance, Tax evasion, Assessment year and Financial Year

Residential status of corporate and its incidence of tax, Minimum Alternate Tax, Calculation of Tax Liability.

Unit-II:

Carryforward and set-off of losses and unabsorbed depreciation (headwise)

Unit-III:

Tax Planning with reference to Depreciation, Capital Gain and Scientific Research

Unit-IV:

Corporate Tax returns–Assessment, Return Filing, Penal provision, Double taxation Relief

Learning outcome: After completion of this paper, students will be able to help tax consultants in tax planning, assessment and filing income tax returns of corporate sector, thereby they can get themselves self-employed.

Text Books Recommended

1. Bhagabati Prasad, Direct Tax Laws & Practices
2. Corporate Tax Planning, V.K. Global Publications

Suggested Readings

1. Singhania V.K. Direct Taxes: Law & Practices, Taxmann Publication.
2. Corporate Tax Planning, Kalyani Publishers

DSE – 3

Group B: Banking & Insurance

Fundamentals of Investment

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Content

Unit-I:

The Investment Environment- The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets, the Indian securities market, the market participants and trading of securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on return.

Investor Protection

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investors' awareness and activism.

Unit-II:

Fixed Income Securities- Bond features, types of bonds, estimating bond yields, Bond Valuation types of bond risks, default risk and credit rating

Unit-III:

Approaches to Equity Analysis: Introductions to Fundamental Analysis, Technical Analysis and Efficient Market Hypothesis, dividend capitalization models, and price-earnings multiple approach to equity valuation.

Unit-IV:

Portfolio Analysis and Financial Derivatives:(a) Portfolio and Diversification, Portfolio Risk and Return. (b) Mutual Funds. (c) Introduction to Financial Derivatives, Financial Derivatives Markets in India.

Learning outcome: After completion of this paper, this paper will educate the students about various aspect of investment in detail along with understandability of stock market operation, focusing on need for common investor protection.

Text Books Recommended

1. Bhalla – Fundamentals of Investment – S.Chand
2. Rustogi, R.P., Fundamentals of Investment, Sultan Chand & Sons, New Delhi.

Suggested Readings

3. Pandian P. – Security Analysis & Portfolio Management – Vikash Publication
4. Jones, C.P., "Investments Analysis and Management", Wiley, 8th ed.
5. Prasanna, Chandra., "Investment Analysis and Portfolio Management", Tata McGraw Hill.
6. Vohra, N.D., and B.R. Bagri, "Futures and Options", McGraw Hill Publishing
7. Mayo, An Introduction to Investment,Cengage Learning.
8. Fundamentals of Investment, Sashi Gupta, Kalyani Publishers, New Delhi,
9. Fundamentals of Investment, Vandana Dangi, V.K. Globa. Pub. Pvt. Ltd. New delhi.

DSE-3

Group – C: Management

Consumer Affairs & Customer Care

Objective: This paper seeks to familiarise the students with of their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights.It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and business environment.

Unit I: Conceptual Framework

Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances- complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Internal and External Complaint handling: Corporate Redress Systems and Public Redress Systems

Unit II: The Consumer Protection Act, 1986 (CPA) Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods and services, unfair trade practice, restrictive trade practice.

Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels, Basic Consumer Rights; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA.

RTI Act

Unit III: Grievance Redress Mechanism under the Consumer Protection Act, 1986:

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

Unit IV: Industry Regulators and Consumer Complaint Redress Mechanism

i. Banking: RBI and Banking Ombudsman
ii. Insurance: IRDA and Insurance ombudsman
iii. Telecommunication: TRAI
iv. Food Products: FSSAI (an overview)
v. Electricity Supply: Electricity Regulatory commission
vi. Advertising: ASCI

Text Books Recommended

1. The Consumer Protection Act, 1986
2. Bhatta KG- Customer Care Management-Himalaya Publishing House

Suggested Readings:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. Consumer Affairs"
2. (2007) Delhi University Publication. 334 pp.
3. Aggarwal, V. K. (2003). Consumer Protection: Law and Practice. 5th ed. Bharat Law
4. House, Delhi, or latest edition.
5. Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
6. Nader, Ralph (1973). The Consumer and Corporate Accountability. USA, Harcourt Brace
7. Jovanovich, Inc.
8. Sharma, Deepa (2011).Consumer Protection and Grievance-Redress in India: A Study of
9. Insurance Industry (LAP LAMBERT Academic Publishing GmbH & Co.KG,
10. Saarbrucken, Germany. 263 pp.
11. Empowering Consumers e-book, www.consumeraffairs.nic.in
12. ebook, www.bis.org
13. Nair Suja – Consumer Behaviour – Himalaya Publishing House

DSE-4

B.Com. (Hons.): Semester – VI

Business Research Methods and Project Work

Objective: This course aims at providing the general understanding of business research and the methods of business research. The course will impart learning about how to collect, analyze, present and interpret data.

Section A: Business Research Methods

50 Marks Unit-I

Introduction: Meaning of research; Scope of Business Research; Purpose of Research – Exploration, Description, Explanation; Unit of Analysis – Individual, Organization, Groups, and Data Series; Conception, Construct, Attributes, Variables, and Hypotheses.

Unit-II

Research Process: An Overview; Problem Identification and Definition; Selection of Basic Research Methods- Field Study, Laboratory Study, Survey Method, Observational Method Existing Data Based Research, Longitudinal Studies, Panel Studies

Unit-III

Measurement: Definition; Designing and writing items; Uni-dimensional and Multi-dimensional scales; Measurement Scales- Nominal, Ordinal, Interval, Ratio; Ratings and Ranking Scale, Thurst one, Likert and Semantic Differential scaling, Paired Comparison; Sampling –Steps, Types, Sample Size Decision; Secondary data sources

Hypothesis Testing: Tests concerning means and proportions; ANOVA, Chi-square test and other Non-parametric tests; testing the assumptions of Classical Normal Linear Regression.

Section B – Project Report Marks (30 + 20)

Unit-IV Report Preparation: Meaning, types and layout of research report; Steps in report writing; Citations, Bibliography and Annexure in report; JEL Classification

Note:

1. There shall be a written examination of 50% Marks on the basis of Unit I to III.

2. The student will write a project report under the supervision of a faculty member assigned by the college/institution based on field work. The Project Report carries 50% Marks and will be evaluated by University appointed examiners.

Learning Outcome: After completion of this paper, the students will be able to assess and apply a range of research method on a practical project.

Text Books Recommended

1. Mishra Business Research Methods , Oxford University Press.
2. Business Research Methods and Project work, Priyaranjan Dash, VrindaPublications (P) Ltd

Suggested Readings:

1. Business Research methods, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd., New Delhi.

2. Upagade& Shende – Research Methodology – S. Chand
3. A.K.P.C. Swain, Business Research methods and Project work, Kalyani Publishers, New Delhi
4. Dangi, H.K. Business Research methods, Cengage Learning
5. Chawla Deepak – Research Methodology – Vikash Publication

(GE – 1) MICRO ECONOMICS

Objective: Objective of the course is to acquaint the students with the concepts of micro-economics dealing with consumer behavior. The course also makes the student understand the supply side of the market through the production and cost behavior of firms.

Unit: I Demand and Consumer behaviour

Concept of demand: demand function, law of demand, derivation of individual and market demand curves, shifting of the demand curve, elasticity of demand, Consumer behavior, Marshallian utility approach and Indifference Curve approach; utility maximization conditions . Income-Consumption Curve (ICC) and Price-Consumption Curve (PCC)

Unit: II Production and Cost

Production function: Short-run and Long-run; Total Product, Average Product and Marginal Product, Law of returns to a variable factor, Law of Returns to Scale; Concepts of Iso-quant and iso-cost line;
Cost: Accounting and Economic Costs; Social and Private Costs; Short-run and Long-run Costs; Relation between Average and Marginal

Unit: III Perfect Competition

Concept of Perfectly Competitive market: Assumptions, Profit maximization conditions; Related concepts of Total Revenue, Average Revenue and Marginal Revenue, Short-run and Long- run equilibrium of a firm; determination of short-run supply curve of a firm, measuring producer surplus under perfect competition

Unit: IV Imperfect

Competition Monopoly

Concept of Monopoly: Sources of monopoly power; Short-run and Long-run equilibrium of a monopoly firm; Price discrimination; Social Cost of Monopoly (concept only).

Monopolistic Competition

Concept of Imperfectly Competitive market; Monopolistic Competition: Features and examples; Oligopoly: Non-Collusive Oligopoly: Sweezy's Kinked demand Curve Model, Collusive Oligopoly: Cartel (concept with example)

Learning Outcomes: The students would be able to apply tools of consumer behaviour and

firm theory to business situations.

Text Books Recommended

1. Micro Economics-K C Dash- Himalaya Publishing House
2. Ahuja, H.L, Micro Economics, S.Chand

Suggested Readings:

1. Mehta P.K, Singh M. – Micro Economics – Taxmann Publication
2. Micro Economics-T.R. Jain , B.D. Majhi, V.K. Global
3. Browining, E.K. and J.M. Browning; Microeconomic Theory and Applications,
4. Kalyani Publishers, New Delhi.
5. Microeconomics I and Statistics: Das & Sengupta, Oxford University Press
6. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
7. Dwivedi, D.N. Micro Economics, Vikash Publication
8. Pindyck, R.S., D. L. Rubinfeld and P. L. Mehta; Microeconomics, Pearson Education.
9. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
10. Maddala G.S.and E.Miller; Microeconomics: Theory and Applications,
11. MCGraw-Hill International.

(GE-2)

Macro & Indian Economy

Objectives: The course aims at providing the student with knowledge of basic concepts of the macro economics. The modern tools of macro-economic analysis are discussed and the policy framework is elaborated, including the open economy.

Contents:

Unit I Introduction to Macro Economics

Introduction: Meaning and definition of Microeconomics and macroeconomics, Difference between Microeconomics and macroeconomics, macro-economic goals, components of Macroeconomics, Economic Systems: Mixed economy, Socialism economy, Capitalism economy and Islamic economy (only meaning and characteristics)

Unit II National Income Accounting

Definition of National Income, Concepts of National Income,GDP and GNP, Methods of Measuring National Income, Uses of National Income, Difficulties in calculating National Income, Real Income, Per Capita Income and Growth Rate

Unit:III National Income Equilibrium

I Concepts of Equilibrium, Consumptions & Savings, Investment Theory, Government Sector, Foreign Sector, Determination of Equilibrium, Multiplier Concept, Inflationary Gap and Deflationary Gap, Summary of Two-, Three- and Four-sector Economies

Unit:IV Role of Government

Expenditure, Public Debt, and Government Policy

Economic functions of Government, Types of Budget, Government Revenue, Government Expenditure, Public Debt, and Government Policy

Macroeconomic Problems

Introduction, Business cycle, Unemployment, Inflation, Deflation, Depression, RBI and monetary policy

Learning Outcomes: Students would be able to apply the modern tools of macro-economic analysis so as to minimize the adverse impact of macro-economic factors on business.

Text Books Recommended

1. Macro & Indian Economy, M. Treheran, T Treheran, V.K. Global publishing Pvt. Ltd., New Delhi
2. Ahuja H.L – Macro Economics – S.Chand

Suggested Readings

1. Mankiw, N. Gregory. Principles Macroeconomics.Cengage Learning
2. Macro and Indian economy, P.K. Dhar, Kalyani Publishers
3. Macro and Indian Economy-V K Puri- Himalaya Publishing House
4. Dornbusch, Rudiger., Stanley. Fischer and Richard Startz, Macroeconomics. Irwin/McGraw-Hill.
5. Vaish – Macro Economics – Vikash Publication
6. Macroeconomics & Indian Economy: Bhattacharyya, Oxford University Press.

(GE-3)

Business Statistics

Objective: The objective of this course is to familiarize students with the basic statistical toolsused for managerial decision-making.

Contents:

Unit I:

Statistical Data and Descriptive Statistics (With the use of Excel and other statistical software)

Nature and Classification of data: Univariate, Bivariate and multivariate data; time-series and cross-sectional data
Measures of Central Tendency
a) Mathematical averages including arithmetic mean, geometric mean and harmonic mean. Properties and applications.
b) Positional Averages
Mode and Median and other partition values including quartiles, deciles, and percentiles

Unit II:

Measures of Variation (With the use of Excel and other statistical software)

Absolute and relative, Range, quartile deviation, mean deviation, standard deviation, and their coefficients, Properties of standard deviation/variance Skewness: Meaning, Measurement using Karl Pearson and Bowley's measures; Concept of Kurtosis

Unit III:

Simple Correlation and Regression Analysis (With the use of Excel and other latest software)

Correlation Analysis: Meaning of Correlation: simple, multiple and partial; linear and non-linear, Correlation and Causation, Scatter diagram, Pearson's co-efficient of correlation; calculation and properties (proofs not required). Correlation and Probable error; Rank Correlation

Regression Analysis: Principle of least squares and regression lines, Regression equations and estimation; Properties of regression coefficients; Relationship between Correlation and Regression coefficients; Standard Error of Estimate

Unit IV:

Index Numbers (With the use of Excel and other latest software)

Meaning and uses of index numbers: Construction of index numbers: fixed and chain base: univariate and composite. Aggregative and average of relatives – simple and weighted

Tests of adequacy of index numbers, Base shifting, splicing and deflating. Problems in the construction of index numbers

Construction of consumer price indices, important share price indices

Time Series Analysis (With the use of Excel and other latest software)

Components of time series, Additive and multiplicative models Trend analysis, Fitting of trend line using principle of least squares – linear, second degree parabola and exponential, Conversion of annual linear trend equation to quarterly/monthly basis and vice-versa; Moving averages Seasonal variations- Calculation of Seasonal Indices using Simple averages, Ratio-to-trend, and Ratio-to-moving averages methods. Uses of Seasonal Indices

Learning Outcomes: Students would be armed with the knowledge of using different statistical tools very much required in the decision making process in any business as well as business research.

Text Books Recommended

1. Gupta, S.P., and Archana Gupta. Statistical Methods. Sultan Chand and Sons, New Delhi.
2. Business Statistics - Levine and Viswanathan, Pearson Publication

Suggested Readings:

1. Business statistics, S.C. Agarwal, V.K. Global Pub. Pvt. Ltd, New Delhi.
2. Patri and Patri, Business statistics , Kalyani Publishers New Delhi.

3. Keller G, and Arora H, BSTAT, Cengage Learning
4. Gupta, S.C. Fundamentals of Statistics. Himalaya Publishing House.
5. Business Statistics– S K Sahoo, P K Prusty, Vrinda Publications (P) Ltd
6. Microeconomics I and Statistics: Das & Sengupta, Oxford University Press.
7. Sharma J K, Fundamentals of Business Statistics – Vikash Publication
8. Vohra N. D., Business Statistics, McGraw Hill.

(GE-4)

Principles of Marketing

Objective: The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

Contents:

Unit I: Introduction:

Nature, scope and importance of marketing; Selling vs Marketing; Marketing mix, Marketing environment: concept, importance, and components (Economic, Demographic, Technological, Natural, Socio-Cultural and Legal).

Consumer Behaviour and Market segmentation:

Consumer Behaviour: Nature and Importance, Factors influencing consumer buying behaviour. Market segmentation: concept, importance and bases; Product differentiation vs. market segmentation.

Unit II: Product:

Concept and importance, Product classifications; Concept of product mix; Branding, packaging and labeling; Product life-cycle; New Product Development Process

Unit III: Pricing, Distribution Channels and Physical Distribution

Pricing: Significance, Factors affecting price of a product, Pricing policies and strategies, Distribution Channels and Physical Distribution: Channels of distribution - meaning and importance; Types of distribution channels; Factors affecting choice of distribution channel

Unit IV: Promotion and Recent developments in marketing:

Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion, and their distinctive characteristics. Recent developments in marketing: Social Marketing, online marketing, direct marketing, services marketing, green marketing, Rural marketing; Consumerism

Learning outcome: After the completion of this paper, the students will able to identify marketing components and fit them in the value chain along with the various marketing strategies.

Text Books Recommended

1. Marketing Principles and Management-Sherleker and Pany-- Himalaya Publishing House
2. Kotler, Philip, Gary Armstrong, Prafulla Agnihotri and AhsanUlHaque. Principlesof Marketing. 13th edition. Pearson Education.

Suggested Readings:

1. Principles of Marketing, Bajaj, Kaur, Kalyani Publishers, New Delhi.
2. Principles of Marketing , R.K. Mittal , A. Sharma, V .K. Global Pub. Pvt. Ltd, New Delhi.
3. Marketing Management & Human Resource Management: Verma et.al, Oxford University Press.
4. Lamb, C. W., Hair, J.F. and Sharma, D. MKTG, Cengage Learning
5. Principles of Marketing M K Nabi, K C Raut, Vrinda Publications (P) Ltd
6. Arun Kumar – Marketing management – Vikash Publication
7. Rudani R.B – Basics of Marketing Management – S. Chand
8. Majaro, Simon. The Essence of Marketing. Prentice Hall, New Delhi.
9. Zikmund William G. and Michael D'Amico. Marketing; Creating and Keeping Customers in an E-Commerce World. Thomson Learning.
10. Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition. DhanpatRai& Company.

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN SCIENCE (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

Course Structure of U.G. Botany Honours				
Semester	**Course**	**Course Name**	**Credit**	**Total marks**
Semester-I	AECC-I		4	100
	C-1 (Theory)	Microbiology and Phycology	4	75
	C-1 (Practical)	Microbiology and Phycology	2	25
	C-2 (Theory)	Biomolecules and Cell Biology	4	75
	C-2 (Practical)	Biomolecules and Cell Biology	2	25
	GE -1A (Theory)	Biodiversity (Microbes, Algae, Fungi & Archegoniate)	4	75
	GE -1A(Practical)	Biodiversity (Microbes, Algae, Fungi & Archegoniate)	2	25
	AECC-II		4	100
	C-3 (Theory)	Mycology and Phytopathology	4	75

Semester-II	C-3 (Practical)	Mycology and Phytopathology	2	25
	C-4 (Theory)	Archegoniate	4	75
	C-4 (Practical)	Archegoniate	2	25
	GE -2A (Theory)	Plant Physiology & Metabolism	4	75
	GE -2A(Practical)	Plant Physiology & Metabolism	2	25
Semester-III	C-5 (Theory)	Anatomy of Angiosperms	4	75
	C-5 (Practical)	Anatomy of Angiosperms	2	25
	C-6 (Theory)	Economic Botany	4	75
	C-6 (Practical)	Economic Botany	2	25
	C-7 (Theory)	Genetics	4	75
	C-7 (Practical)	Genetics	2	25
	SEC-1		4	100
	GE -1B (Theory)	Plant Ecology & Taxonomy	4	75
	GE -1B (Practical)	Plant Ecology & Taxonomy	2	25
Semester-IV	C-8 (Theory)	Molecular Biology	4	75
	C-8 (Practical)	Molecular Biology	2	25
	C-9 (Theory)	Plant Ecology & Phytogeography	4	75
	C-9 (Practical)	Plant Ecology & Phytogeography	2	25

	C-10 (Theory)	Plant Systematics	4	75
	C-10 (Practical)	Plant Systematics	2	25
	SEC II		4	100
	GE-2B (Theory)	Plant Anatomy , Embryology & Biotechnology	4	75
	GE-2B(Practical)	Plant Anatomy , Embryology & Biotechnology	2	25
Semester-V	C-11 (Theory)	Reproductive Biology of Angiosperms	4	75
	C-11 (Practical)	Reproductive Biology of Angiosperms	2	25
	C-12 (Theory)	Plant Physiology	4	75
	C-12 (Practical)	Plant Physiology	2	25
	DSE - 1 (Theory)	Analytical Techniques in Plants Sciences	4	75
	DSE - 1 (Practical)	Analytical Techniques in Plants Sciences	2	25
	DSE - 2 (Theory)	Natural Resource Management	4	75
	DSE - 2 (Practical)	Natural Resource Management	2	25
Semester-VI	C-13 (Theory)	Plant Metabolism	4	75
	C-13 (Practical)	Plant Metabolism	2	25
	C-14 (Theory)	Plant Biotechnology	4	75
	C-14 (Practical)	Plant Biotechnology	2	25
	DSE - 3 (Theory)	Horticulture Practices & Post Harvest Technology	4	75
	DSE-3 (Practical)	Horticulture Practices & Post Harvest Technology	2	25
	DSE – 4 Project work	Project Work	6	100
		Total	**148**	**2600**

BOTANY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers
Generic Elective for non-Botany students – 4 papers. In case University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper. The students have the option of taking any two.

Marks per paper – Mid term: 15 marks, End term: 60 marks (Theory) + 25 marks (Practical), Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 40 hours (theory) + 10 hours (practical)

Core Paper I

MICROBIOLOGY AND PHYCOLOGY

Unit-I

Introduction to microbial world, microbial nutrition, growth and metabolism. **Viruses:-** Discovery, physicochemical and biological characteristics; classification (Baltimore), general structure with special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Economic importance of viruses with reference to vaccine production, role in research, medicine and diagnostics, as causal organisms of plant diseases.

Unit–II

(i) **Bacteria: -** Discovery, general characteristics, types- archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts), cell structure, nutritional types, reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction). Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).

(ii) **Cyanobacteria:-**Ecology and occurrence, cell structure, heterocyst, reproduction, economic importance; role in biotechnology. Morphology and life-cycle of *Nostoc*. General characteristics of prochlorophyceae, Evolutionary significance of Prochloron.

Unit–III

(i) **Algae:-** General characteristics; Ecology and distribution; range of thallus organization; Cell structure and components; cell wall, pigment system, reserve food (of only groups represented in the syllabus), flagella and methods of reproduction, classification; criteria, system of Fritsch, and evolutionary classification of Lee (only upto groups); Role of algae in the environment, agriculture, biotechnology and industry.

(i) Chlorophyta:- General characteristics, occurrence, range of thallus organization, cell structure and reproduction. Morphology and life-cycles of *Chlamydomonas*, *Volvox*, *Oedogonium* and *Coleochaete*.

Unit-IV

(i) **Charophyta:-** General characteristics; occurrence, morphology, cell structure and life-cycle of *Chara*; evolutionary significance.

(ii) **Xanthophyta:-** General characteristics; Occurrence, morphology and life- cycle of *Vaucheria*.

(iii) **Phaeophyta:-**Characteristics, occurrence, cell structure and reproduction. Morphology and life-cycles of *Ectocarpus* and *Fucus*.

(iv) **Rhodophyta:-**General characteristics, occurrence, cell structure and reproduction. Morphology and life-cycle of *Polysiphonia*.

PRACTICAL

Microbiology

(i) Electron micrographs/Models of viruses –T-Phage and TMV, Line drawings/ Photographs of Lytic and Lysogenic Cycle.

(ii) Types of Bacteria to be observed from temporary/permanent slides/photographs.

(iii) Examination of bacteria from bacterial culture by Gram's staining method.

(iv) Electron micrographs of bacteria, binary fission, endospore, conjugation, root Nodule (live materials and photographs).

Phycology

Study of vegetative and reproductive structures of Nostoc, Chlamydomonas (electron micrographs), Volvox, Oedogonium,Coleochaete, Chara, Vaucheria, Ectocarpus, Fucus and Polysiphonia, Procholoron, Diatoms through, temporary preparations and permanent slides.

Text Books:

1. Singh, V., Pandey, P.C., and Jain, D.K. (2017). Microbiology and Phycology, Rastogi Publication, Meerut.

Reference Books:

1. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
2. Prescott, L.M., Harley J.P., Klein D. A. (2010). Microbiology, McGraw-Hill, India. 8th edition.
3. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
4. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008). Biology, Pearson Benjamin Cummings, USA. 8th edition.
5. Pelczar, M.J., Chan, E.C.S., Krieg, N.R. (2011) Microbiology, 8th edition, Tata McGraw-Hill Co, New Delhi.
6. Willey, Sherwood and Christopher. Laboratory exercises in Microbiology. McGraw-Hill, India. 9th edition.
7. Vasistha B.R. (2017) Botany for Degree student, Algae, S. Chand Publication, New Delhi.
8. Mishra B. K. (2018) Microbiology and Phycology, Kalyani Publishers, New Delhi.

Core Paper II BIOMOLECULES AND CELL BIOLOGY

Unit-I

(i) Biomolecules and Bioenergenetics: Types and significance of chemical bonds; Structure and properties of water; pH and buffers. Laws of thermodynamics, concept of free energy, endergonic and exergonic reactions, coupled reactions, redox reactions.

(ii) Enzymes: Structure of enzyme: holoenzyme, apoenzyme, cofactors, coenzymes and prosthetic group; Classification of enzymes; Features of active site, substrate specificity, properties of enzymes, mechanism of action (activation energy, lock and key hypothesis, induced - fit theory), Michaelis – Menten equation, enzyme inhibition and factors affecting enzyme activity.

(iii) Carbohydrates: Nomenclature, classification, structure and function of Monosaccharides, Disaccharides, Oligosaccharides and polysaccharides

Unit –II

(i) Lipids: Definition and major classes of storage and structural lipids. Fatty acids structure and functions. Essential fatty acids. Triacyl glycerols structure, functions and properties.

(ii) Proteins: Structure and classification of amino acids; Peptide bonds; Levels of protein structure-primary, secondary, tertiary and quarternary; Isoelectric point; Protein denaturation and biological roles of proteins.

(iii) Nucleic acids: Structure of nitrogenous bases; Structure and function of nucleotides; Types of nucleic acids; Structure of A, B, Z types of DNA; Types of RNA; Structure of tRNA.

Unit –III

(i) The Cell: Cell as a unit of structure and function; Characteristics of prokaryotic and eukaryotic cells; Origin of eukaryotic cell (Endosymbiotic theory).

(ii) Cell wall and plasma membrane: Chemistry, structure and function of Plant Cell Wall. Overview of membrane function; fluid mosaic model; Chemical composition of membranes; Membrane transport – Passive, active and facilitated transport, endocytosis and exocytosis.

(i) Cell organelles: Nucleus; Structure-nuclear envelope, nuclear pore complex, nuclear lamina, molecular organization of chromatin; nucleolus.

Unit-IV

(i) Cytoskeleton: Role and structure of microtubules, microfilaments and intermediary filament.

(ii) Chloroplast, mitochondria and peroxisomes: Structural organization; Function; Semiautonomous nature of mitochondria and chloroplast. Endoplasmic Reticulum, Golgi Apparatus, Lysosomes.

(iii) Cell division: Eukaryotic cell cycle, different stages of mitosis and meiosis. Cell cycle,

Regulation of cell cycle.

PRACTICAL

(i) Qualitative tests for carbohydrates, reducing sugars, non-reducing sugars, lipids and proteins.

(ii) Study of plant cell structure with the help of epidermal peel mount of Onion/*Rhoeo*

(iii) Demonstration of the phenomenon of protoplasmic streaming in *Hydrilla* leaf.

(iv) Counting the cells per unit volume with the help of haemocytometer. (Yeast/pollen grains).

(v) Study the phenomenon of plasmolysis and deplasmolysis.

(vi) Study of different stages of mitosis and meiosis using aceto carmine and aceto orcine method from Onion root tip and bud respectively.

Text Books:

1. Rastogi, V. B. (2016). Introductory Cytology, Kedar Nath & Ram Nath, Meerut
2. Gupta, P. K. (2017). Biomolecules and Cell Biology, Rastogi Publication, Meerut.

Reference Books:

1. Sahoo, K. (2017) Biomolecules and Cell Biology, Kalyani Publishers, New Delhi.
2. Tymoczko, J.L., Berg, J.M. and Stryer, L. (2012) Biochemistry: A short course, 2nd ed., W.H. Freeman
3. Nelson, D.L. and Cox, M.M. (2008) Lehninger Principles of Biochemistry, 5th Edition, W.H. Freeman and Company.
4. Cooper, G.M. and Hausman, R.E. 2009 The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
5. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009 The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco

Core Paper III

MYCOLOGY AND PHYTOPATHOLOGY

Unit-I

(i) Introduction to true fungi: Definition, General characteristics; Affinities with plants and animals; Thallus organization; Cell wall composition; Nutrition; Classification.

(i) Zygomycota: General characteristics; Ecology; Thallus organisation; Life cycle with reference to *Rhizopus*.

(ii) Ascomycota: General characteristics (asexual and sexual fruiting bodies); Ecology; Life cycle, Heterokaryosis and parasexuality; life cycle and classification with reference to *Saccharomyces*, *Aspergillus*, *Penicillium,*and *Neurospora.*

(iv) Basidiomycota: General characteristics; Ecology and Classification; Life cycle of *Puccinia* and *Agaricus*.

Unit-II

(i) Allied Fungi: General characteristics; Status of Slime molds, Classification;

Occurrence; Types of plasmodia; Types of fruiting bodies.

(ii) Oomycota: General characteristic; Ecology; Life cycle and classification with reference to *Phytophthora,* and *Albugo.*

(iii) Symbiotic associations: Lichen – Occurrence; General characteristics; Growth forms and range of thallus organization; Nature of associations of algal and fungal partners; Reproduction. Mycorrhiza-Ectomycorrhiza, Endomycorrhiza and their significance. Economic importance of Lichens.

Unit-III

Applied Mycology: Role of fungi in biotechnology, Mushroom cultivation, Application of fungi in food industry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Mycoproteins); Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides); Medical mycology.

Unit-IV

Phytopathology: Terms and concepts; General symptoms; Geographical distribution of diseases; etiology; symptomology; Host- Pathogen relationships; disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine. Bacterial diseases – Citrus canker and angular leaf spot disease of Cotton. Viral diseases – Tobacco Mosaic, Vein Clearing. Fungal diseases – Early blight of potato, Loose and covered smut.

PRACTICAL

(i) Introduction to the world of fungi (Unicellular, coenocytic/ septate mycelium, ascocarps & basidiocarps).

(ii) *Rhizopus*: study of asexual stage from temporary mounts and sexual structures through permanent slides.

(iii) *Aspergillus, Penicillium* and *Saccharomyces* : study of asexual stage from temporary mounts. Study of Sexual stage from permanent slides/photographs.

(iv) *Puccnia :* Study of different stages from temporary mounts and permanent slides.

(v) *Agaricus*: Specimens of button stage and full grown mushroom; sectioning of gills of *Agaricus*, and fairy rings are to be shown.

(vi) *Albugo:* Study of symptoms of plants infected with *Albugo*; asexual phase study through section/ temporary mounts and sexual structures through permanent slides.

(vii) *Phytopathology*: Herbarium specimens of bacterial diseases; Citrus Canker; Viral diseases: Mosaic disease of ladies finger, papaya, cucurbits, moong, black gram, Fungal diseases: Blast of rice, Tikka disease of ground nut, powdery mildew of locally available plants and White rust of crucifers.

Text Books:

1. Mishra, B. K. (2017), Mycology and Phytopathology, Kalynai Publishers, New Delhi.

Reference Books:

1. Sharma, P. D. (2017). Mycology and Phytopathology Rastogi Publication, Meerut.
2. Agrios, G.N. (1997) Plant Pathology, 4th edition, Academic Press, U.K.
3. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley &Sons (Asia) Singapore. 4th edition.
4. Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge University Press, Cambridge. 3rd edition.
5. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Publishers India Ltd.
6. Mehrotra, R. S.(2011). Plant Pathology. Tata Mc Graw-Hill Publishing Company Limited, New Delhi

Core Paper IV

ARCHEGONIATAE

Unit-I

(i) Introduction: Unifying features of archegoniates; Transition to land habit; Alternation of generations. General characteristics; Origin of land plants and Adaptations to land habit;

(ii) Bryophytes : Origin and Classification; Range of thallus organization. Classification (up to family). Structure, Reproduction and evolutionary trends in *Riccia*, *Marchantia*, *Anthoceros* and *Funaria* (developmental stages not included). Ecological and economic importance of bryophytes.

Unit-II

Pteridophytes: General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Psilotum*, *Selaginella*, *Equisetum, Pteris* and *Marsilea*. Apogamy, and apospory, heterospory and seed habit, telome theory, stellar evolution and economic importance.

Unit-III

Gymnosperms: General characteristics, classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus*, *Ginkgo* and *Gnetum*. (Developmental details not to be included).Ecological and economic importance.

Unit-IV

Palaeobotany: Geological time scale, fossils and fossilization process. Morphology, anatomy and affinities of Rhynia, Calamites, Lepidodendron, Lyginopteris, Cycadeoidea and Williamsonnia.

PRACTICAL

(i) Morphology, anatomy and reproductive structures of *Riccia, Marchantia, Anthoceros, Funaria*.

(ii) *Psilotum*- Study of specimen, transverse section of synangium (permanent slide).

(iii) *Selaginella*- Morphology, whole mount of leaf with ligule, transverse section of stem, whole mount of strobilus, whole mount of microsporophyll and megasporophyll (temporary slides), longitudinal section of strobilus (permanent slide).

(iv) *Equisetum*- Morphology, transverse section of internode, longitudinal section of strobilus, transverse section of strobilus, whole mount of sporangiophore, whole mount of spores (wet and dry) (temporary slide), transverse section of rhizome (permanent slide).

(v) Study of temporary preparations and permanent slides of *Marsilea*.

(vi) *Pteris*- Morphology, transverse section of rachis, vertical section of sporophyll, whole mount of sporangium, whole mount of spores (temporary slides), transverse section of rhizome, whole mount of prothallus with sex organs and young sporophyte (permanent slide).

(vii) *Cycas*- Morphology (coralloid roots, bulbil, leaf), whole mount of microsporophyll and megaspore, T.S root, leaflet, rachis

(viii) *Pinus*- Morphology (long and dwarf shoots, whole mount of dwarf shoot, male and female cones), T.S. Needle, stem, L.S. male cone, whole mount of microsporophyll, whole mount of Microspores (temporary slides), L.S.of female cone.

(ix) *Gnetum*- Morphology (stem, male & female cones), transverse section of stem, vertical section of ovule (permanent slide).

(x) Study of some fossil slides / photographs as per theory.

Text Books:

1. Vasistha, B. R. (2017) Botany for Degree student, Bryophyta, S. Chand Publication, New Delhi.
2. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Archegoniate, Rastogi Publication, Meerut.

Reference Books:

1. Acharya, B. S. (2017), Archegoniate, Kalyani Publishers, New Delhi.
2. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. New Delhi, India.
3. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
4. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.

Core Paper V
ANATOMY OF ANGIOSPERMS

Unit-I

(i) Introduction and scope of Plant Anatomy: Applications in systematics, forensics and pharmacognosy.
(ii) Tissues: Classification of tissues; Simple and complex tissues (no phylogeny); cyto-differentiation of tracheary elements and sieve elements; Pits and plasmodesmata; Cell wall ingrowths and transfer cells, adcrustation and incrustation, Ergastic substances.

Unit-II

(i) Stem: Organization of shoot apex (Apical cell theory, Histogen theory, Tunica Corpus theory, continuing meristematic residue, cyto-histological zonation); Types of vascular bundles; Anatomy of dicot and monocot stem. Vascular Cambium: Structure, function and seasonal activity of cambium; secondary growth in stem (normal and anomalous). Root Stem transition.

(ii) Leaf: Anatomy of dicot and monocot leaf, Kranz anatomy.

Unit-III

(i) Root: Organization of root apex (Apical cell theory, Histogen theory, Korper-Kappe theory); Quiescent centre; Root cap; Anatomy of dicot and monocot root; Endodermis, exodermis and origin of lateral root. Secondary growth in roots.

(ii) Wood: Axially and radially oriented elements; Types of rays and axial parenchyma; Cyclic aspects and reaction wood; Sapwood and heartwood; Ring and diffuse porous wood; Early and late wood, tyloses; Dendrochronology.

(iii) Periderm: Development and composition of periderm, rhytidome and lenticels.

Unit –IV

(i) Adaptive and Protective Systems Epidermal tissue system, cuticle, epicuticular waxes, trichomes (uni-and multicellular, glandular and nonglandular: two examples of each), stomata (classification); Anatomical adaptations of xerophytes and hydrophytes.
(ii) Secretory System: Hydathodes, cavities, lithocysts and laticifers.

(iii) Mechanical tissue system.

PRACTICAL

1. Study of distribution and types of parenchyma, collenchyma and sclerenchyma, Xylem: Tracheary elements-tracheids, vessel elements; thickenings; perforation plates; xylem fibres, Phloem: Sieve tubes-sieve plates; companion cells; phloem fibres.
2. Wood: ring porous; diffuse porous; tyloses; heart- and sapwood.
3. Epidermal system: cell types, stomata types; trichomes: non-glandular and glandular.
4. Root: monocot, dicot, secondary growth.
5. Stem: monocot, dicot - primary and secondary growth (normal and anomalous); periderm; lenticels.

6. Leaf: isobilateral, dorsiventral, C_4 leaves (Kranz anatomy).
7. Ecological anatomy.

Text Books:

1. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Anatomy of Angiosperms, Rastogi Publication, Meerut.

Reference Books:

1. Eames, A.J. and Mc Daniels, L.H., (1953). An introduction to plant anatomy, Tata Mc Grow Hills, New Delhi
2. Esau, K. (1977). Anatomy of Seed Plants. John Wiley & Sons, Inc., Delhi.
3. Tayal, M. S. (2012) Plant Anatomy Rajpal and Sons, New Delhi
4. Mishra, B. K. (2017). Anatomy of Angiosperms, Kalyani Publishers, New Delhi.
5. Pandey, B. P. (2017) Plant Anatomy, S. Chand Publication, New Delhi.

Core Paper VI

ECONOMIC BOTANY

Unit-I

(i) Origin of Cultivated Plants: Concept of Centres of Origin, their importance with reference to Vavilov's work. Examples of major plant introductions; Crop domestication and loss of genetic diversity; evolution of new crops/varieties, importance of germplasm diversity.

(ii) Cereals: Cultivation and brief account of Wheat, Rice and millets.

(iii) Legumes: General account, importance to man and ecosystem.

(iv) Sugars & Starches: Morphology, cultivation and processing of sugarcane, products and by-products of sugarcane industry. Potato – morphology, cultivation, propagation & uses.

Unit-II

(i) Spices: Listing of important spices, their family and part used, economic importance with special reference to fennel, saffron, clove and black pepper Beverages: Tea, Coffee (morphology, processing & uses)

(ii) Drug-yielding plants: Therapeutic and habit-forming drugs with special reference to Cinchona, Digitalis, Papaver and Cannabis.

(iii) Tobacco: Tobacco (Morphology, processing, uses and health hazards)

Unit-III

(i) Oils & Fats: General description, classification, extraction, their uses and health implications groundnut, coconut, linseed and *Brassica* (Botanical name, family & uses)

(**i**) Essential Oils: General account, extraction methods, comparison with fatty oils &

their uses.

Unit-IV

(i) Natural Rubber: Para-rubber: tapping, processing and uses.

(ii) Timber plants: General account with special reference to teak and pine. Fibers: Classification based on the origin of fibers, Cotton and Jute (morphology, extraction and uses).

PRACTICAL

(i) Cereals: Rice (habit sketch, study of paddy and grain, starch grains).
(ii) Legumes: Soya bean/moong bean/black gram, Groundnut, (habit, fruit, seed structure, micro-chemical tests).
(iii) Sugars & Starches: Sugarcane (habit sketch; cane juice- micro-chemical tests), Potato (habit sketch, tuber morphology, T.S. tuber to show localization of starch grains, starch grains, micro-chemical tests).
(iv) Spice and Beverages: clove, black pepper ,Tea (plant specimen, tea leaves), Coffee (plant specimen, beans).
(v) Oils & Fats: Groundnut, Mustard–plant specimen, seeds; tests for fats in crushedseeds.
(vi) Drug-yielding plants: Specimens of *Digitalis, Papaver* and *Cannabis.*
(vii) Woods: *Tectona*, *Pinus/*Sal: Specimen, Section of young stem.
(viii) Fiber-yielding plants: Cotton (specimen, whole mount of seed to show lint and fuzz; whole mount of fiber and test for cellulose), Jute (specimen, transverse section of stem, test for lignin on transverse section of stem and fiber).

Text Books:

1. B. P. Pandey, (2017) Economic Botany. S. Chand Publication, New Delhi.

Reference Books:

1. Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
2. Samba Murty, A.V.S.S. and Subrahmanyam, N.S. (2011). Text Book of Modern Economic Botany, CBS Publishers and Distributors, New Delhi.
3. Hill, Albert F. Economic Botany, Tata Mc Grow Hill Publishing Company, Ltd. New Delhi.
4. Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.
5. Singh, V., Pandey, P.C. and Jain, D.K. (2017). Economic Botany, Rastogi Publication, Meerut.
6. Baruah, B. (2017). Economic Botany, Kalyani Publishers, New Delhi.

Core Paper VII

GENETICS

Unit-I

(i) Mendelian genetics and its extension Mendelism: History; Principles of inheritance; Chromosome theory of inheritance; Autosomes and sex chromosomes; Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Interaction of genes, Pleiotropy, Recessive and Dominant traits, Polygenic inheritance.

(ii) Extrachromosomal Inheritance: Chloroplast mutation: Variegation in Four o'clock plant; Mitochondrial mutations in yeast; cytoplasmic male sterility; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium.

Unit-II

Linkage, crossing over and chromosome mapping: Linkage and crossing over-Cytological basis of crossing over; Recombination frequency, two factor and three factor crosses; Interference and coincidence; Numericals based on gene mapping; Sex Linkage.

Unit-III

(i) Variation in chromosome number and structure: Deletion, Duplication, Inversion, Translocation, Position effect, Euploidy and Aneuploidy

(ii) Gene mutations: Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents); Detection of mutations: CIB method. Role of Transposons in mutation. DNA repair mechanisms.

Unit-IV

(i) Fine structure of gene: Classical vs. molecular concepts of gene; Cis-Trans complementation test for functional allelism; Structure of Phage T4, rII Locus.

(**i**) Population and Evolutionary Genetics: Gene pool, Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift. Genetic variation and Speciation.

PRACTICAL

1. Analysis of allelic and genotypic frequencies.
2. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square analysis.
3. Chromosome mapping using test cross data.
4. Pedigree analysis for dominant and recessive autosomal and sex linked traits.
5. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).
6. Blood Typing: ABO groups & Rh factor.

7. Chromosome anomaly : Translocation Ring, Laggards and Inversion Bridge, break etc (through photographs).

Text Books:

1. Singh B. D. (2017). Fundamental of Genetics, Kalyani Publishers, New Delhi.

2. Gupta P. K. (2017). Genetics, Rastogi Publication, Meerut.

Reference Books:

1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, John Wiley & Sons, India. 8th edition.
2. Sinnot, E.W., Dunn, L.C. and Dobzhansky, T. (1985) Principles of Genetics, Tata Mc Grow Hill, New Delhi
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. Benjamin Cummings, U.S.A. 10th edition.
4. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W.H. Freeman and Co., U.S.A. 10th edition.
5. Strickberger, M.W. Genetics, Pearson Publishers, 3rd Edition
6. Rastogi V. B. (2017). Genetics, Kedar Nath & Ram Nath, Meerut

Core Paper VIII

MOLECULAR BIOLOGY

Unit-I Nucleic acids: Carriers of genetic information: Historical perspective; DNA as the carrier of genetic information (Griffith's, Hershey & Chase, Avery, McLeod & McCarty), Types of genetic material, denaturation and renaturation, cot curves. Organization of DNA and structure of RNA- Prokaryotes, Viruses, Eukaryotes, Fraenkel-Conrat's experiment. Organelle DNA - mitochondria and chloroplast DNA. The Nucleosome -Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin.

Unit-II

(i) The replication of DNA: Chemistry of DNA synthesis (Kornberg's discovery); General principles – bidirectional, semi-conservative and semi discontinuous replication, RNA priming; Various models of DNA replication, including rolling circle, θ (theta) mode of replication, replication of linear ds-DNA, replication of the 5′ end of linear chromosome; Enzymes involved in DNA replication.

(ii) Central dogma and genetic code: Key experiments establishing-The Central Dogma (Adaptor hypothesis and discovery of mRNA template), Genetic code (deciphering & salient features)

(iii) Processing and modification of RNA: Split genes-concept of introns and exons, removal of introns, spliceosome machinery, splicing pathways, group I & group II intron splicing, alternative splicing eukaryotic mRNA processing (5′ cap, 3′

polyA tail); Ribozymes, exon shuffling; RNA editing and mRNA transport.

Unit-III

Mechanism of Transcription: Transcription in prokaryotes and eukaryotes;
Regulation of transcription in prokaryotes and eukaryotes: Principles of transcriptional regulation; Prokaryotes: Operon concept- Regulation of lactose metabolism and tryptophan synthesis in *E.coli.* Eukaryotes: transcription factors, heat shock proteins, steroids and peptide hormones; Gene silencing

Unit-IV

Translation (Prokaryotes and eukaryotes): Ribosome structure and assembly; Charging of tRNA, aminoacyl tRNA synthetases; Various steps in protein synthesis, proteins involved in initiation, elongation and termination of polypeptides; Fidelity of translation; Inhibitors of protein synthesis; Post-translational modifications of proteins.

PRACTICAL

1. Preparation of LB medium and raising E. coli.
2. Isolation of genomic DNA from suitable plant material.
3. RNA estimation by orcinol method.
4. DNA estimation by diphenylamine reagent/UV Spectrophotometry.
5. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments)
6. Study of Barr body from buccal smear preparation.

Text Books:

1. Gupta P. K. (2017). Molecular Biology, Rastogi Publication, Meerut.

Reference Books:

1. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
2. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th edition.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
4. Sheeler, P. and Bianchi, D.E. (2009) Molecular Biology of the Cell, Willey Publisher, New Delhi
5. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W.H. Freeman and Co., U.S.A. 10th edition.
6. Alberts, B. et al. 2014. Molecular Biology of the cell Garland Science. 6th Edition
7. Power, C. B. (2017) Cell Biology, Himalaya Publishing House, New Delhi

8. Sahu, A.C. (2017). Essentials of Molecular Biology, Kalynai Publishers, New Delhi.

Core Paper IX

PLANT ECOLOGY & PHYTOGEOGRAPHY

Unit-I

(i) Introduction Concept of ecology, Autoecology, Synecology, system ecology, Levels of organization. Inter-relationships between the living world and the environment, the components of environment, concept of hydrosphere and lithosphere and dynamism, homeostasis.

(ii) Light, temperature, wind and fire: Variations; adaptations of plants to their variation.

Unit-II

(i) Soil: Formation; Composition; Physical; Chemical and Biological components; Soil profile; Role of climate in soil development.

(ii) Water: Importance: States of water in the environment; Atmospheric moisture; Precipitation types (rain, fog, snow, hail, dew); Hydrological Cycle; Water in soil; Water table.

Unit-III

Biotic interactions and Population ecology: Characteristics and Dynamics.

Plant communities: Concept of ecological amplitude; Habitat and niche; Characters: analytical and synthetic; Ecotone and edge effect; Dynamics: succession – processes, types; climax concepts.

Unit-IV

(i) Ecosystems: Structure; Processes; Trophic organisation; Food chains and Food webs; Ecological pyramids.

(ii) Functional aspects of ecosystem: Principles and models of energy flow; Production and productivity; Ecological efficiencies; Biogeochemical cycles; Cycling of Carbon, Nitrogen and Phosphorus.

(iii) Phytogeography: Principles; Continental drift; Theory of tolerance; Endemism; Phytogeographical division of India; Vegetation of Odisha.

PRACTICAL

1. Determination of pH of various soil and water samples (pH meter, universal indicator/Lovibond comparator and pH paper)
2. Analysis for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from two soil samples by rapid field tests.
3. Determination of dissolved oxygen of water samples from polluted and unpolluted sources.
4. Study of morphological adaptations of hydrophytes, xerophytes, halophyles (two

each).

5. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
6. Quantitative analysis of herbaceous vegetation for frequency, density and abundance in the college campus.
7. Field visit to familiarize students with ecology of different sites.

Text Books:

1. Sharma, P.D. (2017). Fundamentals of Ecology. Rastogi Publications, Meerut, India.

Reference Books:

1. Odum, E.P. (2005). Fundamentals of ecology. Cengage Learning India Pvt. Ltd., New Delhi. 5thedition.
2. Singh, J.S., Singh, S.P., Gupta, S. (2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.
3. Wilkinson, D.M. (2007). Fundamental Processes in Ecology: An Earth Systems Approach. Oxford University Press. U.S.A.
4. Kormondy, E.J. (1996). Concepts of ecology. PHI Learning Pvt. Ltd., Delhi, India. 4th edition.
5. Santra, S. C. (2015) Environmental Science. New Central Book Agency (P) Ltd. Kolkata.
6. Das M. C. and Das S. P. (2009). Fundamental of Ecology. Tata MGrow Hill, New Delhi.
7. Shukla R.S. and Chandel P.S. (2016). A Text Book of Plant Ecology. S Chand Publication, New Delhi

Core Paper X PLANT

SYSTEMATICS

Unit-I

Plant identification, Classification, Nomenclature; Biosystematics. Identification: Field inventory; Functions of Herbarium; Important herbaria and botanical gardens of the world and India; Virtual herbarium; E-flora; Documentation: Flora, Monographs, Journals; Keys: Single access and Multi-access

Unit-II

Taxonomic hierarchy: Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept (taxonomic, biological, evolutionary).

Botanical nomenclature: Principles and rules (ICN); Ranks and names; Typification, author citation, valid publication, rejection of names, principle of priority and its limitations; Names of hybrids.

Unit-III

(i) Systematics- an interdisciplinary science: Evidence from palynology, cytology, phytochemistry and molecular data.

(ii) Systems of classification: Major contributions of Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan and Cronquist; Classification systems of Bentham and Hooker (up to series) and Hutchinson (up to series); Brief reference of Angiosperm Phylogeny Group (APG III) classification.

Unit-IV

Phylogeny of Angiosperms: Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, Paraphyly, polyphyly and clades). Origin& evolution of angiosperms; co- evolution of angiosperms and animals; methods of illustrating evolutionary relationship (phylogenetic tree, cladogram).

Families of Angiosperms : Descriptive studies of Magnoliaceae, Rosaceae, Rubiacae, Poaceae, Orchidaceae, Musaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Lamiaceae.

PRACTICAL

(i) Study of vegetative and floral characters of available materials of the families included in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification).

(ii) Field visit, plant collection and herbarium preparation and submission. Mounting of properly dried and pressed specimen of at least fifteen wild plants with herbarium label (to be submitted in the record book)

Text Books:

1. Sharma O. P. (2009) Plant Taxonomy, Tata Mc Grow Hill, New Delhi

Reference Books:

1. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi.3rdedition.
2. Jeffrey, C. (1982). An Introduction to *Plant Taxonomy.* Cambridge University Press, Cambridge.
3. Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2nd edition.
4. Saxena, H. O. and Brahman, M..The Flora of Orissa, CSIR Publication.
5. Bose T. K. (2009). Trees of the World, Regional Plant Resource Centre, Bhubaneswar, Odisha, India
6. Radford, A.E. (1986). Fundamentals of *Plant Systematics*. Harper and Row, New York.
7. Hanes, H. H. (2009). Botany of Bihar and Orissa,

8. Mohanty, C. R. (2017). Text Book of Plant Systematics, Kalynai Publisher, New Delhi.
9. Subrahmainayam, M. S. (2011) Modern Plant Taxonomy, Vikash Publishing House, New Delhi
10. Pandey, B. P., (2017). Taxonomy of Angiosperm. S. Chand Publication.

Core Paper XI REPRODUCTIVE

BIOLOGY OF ANGIOSPERMS

Unit-I

(i) Introduction: History and scope.

(ii) Anther: Anther wall: Structure and functions, micro-sporogenesis, callose deposition and its significance.

(iii) Pollen biology: Micro-gametogenesis; Pollen wall structure, MGU (male germ unit) structure, NPC system; Palynology and scope (a brief account); Pollen wall proteins; Pollen viability, storage and germination; Abnormal features: Pseudomonads, polyads, massulae, pollinia.

Unit-II

Ovule: Structure; Types; Special structures–endothelium, obturator, aril, caruncle and hypostase; Female gametophyte– mega-sporogenesis and mega-gametogenesis; Types and ultrastructure of different mature embryo sacs (Details of *Polygonum* type), Developmental pattern of mono-, bi- and tetrasporic embryo sacs.

Unit-III

(i) Pollination and fertilization: Pollination types and significance; adaptations; structure of stigma and style; path of pollen tube in pistil; double fertilization.
(ii) Self incompatibility: Basic concepts; Methods to overcome self- incompatibility: mixed pollination, bud pollination, stub pollination; Intraovarian and *in vitro* pollination; Modification of stigma surface.

Unit-IV

(i) Endosperm: development, structure and functions
(ii) Embryo: Types of embryogeny; General pattern of development of dicot and monocot embryo; Suspensor: structure and functions; Embryo- endosperm relationship; Nutrition of embryo; Embryo development in *Paeonia*.
(iii) Seed: Structure, importance and dispersal mechanisms
(iv) Polyembryony and apomixes: Introduction; Classification; Causes and applications.

PRACTICAL

(i) Anther: Wall and its ontogeny; Tapetum (amoeboid and glandular); MMC, spore tetrads, uninucleate, bicelled and dehisced anther stages through slides/micrographs, male germ unit (MGU) through photographs and schematic

representation.

(ii) Pollen grains: Fresh and acetolyzed showing ornamentation and aperture, psuedomonads, polyads, pollinia (slides/photographs, fresh material), ultrastructure of pollen wall (micrograph); Pollen viability: Tetrazolium test, Germination: Calculation of percentage germination in different media using hanging drop method.

(iii) Ovule: Types-anatropous, orthotropous, amphitropous/ campylotropous, circinotropous, unitegmic, bitegmic; Tenuinucellate and crassinucellate; Special structures: Endothelium, obturator, hypostase, caruncle and aril (permanent slides/specimens/photographs). Female gametophyte through permanent slides/ photographs: Types, ultrastructure of mature egg apparatus.

(iv) Embryogenesis: Study of development of dicot embryo through permanent slides/photographs; dissection of developing seeds for embryos at various developmental stages; Study of suspensor through electron micrographs.

(v) Tracing the path of pollen tube.

(vi) Study of haustorial endosperm.

Text Books:

1. Singh, V., Pandey, P.C, and Jain, D.K. (2017). Reproductive Biology of Angiosperms, Rastogi Publications, Meerut

Reference Books:

1. Maheswari, P. (2009). Embryology of Angiosperms.
2. Shivanna, K.R. (2003). Pollen Biology and Biotechnology. Oxford and IBH Publishing Co. Pvt. Ltd. Delhi.
3. Raghavan, V. (2000). Developmental Biology of Flowering plants, Springer, Netherlands.
4. Johri, B.M. l (1984). Embryology of Angiosperms, Springer-Verlag, Netherlands.
5. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, Vikas Publishing House. Delhi. 5th edition.
6. Mishra, B. K. (2017). Reproductive Biology of Angiosperms, Kalyani Publishers, New Delhi.

Core Paper XII

PLANT PHYSIOLOGY

Unit-I

(i) Plant water relationship: Water Potential and its components, plasmolysis and imbibitions, water absorption by roots, aquaporins, pathway of water movement, symplast, apoplast, trans-membrane pathways, root pressure, guttation. Ascent of sap– cohesion-tension theory. Transpiration and factors affecting transpiration, anti-transpirants, mechanism of stomatal movement.

(ii) Translocation in the phloem: Experimental evidence in support of phloem as the site of sugar translocation. Pressure–Flow Model; Phloem loading and unloading; Source–sink relationship.

Unit-II

(i) Mineral nutrition: Essential and beneficial elements, macro and micronutrients, methods of study and use of nutrient solutions, criteria for essentiality, mineral deficiency symptoms, roles of essential elements, chelating agents.

(ii) Nutrient Uptake: Soil as a nutrient reservoir, transport of ions across cell membrane, passive absorption, electrochemical gradient, facilitated diffusion, active absorption, role of ATP, carrier systems, proton ATPase pump and ion flux, uniport, co-transport, symport, and antiport.

Unit-III

Plant growth regulators: Discovery, chemical nature (basic structure), bioassay and physiological roles of Auxin, Gibberellins, Cytokinin, Abscisic acid, Ethylene. Brassinosteroids and Jasmonic acid.

Unit-IV

(i) Physiology of flowering: Photoperiodism, flowering stimulus, florigen concept, vernalization, seed dormancy. Senescence: Types and causes.

(ii) Phytochrome: Discovery, chemical nature, role of phytochrome in photo-morphogenesis, low energy responses (LER) and high irradiance responses (HIR), mode of action.

PRACTICAL

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. Determination of water potential of given tissue (potato tuber) by weight method.
3. Study of the effect of wind velocity and light on the rate of transpiration in excised twig/leaf.
4. Calculation of stomatal index and stomatal frequency from the two surfaces of leaves of a mesophyte and xerophyte.
5. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and xerophyte (both surfaces).
6. To study the phenomenon of seed germination (effect of light).
7. To study the induction of amylase activity in germinating barley grains
8. To demonstrate suction due to transpiration.
9. Measurement of relation between transpiration and transpiring surface.
10. Measurement of cuticular resistance to transpiration.

Text Books:

1. Sinha, R. K. (2015). Modern Plant Physiology, Narosa Publishing House, New

Delhi.

Reference Books:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
2. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
3. Bajracharya D. (1999). Experiments in Plant Physiology-A Laboratory Manual. Narosa Publishing House, New Delhi.
4. Salisbury, F. B. and Ross, C. W. Plant Physiology Wadsworth Publishing Company, California
5. Sahoo, A. C. (2018). Outlines of Plant Physiology Kalynai Publishers, New Delhi.
6. Srivastava, N. K.. (2017). Plant Physiology, Rastogi Publications, Meerut.
7. Pandey and Sinha (2011). Plant Physiology, Vikash Publishing House, New Delhi

Core Paper XIII

PLANT METABOLISM

Unit-I

(i) Concept of metabolism: Introduction, anabolic and catabolic pathways, regulation of metabolism, role of regulatory enzymes (allosteric ,covalent modulation and Isozymes).

(ii) Mechanisms of signal transduction: Calcium, phospholipids, cGMP, NO.

Unit-II

Carbon assimilation: Historical background, photosynthetic pigments, role of photosynthetic pigments, Red drop and Emerson Enhancement Effect, antenna molecules and reaction centres, photochemical reactions, photosynthetic electron transport, PSI, PSII, Q cycle, C_3, C_4 pathways; Crassulacean acid metabolism; Factors affecting CO_2 reduction. Photorespiration.

Unit-III

(i) Carbon Oxidation: Glycolysis, fate of pyruvate, regulation of glycolysis, oxidative pentose phosphate pathway, oxidative decarboxylation of pyruvate, regulation of PDH, NADH shuttle; TCA cycle, amphibolic role, anaplerotic reactions, regulation of the cycle, mitochondrial electron transport, oxidative phosphorylation, cyanide-resistant respiration, factors affecting respiration.

(**i**) ATP-Synthesis: Mechanism of ATP synthesis, substrate level phosphorylation, chemiosmotic mechanism (oxidative and photo- phosphorylation), ATP synthase, Boyers conformational model, Racker's experiment, Jagendorf's experiment; role of uncouplers.

Unit-IV

(i) Lipid metabolism: Synthesis and breakdown of triglycerides, β-oxidation, glyoxylate cycle, gluco-neogenesis and its role in mobilisation of lipids during seed germination, α oxidation.

(ii) Nitrogen metabolism: Nitrate assimilation, free living and symbiotic biological nitrogen fixation (examples of legumes and non-legumes); Nitrification, Physiology and biochemistry of nitrogen fixation; Ammonia assimilation and trans-amination.

PRACTICAL

1. Isolation and quantitization of photosynthetic pigments.
2. Experimental demonstration of Hill's reaction.
3. To study the effect of light intensity on the rate of photosynthesis.
4. Effect of carbon dioxide on the rate of photosynthesis.
5. To compare the rate of respiration in different parts of a plant.
6. Demonstration of absorption spectrum of photosynthetic pigments.
7. Assay of the enzyme Catalase.
8. Photoreduction of dye by isolated chloroplasts.

Text Books:

1. Gupta, S, K. (2017). Plant Metabolism, Rastogi Publication, Meerut.

Reference Books:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons. U.S.A. 4th edition.
2. Taiz, L., Zeiger, E., Møller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
3. Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York.
4. Sahoo, A. C. (2018). Outlines of Plant Metabolism, Kalynai Publishers, New Delhi.

Core Paper XIV PLANT

BIOTECHNOLOGY

Unit-I

Plant Tissue Culture: Historical perspective; Aseptic tissue culture techniques, Composition of media; Nutrient and hormone requirements (role of vitamins and hormones). Totipotency; Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and hybrids;Cryopreservation; Germplasm Conservation).

Unit-II

Recombinant DNA technology-I: Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC).Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning).

Unit-III

Recombinant DNA technology-II: Gene Construct; construction of genomic and cDNA libraries, screening DNA libraries to obtain gene of interest by genetic selection; complementation, colony hybridization; Probes-oligonucleotide, heterologous, Methods of gene transfer- *Agrobacterium*-mediated, Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Unit-IV

Applications of Biotechnology: Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products–Human Growth Hormone; Humulin; Biosafety concerns.

PRACTICAL

1. a) Preparation of tissue culture (MS) medium.
   (b) Demonstration of *in vitro* sterilization and inoculation methods using leaf and nodal explants of tobacco, *Datura*, *Brassica* etc.
2. Study of another culture through photographs.
3. Preparation of artificial seeds.
4. Study of Bt cotton through photographs.
5. Isolation of plasmid DNA.
6. Gel electrophoresis (demonstration).

Text Books:

1. Chawla, H. S. (2010). Introduction to Plant Biotechnology. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

Reference Books:

1. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
2. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

3. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.
4. Singh, B. D. (2018). Plant Biotechnology Kalynai Publishers, New Delhi.
5. Gupta, P. K. (2017). Plant Biotechnology, Rastogi Publication, Meerut.
6. Dubey, R. C. (2017). Advanced Biotechnology, S, Chand Publication, New Delhi

Discipline Specific Elective Paper-I

ANALYTICAL TECNIQUES IN PLANT SCIENCES

Unit-I

Imaging and related techniques: Principles of microscopy; Light microscopy; Fluorescence microscopy; Flow cytometry (FACS); Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.

Unit-II

Cell fractionation: Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, $CsCl_2$gradient, analytical centrifugation, ultracentrifugation. Radioisotopes: Use in biological research, auto-radiography, pulse chase experiment. Spectrophotometry: Principle and its application in biological research.

Unit-III

Chromatography: Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography. Characterization of proteins and nucleic acids: Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

Unit-IV

Biostatistics: Statistics, data, population, samples, variables, parameters; Representation of Data: Tabular, Graphical; Measures of frequency and central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variance, standard deviation; Chi-square test for goodness of fit. Test of significance: comparison of large, small and paired samples (T-Test) and correlation.

PRACTICAL

1. Study of different microscopic techniques for chromosome study
2. Study of PCR Demonstration.
3. To separate pigments by paper chromatography.
4. To separate phytochemicals by thin layer chromatography.
5. To estimate protein through Lowry's methods.
6. To separate proteins using PAGE.

7.To separate DNA (marker) using AGE.
8. Spectrometric estimation of total sugar by Anthrone method.
9.Chi-square analysis of mendelian ratio.
10. T-Test.

Text Books:

1. Patil, C. S. (2017). Advanced Analytical Techniques, ABE Books, New Delhi.

Reference Books:

1. Plummer, D.T. (1996). An Introduction to Practical Biochemistry. Tata McGraw-Hill Publishing Co. Ltd. New Delhi. 3rd edition.
2. Ruzin, S.E. (1999). Plant Micro technique and Microscopy, Oxford University Press, New York. U.S.A.
3. Ausubel, F., Brent, R., Kingston, R. E., Moore, D.D., Seidman, J.G., Smith, J.A., Struhl, K. (1995). Short Protocols in Molecular Biology. John Wiley & Sons. 3rd edition.
4. Zar, J.H. (2012). Biostatistical Analysis. Pearson Publication. U.S.A. 4th edition.
5. Aneja, K. R. (2014). Laboratory manual of microbiology and biotechnology, Medtech, New Delhi

Discipline Specific Elective Paper-II

NATURAL RESOURCE MANAGEMENT

Unit-I

(i) Natural resources: Definition and types.
(ii) Sustainable utilization :Concept, approaches (economic, ecological and socio-cultural).
(iii) Land: Utilization (agricultural, horticultural, silvicultural); Soil degradation and management.
(iv) Water: Fresh water (rivers, lakes, groundwater, water harvesting technology, rain water storage and utilization.

Unit-II

Biological Resources: Biodiversity-definition and types; Significance; Threats; Management strategies; Bioprospecting; IPR; CBD; National Biodiversity Action Plan).

Forests: Definition, Cover and its significance (with special reference to India); Major and minor forest products; Depletion; Management.

Unit-III

(i) Energy: Renewable and non-renewable sources of energy-solar, wind, tidal, geothermal and bioenergy resources.
(ii) Contemporary practices in resource management: EIA, GIS, Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint.

Unit-IV

Resource Accounting; Waste management. National and international efforts in resource management and conservation

PRACTICAL

i. Estimation of solid waste generated by a domestic system (biodegradable and non-biodegradable) and its impact on land degradation.
ii. Collections of data on forest cover of specific area.
iii. Measurement of dominance of woody species by DBH (diameter at breast height) method.
iv. Calculation and analysis of ecological footprint.
v. Ecological modeling.
vi. Estimation of soil moisture content and soil texture.
vii. Estimation of soil porosity
viii. Estimation of soil water-holding capacity.
ix. Estimation of soil organic matter and soil carbon

Text Books:

1. Pandey, B. W. 2005. Natural Resource Management. Mittal Publication, New Delhi

Reference Books:

1. Vasudevan, N. (2006). Essentials of Environmental Science. Narosa Publishing House, New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.
3. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Discipline Specific Elective Paper-III

HORTICULTURAL PRACTICES AND POST-HARVEST TECHNOLOGY

Unit-I

(i) Introduction: Scope and importance, Branches of horticulture; Role in rural economy and employment generation; Importance in food and nutritional security; Urban horticulture and ecotourism.

(ii) Ornamental plants: Types, classification (annuals, perennials, climbers and trees); Identification and salient features of some ornamental plants [rose, marigold, gladiolus, carnations, orchids, poppies, gerberas, tuberose, sages, cacti and succulents (*Opuntia, Agave* and spurges)]

Unit-II

(i) Fruit and vegetable crops: Production, origin and distribution; Description of plants and their economic products; Management and marketing of vegetable and fruit crops.

(i) Horticultural techniques: Application of manure, fertilizers, nutrients and PGRs; Weed control; Biofertilizers, biopesticides; Irrigation methods (drip irrigation, surface irrigation, furrow and border irrigation); Hydroponics; Propagation Methods: asexual (grafting, cutting, layering, budding), sexual (seed propagation), Scope and limitations.

(ii) Landscaping and garden design :Planning and layout (parks and avenues); gardening traditions - Ancient Indian, European, Mughal and Japanese Gardens; Urban forestry; policies and practices.

Unit-III

(i) Post-harvest technology: Importance of post harvest technology in horticultural crops; Evaluation of quality traits; Harvesting and handling of fruits, vegetables and cut flowers; Principles, methods of preservation and processing; Methods of minimizing loses during storage and transportation;

(ii) Disease control and management : Field and post-harvest diseases; Identification of deficiency symptoms; remedial measures and nutritional management practices; Crop sanitation; IPM strategies (genetic, biological and chemical methods for pest control); Quarantine practices;

Unit-IV

Horticultural crops - conservation and management: Documentation and conservation of germplasm; Role of micropropagation and tissue culture techniques; Varieties and cultivars of various horticultural crops; IPR issues; National, international and professional societies and sources of information on horticulture.

PRACTICAL

i. Identification and description of salient features of ornamental plants included in the syllabus.
ii. Horticultural techniques (Drip irrigation, surface irrigation, furrow and border irrigation).
iii. Study of practice of asexual propagation methods (grafting, cutting, layering, budding)
iv. Planning and layout of parks and avenues
v. Handing of harvested fruits, vegetables and cut flowers
vi. Methods of fruit preservation
vii. Basic tissue cultures technique

Text Books:

1. Peter, K. V. (2009). Basics of Horticulture, Kalyani Publishers, New Delhi.

Reference Books:

1. Singh, D. & Manivannan, S. (2009). Genetic Resources of Horticultural Crops. Ridhi International, Delhi, India.
2. Swaminathan, M.S. and Kochhar, S.L. (2007). Groves of Beauty and Plenty: An Atlas

of Major Flowering Trees in India. Macmillan Publishers, India.
3. NIIR Board (2005). Cultivation of Fruits, Vegetables and Floriculture. National Institute of Industrial Research Board, Delhi.
4. Kader, A.A. (2002). Post-Harvest Technology of Horticultural Crops. UCANR Publications, USA.
5. Capon, B. (2010). Botany for Gardeners. 3rd Edition. Timber Press, Portland, Oregon.
6. Pandey, P. H. (2007). Principles and Practices of Post Harvest Technology, Kalyani Publishers, New Delhi.

Discipline Specific Elective Paper-IV

INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

Unit-I

(i) Scope of microbes in industry and environment: Bioreactors/Fermenters and fermentation processes: Solid-state and liquid-state (stationary and submerged) fermentations; Batch and continuous fermentations. Components of a typical bioreactor, Types of bioreactors- laboratory.

(ii) Microbial production of industrial products: Microorganisms involved, media, fermentation conditions, downstream processing and uses; Filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, lyophilization, spray drying.

Unit-II

Microbial enzymes of industrial interest and enzyme immobilization: Microorganisms for industrial applications and hands on screening microorganisms for casein hydrolysis; starch hydrolysis; cellulose hydrolysis. Methods of immobilization, advantages and applications of immobilization, large scale applications of immobilized enzymes (glucose isomerase and penicillin acylase).

Unit-III

Microbes and quality of environment: Distribution of microbes in air; Isolation of microorganisms from soil, air and water.

Microbial flora of water: Water pollution, role of microbes in sewage and domestic waste water treatment systems. Determination of BOD, COD, TDS and TOC of water samples; Microorganisms as indicators of water quality.

Unit-IV

Microbes in agriculture and remediation of contaminated soils: Biological fixation; Mycorrhizae; Bioremediation of contaminated soils. Isolation of root nodulating bacteria, arbuscular mycorrhizal colonization in plant roots.

PRACTICAL

1.Principles and functioning of instruments in microbiology laboratory
2.Hands on sterilization techniques and preparation of culture media
3. Screening microorganisms for industrial use.
4. Mycorrhiza, arbuscular mycorrhizal colonization in plant roots
5. Determination of BOD, COD, TDS and TOC of water samples;
6. Microorganisms as indicators of water quality

Text Books:

1. P. D. Sharma. (2017) Environmental Microbiology. Rastogi Publications, Meerut.

Suggested Readings

1. Pelzar, M.J. Jr., Chen E.C. S., Krieg, N.R. (2010). Microbiology: An application based approach. Tata McGraw Hill Education Pvt. Ltd., Delhi.
2. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. Pearson Benjamin Cummings, San Francisco, U.S.A. 9th edition.
3. Pradipta K. Mohapatra (2008). Text Book of Environmental Microbiology, I. K. International Publishing House, New Delhi
4. A. K. Rath (2018). Industrial and Environmental Microbiology, Kalyani Publishers, New Delhi.

OR

Discipline Specific Elective Paper-IV

DISSERTATION / PROJECT WORK

Identification of problem	Review of Literature	Methodology	Findings	Analysis	Viva-Voce	Total
10	10	10	25	25	20	100

** = Students who score more than ≥60% in aggregate are eligible for project work

Generic Elective Paper I A

BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATES)

Unit-I

Microbes :Viruses – Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic **cycle**, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

Unit-II

(i) Algae: General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Morphology and life- cycles of the following: *Chlamydomonas, Oedogonium, Nostoc and Fucus, Vaucheria, Polysiphonia,* Economic importance of algae.

(ii) Fungi : Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; True Fungi-General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota) *Penicillium* (Ascomycota), *Puccnia, Agaricus* Basidiomycota); Symbiotic Associations-Lichens:

Unit-III

(i) **Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organization, Classification (up to family), morphology, anatomy and reproduction of *Marchantia* and *Funaria* (Developmental details not to be included).

(ii) **Pteridophytes:** General characteristics, classification, early land plants (*Rhynia*). Classification (up to family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris* (Developmental details not to be included).Heterospory and seed habit, stellar evolution. Ecological and economical importance of Pteridophytes.

Unit-IV

Gymnosperms: General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*. (Developmental details not to be included).Ecological and economical importance.

PRACTICAL

1. Gram staining
2. Study of vegetative and reproductive structures of *Nostoc, Chlamydomonas, Oedogonium, Vaucheria, Fucus* and *Polysiphonia* through temporary preparations and permanent slides.
3. *Rhizopus and Penicillium*: Asexual stage from temporary ounts and sexual structures through permanent slides.

4. *Puccinia* and *Agaricus*: Specimens of button stage and full grown mushroom;

Sectioning of gills of *Agaricus*.

5. *Marchantia and Funaria*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
6. *Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, w.m.microsporophyll and megasporophyll (temporary slides), l.s. strobilus (permanent slide).
7. *Equisetum*- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore, w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
8. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
9. *Pinus*- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m. dwarf shoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

Text Books:

1. Mitra, J.N., Mitra, D. and Choudhury, S.K. Studies in Botany Volume 1. Moulik Publisher, Kolkata. Ninth Revised Edition

Reference Books:

1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi.2nd edition.
2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, Mac Millan Publishers Pvt. Ltd., Delhi.
4. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
7. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
8. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
9. Pandey, B. P. (2017), Botany for degree studies (as per CBCS). S. Chand
10. Acharya, B. S. and Mishra, B. K. (2018). Plant Biodiversity, Kalyani Publishers, New Delhi.

Generic Elective Paper IIA

PLANT PHYSIOLOGY AND METABOLISM

Unit-I

(i) Plant-water relations: Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation.

(ii) Mineral nutrition: Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

(iii) Translocation in phloem.: Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading

Unit-II

(i) Photosynthesis: Photosynthetic Pigments (*Chl* a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C_3, C_4 and CAM pathways of carbon fixation.

(ii) Respiration: Glycolysis, anaerobic respiration, TCA cycle; Oxidative Phosphorylation.

Unit-III

(i) Enzymes: Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition.

(ii) Nitrogen metabolism: Biological nitrogen fixation; Nitrate and ammonia assimilation.

Unit-IV

(i) Plant growth regulators: Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene.

(ii) Plant response to light and temperature: Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on hotomorphogenesis; Vernalization.

PRACTICAL

1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. To study the effect of two environmental factors (light and wind) on transpiration by excised twig.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. Demonstrate the activity of catalase and study the effect of pH and enzyme concentration.
6. To study the effect of light intensity and bicarbonate concentration on O_2 evolution in photosynthesis.
7. Comparison of the rate of respiration in any two parts of a plant.

Text Books:

1. A. C. Sahu (2018). Plant Physiology and Metabolism. Kalyani Publishers, New Delhi.

Reference Books:

1. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
3. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.
4. H. S. Srivatava. Plant Physiology, Rastogi Publications, New Delhi

Generic Elective Paper IB PLANT

ECOLOGY AND TAXONOMY

Unit-I

(i) Ecological factors: Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes

(ii) Plant communities : Characters; Ecotone and edge effect; Succession; Processes and types

Unit-II

(i) Ecosystem : Structure; Biotic and abiotic components, energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon, nitrogen and Phosphorous

(ii) Phytogeography: Principal biogeographical zones, Endemism.

Unit-III

(i) Introduction to plant taxonomy: Identification, Classification, Nomenclature.

(ii) Identification : Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access

Unit-IV

(i) Taxonomic hierarchy: Ranks, categories and taxonomic groups

(ii) Botanical nomenclature: Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.

(iii) Classification: Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (upto series), Hutchinson (upto series).

(iv) Taxonomic description of the families : Malvaceae, Fabaceae, Asteraceae and Poaceae, Apocynaceae, Lamiaceae and Musaceae.

PRACTICAL

1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH, and analysis of two soil samples for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency by rapid field test.
3. Comparison of bulk density, porosity and rate of infiltration of water in soil ofthree habitats.
4. (a) Study of morphological adaptations of hydrophytes and xerophytes (four each). (b)Study of biotic interactions of the following: Stem parasite (*Cuscuta),* Rootparasite
5. (*Orobanche*), Epiphytes, Predation (Insectivorous plants)
6. Determination of minimal quadrat size for the study of herbaceous vegetation inthe college campus by species area curve method. (species to be listed)
7. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law .
8. Study of vegetative and floral characters of the families as in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification).
9. Mounting of properly dried and pressed specimen of any ten wild plant's with herbarium label (to be submitted in the record book).

Text Books:

1. Sharma, P.D. (2017). Fundamentals of Ecology. Rastogi Publications, Meerut, India.

Reference Books:

1. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
3. Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA, U.S.A.
4. Singh, G. (2012). *Plant Systematics:* Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.
5. Sahu, A. C. (2017). Plant Ecology and Phytogeography, Kalyani Publishers, New Delhi.
6. Das, M. C. and Das, S. P. (2009). Fundamental of Ecology. Tata MGrow Hill, New Delhi.
7. Shukla, R.S. and Chandel, P.S. (2016). A text book of Plant Ecology. S Chand Publication, New Delhi
8. Mohanty, C. R. (2017). Text Book of Plant Systematics, Kalynai Publisher, New Delhi.

Generic Elective Paper IIB

PLANT ANATOMY AND EMBRYOLOGY

Unit-I

(i) Meristematic and permanent tissues : Root and shoot apical meristems; Simple and complex tissues
(ii) Organs :Anatomy of dicot and monocot root stem and leaf.

Unit-II

(i) Secondary Growth: Vascular cambium – structure and function, seasonal activity. Secondary growth in and stem, Wood (heartwood and sapwood)
(ii) Adaptive and protective systems: Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes.

Unit-III

(i) Structural organization of flower: Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.
(ii) Pollination and fertilization : Pollination mechanisms and adaptations; Double fertilization;

Unit-IV

(i) Endosperm: Endosperm types, structure and functions.
(ii) Embryo: Dicot and monocot embryo; Structure and development, Embryo endosperm relationship.
(iii) Seed-structure and development, appendages and dispersal mechanisms.

PRACTICAL

1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: *Zea mays;* Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).
5. Leaf: Dicot and Monocot leaf (only Permanent slides).
6. Adaptive anatomy: Xerophyte (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous**.**

Text Books:

1. Singh, Pandey and Jain (2017). Anatomy of Angiosperms, Rastogi Publication, Meerut.

Reference Books:

1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.
3. C. R. Mohanty (2018). Plant Anatomy and Embryology. Kalyani Publishers, New Delhi.

CAPACITY BUILDING OF FACULTY

Following modules have been proposed for training of faculties:

- Isolation and quantification of nucleic acids following spectrophotometric and gel electrophoresis techniques
- Techniques of Chromatography
- Micrometry and Haemocytometry
- Tissue Culture Techniques
- PCR techniques
- Chromosome techniques

The above module may be of 3-4 weeks duration with 30 participants.

LIST OF EQUIPMENTS

Sl. No.	List of Equipments	Quantity
01	Dissecting Microscope (Indian Make)	2 no.
02	Compound Microscope (Indian Make) with photographic attachment	2 no.
03	Occular and Stage Micrometer (Indian Make)	1 no.
04	Uv Spectrophotometer (Indian Make)	1 no.
05	Cold Centrifuge (Indian Make)	1 no.
06	Refrigerator (Indian Make)	1 no.
07	Soil Thermometer (Indian Make)	1 no.
08	Anemometer (Indian Make)	1 no.
09	Psychrometer (Indian Make)	1 no.
10	Rain gauge (Indian Make)	1 no.

11	pH meter (Indian Make)	1 no.
12	Herbarium Press (Indian Make)	1 set
13	Hot air Oven (Indian Make)	1 no.
14	Electronic Balance (Indian Make)	1no.
15	Gel Electrophoresis (Indian Make) Vertical and submarine	1 no.
16.	Power Pack for electrophoresis	1 no.
17	Blood Testing Kit (Indian Make)	1 no.
18	Laminar Flow (Indian Make)	1 no.
19	BOD Incubator (Indian Make)	1 no.
20	Autoclave (Indian Make)	1 no.

Course structure of UG Chemistry Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Inorganic Chemistry-I	04	75
	C-I Practical	Inorganic Chemistry-I Lab	02	25
	C-II	Physical Chemistry-I	04	75
	C-II Practical	Physical Chemistry-I Lab	02	25
	GE-I	GE-I	04	75
	GE-I Practical	GE-I Lab	02	25
			22	**400**
II	AECC-II	AECC-II	04	100
	C-III	Organic Chemistry-I	04	75
	C-III Practical	Organic Chemistry-I Lab	02	25
	C-IV	Physical Chemistry-II	04	75
	C-IV Practical	Physical Chemistry-II	02	25
	GE-II	GE-II	04	75
	GE-II Practical	GE-II Lab	02	25
			22	**400**
III	C-V	Inorganic Chemistry-II	04	75
	C-V Practical	Inorganic Chemistry-II Lab	02	25
	C-VI	Organic Chemistry-II	04	75
	C-VI Practical	Organic Chemistry-II Lab	02	25
	C-VII	Physical Chemistry-III	04	75
	C-VII Practical	Physical Chemistry-III Lab	02	25
	GE-III	GE-III	04	75
	GE-III Practical	GE-III Lab	02	25
	SECC-I	SECC-I	04	100
			28	**500**
IV	C-VIII	Inorganic Chemistry-III	04	75
	C-VIII Practical	Inorganic Chemistry-III Lab	02	25

	C-IX	Organic Chemistry-III	04	75
	C-IX Practical	Organic Chemistry-III Lab	02	25
	C-X	Physical Chemistry-IV	04	75
	C-X Practical	Physical Chemistry-IV Lab	02	25
	GE-IV	GE-IV (Theory)	04	75
	GE-IV Practical	GE-IV (Practical)	02	25
	SECC-II	SECC-II	04	100
			28	**500**
V	C-XI	Organic Chemistry-IV	04	75
	C-XI Practical	Organic Chemistry-IV	02	25
	C-XII	Physical Chemistry-V	04	75
	C-XII Practical	Physical Chemistry-V	02	25
	DSE-I	DSE-I	04	75
	DSE-I Practical	DSE-I Lab	02	25
	DSE-II	DSE-II	04	75
	DSE-II Practical	DSE-II Lab	02	25
			24	**400**
VI	C-XIII	Inorganic Chemistry- IV	04	75
	C-XIII Practical	Inorganic Chemistry-IV	02	25
	C-XIV	Organic Chemistry-V	04	75
	C-XIV Practical	Organic Chemistry-V	02	25
	DSE-III	DSE-III	04	75
	DSE-III Practical	DSE-III Lab	02	25
	DSE-IV	DSE-IV	04	75
	DSE-IV Practical	DSE-IV Lab	02	25
	OR			
	DSE-IV	Dissertation	06	100*
			24	**400**
		TOTAL	**148**	**2600**

Discipline Specific Elective Papers: (Credit: 06 each)

(4 papers to be selected by students of Chemistry Honours): DSE (1-IV)

1. Polymer Chemistry
2. Green Chemistry
3. Industrial Chemicals & Environment
4. Inorganic Materials of Industrial Importance
5. *Dissertation (can be opted as alternative of DSE-IV only and of 6 credits. **Dissertation content: 60, Seminar cum Viva: 20)**
6. Analytical Methods in Chemistry (Alternative)

CHEMISTRY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 6 papers suggested)

Generic Elective for non-Chemistry students – 4 papers. Incase the University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 15 marks, End term : 60 marks, Practical- 25 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper – 40 hours Theory classes + 20 hours Practical classes

CORE PAPER 1

INORGANIC CHEMISTRY-I

Unit-I

Atomic structure

Bohr's theory, its limitations and atomic spectrum of hydrogen atom, Sommerfeld's modification. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle, Schrödinger's wave equation (time independent) and its significance, Derivation of Schrödinger's wave equation (for hydrogen atom) in Cartesian coordinate, significance of ψ and ψ^2. Normalized and orthogonal wave functions. Sign of wave functions; Setting of Schrödinger's equation in polar coordinates (derivation not required), radial and angular wave functions for hydrogen atom. Radial and angular distribution curves; Shapes of s, p, d and f orbitals; Quantum numbers and their significance. Pauli's Exclusion principle, Hund's rule of maximum

multiplicity, Aufbau's principle and its limitations**.**

Unit-II

Periodicity of elements

Periodicity of Elements: s, p, d, f block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s & p-blocks. (a) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. (b) Atomic radii (van der Waals) (c) Ionic and crystal radii. (d) Covalent radii (octahedral and tetrahedral) (e) Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. (f) Electron gain enthalpy, trends of electron gain enthalpy. (g) Electronegativity, Pauling's/ Mulliken's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization. Sanderson's electron density ratio.

Unit-III

Chemical bonding-I

(i) Ionic bond: General characteristics, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals. Born-Landé equation with derivation. Madelung constant, Born-Haber cycle and its application, Solvation energy.

(**i**) Covalent bond: Valence Bond theory (Heitler-London approach). Hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements, equivalent and non-equivalent hybrid orbitals, Resonance and resonance energy.

Molecular orbital theory. Molecular orbital diagrams of diatomic and simple polyatomic molecules N_2, O_2, C_2, B_2, F_2, CO, NO, and their ions (CO^+, NO^+, NO^-).

Unit-IV

Chemical bonding-II

VSEPR theory, shapes of simple molecules and ions containing lone and bond pairs of electrons, multiple bonding (σ and π bond approach) and bond lengths. Covalent character in ionic compounds, polarizing power and polarizability. Fajan's rules and consequences of polarization. Ionic character in covalent compounds: Bond moment and dipole moment. Percentage ionic

character from dipole moment and electronegativity difference.

(i) Metallic Bond: Qualitative idea of valence bond and band theories. Semiconductors and insulators.

(ii) *Weak Chemical Forces:* van der Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, Instantaneous dipole-induced dipole interactions. Repulsive forces, Hydrogen bonding (theories of hydrogen bonding, valence bond treatment) Effects of chemical force, melting and boiling points, solubility energetics of dissolution process**.**

Oxidation-reduction: Redox equations, standard electrode potential and its applications to inorganic reactions. Principles involved in some volumetric analyses (iron and copper).

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017
4. Malik, Tuli, Madan Selected Topic in Inorganic Chemistry, S. Chand, New Delhi, 17th Ed., 2010.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. I, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER I LAB

Students are required to learn the followings:

i. Calibration and use of apparatus
ii. Preparation of solutions of different Molarity/Normality of titrants.

List of experiments

(A) Acid-Base Titrations

i. Estimation of carbonate and hydroxide present together in mixture.

ii. Estimation of carbonate and bicarbonate present together in a mixture.

iii. Estimation of free alkali present in different soaps/detergents

(B) Oxidation-Reduction Titrimetry

i. Standardization of $KMnO_4$ with standard sodium oxalate and estimation of Fe (II) using standardized $KMnO_4$ solution.

ii. Estimation of percentage of oxalic acid and sodium oxalate in a given mixture.

iii. Estimation of Fe (II) and Fe (III) in a mixture by standard $K_2Cr_2O_7$ solution.

Reference text Books:

1. J. Mendham, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER II PHYSICAL

CHEMISTRY- I

Unit- I

Gaseous state-I

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path and viscosity of gases, including their temperature and pressure dependence, relation between mean free path and coefficient of viscosity, calculation of σ from η; variation of viscosity with temperature and pressure.

Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities.

Behaviour of real gases: Deviations from ideal gas behaviour, compressibility factor, Z, and its variation with pressure for different gases. Causes of deviation from ideal behaviour. van der Waal's equation of state, its derivation and application in explaining real gas behaviour. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, relation between critical constants and van der Waals constants, law of corresponding states.

Unit-II Liquid state

Qualitative treatment of the structure of the liquid state; physical properties of liquids; vapour pressure, surface tension and coefficient of viscosity, and their determination. Effect of addition of various solutes on surface tension and viscosity. Explanation of cleansing action of detergents. Temperature variation of viscosity of liquids and comparison with that of gases. Qualitative discussion of structure of water.

Ionic equilibria- I

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono- and diprotic acids.

Unit- III: Solid state

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analyses of powder diffraction patterns of NaCl, CsCl and KCl. Defects in crystals (stoichiometric and non- stoichiometric). Glasses and liquid crystals.

Unit-IV

Ionic equilibria - II

Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications; buffer capacity, buffer

range, buffer action and applications of buffers in analytical chemistry and biochemical processes in the human body. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle. Qualitative treatment of acid – base titration curves (calculation of pH at various stages). Theory of acid–base indicators; selection of indicators and their limitations. Multistage equilibria in polyelectrolyte systems; hydrolysis and hydrolysis constants.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn. 2017.
3. Kapoor K. L., Text Book of Physical Chemistry, McGraw Hill, 3rd Edn. 2017
4. Castellan G. W. Physical Chemistry 4thEdn. Narosa (2004).

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications
2. Mortimer R. G., Physical Chemistry, Elsevier (Academic Press), 3rd Ed (2008).
3. Ball D. W. Physical Chemistry Thomson Press, India (2007).
4. Engel T. & Reid P., Physical Chemistry, 3rd Ed. Pearson (2013)

CORE PAPER II LAB

Surface tension measurements.

a. Determine the surface tension by (i) drop number (ii) drop weight method.
b. Study the variation of surface tension of detergent solutions with concentration.

Viscosity measurement using Ostwald's viscometer.

a. Determination of viscosity of aqueous solutions of (i) polymer (ii) ethanol and (iii) sugar at room temperature.
b. Study the variation of viscosity of sucrose solution with the concentration of solute.

pH- metry

a. Study the effect on pH of addition of HCl/NaOH to solutions of acetic acid, sodium acetate and their mixtures.
b. Preparation of buffer solutions of different pH (i) Sodium acetate-acetic acid (ii) Ammonium chloride-ammonium hydroxide.
c. pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.
d. Determination of dissociation constant of a weak acid.

Ionic equilibria

a. Determination of solubility product of PbI_2 by titrimetric method.

Reference Books

1. Khosla, B. D. Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry, 8th Ed.; McGraw-Hill, New York (2003).
3. Viswanathan, B., Raghavan, P.S. Practical Physical Chemistry, Viva Books (2009).
4. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co., New York (2003).

CORE PAPER – III

ORGANIC CHEMISTRY I

Unit –I:

Basics of organic chemistry

Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength.

Homolytic and heterolytic fission with suitable examples. Curly arrow rules; Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and relative stability of carbocations, carbanions, free radicals and carbenes.

Introduction to types of organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

Carbon-carbon sigma bonds

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Free radical

substitutions: Halogenation -relative reactivity and selectivity.

Unit – II:

Stereochemistry

Fischer Projection, Newmann and Sawhorse Projection formulae; Geometrical isomerism: cis–trans and, syn-anti isomerism, E/Z notations with C.I.P rules.

Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with one and two chiral-centres, Distereoisomers, meso-structures, Racemic mixture and resolution, inversion. Relative and absolute configuration: D/L and R/S designations.

Unit – III:

Chemistry of aliphatic hydrocarbons

Carbon-Carbon pi bonds:

Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.

Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration- demercuration, hydroboration oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1,2- and 1,4-addition reactions in conjugated dienes and, Diels-Alder reaction; Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes.

Cycloalkanes and Conformational Analysis

Types of cycloalkanes and their relative stability, Baeyer strain theory, Conformational analysis of alkanes (ethane and n-butane): Relative stability with energy diagrams. Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms.

Unit – IV:

Aromatic hydrocarbons

Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/ carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of the groups

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Bhal and Bhal, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
3. Kalsi, P. S., Stereochemistry Conformation and Mechanism; 8thEdn, New Age

International, 2015.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER III LAB

Students are required to learn the followings:

- Checking the calibration of the thermometer
- Determination of melting point, effect of impurities on the melting point – mixed melting point of two unknown organic compounds
- Determination of boiling point of liquid compounds [boiling point lower than and more than 100°C (up to 160°C) by distillation and capillary method respectively](**e**.g., ethanol, cyclohexane, ethyl methyl ketone, cyclohexanone, acetylacetone, anisole, crotonaldehyde, mesityl oxide etc.).

List of experiments

1. Functional group tests for alcohols, phenols, carbonyl and carboxylic acid groups and identification of unknown organic compounds of CHO system (without element detection).
2. Separation and purification of any one component of following binary solid mixture based on the solubility in common laboratory reagents like water (cold, hot), dil. HCl, dil. NaOH, dil. $NaHCO_3$, etc. and determination of melting point.

   Benzoic acid/p-Toluidine; p-Nitrobenzoic acid/p-Aminobenzoic acid; p-Nitrotolune/p-Anisidine etc.
3. Chromatography
   - Separation of a mixture of two amino acids by ascending and horizontal paper chromatography
   - Separation of a mixture of two sugars by ascending paper chromatography
   - Separation of a mixture of o-and p-nitrophenol or o-and p-aminophenol by thin layer chromatography (TLC)

Reference Books:

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)

CORE PAPER IV

PHYSICAL CHEMISTRY II

Unit –I

Chemical Thermodynamics

Intensive and extensive variables; state and path functions; isolated, closed and open systems; zeroth law of thermodynamics.

First law: Concept of heat(q), work(w), internal energy(U) and statement of first law; enthalpy(H), relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases (ideal and van der Waals) under isothermal and adiabatic conditions.

Thermochemistry: Heats of reactions: standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions.

Unit-II

Carnot cycle, efficiency of heat engine, Carnot theorem

Second Law: Concept of entropy; thermodynamic scale of temperature, statement of the second law of thermodynamics; molecular and statistical interpretation of entropy. Calculation of entropy change for reversible and irreversible processes.

Third Law: Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules.

Free Energy Functions: Gibbs and Helmholtz energy; variation of S, G, A with T, V, P; Free energy change and spontaneity. Relation between Joule-Thomson coefficient and other thermodynamic parameters, inversion temperature, Gibbs-Helmholtz equation, Maxwell relations, thermodynamic equation of state.

Unit-III

Systems of variable composition

Partial molar quantities, dependence of thermodynamic parameters on composition; Gibbs Duhem equation, chemical potential of ideal mixtures, change in thermodynamic functions in mixing of ideal gases.

Chemical equilibrium

Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases, concept of fugacity. Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient (Vant Hoff's reaction). Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Free energy of mixing and spontaneity; thermodynamic derivation of relations between the various equilibrium constants K_p, K_c and K_x. Le Chatelier principle (quantitative treatment) and its applications.

Unit-IV

Solutions and Colligative Properties

Dilute solutions; lowering of vapour pressure, Raoult's and Henry's Laws and their applications. Thermodynamic derivation using chemical potential to derive relations between the four colligative properties: (i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) osmotic pressure and amount of solute. Applications in calculating molar masses of normal, dissociated and associated solutes in solution.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017
4. Castellan G. W. Physical Chemistry 4th Ed. Narosa (2004).

Reference Books:

1. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013).
2. McQuarrie, D. A. & Simon, J. D. Molecular Thermodynamics Viva Books Pvt. Ltd.: New Delhi (2004).
3. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.

CORE PAPER IV LAB

THERMOCHEMISTRY

a) Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system (method of back calculation of heat capacity of calorimeter from known enthalpy of solution or enthalpy of neutralization).

b) Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide.

c) Calculation of the enthalpy of ionization of ethanoic acid.

d) Determination of heat capacity of the calorimeter and integral enthalpy (endothermic and exothermic) solution of salts.

e) Determination of basicity/ proticity of a polyprotic acid by the thermochemical method in terms of the changes of temperatures observed in the graph of temperature versus time for different additions of a base. Also calculate the enthalpy of neutralization of the first step.

f) Determination of enthalpy of hydration of copper sulphate.

g) Determination of heat of solution (ΔH) of oxalic acid/benzoic acid from solubility measurement.

Reference Books

1. Khosla, B. D.; Garg, V. C. & Gulati, A., Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
2. Athawale, V. D. & Mathur, P. Experimental Physical Chemistry, New Age International: New Delhi (2001).
3. Viswanathan, B., Raghavan, P.S. Practical Physical Chemistry, Viva Books (2009)

CORE PAPER V

INORGANIC CHEMISTRY II

Unit - I

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agent. Electrolytic Reduction, Hydrometallurgy. Methods of purification of metals: Electrolytic process, Parting process, van Arkel-de Boer process and Mond's process, Zone refining.

Acids and Bases

Brönsted-Lowry concept of acid-base reactions, solvated proton, relative strength of acids, types of acid-base reactions, Lewis acid-base concept, Classification of Lewis acids, Hard and Soft Acids and Bases (HSAB) application of HSAB principle.

Unit-II

Chemistry of *s* and *p* Block Elements - I

Inert pair effect, Relative stability of different oxidation states, diagonal relationship and anomalous behaviour of first member of each group. Allotropy and catenation. Complex formation tendency of *s* and *p* block elements.

Hydrides and their classification ionic, covalent and interstitial.

Basic beryllium acetate and nitrate.

Unit-III

Chemistry of *s* and *p* Block Elements - II

Study of the following compounds with emphasis on structure, bonding, preparation, properties and uses.

Boric acid and borates, boron nitrides, borohydrides (diborane) carboranes and graphitic compounds, silanes. Oxides and oxoacids of nitrogen, Phosphorus and chlorine. Peroxo acids of sulphur, interhalogen compounds, polyhalide ions, pseudohalogens and basic properties of halogens.

Unit-IV

Noble Gases

Occurrence and uses, rationalization of inertness of noble gases, clathrates; preparation and

properties of XeF_2, XeF_4 and XeF_6; Nature of bonding in noble gas compounds (Valence bond treatment and MO treatment for XeF_2). Molecular shapes of noble gas compounds (VSEPR theory).

Inorganic Polymers:

Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes, and polysulphates.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
4. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.(2010).

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. I, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER V LAB

Iodometric / Iodimetric titrations

(i) Standardization of sodium thiosulphate solution by standard of $K_2Cr_2O_7$ solution.

(ii) Estimation of Cu(II) using standard sodium thiosulphate solution (Iodimetrically).

(iii) Estimation of available chlorine in bleaching powder iodometrically.

Inorganic preparations

(i) Cuprous oxide (Cu_2O)

(ii) Cuprous chloride(Cu_2Cl_2)

(iii) Manganese(III) phosphate($MnPO_4.H_2O$)

(iv) Aluminium potassium sulphate (K_2SO_4. $Al_2(SO_4)_2.24H_2O$ - Potash alum).

(v) Lead chromate ($PbCrO_4$)

Reference Books:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis, 6th Ed., Pearson, 2009.

2. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt. Ltd., (2017).

CORE PAPER VI

ORGANIC CHEMISTRY-II

Unit - I

Chemistry of Halogenated Hydrocarbons

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – SN_1, SN_2 and SN_i mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution vs. elimination.

Aryl halides: Preparation, including preparation from diazonium salts, nucleophilic aromatic substitution; SNAr, Benzyne mechanism.

Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

Organometallic compounds of Mg and Li – Use in synthesis of organic compounds.

Unit-II

Alcohols, Phenols, Ethers and Epoxides

Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction; Preparation and properties of glycols: Oxidation by periodic acid and lead tetraacetate, Pinacol-Pinacolone rearrangement;

Phenols: Preparation and properties; Acidity and factors effecting it, Ring substitution reactions, Reimer–Tiemann and Kolbe's–Schmidt Reactions, Fries and Claisen rearrangements with mechanism;

Ethers and Epoxides: Preparation and reactions with acids. Reactions of epoxides with alcohols, Ammonia derivatives and $LiAlH_4$.

Unit-III

Carbonyl Compounds

Structure, reactivity and preparation:

Nucleophilic additions, Nucleophilic addition-elimination reactions with ammonia derivatives with mechanism; Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Perkin, Cannizzaro and Wittig reaction, Beckmann rearrangements, α halo form reaction and

Baeyer Villiger oxidation, - substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, $LiAlH_4$, $NaBH_4$, MPV.; Addition reactions of unsaturated carbonyl compounds: Michael addition.

Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of diethyl malonate and ethyl acetoacetate.

Unit-IV

Carboxylic Acids and their Derivatives

Preparation, physical properties and reactions of monocarboxylic acids: Typical reactions of dicarboxylic acids, hydroxy acids and unsaturated acids: succinic, lactic, malic, tartaric, citric, maleic and fumaric acids;

Preparation and reactions of acid chlorides, anhydrides, esters and amides; Comparative study of nucleophilic substitution at acyl group -Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hofmann-bromamide degradation and Curtius rearrangement.

Sulphur containing compounds: Preparation and reactions of thiols and thioethers**.**

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Bhal and Bhal, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
3. Mendham, J.,et al, A. I. Vogel's Quantitative Chemical Analysis, 6th Ed., Pearson, 2009.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER VI LAB

Organic preparations:

i. Acetylation of one of the following compounds: amines (aniline, *o*-, *m*-, *p*-toluidines and *o*-, *m*-, *p*-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) by any one method:
   a. Using conventional method.
   b. Using green approach

ii. Benzolyation of one of the following amines (aniline, *o*-, *m*-, *p*- toluidines and *o*-, *m*-, *p*-anisidine) and one of the following phenols (β-naphthol, resorcinol, p- cresol) by Schotten-Baumann reaction.

iii. Bromination of any one of the following:
   a. Acetanilide by conventional methods
   b. Acetanilide using green approach (Bromate-bromide method)

iv. Nitration of any one of the following:
   a. Acetanilide/nitrobenzene by conventional method
   b. Salicylic acid by green approach (using ceric ammonium nitrate).

The above derivatives should be prepared using 0.5-1g of the organic compound.
Calculate percentage yield, based upon isolated yield (crude) and theoretical yield.
Purification of the crude product by recrystallisation from water/alcohol, or sublimation, whichever is applicable and determination of melting point.

Reference Books

1. Vogel, A. I. Elementary Practical Organic Chemistry, Part 1: Small scale Preparations, Pearson (2011)
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry*, Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical OrganicChemistry, 5th Ed.*, Pearson (2012)
4. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry:Preparation and Quantitative Analysis,* University Press (2000).
5. Ahluwalia, V.K. & Dhingra, S. *Comprehensive Practical Organic Chemistry: QualitativeAnalysis,* University Press (2000).

CORE PAPER VII PHYSICAL CHEMISTRY-III

Unit-I

Phase Equilibria-I

Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems, Clausius- Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems, with applications (H_2O and sulphur system).

Phase diagrams for systems of solid-liquid equilibria involving eutectic (Pb-Ag system, desilverisation of lead), congruent (ferric chloride-water) and incongruent (sodium sulphate-water) melting points, completely miscible solid solutions (intermediate, medium, maximum freezing points).

Unit-II

Phase Equilibria-II

Three component systems, water-chloroform-acetic acid system, triangular plots.

Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), azeotropes, partial miscibility of liquids, CST, miscible pairs, steam distillation.

Nernst distribution law: its derivation and applications.

Unit-III

Chemical Kinetics

Order and molecularity of a reaction, rate laws in terms of the advancement of a reaction, differential and integrated form of rate expressions up to second order reactions, experimental methods of the determination of orders.

Kinetics of complex reactions (integrated rate expressions up to first order only): (i) Opposing reactions (ii) parallel reactions (iii) consecutive reactions and their differential rate equations (steady-state approximation in reaction mechanisms) (iv) chain reactions.

Temperature dependence of reaction rates; Arrhenius equation; activation energy. Collision theory of reaction rates, qualitative treatment of the theory of absolute reaction rates.

Unit-IV

Catalysis

Types of catalyst, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces; effect of particle size and efficiency of nanoparticles as catalysts. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis.

Surface chemistry:

Physical adsorption, chemisorption, adsorption isotherms (Langmuir, Freundlich and Gibb's isotherms), nature of adsorbed state.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. Kapoor K. L., Text Book of Physical Chemistry, McGraw Hill, 3rd Edn. 2017
4. Castellan G. W. Physical Chemistry 4th Edn. Narosa (2004).

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Levine, I. N. *Physical Chemistry 6thEd.*, Tata McGraw-Hill (2011).
3. Ball D. W. Physical Chemistry Thomson Press, India (2007).
4. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013)

CORE PAPER VII LAB

1. Determination of distribution coefficients of:
   (a) Iodine between water and carbon tetrachloride.
   (b) Acetic/ benzoic acid between water and cyclohexane.
2. Study the equilibrium of at least one of the following reactions by the distribution method:
   - $I_2(aq) + I^- \rightarrow I_3^-(aq)$
   - $Cu^{2+}(aq) + nNH_3 \rightarrow Cu(NH_3)_n$
3. Study the kinetics of the following reactions.
   (i) Integrated rate method:
   a) Acid hydrolysis of methyl acetate with hydrochloric acid.

b) Saponification of ethyl acetate.

(ii) Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate.

4. Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.

Reference Books:

1. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.*; McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).

CORE PAPER VIII

INORGANIC CHEMISTRY-III

Unit-I

Coordination Chemistry

Werner's theory, valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding.

IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelate effect, Labile and inert complexes.

Crystal field theory, measurement of CFSE weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq in octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry, Jahn-Teller theorem, square planar geometry. Qualitative aspect of ligand field and MO Theory.

Unit-II

Transition Elements-I

General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, and ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer & Ebsworth diagrams). Difference between the first, second and third transition series.

Unit-III

Transition Elements-II

Chemistry of Ti, V, Cr, Mn, Fe and Co in various oxidation states (excluding their metallurgy).

Lanthanoids and Actinoids

Electronic configuration, oxidation states, colour, spectral and magnetic properties,lanthanide contraction, separation of lanthanides (ion-exchange method only).

General features of actinoids, separation of Np, Pm, Am from U.

Unit-IV

Bioinorganic Chemistry

Metal ions present in biological systems, classification of elements according to their action in biological system. Na/K-pump, carbonic anhydrase and carboxypeptidase. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and As), reasons for toxicity, Use of chelating agents in medicine.

Iron and its application in bio-systems, Haemoglobin and myoglobin.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
3. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
4. Shriver D. E. Atkins P. W., Inorganic Chemistry, Oxford University Pres, 5th Edn..

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Bioinorganic Chemistry, Asim Kumar Das, Books & Allied (P) Ltd. 1st Ed. 2015.
3. Selected Topic in Inorganic Chemistry, Mallick, Madan and Tuli, S. Chand Publisher. 17th Ed. 2010.

4. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

CORE PAPER VIII LAB

Inorganic preparations

Preparation of complexes:

i. Hexamine nickel(II), $[Ni(NH_3)_6]Cl_2$
ii. Potassium trioxalatoferrate (III) trihydrate
iii. Tetraamminecopper (II) sulphate, $[Cu(NH_3)_4]SO_4.H_2O$
iv. Tetraamminecarbonatocobalt (III) nitrate

Complexometric titration

i. Estimation of Ca by EDTA
ii. Estimation of Mg by EDTA

Gravimetric Analysis:

i. Estimation of nickel (II) using dimethylglyoxime (DMG).
ii. Estimation of copper as CuSCN
iii. Estimation of iron as Fe_2O_3 by precipitating iron as $Fe(OH)_3$.
iv. Estimation of Al(III) by precipitating with oxine and weighing as $Al(oxine)_3$ (Aluminium Oxinate).

Chromatography of metal ions

Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions:

i. Ni(II) and Co(II)
ii. Fe(III) and Al(III)

Reference Books:

1. Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS (1978).
2. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER IX

ORGANIC CHEMISTRY-III

Unit-I

Nitrogen Containing Functional Groups

Preparation and important reactions of nitro and compounds, nitriles.

Amines: Effect of substituent and solvent on basicity; Preparation and properties: Gabriel phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction; Distinction between 1°, 2° and 3° amines with Hinsberg reagent and nitrous acid.

Unit-II

Diazonium Salts

Preparation and their synthetic applications.

Polynuclear Hydrocarbons

Reactions of naphthalene and anthracene Structure, Preparation and structure elucidation and important derivatives of naphthalene and anthracene. Polynuclear hydrocarbons.

Unit-III

Heterocyclic Compounds

Classification and nomenclature, Structure, aromaticity in 5-numbered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of: Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Pyrimidine. Fischer indole synthesis and Madelung synthesis, Derivatives of furan: Furfural and furoic acid (preparation only).

Unit-IV

Alkaloids

Natural occurrence, General structural features, Isolation and their physiological action. Hoffmann's exhaustive methylation, Emde's modification, Structure elucidation and synthesis of Hygrine and Nicotine. Medicinal importance of Nicotine, Hygrine, Quinine, Morphine, Cocaine, and Reserpine.

Terpenes

Occurrence, classification, isoprene rule; Elucidation of structure and synthesis of Citral, Neral and α- terpineol.

Recommended Text Books:

1. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Advanced Organic Chemistry, 2nd Edition, Arun Bahl & B S Bahl, S. Chand Publisher, 2012.

Reference Books:

1. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013)
2. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
3. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER IX LAB

Qualitative organic analysis of organic compounds

1. Detection of extra elements (N, X, S) in organic compounds by Lassaigne's test.
2. Qualitative analysis of unknown organic compounds containing simple functional groups under CHN system (amine, nitro, amide and imide), determination of melting/ boiling point, and preparation of their derivative.

Reference Books

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
3. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
4. Ghoshal, A., Mahapatra, B., Nad, A. K. An Advanced Course in Practical Chemistry, New Central Book Agency (2007).

CORE PAPER X

PHYSICAL CHEMISTRY-IV

Unit-I

Conductance-I

Arrhenius theory of electrolytic dissociation. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution. Kohlrausch law of independent migration of ions. Debye-Hückel-Onsager equation, Wien effect, Debye-Falkenhagen effect, Walden's rules.

UNIT-II

Conductance-II

Ionic velocities, mobilities and their determinations, transference numbers and their relation to ionic mobilities, determination of transference numbers using Hittorf and Moving Boundary methods. Applications of conductance measurement: (i) degree of dissociation of weak electrolytes, (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts, (iv) conductometric titrations, and (v) hydrolysis constants of salts.

Unit-III

Electrochemistry-I

Quantitative aspects of Faraday's laws of electrolysis, rules of oxidation/reduction of ions based on half-cell potentials, applications of electrolysis in metallurgy and industry.

Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining free energy, enthalpy and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass electrodes.

Unit-IV

Electrochemistry-II

Concentration cells with and without transference, liquid junction potential; determination of activity coefficients and transference numbers. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation).

Electrical properties of atoms and molecules

Basic ideas of electrostatics, Electrostatics of dielectric media. Clausius-Mosotti equation and Lorenz-Laurentz equation (no derivation), Dipole moment and molecular polarizabilities and their measurements.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
3. Kapoor, K. L., Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn., 2017
4. Castellan G. W. Physical Chemistry 4th Ed. Narosa (2004).

Reference Books:

1. Engel T. & Reid P., Physical Chemistry 3rd Ed. Pearson (2013).
2. Levine, I. N. Physical Chemistry 6th Ed., Tata McGraw-Hill (2011).
3. McQuarrie, D. A. & Simon, J. D. Molecular Thermodynamics Viva Books Pvt. Ltd.: New Delhi (2004).
4. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.

CORE PAPER X LAB

Conductometry

I. Determination of cell constant.

II. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.

III. Perform the following conductometric titrations:

- i. Strong acid vs. strong base
- ii. Weak acid vs. strong base
- iii. Strong acid vs. weak base

Potentiometry

I Perform the following potentiometric titrations:

i. Strong acid vs. strong base

ii. Weak acid vs. strong base

iii. Dibasic acid vs. strong base

Reference Books:

1. Khosla, B. D., Garg, V. C. & Gulati, A., Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
2. Garland, C. W. Nibler, J. W. & Shoemaker, D. P., Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C., Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co., New York (2003).
4. Viswanathan, B., Raghavan, P.S., Practical Physical Chemistry, Viva Books (2009).

CORE PAPER XI

ORGANIC CHEMISTRY-IV

Unit-I

Organic Spectroscopy-I

UV Spectroscopy: Types of electronic transitions, λ_{max}, Lambert-Beer's law and its limitations, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption; Application of Woodward rules for calculation of λ_{max} for the following systems: α, β the unsaturated aldehydes: ketones, carboxylic acids and esters; Conjugated dienes: alicyclic, homoannular and heteroannular; Extended conjugated systems (aldehydes, ketones and dienes); distinction between cis and trans isomers.

Unit-II

Organic Spectroscopy-II

IR Spectroscopy: Fundamental and non-fundamental molecular vibrations; IR absorption positions of O and N containing functional groups; Effect of H-bonding, conjugation, resonance and ring size on IR absorptions; Fingerprint region and its significance; application in simple functional group analysis.

Unit-III

Organic Spectroscopy-III

NMR Spectroscopy: Basic principles of Proton Magnetic Resonance, chemical shift andfactors influencing it; Spin-spin coupling and coupling constant; Anisotropic effects in alkene, alkyne, aldehydes and aromatics; Interpretation of NMR spectra of simple compounds.

Mass Spectroscopy- Basic principle, Fragmentation pattern, instrumentation, determination of m/e ratio. Application of mass spectroscopy on CH_4, C_2H_6, *n*-butane and *neo*-pentane.

Applications of IR, UV & NMR for identification of simple organic molecules.

Unit-IV

Carbohydrates

Occurrence, classification and their biological importance.

Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Interconversions of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation;

Disaccharides – Structure elucidation of maltose; Polysaccharides – Elementary treatment of starch, cellulose.

Recommended Text Books:

1. Kemp William, Organic Spectroscopy, 3rd Edition, Palgrave Publisher, 1991.
2. Davis, B. G., Fairbanks, A. J., Carbohydrate Chemistry, Oxford Chemistry Primer, Oxford University Press.
3. J Kalsi P. S., Spectroscopy of Organic Compounds, 5th Edition, New Age International Publishers, 2016.
4. Advanced Organic Chemistry, 2nd Edition, Arun Bahl & B S Bahl, S. Chand Publisher, 2012.

Reference Books:

1. Y R Sharma, Elementary Organic Spectroscopy, 5th Edition, S. Chand & Company, 2013.
2. Jag Mohan, Organic Spectroscopy and Applications, Narosa Publishers, 2012.
3. Graham Solomons T. W., Fryhle, Craig B., Snyder Scott A, Organic Chemistry, Wiley Student Ed, 11th Edition (2013).

4. Jonathan Clayden, Nick Greeves, Stuart Warren, Organic Chemistry, 2nd Edition, Oxford Publisher, 2014.
5. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

CORE PAPER XI LAB

1. Qualitative analysis of carbohydrate: aldoses and ketoses, reducing and non-reducing sugars.
2. Qualitative analysis of unknown organic compounds containing simple bifunctional groups, for e.g. salicylic acid, cinnamic acid, nitrophenols etc.
3. Quantitative estimation of sugars:
   (c) Estimation glucose by titration with Fehling's solution.
   (d) Estimation of sucrose by titration with Fehling's solution.
   (e) Estimation glucose and sucrose in a given mixture.
4. Identification of labelled peaks in the ^{1}H NMR spectra of the known organic compounds explaining the relative δ-values and splitting pattern.
5. Identification of labelled peaks in the IR spectrum of the same compound explaining the relative frequencies of the absorptions (CORE PAPERH, O-H, N-H, CORE PAPERO, CORE PAPERN, CORE PAPERX, C=C, C=O, N=O, C≡C, C≡N stretching frequencies; characteristic bending vibrations are included).

Reference Books:

1. Vogel, A.I. *Quantitative Organic Analysis,* Part 3, Pearson (2012).
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
3. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
4. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis,* University Press (2000).
5. Ahluwalia, V.K. & Dhingra, S. *Comprehensive Practical Organic Chemistry: Qualitative Analysis,* University Press (2000).

CORE PAPER XII PHYSICAL CHEMISTRY V

Unit-I

Quantum Chemistry-I

Quantum mechanical operators, Postulates of quantum mechanics, Schrödinger equation and its application to particle in one-dimensional box (complete solution) - quantization of energy levels, zero-point energy, normalization of wave functions, probability distribution functions, nodal properties. Extension to three-dimensional boxes, separation of variables, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion: Setting up of Schrödinger equation and discussion of solution and wave functions. Vibrational energy of diatomic molecules and zero-point energy.

Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component.

Rigid rotator model of rotation of diatomic molecule: Schrödinger equation, transformation to spherical polar coordinates. Separation of variables (Preliminary treatment).

Unit-II

Chemical Bonding

Chemical bonding: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+. Bonding and antibonding orbitals. Qualitative extension to H_2. Comparison of LCAO-MO and VB treatments of H_2 (only wave functions, detailed solution not required) and their limitations. Localized and non-localized molecular orbitals treatment of triatomic (BeH_2, H_2O) molecules. Qualitative MO theory and its application to AH_2 type molecules.

Unit-III

Molecular Spectroscopy-I

Interaction of electromagnetic radiation with molecules and various types of spectra; Born-Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic

molecules, modes of vibration. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Unit-IV

Molecular Spectroscopy-II

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual exclusion.

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation.

Photochemistry

Characteristics of electromagnetic radiation, physical significance of absorption coefficients. Laws of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitised reactions, quenching, chemiluminescence.

Recommended Text Books:

1. McQuarie D., Quantum Chemistry, University Science Publishers, 2007
2. Chandra, A. K. Introductory Quantum Chemistry Tata McGraw-Hill (2001).
3. Banwell, C. N. & McCash, E. M. Fundamentals of Molecular Spectroscopy 4th Ed. Tata McGraw-Hill: New Delhi (2010).
4. Prasad R K., Quantum Chemistry, New Age International Publishers, 4th Edn,2010.
5. Rohatagi Mukherjee K K., Fundamentals of Photochemistry, Wiley Eastern Ltd., 1992.

Reference Books:

1. Puri, Sharma & Pathania, Principles of Physical Chemistry, Vishal Publishing Co, 47th Edn., 2017.
2. Kapoor, K. L., Text Book of Physical Chemistry, McGraw Hill, Vol. II, IV.
3. Levine, I. N. Quantum Chemistry, PHI.

CORE PAPER XII LAB

Spectroscopy/Colorimetry

1. Study of absorption spectra (visible range) of $KMnO_4$ and determine the λ_{max}

value. Calculate the energies of the transitions in kJ mol^{-1}, cm^{-1}, and eV.

2. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/ $KMnO_4$/ $K_2Cr_2O_7$ in a solution of unknown concentration.

3. Determine the dissociation constant of an indicator (phenolphthalein).

Spectrophotometric titration

1. Determine the concentration of HCl against 0.1 N NaOH spectrophotometrically.
2. To find the strength of given ferric ammonium sulfate solution of (0.05 M) by using EDTA spectrophotometrically.
3. To find out the strength of $CuSO_4$ solution by titrating with EDTA spectrophotometrically.
4. To determine the concentration of Cu(II) and Fe(III) solution photometrically by titrating with EDTA.

Reference Books

1. Khosla, B. D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
2. Garland, C. W., Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.;* McGraw-Hill: New York (2003).
3. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).
4. J. N. Gurtu, R. Kapoor, Experimental Physical Chemistry.

CORE PAPER XIII
INORGANIC CHEMISTRY-IV

Unit-I

Organometallic Compounds-I

Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands.

Metal carbonyls: 18 electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of

3d series. Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. π-acceptor behaviour of CO (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

Zeise's salt: Preparation and structure, evidences of synergic effect and comparison of synergic effect with that in carbonyls.

Unit-II

Organometallic Compounds-II

Metal Alkyls: Important structural features of methyl lithium (tetramer) and trialkyl aluminium (dimer), concept of multicentre bonding in these compounds. Role of triethyl aluminium in polymerisation of ethene (Ziegler – Natta Catalyst). Species present in ether solution of Grignard reagent and their structures.

Ferrocene: Preparation and reactions (acetylation, alkylation, metallation, Mannich Condensation), structure and aromaticity, comparison of aromaticity and reactivity with that of benzene.

Unit-III

Catalysis by Organometallic Compounds

Study of the following industrial processes and their mechanism:

1. Alkene hydrogenation (Wilkinson's Catalyst)
2. Hydroformylation (Co salts)
3. Wacker Process
4. Synthetic gasoline (Fischer Tropsch reaction)

Theoretical Principles in Qualitative Analysis (H_2S Scheme)

Basic principles involved in analysis of cations and anions and solubility products, common ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride and phosphate) and need to remove them after Group II.

Unit-IV

Thermodynamic & kinetic aspects and reaction mechanism of metal complexes

Thermodynamic and kinetic stability, Stepwise and overall formation constants and their relationship, factors affecting stability. Introduction to inorganic reaction mechanisms-types of reaction and classification of substitution reaction. Substitution reaction of square planar complexes, Trans effect and its applications, theories of trans-effect (electrostatic polarization and Static π-Bonding Theory). Kinetics of octahedral substitution (classification of metal ions based on water exchange rate), General mechanism of ligand substitution reactions in octahedral complexes (D, I, I_d, I_a).

Recommended Text Books:

1. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd Ed., 2017.
3. Shriver D. E. Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, 7th Edition, Prentice Hall, 1996-0307.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Selected Topic in Inorganic Chemistry, Mallick, Madan and Tuli, S. Chand Publisher. 17th Ed. 2010.
3. Mehrotra R.C. and Singh, A. *Organometallic Chemistry*, New Age International Publishers, 2nd Edn, 2000.
4. Gupta B. D. and Elias A. J., Basic Organometallic Chemistry, 2nd Edn., University Press (2013).

CORE PAPER XIII LAB

- Qualitative analysis of mixtures containing 4 radicals (2 anions and 2 cations). Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

  CO_3^{2-}, NO_2^-, S^{2-}, SO_3^{2-}, F^-, Cl^-, Br^-, I^-, NO_3^-, PO_4^{3-}, NH_4^+, K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}.

- Mixtures may contain one insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$, CaF_2 or Al_2O_3) or

combination of interfering anions e.g. CO_3^{2-} and SO_3^{2-}, NO_2^- and NO_3^-, Cl^- and Br^-, Cl^- and I^-, Br^- and I^-, NO_3^- and Br^-, NO_3^- and I^-.

- Spot tests should be done whenever possible.

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, 7th Ed, Revised by G. Svehela, 4th Ed., Person (2007).
2. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt Ltd., (2017).

CORE PAPER XIV ORGANIC CHEMISTRY-V

Unit-I

Amino Acids, Peptides and Proteins

Amino acids: Classification; α-Amino acids - Synthesis, ionic properties and reactions. Zwitterions, pK_a values, isoelectric point and electrophoresis.

Peptides: Classification, Determination of their primary structures-end group analysis, methods of peptide synthesis. Synthesis of peptides using N-protecting, CORE PAPER protecting and CORE PAPER activating groups - Solid-phase synthesis.

Proteins: Structure of proteins, protein denaturation and renaturation

Unit-II Enzymes

Introduction, classification and characteristics of enzymes. Salient features of active site of enzymes. Mechanism of enzyme action (taking trypsin as example), factors affecting enzyme action, coenzymes and cofactors and their role in biological reactions, specificity of enzyme action (including stereo specificity), enzyme inhibitors and their importance, phenomenon of inhibition (competitive, uncompetitive and non-competitive inhibition including allosteric inhibition).

Nucleic Acids

Components of nucleic acids, Nucleosides and nucleotides;

Structure, synthesis and reactions of: Adenine, Guanine, Cytosine, Uracil and Thymine;

Structure of polynucleotides.

Unit-III Lipids

Introduction to oils and fats; common fatty acids present in oils and fats, Hydrogenation of fats and oils, Saponification value, acid value, iodine number. Reversion and rancidity.

Concept of Energy in Biosystems

Cells obtain energy by the oxidation of foodstuff (organic molecules). Introduction to metabolism (catabolism and anabolism).

Overview of catabolic pathways of fat and protein.

Interrelationship in the metabolic pathways of protein, fat and carbohydrate. Caloric value of food, standard caloric content of food types.

Unit-IV

Pharmaceutical Compounds: Structure and Importance

Classification, structure and therapeutic uses of antipyretics: Paracetamol (with synthesis), Analgesics: Ibuprofen (with synthesis), Antimalarials: Chloroquine (with synthesis). An elementary treatment of Antibiotics and detailed study of chloramphenicol, Medicinal values of curcumin (haldi), azadirachtin (neem), vitamin C and antacid (ranitidine).

Dyes

Classification, colour and constitution; Mordant and Vat dyes; Chemistry of dyeing. Synthesis and applications of: *Azo dyes* – Methyl orange and Congo red (mechanism of Diazo Coupling); *Triphenylmethane dyes* - Malachite Green, and crystal violet; *Phthalein dyes* – Phenolphthalein and Fluorescein.

Recommended Text books

1. Nelson, D.L., Cox, M.M. and Lehninger, A.L. Principles of Biochemistry. 6th Edn. W.H. Freeman and Co. (2013).
2. Kar Ashutosh, Medicinal chemistry, New Age International (P) Ltd., (2007)
3. Debojyoti Das, Biochemistry, (Part-I) Academic Publishers (1979)

Reference Books:

1. Talwar, G.P. & Srivastava, M. Textbook of Biochemistry and Human Biology, 3rd Ed. PHI Learning.

2. Berg, J.M., Tymoczko, J.L. & Stryer, L. Biochemistry, W.H. Freeman, 2002.
4. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009) Harper's Illustrated Biochemistry. XXVIII edition. Lange Medical Books/ McGraw-Hill.
5. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2006) Biochemistry, 6th Edition. W.H. Freeman and Co. (2002).
6. Wilson, K. & Walker, J. Practical Biochemistry. Cambridge University Press (2009).
7. The Tools of Biochemistry (1977; Reprint 2011) Cooper, T.G., Wiley India Pvt. Ltd. (New Delhi), ISBN: 978-81-265-3016-8.

CORE PAPER XIV LAB

1. Preparations of the following compounds
    i. Aspirin
    ii. Methyl orange
2. Estimation of phenol and aniline by bromination method.
3. Saponification value of an oil/ fat/ ester.
4. Estimation of glycine by Sorenson's formalin method.
5. Estimation formaldehyde (formalin).
6. Estimation of ascorbic acid in fruit juices/Vitamin C tablet (Iodometric method)
7. Determination of Iodine number of an oil/ fat.

Reference Books:

1. Arthur, I. Vogel, Elementary Practical Organic Chemistry, Part-1 Small scale preparations, Indian Edition, Pearson (2011).
2. Manual of Biochemistry Workshop, 2012, Department of Chemistry, University of Delhi.
3. Arthur, I. Vogel, *Quantitative Organic Analysis*, Pearson.
4. Wilson, K. & Walker, J. Practical Biochemistry. Cambridge University Press (2009).

Discipline Specific Elective Paper-1

POLYMER CHEMISTRY

Unit-I

Introduction and history of polymeric materials:

Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers.

Functionality and its importance:

Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization. Bi- functional systems, Poly-functional systems.

Unit-II

Mechanism & Kinetics of Polymerization:

Polymerization reactions – addition and condensation, mechanism and kinetics of step growth, radical chain growth, ionic chain (both cationic and anionic) and coordination polymerizations, Mechanism and kinetics of copolymerization, polymerization techniques.

Crystallization and crystallinity:

Determination of crystalline melting point and degree of crystallinity, Morphology of crystalline polymers, Factors affecting crystalline melting **point**.

Unit-III

Molecular weight of polymers and their determination (M_n, M_w, M_v, M_z) by end group analysis, viscometry and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersity index.

Glass transition temperature (T_g) and it determination: WLF equation, Outlines of factors affecting glass transition temperature (T_g).

Unit-IV

Properties of polymers (physical, thermal and mechanical properties)

Preparation, structure, properties and applications of the following polymers: polyolefins (polyethylene, polypropylene), polystyrene, polyvinyl chloride, polyvinyl acetate, polyacrylamide, fluoro polymers (Teflon), polyamides (nylon-6 and nylon 6, 6). Thermosetting polymers - phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, conducting polymers (polyacetylene, polyaniline). Brief outline of biodegradable polymers.

Recommended Text Books:

1. V. R. Gowarikar, Jayadev Sreedhar, N. V. Viswanathan, Polymer Science 1st Edition, New Age International Publishers, 1986.

2. Premamoy Ghosh, Polymer Science and Technology: Plastics, Rubber, Blends and Composites, 3rd Edition, McGraw Hill Education, 2010.
3. P. Bahadur & N.V.Sastry, Principles of polymer science, Narosa Publishing house, New Delhi 2002.
4. Fred W. Billmeyer, Textbook of Polymer Science, 3rd ed. Wiley- Interscience (1984)

Reference books

1. L.H. Sperling, Introduction to Physical Polymer Science, 4th ed. John Wiley & Sons (2005)
2. Malcolm P. Stevens, Polymer Chemistry: An Introduction, 3rd ed. Oxford University Press (2005)
3. Seymour/ Carraher's Polymer Chemistry, 9th ed. by Charles E. Carraher, Jr. (2013).
4. Nayak P.L., Polymer Chemistry, Kalyani Publisher (2017).

Discipline Specific Elective Paper I LAB

Polymer synthesis (At least three experiments)

1. Preparation of nylon-6,6 / Polyaniline.
2. Preparations of phenol-formaldehyde resin-novalac/ phenol-formaldehyde resin resold.
3. Preparation of urea-formaldehyde resin.
4. Free radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA) / Methyl Acrylate (MA) / Acrylic acid (AA).
   a. Purification of monomer.
   b. Polymerization using benzoyl peroxide (BPO) / 2,2'-azo-bis-isobutylonitrile (AIBN).
5. Redox polymerization of acrylamide.
6. Precipitation polymerization of acrylonitrile.

Polymer characterization/analysis (At least two different experiments)

1. Determination of molecular weight by viscometry:
   a. Polyacrylamide / Polystyrene
   b. Polyvinyl pyrolidine (PVP)
2. Determination of acid value/ saponification value of a resin.

3. Determination of hydroxyl number of a polymer using colorimetric method.
4. Estimation of the amount of HCHO in the given solution by sodium sulphite method
5. Analysis of some IR spectra of polymers – Identification of labelled peaks in IR spectra of known polymer.

Reference Books:

1. Hundiwale G.D., Athawale V.D., Kapadi U.R. and Gite V. V., Experiments in Polymer Science, New Age Publications (2009).
2. Malcohm P. Stevens, Polymer Chemistry: An Introduction, 3rd Ed.
3. Joel R. Fried, Polymer Science and Technology, 2nd Ed. Prentice-Hall (2003).
4. Petr Munk and Tejraj M. Aminabhavi, Introduction to Macromolecular Science, 2nd Ed. John Wiley & Sons (2002).
5. Malcolm P. Stevens, Polymer Chemistry: An Introduction, 3rd ed. Oxford University Press (2005).

Discipline Specific Elective Paper-II

GREEN CHEMISTRY

Unit-I

Introduction to Green Chemistry

What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry.

Principles of Green Chemistry and Designing a Chemical synthesis- I

Twelve principles of Green Chemistry. Explanations of principle with special emphasis on - Designing green synthesis processes: Prevention of Waste/ by-products; maximize the incorporation of the materials used in the process into the final products (Atom Economy) with reference to rearrangement, addition, substitution and elimination reactions; Prevention/ minimization of hazardous/ toxic products; Designing safer chemicals; Use of safer solvents and auxiliaries (e.g. separating agent) - green solvents (supercritical CO_2, water, ionic liquids), solvent less processes, immobilized solvents.

Unit-II

Principles of Green Chemistry and Designing a Chemical synthesis-II

Explanation of green chemistry principles with special emphasis on:

Energy efficient processes for synthesis - use of microwaves and ultrasonic energy. Selection of starting materials (use of renewable feedstock); avoidance of unnecessary derivatization (e.g. blocking group, protection groups, deprotection); Use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; designing of biodegradable products use of chemically safer substances for prevention of chemical accidents, inherent safer design greener - alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol); real-time, in-process monitoring and control to prevent the formation of hazardous substances; development of green analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.

Unit-III

Examples of Green Synthesis/ Reactions and some real world cases-I

Green Synthesis of the following compounds: adipic acid, catechol, methyl methacrylate, urethane, disodium iminodiacetate (alternative to Strecker synthesis), paracetamol, furfural.

Microwave assisted reactions: Applications to reactions (i) in water: Hofmann Elimination, hydrolysis (of benzyl chloride, methyl benzoate to benzoic acid), Oxidation (of toluene, alcohols); (ii) reactions in organic solvents: Diels-Alder reaction and Decarboxylation reaction.

Ultrasound assisted reactions: Applications to esterification, saponification, Simmons-Smith Reaction (Ultrasonic alternative to Iodine).

Unit-IV

Examples of Green Synthesis/ Reactions and some real world cases- II

Surfactants for carbon dioxide – replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments; Designing of Environmentally safe marine antifoulant; Right fit pigment: synthetic azopigments to replace toxic organic and inorganic pigments; Synthesis of a compostable and widely applicable plastic (poly lactic acid) from corn; Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting

Future Trends in Green Chemistry

Oxidizing and reducing reagents and catalysts; multifunctional reagents; Combinatorial green

chemistry; Proliferation of solvent less reactions; Green chemistry in sustainable development. (Bio-diesel, bio-ethanol and biogas).

Recommended Text Books:

1. Anastas P.T. & Warner J.K.: Green Chemistry- Theory and Practical, Oxford University Press (2000).
2. Ahluwalia V.K. & Kidwai M.: New Trends in Green Chemistry, Anamalaya Publishers, New Delhi (2004).
3. Kumar V., An Introduction to Green Chemistry, Vishal Publishing Co., (2015).

Reference Books:

1. Matlack A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
2. Das Asim K. amd Das Mahua , Environment Chemistry with Green Chemistry, Books and Allied (P) Ltd. (2010)

Discipline Specific Elective Paper II LAB

At least five experiments should be done:

1. Acetylation of primary amine (Aniline to N-phenylacetamide) using Zn dust.
2. Nitration of salicylic acid by green method (Using calcium nitrate and acetic acid).
3. Bromination of acetanilide using ceric ammonium nitrate/KBr.
4. Microwave assisted nitration of Phenols using $Cu(NO_3)_2$.
5. Detection of elements in organic compounds by green method (Sodium carbonate fusion).
6. Base catalyzed Aldol condensation (Synthesis of dibenzalpropanone).
7. Vitamin C clock reaction using vitamin C tablets, tincture of iodine, hydrogen peroxide and liquid laundry starch. Effect of concentration on clock reaction.
8. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.
9. Diels Alder reaction in water: Reaction between furan and maleic acid in water and at room temperature rather than in benzene and reflux.
10. Preparation and characterization of nanoparticles (Cu, Ag) using plant extract.
11. Preparation of propene by following two methods or any other reactions like addition, elimination, substitution showing atomic economy can be studied
    (I) Triethylamine ion + OH^- $\rightarrow$ Propene + Trimethylpropene + water

(II) 1-propanol $\xrightarrow{H_2SO_4/\Delta}$ propene + water

Reference Books:

1. Monograph on Green Chemistry Laboratory Experiments, edited and published by Green Chemistry Task Force Committee, DST Govt. of India, p. 1-79.
2. Kirchoff, M. & Ryan, M.A. *Greener approaches to undergraduate chemistry experiment*. American Chemical Society, Washington DC (2002).
3. Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. *Green Chemistry Experiment:A monograph International Publishing House Pvt Ltd. New Delhi*. Bangalore CISBN978-93-81141-55-7 (2013).

Discipline Specific Elective Paper-III

INDUSTRIAL CHEMICALS AND ENVIRONMENT

Unit-I

Industrial Gases and Inorganic Chemicals

Industrial Gases: Large scale production uses storage and hazards in handling of the following gases: oxygen, nitrogen, argon, hydrogen, acetylene, carbon monoxide, chlorine, sulphur dioxide.
Inorganic Chemicals: Manufacture, application and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, potassium dichromate and potassium permanganate.

Industrial Metallurgy

Preparation of metals (ferrous and nonferrous) and ultrapure metals for semiconductor technology.

Unit-II

Environment and its segments

Ecosystems. Biogeochemical cycles of carbon, nitrogen and sulphur.

Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions in atmosphere. Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry. Environmental effects of ozone. Major sources of air pollution.

Pollution by SO_2, CO_2, CO, NO_x, and H_2S and control procedures.

Effects of air pollution on living organisms and vegetation. Greenhouse effect and global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and halogens, removal of sulphur from coal.

Unit-III

Water Pollution: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems.

Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: electroplating, textile, tannery, dairy, petroleum and petrochemicals, fertilizer. Sludge disposal.

Industrial waste management: incineration of waste. Water treatment and purification (reverse osmosis, ion exchange). Water quality parameters for wastewater, industrial water and domestic water.

Unit-IV

Energy and Environment

Sources of energy: Coal, petrol and natural gas. Nuclear fusion/fission, solar energy, hydrogen, geothermal, tidal and hydel.

Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management.

Biocatalysis

Introduction to biocatalysis: Importance in green chemistry and chemical industry.

Recommended Text Books:

1. De, A. K. *Environmental Chemistry*: New Age International Pvt., Ltd, New Delhi, 2010.
2. Stocchi E., *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
3. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).

Reference Books:

1. Felder R.M. and Rousseau R.W., *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
2. Dara S. S., *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
3. Miller G.T., Environmental Science, 11th edition. Brooks/ Cole (2006).
4. Mishra, Environmental Studies, Selective and Scientific Books, New Delhi (2005).

Discipline Specific Elective Paper III LAB

1. Determination of Dissolved Oxygen (DO) in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride, sulphate and salinity of water samples by simple titration method ($AgNO_3$ and potassium chromate).
6. Estimation of total alkalinity of water samples (CO^{2-}, HCO^{-}) using double titration method.
7. Measurement of dissolved CO_2.
8. Study of some of the common bio-indicators of pollution.
9. Estimation of SPM in air samples.
10. Preparation of borax/ boric acid.

Reference Books:

1. Dara S. S., A Textbook on Experiments and Calculations in Engineering Chemistry S Chand & Company; 9th revised edition (2015).
2. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
3. R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
4. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
5. S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.

Discipline Specific Elective Paper-IV

INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

Unit I

Silicate Industries

Glass: Glassy state and its properties, classification (silicate and nonsilicate glasses). Manufacturing and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics: Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre.

Cements: Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

Unit II

Fertilizers: Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates; polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.

Batteries: Primary and secondary batteries, battery components and their role, Characteristics of Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery. Fuel cells, Solar cell and polymer cell.

Unit III

Surface Coatings:

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings, metal spraying and anodizing.

Unit IV

Alloys: Classification of alloys, ferrous and non-ferrous alloys, Specific properties of elements in alloys. Manufacture of Steel (removal of silicon, decarbonization, demanganization, desulphurization, dephosphorisation) and surface treatment (argon treatment, heat treatment nitriding, carburizing). Composition and properties of different types of steels.

Chemical explosives: Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

Recommended Text Books:

1. Stocchi E., *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
2. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).
3. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.

Reference Books:

1. Felder R.M. and Rousseau R.W., *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.

2. Dara S. S., *A Textbook of Engineering Chemistry,* S. Chand & Company Ltd. New Delhi.

3. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.

4. R. Gopalan, D. Venkappayya, S. Nagarajan: Engineering Chemistry, Vikas Publications, New Delhi.

Discipline Specific Elective Paper-IV LAB

List of Practicals

1. Determination of free acidity in ammonium sulphate fertilizer.
2. Estimation of Calcium in Calcium ammonium nitrate fertilizer.
3. Estimation of phosphoric acid in superphosphate fertilizer.
4. Determination of composition of dolomite (by complexometric titration).
5. Analysis of (Cu, Ni); (Cu, Zn) in alloy or synthetic samples.
6. Analysis of Cement.
7. Estimation of Iron from Cement Volumetrically
8. Preparation of pigment (zinc oxide).

Reference Books

1. Dara S. S., A Textbook on Experiments and Calculations in Engineering Chemistry S Chand & Company; 9th revised edition (2015).
2. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
3. R. M. Felder, R. W. Rousseau: Elementary Principles of Chemical Processes, Wiley

Publishers, New Delhi.

4. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: Introduction to Ceramics, Wiley Publishers, New Delhi.
5. J. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
6. P. C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi.
7. R. Gopalan, D. Venkappayya, S. Nagarajan: Engineering Chemistry, Vikas Publications, New Delhi.

Alternative to DSC CORE PAPER IV

Discipline Specific Elective Paper- V

DISSERTATION

A project work is to be carried out by the student in consultation with the teachers of the department. The report of work (dissertation) in a standard format is to be submitted and presented for evaluation.

Distribution of marks

(a) Project Report/Dissertation (Proper documentation of literature, data, discussion etc. and logical flow of work undertaken): 50 Marks

(b) Seminar/Presentation: 30 marks

(c) Viva voce: 20 marks

Brief Guidelines to Project Work:

1. Students shall undertake the project work (experimental/theoretical) related to any branch of chemistry/Chemical science under the guidance of teacher(s) from the department or jointly with teachers/research personnel of other institutes.
2. The following activities have been outlined as guidelines (not exhaustive):
   - Physiochemical studies (pH, conductivity, turbidity, etc.) of different wetlands (ponds, lakes, river etc.)
   - Analysis of iron in pond / tube well / river water.
   - Analysis of Hardness of water samples.
   - Adulteration detection activities in food stuff and other edible items.
   - Extraction and preliminary characterization of useful chemicals (as far as possible) from plants.
   - Solubility, surface tension, and viscosity measurements of some solution of practical

relevance, (cough syrup, soap solution, pesticides, fertilizers.. etc.)

- Pollution related activities (Industrial/Agricultural/Municipal etc.)
- Nutrition related activities, (essential metal detection in food, cereals, pulses, fruits etc.).
- Small synthetical work (inorganic/Organic/Polymeric compounds)

2. The UG level project work is a group activity, maximum number of students being limited to three. HOD to notify the name of teacher(s) for supervising the project work of each group. A teacher can guide more than one group, if necessary.
4. No two groups in the same institution are permitted to do project work on the same problem.
5. Each student shall prepare and submit the project report separately for evaluation. Two copies of project report are required to be submitted in bound form (spiral/paperback).
6. The project report shall be divided as:

Chapter I: Introduction (Introduction on the topic, review of literature, objective and scope of the work)

Chapter II: Materials and methods

Chapter II: Results and discussion

Chapter IV: Conclusions and Scope of future studies

Chapter V: References

Reference Books:

1. M. A. Malati, An Investigative, Integrated Approach to Practical Project Work; Mid-Kent College of Higher/Further Education, UK (October 1999); Imprint: Woodhead Publishing; ISBN: 978-1-898563-47-1.
2. Dean, J. R., Jones, A. M., Holmes, D., Reed, R., Weyers, J. & Jones, A. (2011) Practical skills in chemistry. 2nd Ed., Prentice-Hall, Harlow.

Alternative for Discipline Specific Elective (DSE) Papers Discipline Specific Elective Paper-VI

ANALYTICAL METHODS IN CHEMISTRY

Unit I

UV-Visible and IR Spectrometry

Origin of spectra, interaction of radiation with matter, fundamental laws of spectroscopy and selection rules, validity of Beer-Lambert's law.

UV-Visible Spectrometry: Basic principles, instrumentation (choice of source, monochromator and detector) for single and double beam instrument; Basic principles of quantitative analysis:

estimation of metal ions from aqueous solution, geometrical isomers, keto-enol tautomers. Determination of composition of metal complexes using Job's method of continuous variation and mole ratio method.

Infrared Spectrometry: Basic principles of instrumentation (choice of source, monochromator & detector) for single and double beam instrument; sampling techniques. Structural illustration through interpretation of data, Effect and importance of isotope substitution.

Unit II

Qualitative and quantitative aspects of analysis

Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, normal law of distribution if indeterminate errors, statistical test of data; F, Q and t test, rejection of data, and confidence intervals.

Flame Atomic Absorption Spectrometry

Basic principles of instrumentation (choice of source, monochromator, detector, choice of flame and Burner designs. Techniques of atomization and sample introduction; Method of background correction, sources of chemical interferences and their method of removal. Techniques for the quantitative estimation of trace level of metal ions from water samples.

Unit III

Thermal and electro-analytical methods of analysis

Theory of thermo-gravimetry (TG), basic principle of instrumentation. Techniques for quantitative estimation of Ca and Mg from their mixture.

Classification of electro-analytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points.

Unit IV

Separation techniques

Solvent extraction: Classification, principle and efficiency of the technique. Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions.

Chromatography: Classification, principle and efficiency of the technique. Mechanism of separation: adsorption, partition & ion exchange. Development of chromatograms: frontal, elution and displacement methods. Qualitative and quantitative aspects of chromatographic methods of analysis: TLC and HPLC.

Recommended text books:

1. Vogel, Arthur I: A Test book of Quantitative Inorganic Analysis (Rev. by G.H. Jeffery and others) 5th Ed., The English Language Book Society of Longman.
2. Skoog, Holler and Crouch, Principles of Instrumental Analysis, Cengage Learning, 6th Indian Reprint (2017).
3. Christian, Gary D; Analytical Chemistry, 6th Ed., John Wiley & Sons, New York, 2004.

Reference books

1. Harris, Daniel C: Exploring Chemical Analysis, Ed. New York, W. H. Freeman, 2001.
2. Willard, Hobert H. et al.: Instrumental Methods of Analysis, 7th Ed., Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Mikes, O. & Chalmes, R.A. Laboratory Hand Book of Chromatographic & Allied Methods, Elles Harwood Ltd. London.
4. Pavia, Lamman, Kriz and Vyvyan, Introduction to Spectroscopy, Cengage Learning, 3rd Indian Reprint (2017).
5. Dash U N , Analytical Chemistry.

Discipline Specific Elective Paper -VI LAB

1. Paper chromatographic separation of Fe^{3+}, Al^{3+}, and Cr^{3+}.
2. Separation and identification of the monosaccharides present in the given mixture (glucose & fructose) by paper chromatography. Reporting the R_f values.
3. Separate a mixture of Sudan yellow and Sudan Red by TLC technique and identify them on the basis of their R_f values.
4. Chromatographic separation of the active ingredients of plants, flowers and juices by TLC.
5. Determine the pH of the given aerated drinks fruit juices, shampoos and soaps.
6. Determination of Na, Ca, Li in cola drinks and fruit juices using flame photometric techniques.
7. Analysis of soil: determination of pH of soil, total soluble salt, estimation of calcium, magnesium, phosphate, nitrate.
8. Separation of metal ions from their binary mixture.
9. Separation of amino acids from organic acids by ion exchange chromatography.
10. Determination of dissolved oxygen in water.
11. Determination of chemical oxygen demand (COD).

Reference Books:

1. Vogel, Arthur I: A Test book of Quantitative Inorganic Analysis (Rev. by G. H. Jeffery and others) 5th Ed., The English Language Book Society of Longman.
2. Willard, Hobert H. et al.: Instrumental Methods of Analysis, 7th Ed., Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age, International Publisher, 2009.

GENERIC ELECTIVE (GE)

Generic Elective Paper I (Theory)

ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

Section A: Inorganic Chemistry-I

Unit-I

Atomic Structure

Review of: Bohr's theory and its limitations, dual behaviour of matter and radiation, de-Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra.

Quantum mechanics: Time independent Schrodinger equation and meaning of various terms in it. Significance of ψ and ψ^2, Schrödinger equation for hydrogen atom. Radial and angular parts of the hydogenic wave functions (atomic orbitals) and their variations for 1s, 2s, 2p, 3s, 3p and 3d orbitals (Only graphical representation). Quantum numbers and their significance, shapes of s, p and d atomic orbitals, nodal planes.

Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbital, Anomalous electronic configurations.

Unit-II

Chemical Bonding and Molecular Structure

Ionic Bonding: General characteristics, energy considerations. Lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules and its applications.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.

Concept of resonance and resonating structures in various inorganic and organic compounds.

MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules (N_2, O_2) and heteronuclear diatomic molecules (CO, NO). Comparison of VB and MO approaches.

Section B: Organic Chemistry-I

Unit- III

Fundamentals of Organic Chemistry

Physical Effects, Electronic Displacements: Inductive effect, Electrometric effect, Resonance and hyperconjugation. Cleavage of bonds: Homolysis and heterolysis.

Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.

Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Hückel's rule.

Stereochemistry

Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). D and L; cis-trans nomenclature; CIP Rules: R/ S (for one chiral carbon atoms) and E / Z Nomenclature (for up to two C=C systems).

Unit-IV

Aliphatic Hydrocarbons

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Alkanes: (Up to 5 Carbons) *Preparation:* Catalytic hydrogenation, Wurtz reaction,Kolbe's synthesis, from Grignard reagent. *Reactions:* Free radical Substitution: Halogenation.

Alkenes: (Up to 5 Carbons) *Preparation:* Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis-alkenes (Partial catalytic hydrogenation) and trans-alkenes (Birch reduction). *Reactions:* cis-addition (alk. $KMnO_4$) and trans-addition (bromine), Addition of HX (Markownikoff's and anti- Markownikoff's addition),

Hydration, Ozonolysis.

Alkynes: (Up to 5 Carbons) *Preparation:* Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. *Reactions:* formation of metal acetylides, addition of bromine and alkaline $KMnO_4$,ozonolysis.

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd Ed., 2017.
3. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, Pearson Education, 4th Ed. 2002.
5. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Bhal Arun & Bhal B S , Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.
7. Kalsi, P. S. Stereochemistry Conformation and Mechanism; 8th Edn, New Age International, 2015.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.
3. Mallick, Madan and Tuli, S. Chand Selected Topic in Inorganic Chemistry, 17th Edn. 2010.
4. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications.

Generic Elective Paper I LAB

Section A: Inorganic Chemistry

Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with $KMnO_4$.
3. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$.
4. Estimation of Fe(II) ions by titrating it with $K_2Cr_2O_7$ using internal indicator.
5. Estimation of Cu(II) ions iodometrically using $Na_2S_2O_3$.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl) in organic compounds (containing up to two extra elements)
2. Separation of mixtures by Chromatography: Measure the R_f value in each case (combination of two compounds to be given)

(a) Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography.

(b) Identify and separate the sugars present in the given mixture by paper chromatography.

Reference Books:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
3. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

Generic Elective Paper II (Theory)

CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY

Section A: Physical Chemistry-I

Unit-I

Chemical Energetics

Review of thermodynamics and the Laws of Thermodynamics.

Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.

Statement of Third Law of thermodynamics.

Chemical Equilibrium

Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG^o, Le Chatelier's principle. Relationships between K_p, K_c and K_x for reactions involving ideal gases.

Unit- II

Ionic Equilibria

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Section B: Organic Chemistry-II

Unit- III

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons

Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid. Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (up to 4 carbons on benzene). Side chain oxidation of alkyl benzenes (up to 4 carbons on benzene).

Alkyl and Aryl Halides

Alkyl Halides (Up to 5 Carbons) Types of Nucleophilic Substitution (SN_1, SN_2 and SN_i) reactions.

Preparation: from alkenes and alcohols. Reactions: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation. Williamson's ether synthesis: Elimination vs substitution.

Aryl Halides Preparation: (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions.

Reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by –OH group) and effect of nitro substituent. Benzyne Mechanism: KNH_2/NH_3 (or $NaNH_2/NH_3$).

Unit- IV

Alcohols, Phenols and Ethers (Up to 5 Carbons)

Alcohols: Preparation: Preparation of 1°, 2° and 3° alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes and ketones, carboxylic acid and esters.

Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, Alk. $KMnO_4$, acidic dichromate, conc. HNO_3). Oppeneauer oxidation Diols: (Up to 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement.

Phenols: (Phenol case) Preparation: Cumene hydroperoxide method, from diazonium salts. Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer Tiemann Reaction, Gattermann -Koch Reaction,

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Aldehydes and ketones (aliphatic and aromatic): Formaldehyde, acetaldehyde, acetone and benzaldehyde

Preparation: from acid chlorides and from nitriles.

Reactions – Reaction with HCN, ROH, $NaHSO_3$, NH_2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction.

Recommended Text Books:

1. Atkins P. W. & Paula, J. de, Elements of Physical Chemistry, Oxford University Press, 6th Ed., (2006).
2. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co, 47th Edn., 2017.
3. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017.
4. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Arun Bahl & B S Bahl, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

Generic Elective Paper II LAB Section

A: Physical Chemistry

Thermochemistry (any three)

1. Determination of heat capacity of calorimeter for different volumes.
2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Determination of enthalpy of ionization of acetic acid.
4. Determination of integral enthalpy of solution of salts (KNO_3, NH_4Cl).
5. Determination of enthalpy of hydration of copper sulphate.

6. Study of the solubility of benzoic acid in water and determination of ΔH.

Ionic equilibria

pH measurements

a) Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.

b) Preparation of buffer solutions:

- Sodium acetate-acetic acid
- Ammonium chloride-ammonium hydroxide

Measurement of the pH of buffer solutions and comparison of the values with theoretical values.

Section B: Organic Chemistry

1. Purification of organic compounds by crystallization (from water) and determination of melting.
2. Preparations, recrystallisation, determination of melting point and calculation of quantitative yields of the followings:

(a) Bromination of Phenol/Aniline

(b) Benzoylation of amines/phenols

(c) Oxime and 2,4 dinitrophenylhydrazone of aldehyde/ketone

Reference Books

1. A.I. Vogel: Textbook of Practical Organic Chemistry, 5th edition, Prentice-Hall.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
4. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).

Generic Elective Paper III (Theory)

CHEMISTRY OF S- AND P-BLOCK ELEMENTS, STATES OF MATTER & CHEMICAL KINETICS

Section A: Inorganic Chemistry-II

Unit-I

General Principles of Metallurgy

Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon as reducing agent.

Hydrometallurgy, Methods of purification of metals (Al, Pb, Fe, Cu, Ni): electrolytic, oxidative refining, Parting process, van Arkel-de Boer process and Mond's process.

s- and *p*-Block Elements

Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling & Mulliken scales). Allotropy in C, S, and P.

Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.

Unit-II

Compounds of *s*- and *p*-Block Elements

Hydrides and their classification (ionic, covalent and interstitial), structure and properties with respect to stability of hydrides of p- block elements.

Concept of multicentre bonding (diborane).

Structure, bonding and their important properties like oxidation/reduction, acidic/basic nature of the following compounds and their applications in industrial, organic and environmental chemistry.

Hydrides of nitrogen (NH_3, N_2H_4, N_3H, NH_2OH); Oxoacids of P, S and Cl; Halides and oxohalides: PCl_3, PCl_5, $SOCl_2$.

Section B: Physical Chemistry- II

Unit-III

Kinetic Theory of Gases

Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation.

Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation. van der Waals equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation.

Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance.

Temperature dependence of these distributions. Most probable, average and root mean square velocities (no derivation). Collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).

Liquids

Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Unit-IV

Solids

Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X–Ray diffraction by crystals, Bragg's law. Structures of NaCl, and CsCl (qualitative treatment only). Defects in crystals.

Chemical Kinetics

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.

Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).

Recommended Text Books:

1. Lee J. D., Concise Inorganic Chemistry, Wiley India, 5th Edn., 2008.
2. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
3. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
4. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co, 47th Edn., 2017.
5. K. L. Kapoor, Text Book of Physical Chemistry, Mac Grow Hill, 3rdEdn. 2017.

Reference Books:

1. Kheterpal S.C., Pradeep's Physical Chemistry, Vol. I & II, Pradeep Publications.
2. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.

Generic Elective Paper -III LAB

Section A: Inorganic Chemistry

Qualitative analysis of inorganic slat mixture using H_2S: not more than four ionic species (two anions and two cations and excluding insoluble salts) out of the following:

Cations : NH_4^+, Pb^{2+}, Ag^+, Bi^{3+}, Cu^{2+}, Cd^{2+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, K^+

Anions: CO_3^{2-}, S^{2-}, SO_3^{2-}, NO_2^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-}, PO_4^{3-}, F^-

(Spot tests should be carried out wherever feasible)

Section B: Physical Chemistry

Chemical Kinetics

Study the kinetics of the following reactions.

1. Initial rate method: Iodide-persulphate reaction
2. Integrated rate method:
    a. Acid hydrolysis of methyl acetate with hydrochloric acid.
    b. Saponification of ethyl acetate.
    c. Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate

Reference Books:

1. Svehla, G, Vogel's Qualitative Inorganic Analysis, 7th Ed, 4th Ed., Pearson Education (2007).
2. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co., New Delhi (2011).
3. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1stEdn., CBS Publishers & Distributors Pvt Ltd., (2017).

Generic Elective Paper- IV (Theory)

ORGANOMETALLICS, BIOINORGANIC CHEMISTRY, POLYNUCLEAR HYDROCARBONS AND UV, IR SPECTROSCOPY

Section A: Inorganic Chemistry- III

Unit-I

Chemistry of 3d metals

Oxidation states displayed by Cr, Fe, Co, Ni and Co.

A study of the following compounds (including preparation and important properties);

Peroxo compounds of Cr, $K_2Cr_2O_7$, $KMnO_4$, $K_4[Fe(CN)_6]$, sodium nitroprusside, $[Co(NH_3)_6]Cl_3$, $Na_3[Co(NO_2)_6]$.

Organometallic Compounds

Definition and Classification with appropriate examples based on nature of metal-carbon bond (ionic, s, p and multicentre bonds). Structures of methyl lithium, Zeiss salt and ferrocene. EAN rule as applied to carbonyls. Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. π-acceptor behaviour of carbon monoxide. Synergic effects (VB approach).

Unit-II

Bio-Inorganic Chemistry

A brief introduction to bio-inorganic chemistry. Role of metal ions present in biological systems with special reference to Na^+, K^+ and Mg^{2+} ions: Na/K pump; Role of Mg^{2+} ions in energy production and chlorophyll. Role of Ca^{2+} in blood clotting, and structural role (bones).

Section B: Organic Chemistry- III

Unit-III

Polynuclear and heteronuclear aromatic compounds

Properties of the following compounds with reference to electrophilic and nucleophilic substitution: Naphthalene, Anthracene, Furan, Pyrrole, Thiophene, and Pyridine.

Active methylene compounds

Preparation: Claisen ester condensation. Keto-enol tautomerism.

Reactions: Synthetic uses of ethylacetoacetate (preparation of non-heteromolecules having up to 6 carbon).

Unit-IV

Application of Spectroscopy (UV-Visible, IR) to Simple Organic Molecules

Electromagnetic radiations, electronic transitions, λ_{max} & ε_{max}, chromophore, auxochrome, bathochromic and hypsochromic shifts. Application of electronic spectroscopy and Woodward rules for calculating λ_{max} of conjugated dienes and α, β – unsaturated compounds.

Infrared radiation and types of molecular vibrations, functional group and fingerprint region. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Recommended Text Books:

1. Puri, Sharma, Kalia, Principles of Inorganic Chemistry, Vishal Pub. Co., 33rd ed., 2017.
2. Shriver D. E., Atkins P. W., Inorganic Chemistry, Oxford UniversityPres , 5th Edn.
3. Huheey J. E., Keiter E. A. and Keiter R. L., Inorganic Chemistry – Principles of structure and reactivity, , Pearson Education, 4th Ed. 2002.
4. Morrison, R. N. & Boyd, R. N., Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Arun Bahl & B S Bahl, Advanced Organic Chemistry, 2nd Edition, S. Chand Publisher, 2012.

Reference books

1. Das Asim K., Fundamentals of Inorganic Chemistry, Vol. II, CBS Publications, 2nd Ed. 2010.
2. Das Asim K., Bioinorganic Chemistry, Books & Allied (P) Ltd. 1st ed. 2015.
3. Pradeep's Inorganic Chemistry, Vol. I & II, Universal Book seller, 14th Ed. 2017.
4. Dhawan, S.N., Pradeep's Organic Chemistry, (Vol. I and II), Pradeep Publications

Generic Elective Paper IV LAB

Section A: Inorganic Chemistry

1. Preparation of following compounds (Any two)

a. Cuprous oxide (Cu_2O)

b. Cuprous chloride, Cu_2Cl_2

c. Manganese(III) phosphate, $MnPO_4.H_2O$

d. Lead chromate ($PbCrO_4$)

2. Separation of mixtures by chromatography: Measure the R_f value in each case. (Combination of two ions to be given)

- Paper chromatographic separation of Fe^{3+}, $A1^{3+}$ and Cr^{3+} or
- Paper chromatographic separation of Ni^{2+}, Co^{2+}, Mn^{2+} and Zn^{2+}

Section B: Organic Chemistry

Systematic qualitative organic analysis of organic compounds possessing mono-functional groups (-COOH, phenolic, aldehyde, ketone, amide, nitro, amines) and preparation of one derivative.

Reference Books

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Edn, Pearson, 2009.
2. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009).
3. Ahluwalia, V.K., Dhingra, S. and Gulati A, College Practical Chemistry, University Press (2005).
4. Gulati Shikha , Sharma Gulati JL and Manocha, Shagun, Practical Inorganic Chemistry, 1st Edn., CBS Publishers & Distributors Pvt. Ltd., (2017).

List of minimum instrument required for undertaking practical classes of UG-CBCS in Chemistry (Core and DSC Practicals)

Sl.	Name of the instrument	Numbers
1.	Ostwald's viscometer	02
2.	Tensiometer (Surface tension measurements)	01
3.	Digital pH-meter with accessories	02
4.	Digital Conductivity meter with accessories	02

5.	Potentiometer with accessories	01
6.	Colorimeter	01
7.	Calorimeter with accessories (precision thermometer)	01
8.	Visible spectrophotometer (single beam)	01
9.	Magnetic stirrer (with/without hot plate)	02
10.	Heating mantle	01
11.	Melting point apparatus	02
12.	Vacuum pump for filtration	01
13.	Single distillation units (All glass) 2lit/hr capacity	02
14.	Single pan digital balance with precision 0.01 gm and 0.001 gm	02
15.	Water bath (Electrical)	01
16.	Fume hood	01
17.	Kipp's apparatus (PP)	02
18.	Fire extinguishers	02
19.	Aspirator for chromatographic developer	01
20.	Air oven (up to 300^{o}C)	01
21.	Microwave oven (kitchen quality)	01

22.	Small lab accessories like glassware, plastic wares, laboratory wires and other small accessories as per requirement.	

COMMON SYLLABUS FOR BSc COMPUTER SCIENCE

B. Sc. (Honours) Computer Science (CBCS)

Preamble

Information and Communication Technology (ICT) has today become integral part of all industry domains as well as fields of academics and research. The industry requirements and technologies have been steadily and rapidly advancing. Organizations are increasingly opting for open source systems. The students too these days are thinking beyond career in the industry and aiming for research opportunities. A genuine attempt has been made while designing the new syllabus for this 3- year B. Sc. Computer Science (H) course. Not only does it prepare the students for a career in Software industry, it also motivates them towards further studies and research opportunities. The core philosophy of overall syllabus is to:

a. Form strong foundation of Computer science,

b. Introduce emerging trends to the students in gradual way,

c. Groom the students for the challenges of ICT industry

The Government of Odisha has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the State of Odisha in line with the University Grants Commission (UGC). The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The Government of Odisha has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Universities & Colleges in Odisha in line with UGC. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the Universities and Colleges must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching–learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities and Colleges in the states as well as the country. This creates difficulty for the academia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it uniform grading system. This will facilitate student mobility across institutions within and

has been followed in the top institutions in India and abroad. So, it is desirable to introduce

uniform grading system. This will facilitate student mobility across institutions within and

across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines, which is being adopted by the state of Odisha.

CHOICE BASED CREDIT SYSTEM (CBCS): The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in Odisha. This will benefit the students to move across institutions within Odisha to begin with and across states and countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

1. **Core Course**: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course**: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

> **Discipline Specific Elective (DSE) Course**: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).
>
> **Dissertation/Project**: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.
>
> **Generic Elective (GE) Course**: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. **Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course**: They ((i) Environmental Science, (ii) English/MIL Communication) are mandatory for all disciplines. AEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

Project work/Dissertation is considered as a special course involving application of knowledge

in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

GUIDELINES FOR PROJECT FORMULATION

As the project work constitutes a major component in most of the professional programs and it is to be carried out with due care and should be executed with seriousness by the candidates.

TYPE OF PROJECT

As majority of the students are expected to work out a real-life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. It is not mandatory for a student to work on a real-life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with the guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form:

1. Title of the Project

2. Introduction and Objectives of the Project

3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.)

4. Analysis (DFDs at least up to second level, ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).

5. A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules. Process Logic of each module. Testing process to be used. Reports generation

6. Tools / Platform, Hardware and Software Requirement specifications

7. Future scope and further enhancement of the project.

SEMESTER	COURSE OPTED	COURSE NAME	CREDITS
I	Ability Enhancement Course-1	AEC-1 (Environmental Science)	2
	Core Course-1	Programming using C	4
	Core Course-1 Practical	Programming using C LAB	2
	Core Course-2	Digital Logic	4
	Core Course-2 Practical	Digital Logic Lab	2
	Generic Elective-1	GE-1	4
	Generic Elective-1 Practical	GE-1 Tutorial/ LAB	2
II	Ability Enhancement Course-2	AEC-2 (English Communication/MIL)	2
	Core Course-3	Programming using C++	4
	Core Course-3 Practical	Programming using C++ LAB	2
	Core Course-4	Data Structures	4
	Core Course-4 Practical	Data Structures LAB	2
	Generic Elective-2	GE-2	4
	Generic Elective-2 Practical	GE-2 Tutorial/ LAB	2
III	Core Course-5	JAVA Programming	4
	Core Course-5 Practical	JAVA Programming LAB	2
	Core Course-6	Database Systems	4
	Core Course-6 Practical	Database Systems LAB	2
	Core Course-7	Discrete Mathematical Structures	4
	Core Course-7 Practical	Discrete Mathematical Structures LAB	2
	Skill Enhancement Course-1	SEC-1	2
	Generic Elective-3	GE-3	4
	General Elective-3 Practical	GE-3 Tutorial/ LAB	2
IV	Core Course-8	Operating Systems	4
	Core Course-8 Practical	Operating Systems LAB	2
	Core Course-9	Computer Networks	4
	Core Course-9 Practical	Computer Networks LAB	2
	Core Course-10	Computer Graphics	4
	Core Course-10 Practical	Computer Graphics LAB	2
	Skill Enhancement Course-2	SEC-2	2
	Generic Elective-4	GE-4	4
	General Elective-4 Practical	GE-4 Tutorial/ LAB	2
V	Core Course-11	Web Technology	4
	Core Course-11 Practical	Web Technology LAB	2
	Core Course-12	Software Engineering	4
	Core Course-12 Practical	Software Engineering Lab	2
	Discipline Specific Elective-1	DSE-1	4
	Discipline Specific Elective-1 Practical	DSE-1 LAB/ Tutorial	2
	Discipline Specific Elective-2	DSE-2	4
	Discipline Specific Elective-2 Practical	DSE-2 LAB/ Tutorial	2
VI	Core Course-13	Artificial Intelligence	4
	Core Course-13 Practical	Artificial Intelligence LAB	2
	Core Course-14	Algorithm Design Techniques	4
	Core Course-14 Practical	Algorithm Design Techniques LAB	2
	Discipline Specific Elective-3	DSE-3	4
	Discipline Specific Elective-3 Practical	DSE-3 LAB/ Tutorial	2

	Discipline Specific Elective-4	DSE-4	4
	Discipline Specific Elective-4 Practical	DSE-4 LAB/ Tutorial	2

CORE Papers: (Credit: 06 each)

CORE – 1: Programming Using C

CORE – 2: Digital Logic

CORE – 3: Programming Using C++

CORE – 4: Data Structure

CORE – 5: Java Programming

CORE – 6: Database Systems

CORE – 7: Discrete Mathematical Structures CORE –

8: Operating System

CORE – 9: Computer Network CORE

– 10: Computer Graphics CORE –

11: Web Technologies CORE – 12:

Software Engineering CORE – 13:

Artificial Intelligence

CORE – 14: Algorithm Design Techniques

Discipline Specific Electives (DSE) Papers:

DSE–1: Numerical Techniques

DSE–2: Unix Shell Programming

DSE–3: Data Science

DSE–4: Project Work / Dissertation

OR

Data Mining

Skill Enhancement Courses (SEC):

SEC – 1: Python Programming. SEC

– 2: Android Programming.

Ability Enhancement Courses (AEC): AEC –

1: Environmental Science.

AEC – 2: English Communication/MIL.

Generic Elective (GE): (Credit: 06 each) papers offered by Computer Science/IT Departments for other disciplines. It is recommended that the other departments must offer the following papers as GE.

GE – 1: Computer Fundamentals

GE – 2: C and Data Structures

GE – 3: Programming in Python

GE – 4: Web Technology

However the students from **Computer Science/IT** discipline shall choose **four papers of any one discipline** as their GE papers from the following list**.**

GE-1:

a) Mathematics–1
b) Physics–1
c) Statistics–1
d) Electronics –1

GE-2:

a) Mathematics–2
b) Physics–2
c) Statistics–2
d) Electronics –2

GE-3:

a) Mathematics–3
b) Physics–3
c) Statistics–3
d) Electronics –3

GE-4:

a) Mathematics–4
b) Physics–4
c) Statistics–4
d) Electronics –4

Detailed Syllabus

CORE – 1: Programming Using

C OBJECTIVES:

- To learn basics of C programming language.
- To be able to develop logics to create programs/ applications in C.

Unit-1

Introduction: Introduction to Programming Language, Introduction to C Programming, Keywords & Identifiers, Constants, Variables, Input and Output Operations, Compilation and pre-processing, **Data types**: Different data types, Data types qualifier, modifiers, Memory representation, size and range, **Operators:** Operators (Arithmetic, Relational, Logical, Bitwise, Assignment & compound assignment, Increment & Decrement, Conditional), Operator types (unary, binary, ternary). Expressions, Order of expression (Precedence and associativity)
Control structures: Decision Making and Branching (Simple IF Statement, IF…ELSE Statement, Nesting IF… ELSE Statement, ELSE IF Ladder), Selection control structure (Switch Statement).

Unit-2

Loops: The WHILE Statement, The DO…WHILE Statement, The FOR Statement, Jumps in Loops, **Array**: Concept of Array, Array Declaration, types of array (one and multiple dimension), Character Arrays and Strings, Subscript and pointer representation of array, Array of Pointers, Limitation of array, **Pointers**: Concept of Pointer (null pointer, wild pointer, dangling pointer, generic pointer), Pointer Expressions, Accessing the Address of a Variable, Declaring Pointer Variables, Initializations of Pointer Variable, Accessing a Variable through its Pointer, Pointer arithmetic.

Unit-3

Storage class: Types (auto, register, static, extern), scope rules, declaration and definition.
Function: Function & types (User defined function, library function) Function Definition, Declaration, Function Calls, Header file and library, Function Arguments, string handling function (strlen, strcmp, strcpy, strncpy, strcat, strstr), Function recursion, Functions Returning Pointers, Pointers to Functions, Command line arguments, Application of pointer (dynamic memory allocation).

Unit-4

Structure and Union: Defining, Declaring, Accessing, Initialization Structure, nested structure, self-referential structure, bit-field, Arrays of Structures, Structures and Functions, Unions, difference between structure and union, active data member, structure within union, Self-referential Structure, **File**: File Management in C, Defining and Opening a File, File opening modes (read, write, append), Closing a File, File operations, file and stream, Error Handling During I/O Operations, sequential and random access file, low level and high level file.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI
2. Paul Deitel, Harvey Deitel, “C: How to Program”, 8/e, Prentice Hall.
3. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana

Core-1 Practical: Programming Fundamentals using C Lab 1.1.5

1. Write a Program to find greatest among three numbers.
2. Write a Program to all arithmetic operation using switch case.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

   S = 1+1/2+1/3+1/4+……
6. Write a Program to compute the sum of the first n terms of the following series

   S =1-2+3-4+5…….
7. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
8. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
9. Write a Program to compute the factors of a given number.
10. Write a program to swap two numbers using macro.
11. Write a Program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
```

12. Write a Program to perform following actions on an array entered by the user:
    a) Print the even-valued elements
    b) Print the odd-valued elements
    c) Calculate and print the sum and average of the elements of array
    d) Print the maximum and minimum element of array
    e) Remove the duplicates from the array
    f) Print the array in reverse order

    The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.
13. Write a Program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
14. Write a program that swaps two numbers using pointers.
15. Write a program in which a function is passed address of two variables and then alter its contents.
16. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
17. Write a program to find sum and average of n elements entered by the user. To write this program, allocate memory dynamically using malloc( ) / calloc( ) functions.
18. Write a menu driven program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat function.
    c) Concatenate two strings using strcat function.
    d) Compare two strings
    e) Calculate length of the string (use pointers)
    f) Convert all lowercase characters to uppercase
    g) Convert all uppercase characters to lowercase
    h) Calculate number of vowels
    i) Reverse the string
19. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
20. Write a program to copy the content of one file to other.

CORE–2: DIGITAL LOGIC

OBJECTIVES

- To understand different methods used for the simplification of Boolean functions and binary arithmetic.
- To design and implement combinational circuits, synchronous & asynchronous sequential circuits.
- To study in detail about Semiconductor Memory Systems.

Unit-1

Character Codes, Decimal System, Binary System, Decimal to Binary Conversion, Hexadecimal Notation, Boolean Algebra, Basic Logic Functions: Electronic Logic Gates, Synthesis of Logic Functions, Minimization of Logic Expressions, Minimization using Karnaugh Maps, Synthesis with NAND and NOR Gates, Tri-State Buffers

Unit-2

Arithmetic: Addition and Subtraction of Signed Numbers, Addition/ Subtraction Logic Unit, Design of Fast Adders: Carry-Lookahead Addition, Multiplication of Positive Numbers, Signed-Operand Multiplication: Booth Algorithm, Fast Multiplication: Bit-Pair Recodng Multipliers, Carry-Save Addition of Summands, Integer Division, Floating-Point Numbers and Operations: IEEE Standard for Floating-Point Numbers, Arithmetic Operations on Floating-Point Numbers, Guard Bits and Truncation, Implementing Floating-Point Operations.

Unit-3

Flip-Flops, Gated Latches, Master-Slave Flip-Flops, Edge-Triggering, T Flip-Flops, JK Flip-Flops. Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic Devices (PLDs), Programmable Array Logic (PAL), Complex Programmable Logic Devices (CPLDs), Field-Programmable Gate Array (FPGA), Sequential Circuits, UP/ DOWN Counters, Timing Diagrams, The Finite State Machine Model, Synthesis of Finite State Machines.

Unit-4

Memory System: Semiconductor RAM Memories, Internal Organization of Memory Chips, Static Memories, Asynchronous DRAMS, Synchronous DRAMS, Structure of Large Memories, Memory System Considerations, RAMBUS Memory. Read-Only Memories: ROM, PROM, EPROM, EEPROM, Flash Memory, Speed, Size, and Cost of Memory. Secondary Storage: Magnetic Hard Disks, Optical Disks, Magnetic Tape Systems.

Text Books:

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/e (TMH)

Reference Books:

1. M. Morris Mano: Digital Logic and Computer Design, Pearson

CORE–2 Practical: Digital Logic Lab

1. Introduction to Xilinx software (VHDL)

Write the VHDL code for

2. Realizing all logic gates.

3. Combination Circuit.
4. ADDER.

5. SUBTRACTOR.

6. MUX.

7. DE-MUX.

8. Encoder.

9. Decoder.

10. PAL.

11. PLA.

Write the VHDL program for the following Sequential Logic Circuits

12. Flip Flops.

13. Shift Registers.

14. Counters.

15. Memory Elements.

CORE–3: Programming Using C++

OBJECTIVES

- To know about the Object Oriented Programming concepts.
- To learn basics of C++ programming language.
- To be able to develop logics to create programs/ applications in **C++.**

Unit-1

Principles of Object-Oriented Programming: Object-Oriented Programming (OOP) Paradigm, Basic Concepts of OOP, Benefits of OOP, Characteristics of OOPS, Object Oriented Languages, Applications of OOP.

C++ Program, C++ statements, Expressions and11C8ontrol Structures.

Introduction to C++, Difference between C & C++, Tokens, Data types, Operators, Structure of

C++ Program, C++ statements, Expressions and11C8ontrol Structures.

Functions in C++: Argument passing in function, Inline Functions, Default Arguments, Const. Arguments, Friend function.

Unit-2

Classes and Objects: Defining Member Functions, Making an outside Function Inline, Nested Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friend Functions.

Constructors & Destructors: Constructors, Parameterized Constructors, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Destructors.

Unit-3

Inheritance: Basics of Inheritance, Type of Inheritance, Virtual Base Classes, Abstract Classes, Member Classes, Nesting of Classes. Polymorphism: Pointers, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions, Function Overloading, Operator Overloading.

Unit-4

Managing Console I/O Operations: C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators.
Files: Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling during File Operations, Command-line Arguments.

Text Books

1. E. Balgurusawmy, Object Oriented Programming with C++, 4/e (TMH).
2. Paul Deitel, Harvey Deitel, "C++: How to Program", 9/e. Prentice Hall.

Reference Books:

1. Bjarne Stroustroup, Programming - Principles and Practice using C++, 2/e, Addison-Wesley 2014
2. Herbtz Schildt, C++: The Complete reference, MGH, 4/ed.
3. P. C. Sethi, P. K. Behera, “Programming in C++”- Kalyani Publisher, Ludhiana

CORE–3 Practical: Programming using C++ Lab

1. Write a Program to find greatest among three numbers using nested if…else statement.
2. Write a Program to check a number is prime or not.
3. Write a Program to find the GCD and LCM of two numbers.
4. Write a program to print the result for following series: 1! + 2! + 3! + ……
5. Write a program to print multiplication table from 1 to 10.
6. Write a Program for Swapping of two numbers using pass by value.
7. Write a Program for Swapping of two numbers using pass by address.
8. Write a Program for Swapping of two numbers using pass by reference.
9. Write a Program to find sum of four numbers using default argument passing.
10. Write a Program to find square and cube of a number using inline function.
11. Write a Program to find the factorial of a number.
12. Write a Program to find reverse of a number.
13. Write a program to find sum of four numbers using default argument passing in member

function.

14. Write a Program to find area of circle, triangle and rectangle using function overloading.
15. Write a program to distinguish the properties of static and non-static ata members.
16. Write a program to show the method of accessing static private member function.
17. Write a program to show the ways of calling constructors and destructors.
18. Write a program to perform ++ operator overloading using member function.
19. Write a program to perform ++ operator overloading using friend function.
20. Write a program to perform + operator overloading for two complex number addition.
21. Write a program to perform + operator overloading for string concatenation.
22. Write a program to perform single inheritance.
23. Write a program to perform multiple inheritance.
24. Write a program to create an integer array using new operator and find the sum and average of array elements.
25. Write a program to implement virtual destructor.
26. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
27. Write a program to Copy the contents of one file to other.

CORE–4: Data Structure

OBJECTIVES

- To learn how the choice of data structures impacts the performance of programs.
- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees.
- To learn efficient searching and sorting techniques.

Unit-1

Introduction: Basic Terminology, Data structure, Time and space complexity, Review of Array, Structures, Pointers.

Linked Lists: Dynamic memory allocation, representation, Linked list insertion and deletion, Searching, Traversing in a list, Doubly linked list, Sparse matrices.

Unit-2

Stack: Definition, Representation, Stack operations, Applications (Infix–Prefix–Postfix Conversion & Evaluation, Recursion).

Queues: Definition, Representation, Types of queue, Queue operations, Applications.

Unit-3

Trees: Tree Terminologies, General Tree, Binary Tree, Representations, Traversing, BST, Operations on BST, Heap tree, AVL Search Trees, M-way search tree, Applications of all trees.

Unit-4

Sorting: Exchange sorts, Selection Sort, Bubble sort, Insertion Sorts, Merge Sort, Quick Sort, Radix Sort, Heap sort.

Searching: Linear search, Binary search.

Text book

1. Classic Data Structure , D. Samanta , PHI , 2/ed.

REFERENCES

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Galgotia Publications, 2000.
2. Sastry C.V., Nayak R, Ch. Rajaramesh, Data Structure & Algorithms, I. K. International Publishing House Pvt. Ltd, New Delhi.

CORE – 4 Practical: Data Structure Lab

Write a C/ C++ Program for the followings

1. To insert and delete elements from appropriate position in an array.
2. To search an element and print the total time of occurrence in the array.
3. To delete all occurrence of an element in an array.
4. Array implementation of Stack.
5. Array implementation of Linear Queue.
6. Array implementation of Circular Queue.
7. To implement linear linked list and perform different operation such as node insert and delete, search of an item, reverse the list.
8. To implement circular linked list and perform different operation such as node insert and delete.
9. To implement double linked list and perform different operation such as node insert and delete.
10. Linked list implementation of Stack.
11. Linked list implementation of Queue.
12. Polynomial representation using linked list.
13. To implement a Binary Search Tree.
14. To represent a Sparse Matrix.
15. To perform binary search operation.
16. To perform Bubble sort.
17. To perform Selection sort.
18. To perform Insertion sort.
19. To perform Quick sort.

20. To perform Merge sort.

CORE – 5: Java Programming

OBJECTIVES

- To learn the fundamentals of Object Oriented Programming in Java environment.
- To learn the use of Java language and the Java Virtual Machine.
- To write simple Java programming applications.

Unit-1

Introduction to Java: Java History, Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords (super, this, final, abstract, static, extends, implements, interface) , Data Types, Wrapper class, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods). Input through keyboard using Command line Argument, the Scanner class, BufferedReader class.

Unit-2

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Class Variables & Methods, Objects, Object reference, Objects as parameters, final classes, Garbage Collection.

Constructor- types of constructor, this keyword, super keyword. Method overloading and Constructor overloading. Aggregation vs Inheritance, Inheritance: extends vs implements, types of Inheritance, Interface, Up-Casting, Down-Casting, Auto-Boxing, Enumerations, Polymorphism, Method Overriding and restrictions. Package: Pre-defined packages and Custom packages.

Unit-3

Arrays: Creating & Using Arrays (1D, 2D, 3D and Jagged Array), Array of Object, Referencing Arrays Dynamically. Strings and I/O: Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability& Equality, Passing Strings To & From Methods, StringBuffer Classes and StringBuilder Classes. IO package: Understanding StreamsFile class and its methods, Creating, Reading, Writing using classes: Byte and Character streams, FileOutputStream, FileInputStream, FileWriter, FileReader, InputStreamReader, PrintStream, PrintWriter. Compressing and Uncompressing File.

Unit-4

Exception Handling, Threading, Networking and Database Connectivity: Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Text Books:

1. E. Balagurusamy, “Programming with Java”, TMH, 4/Ed,

Reference books:

1. Herbert Schildt, “The Complete Reference to Java”, TMH, 10/Ed.

CORE – 5 Practical: Java Programming Lab

1. To find the sum of any number of integers entered as command line arguments.
2. To find the factorial of a given number.
3. To convert a decimal to binary number.
4. To check if a number is prime or not, by taking the number as input from the keyboard.
5. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
6. Write a program that show working of different functions of String and StringBufferclasss like setCharAt( ), setLength( ), append( ), insert( ), concat( )and equals( ).
7. Write a program to create a – "distance" class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
8. Modify the – "distance" class by creating constructor for assigning values (feetandinches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
9. Write a program to show that during function overloading, if no matching argument is found, then Java will apply automatic type conversions (from lower to higher data type)
10. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword.
11. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program – "DivideByZero" that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate different mouse handling events like mouseClicked( ), mouseEntered( ), mouseExited( ), mousePressed( ), mouseReleased( ) & mouseDragged( ).
23. Write a program to demonstrate different keyboard handling events.

CORE-6: Database Systems

OBJECTIVES

- To learn the fundamental elements of database system.

- To learn the basic concepts of relational database management systems.
- To learn various SQL commands.

Unit-1

Introduction to Database and Database Users, Database System Concepts and Architecture: data Models, schema, and instances, Conceptual Modeling and Database Design: Entity Relationship (ER) Model: Entity Types, Entity Sets, Attributes, Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, ER Naming Conventions. Enhanced Entity-Relationship (EER) Model.

Unit-2

Database Design Theory and Normalization: Functional Dependencies, Normal Forms based on Primary Keys, Second and third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

Unit-3

Relational data Model and SQL: Relational Model Concepts, Basic SQLs, SQL Data Definition and Data types, Constraints in SQL, Retrieval Queries in SQL, INSERT, DELETE, UPDATE Statements in SQL, Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT, Binary Relation: JOIN and DIVISION.

Unit-4

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing, Transaction and System Concepts, Properties of Transactions, Recoverability, Serializability, Concurrency Control Techniques, Locking techniques for Concurrency Control, Concurrency Control based on Time-Stamp Ordering.

Text Book:

1. Fundamentals of Database Systems, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson Education

Reference Book:

1. An Introduction to Database System, Date C. J. - Pearson Education, New Delhi - 2005

CORE-6 Practical: Database Systems Labs

Create and use the following database schema to answer the given queries.

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL
Job_type	Varchar(50)	NO		NIL
Manager	Char(3)	Yes	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES	FK	NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

DEPARTMENT Schema

Field	Type	NULL	KEY	DEFAULT
Dno	Integer	No	PRI	NULL
Dname	Varchar(50)	Yes		NULL
Location	Varchar(50)	Yes		New Delhi

Query List

1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
2. Query to display unique Jobs from the Employee Table.
3. Query to display the Employee Name concatenated by a Job separated by a comma.
4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
5. Query to display the Employee Name and Salary of all the employees earning more than $2850.
6. Query to display Employee Name and Department Number for the Employee No= 7900.
7. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.
8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
9. Query to display Name and Hire Date of every Employee who was hired in 1981.
10. Query to display Name and Job of all employees who don't have a current Manager.
11. Query to display the Name, Salary and Commission for all the employees who earn commission.
12. Sort the data in descending order of Salary and Commission.
13. Query to display Name of all the employees where the third letter of their name is 'A'.
14. Query to display Name of all employees either have two 'R's or have two 'A's in their name and are either in Dept No = 30 or their Mangers Employee No = 7788.
15. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
16. Query to display the Current Date.
17. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.

    employee was hired.

18. Query to display Name and calculate the number of months between today and the date each employee was hired.

19. Query to display the following for each employee <E-Name> earns < Salary> monthly but wants <3*Current Salary>. Label the Column as Dream Salary.
20. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.
21. Query to display Name, Hire Date and Day of the week on which the employee started.
22. Query to display Name, Department Name and Department No for all the employees.
23. Query to display Unique Listing of all Jobs that are in Department # 30.
24. Query to display Name, Department Name of all employees who have an 'A' in their name.
25. Query to display Name, Job, Department No. and Department Name for all the employees working at the Dallas location.
26. Query to display Name and Employee no. Along with their Manger's Name and the Manager's employee no; along with the Employees Name who do not have a Manager.
27. Query to display Name, Department No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.
28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies $100.
29. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees.
30. Query to display the number of employees performing the same Job type functions.
31. Query to display the no. of managers without listing their names.
32. Query to display the Department Name, Location Name, No. of Employees and the average salary for all employees in that department.
33. Query to display Name and Hire Date for all employees in the same dept. as Blake.
34. Query to display the Employee No. And Name for all employees who earn more than the average salary.
35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.
36. Query to display the names and salaries of all employees who report to King.
37. Query to display the department no, name and job for all employees in the Sales department.

CORE – 7: Discrete Mathematical

Structure OBJECTIVES

- To learn the mathematical foundations for Computer Science.
- Topics covered essential for understanding various courses.

Unit-1

Logics and Proof: Propositional Logic, Propositional Equivalences, Predicates and Quantifiers Nested Quantifiers, Rules inference, Mathematical Induction.

Sets and Functions: Sets, Relations, Functions, Closures of Equivalence Relations, Partial ordering well ordering, Lattice, Sum of products and product of sums principle of Inclusions and Exclusions

Unit-2

Combinatory: Permutations, Combinations, Pigeonhole principle

Recurrence Relation: Linear and Non-linear Recurrence Relations, Solving Recurrence Relation using Generating Functions.

Unit-3

Graphs: Introduction to graphs, graphs terminologies, Representation of graphs, Isomorphism, **Connectivity & Paths:** Connectivity, Euler and Hamiltonian Paths, Introduction to tree, tree traversals, spanning tree and tree search: Breadth first search, Depth first search, cut-set, cut-vertex.

Unit-4

Modeling Computation: Finite State Machine, Deterministic Finite Automata (DFA), Non-Deterministic Finite Automata (NFA), Grammars and Language, Application of Pumping Lemma for Regular Language.

Text Books:

1. "Discrete Mathematics and its Applications with Combinatory and Graph Theory" 7th edition by Kenneth H. Rosen.

Reference Books:

1. Elements of Discrete Mathematics by C. L. Liu and D.P. Mohapatra, TMH, 2012
2. J. P Tremblay, R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH, 1997.
3. A Modern Approach to Discrete Mathematics and Structure by J. K. Mantri & T. K Tripathy ,Laxmi Publication
4.

CORE – 7 Practical: Discrete Mathematical Structure Lab

Write the following programs using C/ C++

1. Tower of Hanoi
2. Graph representation using Adjacency List.
3. Graph representation using Adjacency Matrix.
4. String Matching using finite state machine.
5. Detecting whether a number is even or odd using Finite State Machine.
6. To identify keywords such as char, const, continue using Finite State Machine.
7. To find the power set for a given set.
8. To find GCD of two numbers using recursion.
9. To find Binomial coefficients.
10. To find Permutation and Combination result for a given pair of values n and r.
11. To check a number is prime or not.
12. To calculate the Euclidean distance between two points.
13. To find the Roots of polynomials.
14. Find the shortest path pair in a plane.

CORE–8: Operating System

OBJECTIVES

- To understand Operating system structure and services.
- To understand the concept of a Process, memory, storage and I/O management.

Unit–1

Introduction to Operating System, System Structures: Operating system services, system calls, system programs, Operating system design and implementation, Operating system structure.

Unit–2

Process Management: Process Concept, Operations on processes, Process scheduling and algorithms, Inter-process Communication, Concepts on Thread and Process, Deadlocks: Deadlock detection, deadlock prevention, and deadlock avoidance fundamentals.

Unit-3

Memory Management Strategies: Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management: Concepts, implementation (Demand Paging), Page Replacement, Thrashing.

Unit–4

Storage Management: File System concept, Access Methods, File System Mounting, File Sharing and File Protection, Implementing File Systems, Kernel I/O Systems.

Text book – Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, Eighth Edition, Wiley Student Edition 2009.

Reference book:

1. Morden Operating System , Tanenbaum ,Pearson , 4/ed. 2014
2. Richard F Ashley, Linux with Operating System Concepts, Chapman and Hall/CRC Published August 26, 2014
3. Richard Blum, Linux Command Line and Shell Scripting Bible, O' Reilly

CORE-8 Practical: Operating System Lab

1. Write a program (using *fork()* and/or *exec()* commands) where parent and child execute:
   a) same program, same code.
   b) same program, different code.
   c) before terminating, the parent waits for the child to finish its task.
2. Write a program to report behavior of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behavior of Linux kernel including information on configured memory, amount of free and used memory. (memory information)
4. Write a program to print file details including owner access permissions, file access time, where file name is given as argument.
5. Write a program to copy files using system calls.
6. Write a program using C to implement FCFS scheduling algorithm.
7. Write a program using C to implement Round Robin scheduling algorithm.
8. Write a program using C to implement SJF scheduling algorithm.
9. Write a program using C to implement non-preemptive priority based scheduling algorithm.
10. Write a program using C to implement preemptive priority based scheduling algorithm.
11. Write a program using C to implement SRTF scheduling algorithm.

12. Write a program using C to implement first-fit, best-fit and worst-fit allocation strategies.

CORE – 9: Computer Networks OBJECTIVES

- To learn how do computers and terminals actually communicate with each other.
- To understand the parts of a communication network and how they work together.

Unit-1

Introduction to Data Communications and Network Models: Protocols and Standards, Layers in OSI Models, Analog and Digital Signals, Transmission Modes, Transmission Impairment, Data Rate Limits, Performance, Digital Transmission, Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge (fundamental concepts only).

Unit-2

Signal Conversion: Digital-to-Digital Conversion, Analog-to-Digital Conversion, Digital-to-analog Conversion, Analog-to-analog Conversion.
Transmission Media: Guided Media, Unguided Media, Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch.

Unit-3

Error Detection and Correction: Checksum, CRC, Data Link Control: Framing, Flow and Error Control, Noiseless Channels, Noisy channels, (Stop and Wait ARQ, Slidding Window Protocol , Go Back N, Selective Repeat) HDLC, Point-to-Point Protocol. Access Control: TDM, CSMA/CD, and Channelization (FDMA, TDMA, and CDMA).

Unit-4

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Virtual-Circuit Networks: Frame Relay and ATM, Transport Layer: Process-Process Delivery: UDP, TCP. Application layers: DNS, SMTP, POP, FTP, HTTP, Basics of WiFi (Fundamental concepts only), Network Security: Authentication, Basics of Public Key and Private Key, Digital Signatures and Certificates (Fundamental concepts only).

Text Books:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan,TMH.

Reference Books:

1. Computer Networks, A. S. Tanenbaum, 4th edition, Pearson Education.

CORE – 9 Practical: Computer Networks Lab

Use C/C++/ any Network Simulator

1. Simulate Even Parity generator and checker.
2. Simulate two dimensional Parity generator and checker.
3. Simulate checksum generator and checker.

4. Simulate Hamming code method.
5. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
6. Simulate and implement stop and wait protocol for noisy channel.
7. Simulate and implement go back n sliding window protocol.
8. Simulate and implement selective repeat sliding window protocol.
9. Simulate and implement distance vector routing algorithm.

CORE – 10: Computer Graphics OBJECTIVES

- To be able to learn the core concepts of Computer Graphics.
- To be able to create effective programs for solving graphics problems.

Unit-1

Computer Graphics: A Survey of Computer graphics, Overview of Graphics System: Video Display Devices, Raster-Scan Systems, Input Devices, Hard-Copy Devices, Graphics Software.

Unit-2

Graphics Output Primitives: Point and Lines, Algorithms for line, circle & ellipse generation, Filled-Area Primitives. Attributes of Graphics Primitives: Point, line, curve attributes, fill area attributes, Fill methods for areas with irregular boundaries.

Unit-3

Geometric Transformations (both 2-D & 3-D): Basic Geometric Transformations, Transformation Matrix, Types of transformation in 2-D and 3-D Graphics: Scaling, Reflection, shear transformation, rotation, translation. 2-D, 3-D transformation using homogeneous coordinates.

Unit-4

Two Dimensional Viewing: Introduction to viewing and clipping, Viewing transformation in 2-D, Viewing pipeline, Clipping Window, Clipping Algorithms: Point clipping, Line clipping and Polygon clipping.

Text books

1. Mathematical Elements for Computer Graphics, D. F. Rogers & J. A. Adams, MGH, 2/ed.
2. Donald Hearn & M. Pauline Baker, “Computer Graphics with OpenGL”, Pearson Education.

Reference books

1. D. Hearn and M. Baker, “Computer Graphics with Open GL”, Pearson, 2/ed.
2. D. F. Rogers, “Procedural Elements for Computer Graphics”, MGH

CORE – 10 Practical: Computer Graphics Lab

Develop the programs using C/C++ or Java

1. Write a program to implement Bresenham’s line drawing algorithm.
2. Write a program to implement mid-point circle drawing algorithm.
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.

4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to fill a polygon using Scan line fill algorithm.
6. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).
7. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.

CORE – 11: Web Technologies

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:
The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press

2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

CORE – 11 Practical: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
2. Practicing basic and advanced text for formatting.
3. Practice use of image, video and sound in HTML documents.
4. Designing of web pages- Document layout, list, tables.
5. Practicing Hyperlink of web pages, working with frames.
6. Working with forms and controls.
7. Acquaintance with creating style sheet, CSS properties and styling.
8. Working with background, text, font, list properties.
9. Working with HTML elements box properties in CSS.
10. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
11. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
12. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
13. Write a PHP program to check if number is prime or not.
14. Write a PHP program to print first ten Fibonacci numbers.
15. Create a MySQL data base and connect with PHP.
16. Write PHP script for string and retrieving user information from my SQL table.
    a. Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
    b. Store this data in MySQL data base.
    c. Next page display all user in HTML table using PHP (display .PHP).
17. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

CORE – 12: Software Engineering

OBJECTIVES:

- To learn the way of developing software with high quality and the relevant techniques.
- To introduce software engineering principles for industry standard.
- To focus on Project management domain and Software risks management.

Unit-1

Introduction: Evolution of Software to an Engineering Discipline, Software Development Projects, Exploratory Style of Software Development, Emergence of Software Engineering, Changes in Software Development Practices, Computer Systems Engineering.
Software Lifecycle Models: Waterfall Model and its Extensions, Rapid Application Development (RAD), Agile Development Models, Spiral Model.

Unit-2

Software Project Management: Software Project Management Complexities, Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO, Halstead's Software Science, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management.

Unit-3

Requirement Analysis and Specification: Requirements Gathering and Analysis, Software Requirement Specifications, Formal System Specification Axiomatic Specification, Algebraic Specification, Executable Specification and 4GL.
Software Design: Design Process, Characterize a Good Software Design, Cohesion and Coupling, Layered Arrangements of Modules, Approaches to Software Design (Function Oriented & Object-Oriented).

Unit-4

Coding and Testing: Coding: Code Review, Software Documentation, Testing, Unit Testing, Black Box and White Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, Software Maintenance.

Text Book:

1. Fundamental of Software Engineering, Rajib Mall, Fifth Edition, PHI Publication, India.

Reference Books:

1. Software Engineering– Ian Sommerville, 10/Ed, Pearson.
2. Software Engineering Concepts and Practice – Ugrasen Suman, Cengage Learning India Pvt, Ltd.
3. R. Misra, C. Panigrahi, B. Panda: Principles of Software Engineering & System Design, YesDee Publication

CORE – 12 Practical: Software Engineering Lab

S. No. Practical Title

1. • Problem Statement,
   • Process Model
2. Requirement Analysis:

- Creating a Data Flow
- Data Dictionary, Use Cases

3. Project Management:
   - Computing FP
   - Effort
   - Schedule, Risk Table, Timeline chart
4. Design Engineering:
   - Architectural Design
   - Data Design, Component Level Design
5. Testing:
   - Basis Path Testing

Sample Projects:

1. **Criminal Record Management:** Implement a criminal record management system for jailers, police officers and CBI officers.
2. **Route Information**: Online information about the bus routes and their frequency and fares
3. **Car Pooling**: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System
7. Examination and Result computation system
8. Automatic Internal Assessment System
9. Parking Allocation System
10. Wholesale Management System

CORE–13: Artificial Intelligence

OBJECTIVES:

- To learn the basic concepts of AI principles and approaches.
- To develop the basic understanding of the building blocks of AI.

Unit-1

Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behavior and environment.

Unit-2

Problem Solving and Searching Techniques: Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, Hill climbing and its Variations,

Heuristics Search Techniques: Best First Search, A* algorithm, Constraint Satisfaction Problem, Introduction to Game Playing, Min-Max and Alpha-Beta pruning algorithms.

Unit-3

Knowledge Representation : Introduction to First Order Predicate Logic, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, Frames, and Scripts, Production Rules, Conceptual Graphs.

Unit-4

Dealing with Uncertainty and Inconsistencies Truth Maintenance System, Default Reasoning, Probabilistic Reasoning, Bayesian Probabilistic Inference, Possible World Representations, Basics of NLP.

Text books

1. Artificial Intelligence a Modern Approach, Stuart Russell and Peter Norvig, Pearson 3/ed.

Reference books

1. Artificial Intelligence, Rich &Knight , TMG , 3 e/d.

2. DAN.W. Patterson, Introduction to A.I and Expert Systems – PHI, 2007

3. W.F. Clocksin and Mellish, Programming in PROLOG, Narosa Publishing House, 3rd edition, 2001

CORE–13 Practical: Artificial Intelligence Lab

Write a Prolog program

1. To find the factorial of a number
2. To remove the nth item from a list.
3. To find the permutation of a set.
4. To implement append for two lists.
5. To implement palindrome.
6. To find the greater of two numbers X and Y.
7. To find the greatest number in the list of numbers.
8. To find the sum of given list of numbers.
9. To find the reverse of a list.
10. To solve 8 queens problem.
11. To solve 8-puzzle problem using best first search
12. To implement DFS.
13. To implement BFS.
14. To implement best first search.
15. To solve traveling salesman problem.

CORE – 14: Algorithm Design

Techniques OBJECTIVES:

- To be able to learn design principles and concepts of algorithms.
- To have a mathematical foundation in analysis of algorithm.

Unit-1

Introduction: Algorithm specification: Pseudo code, Space complexity and time complexity, Analysis and design of Insertion sort algorithm, Divide and Conquer paradigm, Recurrence relations, Solving Recurrences: Substitution methods, Recursion tree method, and Master method.

Unit-2

Searching and Sorting: Analysis of Linear Search, Binary Search, Merge Sort and Quick Sort, Heap Sort.

Hashing: Hash functions, Hash table, Collision resolution: Chaining and Open Addressing (Linear probing, Quadratic probing, Double hashing).

Unit-3

Greedy Technique: General Method, Applications: Fractional Knapsack Problem , Job Sequencing with Deadlines, Huffman Codes.
Dynamic Programming: General Method, Applications: Matrix Chain Multiplication, Longest common subsequence.

Unit-4

Graph Algorithms: Representations of Graphs, Breadth-first search, Depth-first search, Topological sort, Minimum Spanning Trees: Prim's and Kruskal's algorithm, Single-source shortest paths: Bellman-Ford algorithm, Dijkstra's algorithm.

Text books

1. Introduction to Algorithms, by Thomas H, Cormen, Charles E. Leiserson , Ronald L. Rivest, Clifford Stein, PHI.

Reference books

1. Algorithm Desgin, by Jon Kleinberg, Eva Tardos.

CORE – 14 Practical: Algorithm Design Techniques Lab

Using C or C++ implement the following

1. Quick sort.
2. Heap sort.
3. Merge sort.
4. Matrix Multiplication using recursion.
5. Linear Search.

6. Binary Search.
7. Huffman code.
8. Fractional knapsack problem.
9. Matrix chain multiplication.
10. Longest Common Subsequence.
11. Prim's algorithm.
12. Kruskal's algorithm.
13. BFS.
14. DFS.
15. Dijkstra Algorithm.

DSE-1: Numerical

Techniques OBJECTIVES:

- To learn various numerical techniques.
- To be able to implement different numerical techniques using programming language.

Unit-1

Floating point representation and computer arithmetic, Significant digits, Errors: Round-off error, Local truncation error, Global truncation error, Order of a method, Convergence and terminal conditions, Efficient computations.

Unit-2

Bisection method, Secant method, Regula−Falsi method Newton−Raphson method, Newton's method for solving nonlinear systems.

Unit-3

Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation Piecewise polynomial interpolation: Linear interpolation.

Unit-4

Numerical integration: Trapezoid rule, Simpson's rule (only method), Newton−Cotes formulas, Gaussian quadrature, Ordinary differential equation: Euler's method Modified Euler's methods, Runge-Kutta second methods

Text books

1. S.S. Sastry, "Introductory Methods of Numerical Analysis", EEE , 5/ed.
2. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publisher, 6/e (2012)

Reference books

1. Numerical Analysis: J. K. Mantri & S. Prahan, Laxmi Publication.
2. Introduction to Numerical Analysis, Josef Stoer and Roland Bulirsch, Springer.

DSE – 1 Practical: Numerical Techniques Lab

Implement using C/ C++ or MATLAB/ Scilab

1. Find the roots of the equation by bisection method.
2. Find the roots of the equation by secant/Regula−Falsi method.
3. Find the roots of the equation by Newton‘s method.
4. Find the solution of a system of nonlinear equation using Newton’s method.
5. Find the solution of tri-diagonal system using Gauss Thomas method.
6. Find the solution of system of equations using Jacobi/Gauss-Seidel method.
7. Find the cubic spline interpolating function.
8. Evaluate the approximate value of finite integrals using Gaussian/Romberg integration.
9. Solve the boundary value problem using finite difference method.

DSE – 2: Unix Shell

Programming OBJECTIVES:

- To learn the basics of UNIX OS, UNIX commands and File system.
- To familiarize students with the Linux environment.
- To learn fundamentals of shell scripting and shell programming.
- To be able to write simple programs using UNIX.

Unit-1

Introduction: Unix Operating systems, Difference between Unix and other operating systems, Features and Architecture, Installation, Booting and shutdown process, System processes (an overview), External and internal commands, Creation of partitions in OS, Processes and its creation phases – Fork, Exec, wait, exit.

Unit-2

User Management and the File System: Types of Users, Creating users, Granting rights, User management commands, File quota and various file systems available, File System Management and Layout, File permissions, Login process, Managing Disk Quotas, Links (hard links, symbolic links)

Unit-3

Shell introduction and Shell Scripting: Shell and various type of shell, Various editors present in Unix, Different modes of operation in vi editor, Shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls, Pipes and Filters.

Unit-4

Unix Control Structures and Utilities: Decision making in Shell Scripts (If else, switch), Loops in shell, Functions, Utility programs (cut, paste, join, tr, uniq utilities), Pattern matching utility (grep).

Text Books:

1. Sumitabha, Das, Unix Concepts And Applications, Tata McGraw-Hill Education, 2017, 4/Ed.

Reference Books:

1. Nemeth Synder & Hein, Linux Administration Handbook, Pearson Education, 2010, 2/ Ed.

DSE – 2 Practical: Unix Programming Lab

1. Write a shell script to check if the number entered at the command line is prime or not.
2. Write a shell script to modify "cal" command to display calendars of the specified months.
3. Write a shell script to modify "cal" command to display calendars of the specified range of months.
4. Write a shell script to accept a login name. If not a valid login name display message "Entered login name is invalid".
5. Write a shell script to display date in the mm/dd/yy format.
6. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.
7. Write a shell script to display the multiplication table of any number.
8. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
9. Write a shell script to find the sum of digits of a given number.
10. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
11. Write a shell script to find the LCD (least common divisor) of two numbers.
12. Write a shell script to perform the tasks of basic calculator.
13. Write a shell script to find the power of a given number.
14. Write a shell script to find the greatest number among the three numbers.
15. Write a shell script to find the factorial of a given number.
16. Write a shell script to check whether the number is Armstrong or not.

DSE-3: Data

Science

OBJECTIVES:

- To learn emerging issues related to various fields of data science.
- To understand the underlying principles of data science, exploring data analysis.
- To learn the basics of R Programming.

Unit-1

Data Scientist's Tool Box: Turning data into actionable knowledge, introduction to the tools that will be used in building data analysis software: version control, markdown, git, GitHub, R, and RStudio.

Unit-2

R Programming Basics: Overview of R, R data types and objects, reading and writing data, Control structures, functions, scoping rules, dates and times, Loop functions, debugging tools,

Simulation, code profiling.

Unit-3

Getting and Cleaning Data: Obtaining data from the web, from APIs, from databases and from colleagues in various formats, basics of data cleaning and making data "tidy".

Unit-4

Exploratory Data Analysis: Essential exploratory techniques for summarizing data, applied before formal modeling commences, eliminating or sharpening potential hypotheses about the world that can be addressed by the data, common multivariate statistical techniques used to visualize high-dimensional data.

Text Books

1. Rachel Schutt, Cathy O'Neil, "Doing Data Science: Straight Talk from the Frontiline" by Schroff/O'Reilly, 2013.

Reference Books

1. Foster Provost, Tom Fawcett, "Data Science for Business" What You Need to Know About Data Mining and Data-Analytic Thinking by O'Reilly, 2013.
2. John W. Foreman, "Data Smart: Using data Science to Transform Information into Insight" by John Wiley & Sons, 2013.
3. Eric Seigel, "Predictive Analytics: The Power to Predict who Will Click, Buy, Lie, or Die", 1st Edition, by Wiley, 2013.

DSE-3 Practical: Elementary Data Science Lab

1. Write a program that prints "Hello World" to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement linear search.
8. Implement binary search.
9. Implement matrices addition, subtraction and Multiplication
10. Fifteen students were enrolled in a course. There ages were:

20 20 20 20 20 21 21 21 22 22 22 22 23 23 23

i. Find the median age of all students under 22 years.
ii. Find the median age of all students.
iii. Find the mean age of all students.
iv. Find the modal age for all students.
v. Two more students enter the class. The age of both students is 23. What is now mean, mode and median?

DSE–4: PROJECT WORK/ DISSERTATION OR DATA MINING

DSE–4: DATA MINING

OBJECTIVES:

- To introduce the basic concepts of data warehousing, data mining, Issues, and Implication.
- To learn the core topics like Association rules, Classification & Prediction and Clustering techniques.
- To make a study on the Applications and Trends in Data Mining.

Unit-1

Data Warehouse Fundamentals: Introduction to Data Warehouse, OLTP Systems, OLAP, Differences between OLTP and OLAP, Characteristics of Data Warehouse, Functionality of Data Warehouse, Advantages and Applications of Data Warehouse, Advantages, Applications, Top- Down and Bottom-Up Development Methodology, Tools for Data warehouse development, Data Warehouse Types, Data cubes

Unit-2

Introduction to Data Mining: Data mining, Functionalities, Data Preprocessing: Preprocessing the Data, Data cleaning, Data Integration and Transformation, Data reduction, Discretization and Concept hierarchies.

Unit-3

Mining Association Rules: Basics Concepts – Single Dimensional Boolean Association Rules from Transaction Databases, Multilevel Association Rules from transaction databases, Multi dimension Association Rules from Relational Database and Data Warehouses. Apriori Algorithm, FP-Tree algorithm

Unit-4

Classification and Prediction: Introduction, Issues, Decision Tree Induction, Naïve Bayesian Classification, Classification based on Concepts from Association Rule Mining, Classifier Accuracy.

Text Books:

1. J. Han and M. Kamber, Data Mining Concepts and Techniques, Elsevier, 2011

Reference Books:

1. K.P. Soman ,Shyam Diwakar, V.Ajay ,2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.

2. Data Mining Techniques, Arun K. Pujari, Universities Press, 2006

3. Modern Approaches of Data Mining: Theory & Practice, M. Panda, S. Dehuri, M. R. Patra, Narosa Publishing House, 2018.

DSE – 4 Practical: Data Mining Lab

Using Scilab/ MATLAB/ C/ Python/ R

1. Build a Data Warehouse and perform it's operations.
2. Perform data preprocessing tasks and Demonstrate performing association rule mining on data sets.
3. Demonstrate performing classification on data sets.
4. Demonstrate performing clustering on data sets.
5. Demonstrate performing Regression on data sets.
6. Credit Risk Assessment. Sample Programs using German Credit Data.
7. Sample Programs using Hospital Management System.

SEC – 1: Python

Programming

OBJECTIVES:

- To enable the students to understand the basic principles of the Python Language.
- To use the tools to do simple programs in python.

Unit-1

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Unit-2

Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Unit-3

Overview of Programming: Structure of a Python Program, Elements of Python

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)

Unit-4

Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.

Text Books

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011

Reference Books

1. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

Online References:

1. Python Tutorial/Documentation www.python.or 2015
2. http://docs.python.org/3/tutorial/index.html
3. http://interactivepython.org/courselib/static/pythonds
4. http://www.ibiblio.org/g2swap/byteofpython/read/

Software Lab based on Python Programming:

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon users choice.
2. Write a Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Write a Program to display the first n terms of Fibonacci series.
5. Write a Program to find factorial of the given number.
6. Write a Program to find sum of the following series for n terms: 1 – 2/2! + 3/3! ---------n/n!
7. Write a Program to calculate the sum and product of two compatible matrices.

SEC-2: Android

Programming

OBJECTIVES:

- To learn the basics of Android Programming.
- To develop simple Android applications.

Unit-1

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

Unit-2

Overview of object oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

Unit-3

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating an android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.

Unit-4

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, Dialog.

Database: Understanding of SQLite database, connecting with the database.

Text Books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Reference Book:

1. James C. Sheusi, "Android application Development for Java Programmers", Cengage Learning, 2013.
2. M. Burton, & D. Felker, "Android Application Development for Dummies", 2/e, Wiley India.

Online References:

1. http://www.developer.android.com
2. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebooks also).
3. http://developer.android.com/guide/components/fundamentals.html
4. http://developer.android.com/training/multiscreen/screensizes.html
5. http://developer.android.com/guide/topics/ui/controls.html

Software Lab based on Android Programming:

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher-in-charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

AEC –1: Environmental Science

AEC – 2: English Communication/MIL

GE–1: Computer Fundamentals

OBJECTIVES:

- To make the students understand and learn the basics of computer.
- To make them familiar with the parts and functions of computer.
- To learn the features of some emerging technologies.

Unit-1

Introduction: Introduction to computer system, uses, types.

Data Representation: Number systems and character representation, binary arithmetic

Human Computer Interface: Types of software, Operating system as user interface, utility programs

Unit-2

Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter
Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks

Unit-3

Computer Organisation and Architecture: C.P.U., registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors.

Unit-4

Overview of Emerging Technologies: Bluetooth, cloud computing, big data, data mining, mobile computing and embedded systems.

Text Books:

1. A. Goel, Computer Fundamentals, Pearson Education, 2010.

Reference Books:

1. P. Aksoy, L. DeNardis, Introduction to Information Technology, Cengage Learning, 2006
2. P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers, 2007

GE–1 Practical: Computer Fundamentals Lab

Practical exercises based on MS Office tools including document preparation and spreadsheet handling packages.

MS Word:

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of February, 2019.
   - Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
   - The headings of the columns should be in 12-point and bold.
   - The rest of the document should be in 10-point Times New Roman.
   - Leave a gap of 12-points after the title.

2. Create a telephone directory.
   - The heading should be 16-point Arial Font in bold
   - The rest of the document should use 10-point font size
   - Other headings should use 10-point Courier New Font.
   - The footer should show the page number as well as the date last updated.

3. Design a time-table form for your college.
   - The first line should mention the name of the college in 16-point Arial Font and should be bold.
   - The second line should give the course name/teacher‘s name and the department in 14-point Arial.

4. Create the following documents:
   a) A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.

b) Use a newsletter format to promote upcoming projects or events in your classroom or college.

5. Enter the following data into a table given below:

Salesperson	Dolls	Trucks	Puzzles
Kennedy, Sally	1327	1423	1193
White, Pete	1421	3863	2934
Pillar, James	5214	3247	5467
York, George	2190	1278	1928
Banks, Jennifer	1201	2528	1203
Atwater, Kelly	4098	3079	2067

Add a column Region (values: S, N, N, S, S, S) between the Salesperson and Dolls columns to the given table Sort your table data by Region and within Region by Salesperson in ascending order: In this exercise, you will add a new row to your table, place the word "Total" at the bottom of the Salesperson column, and sum the Dolls, Trucks, and Puzzles columns.

MS Excel

6. Given the following worksheet

	A	B	C	D
1	Roll No.	Name	Marks	Grade
2	1001	Sachin	99	
3	1002	Sehwag	65	
4	1003	Rahul	41	
5	1004	Sourav	89	
6	1005	Har Bhajan	56	

Calculate the grade of these students on the basis of following guidelines:

If Marks	Then Grade
>= 80	A+
>= 60 < 80	A
>= 50 < 60	B
< 50	F

7. Given the following worksheet

	A	B	C	D	E	F	G
1	**Salesman**			**Sales in (Rs.)**			
2	No.	Qtr1	Qtr2	Qtr3	Qtr4	Total	Commission
3	S001	5000	8500	12000	9000		
4	S002	7000	4000	7500	11000		
5	S003	4000	9000	6500	8200		
6	S004	5500	6900	4500	10500		
7	S005	7400	8500	9200	8300		
8	S006	5300	7600	9800	6100		

Calculate the commission earned by the salesmen on the basis of following Candidates:

If Total Sales	**Commission**
< 20000	0% of sales
> 20000 and < 25000	4% of sales
> 25000 and < 30000	5.5% of sales
> 30000 and < 35000	8% of sales
>= 35000	11% of sales

The total sales is sum of sales of all the four quarters.

8. Create Payment Table for a fixed Principal amount, variable rate of interests and time in the format below:

No. of Instalments	5%	6%	7%	8%	9%
3	XX	XX	XX	XX	XX
4	XX	XX	XX	XX	XX
5	XX	XX	XX	XX	XX
6	XX	XX	XX	XX	XX

9. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

- HRA Dependent on Basic
  30% of Basic if Basic <=1000
  25% of Basic if Basic>1000 & Basic<=3000
  20% of Basic if Basic >3000
- DA Fixed for all employees, 30% of Basic
- Conveyance Allowance Rs. 50/- if Basic is <=1000
  Rs. 75/- if Basic >1000 & Basic<=2000
  Rs. 100 if Basic >2000
- Entertainment Allowance NIL if Basic is <=1000 Rs. 100/- if Basic > 1000

Deductions

- Provident Fund 6% of Basic
- Group Insurance Premium Rs. 40/- if Basic is <=1500
  Rs. 60/- if Basic > 1500 & Basic<=3000
  Rs. 80/- if Basic >3000

Calculate the following:

Gross Salary = Basic + HRA + DA + Conveyance + Entertainment

Total deduction = Provident Fund + Group Insurance Premium

Net Salary = Gross Salary – Total Deduction

9.

The following table gives year wise sale figure of five salesmen in Rs.

Salesman	2000	2001	2002	2003
S1	10000	12000	20000	50000
S2	15000	18000	50000	60000
S3	20000	22000	70000	70000
S4	30000	30000	100000	80000
S5	40000	45000	125000	90000

(*a*) Calculate total sale year wise.

(*b*) Calculate the net sale made by each salesman

(*c*) Calculate the maximum sale made by the salesman

(d) Calculate the commission for each salesman under the condition.

(*i*) If total sales >4,00,000 give 5% commission on total sale made by the salesman.

(*ii*) Otherwise give 2% commission.

(*e*) Draw a bar graph representing the sale made by each salesman.

(*f*) Draw a pie graph representing the sale made by salesman in 2000.

GE – 2: C and Data Structure

OBJECTIVES:

- To learn the basics of C programming language.
- To understand the fundamentals of linear data structure.
- To be able write simple C and data structure programs.

Unit-1

Algorithm, flowchart, program development steps, structure of C program, A Simple C program, identifiers, basic data types and sizes, Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators,

assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation.

Input-output statements, statements and blocks, if and switch statements, loops- while, do-while and for statements, break, continue, goto and labels, programming examples.

Unit-2

Designing structured programs, Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, header files, C preprocessor, example c programs.

Unit-3

Arrays- concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two-dimensional and multi-dimensional arrays, applications of arrays. pointers- concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory managements functions, command line arguments, C program examples.

Unit-4

Introduction to data structures, representing stacks and queues in C using arrays, infix to post fix conversion, postfix expression evaluation, Applications of Queue.

Searching - Linear and binary search methods, sorting - Bubble sort, selection sort, Insertion sort, Quick sort.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)
2. Seymour Lipschutz, “Data Structure with C”, - Schaum’s Outlines MGH.

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI
2. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana
3. Data Structures Using C - A. S. Tanenbaum, Y. Langsam, M. J. Augenstein, PHI/Pearson.

GE – 2 Practical: C and Data Structure Lab

1. Write a Program to find the greatest among three numbers.
2. Write a Program to check a number is leap year or not.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

$$S = 1+1/2+1/3+1/4+\ldots\ldots$$

6. Write a function to find whether a given no. is prime or not.
7. Write a Program to compute factorial of a number.
8. Write a Program to print a triangle of stars as follows (take number of lines from user):

*

***
*****
****

9. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
10. To insert and delete elements from appropriate position in an array.
11. To search an element and print the total time of occurrence in the array.
12. Array implementation of Stack.
13. Array implementation of Queue.
14. To perform Bubble sort.
15. To perform Selection sort.

GE – 3: Programming in Python

OBJECTIVES:

- To enable the students to understand the core principles of the Python Language.
- To use the tools to produce well designed programs in python.
- To create effective GUI applications.

Unit-1

Introduction to Python: Python Interpreter, Python as calculator, Python shell, Indentation, identifier and keywords, literals, strings, operatory (Arithmetic, Relational or decrement operator). Input output statement, control statements, (Branding, looping, conditional statement, Exit function)

Unit-2

String manipulations: Subscript operator, indexing, slicing a string, other functions on strings string module.

Strings and number system, format functions: converting strings to numbers & Vice Versa.

List, tuples, sets, Dictionaries: Basic list operators, replacing, inserting, removing an element, searching, Sorting lists, dictionary literals, adding & removing keys, accessing & replacing values, traversing dictionaries , Array in Python.

Unit-3

Design with Functions: hiding redundancy, complexity, arguments & return values; Formal/Actual arguments, named arguments, program structure and design, Recursive functions, scope & Global statements, Importing modules, Math modules & Random modules. Exception Handling: Exceptions, except clause, try and finally clause, user defined exceptions.

File Handling: Manipulating files & directories, OS & SYS modules, Reading, Writing text & numbers from/to file.

Unit-4

Simple Graphics: “Turtle” module; simple drawing colors, shapes, digital images, image file formats, Graphical U&S interfaces: Event driver programming, Paradigm, tkinter module, creating.

Simple GUI: buttons, labels entry fields, dialogs, widget attributes-sizes fonts, colors, layout.

Text Books

1. Python Programming using problem solving approach by Reema Thareja, Oxford University Press.2017

Reference Books

1. Introduction to Computation and Programming Using Python with application to understanding data by Guttag John V. PHI
2. Introduction to Computer Science using Python by Charles Diorbach, Wiley.

GE-3 Practical: Programming in Python Lab

1. Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature.

2. Using while loop, produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).

3. Write a program that reads an integer value and prints ―leap year‖ or ―not a leap year‖.

4. Write a program that takes a positive integer n and then produces n lines of output shown as follows.

For example enter a size: 5

```
*
**
***
****
*****
```

5. Write a function that takes an integer ‗n‘ as input and calculates the value of 1 + 1/1! + 1/2! + 1/3! + … + 1/n

6. Write a function that takes an integer input and calculates the factorial of that number.

7. Write a function that takes a string input and checks if it‘s a palindrome or not.

8. Write a list function to convert a string into a list, as in list (‗abc‘) gives [a, b, c].

9. Write a program to generate Fibonacci series.

10. Write a program to check whether the input number is even or odd.

11. Write a program to compare three numbers and print the largest one.

12. Write a program to print factors of a given number.

13. Write a method to calculate GCD of two numbers.

14. Write a program to create Stack Class and implement all its methods. (Use Lists).

15. Write a program to create Queue Class and implement all its methods. (Use Lists)

16. Write a program to implement linear and binary search on lists.

17. Write a program to sort a list using insertion sort and bubble sort and selection sort.

GE – 4: Web

Technology

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:
The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press
2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

GE-4 Practical: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
1. Practicing basic and advanced text for formatting.
2. Practice use of image, video and sound in HTML documents.
3. Designing of web pages- Document layout, list, tables.
4. Practicing Hyperlink of web pages, working with frames.
5. Working with forms and controls.
6. Acquaintance with creating style sheet, CSS properties and styling.
7. Working with background, text, font, list properties.
8. Working with HTML elements box properties in CSS.
9. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
10. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
11. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
12. Write a PHP program to check if number is prime or not.
13. Write a PHP program to print first ten Fibonacci numbers.
14. Create a MySQL data base and connect with PHP.
15. Write PHP script for string and retrieving user information from my SQL table.
(a) Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
(b) Store this data in MySQL data base.
(c) Next page display all user in HTML table using PHP (display PHP).
16. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

Equipment:

1. Desktop Computer

Core i5 (minimum 8th Generation Processor, 8 GB RAM, 2 TB HDD)

Number of Desktops: 30 (or as per student strength). It must be connected through structured Local Area Network (LAN).

2. Software

LibreOffice, Scilab, C, C++, Java, Assembler, VHDL, Linux/ Unix Prolog etc. , preferably Open Source Software.

Faculty Training:

Most of the Colleges are offering B.Sc. Computer Science (H) under self-financing mode. There is limited faculty to manage the course. It is assumed that for majority of such colleges there is no permanent faculty. If this is the case then faculty training is required for all Core Courses as well as Discipline Specific Elective Courses.

For colleges having adequate faculty, faculty training may be organized for the following Courses in phased manner (six month before the beginning of the Subject in the concerned semester).

i. Digital Logic
ii. Data Structures
iii. Operating Systems
iv. Database Systems
v. Java Programming
vi. Web Technology
vii. Artificial Intelligence
viii. Algorithm Design Techniques
ix. Unix Shell Programming
x. Data Mining
xi. Data Science
xii. Android Programming
xiii. Programming in Python

COMMON SYLLABUS FOR B.Sc. (ITM)

Course structure of B. Sc. (ITM)

Preamble

Information and Communication Technology (ICT) has today become integral part of all industry domains as well as fields of academics and research. The industry requirements and technologies have been steadily and rapidly advancing. Organizations are increasingly opting for open source systems. A genuine attempt has been made while designing the syllabus for this 3- year B. Sc. (ITM) course. It prepare the students for a career in Software industry. The core philosophy of overall syllabus is to:

a. Introduce emerging trends to the students in gradual way,

b. Groom the students for the challenges of ICT industry

The Government of Odisha has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the State of Odisha in line with the University Grants Commission (UGC). The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The Government of Odisha has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Universities & Colleges in Odisha in line with UGC. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the Universities and Colleges must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching–learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the Universities and Colleges in the states as well as the country. This creates difficulty for the academia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top institutions in India and abroad. So, it is desirable to introduce uniform grading system. This will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity, in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines, which is being adopted by the state of Odisha.

CHOICE BASED CREDIT SYSTEM (CBCS): The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in Odisha. This will benefit the students to move across institutions within Odisha to begin with and across states and countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

1. **Core Course**: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course**: Generally, a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

Discipline Specific Elective (DSE) Course: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

Dissertation/Project: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

Generic Elective/ Inter-disciplinary (GE/ IC) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective/ Inter-disciplinary.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. **Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course**: They ((i) Environmental Science, (ii) English/ MIL Communication) are mandatory for all disciplines. AEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

Project work/Dissertation is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/ Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

GUIDELINES FOR PROJECT FORMULATION

As the project work constitutes a major component in most of the professional programs and it is to be carried out with due care and should be executed with seriousness by the candidates.

TYPE OF PROJECT

As majority of the students are expected to work out a real-life project in some industry/research and development laboratories/educational institutions/software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. It is not mandatory for a student to work on a real-life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The project proposal should be prepared in consultation with the guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form:

1. Title of the Project

2. Introduction and Objectives of the Project

3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.)

4. Analysis (DFDs at least up to second level, ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).

5. A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Data Structures as per the project requirements for all the modules. Process Logic of each module. Testing process to be used. Reports generation

6. Tools / Platform, Hardware and Software Requirement specifications

7. Future scope and further enhancement of the project.

SEMESTER	COURSE OPTED	COURSE NAME	CREDITS
I	Ability Enhancement Course-1	AEC-1 (Environmental Science)	4
	Core Course-1	Digital Logic	4
	Core Course-1 Practical/Tutorial	Digital Logic LAB	2
	Core Course-2	Programming using C	4
	Core Course-2 Practical/Tutorial	Programming using C LAB	2
	Generic Elective/ Interdisciplinary Course -1	GE/IC-1 (Discrete Mathematical Structures)	4

	Generic Elective/ Interdisciplinary Course -1 Practical/Tutorial	GE/IC-1 LAB/Tutorial (Discrete Mathematical Structures LAB)	2
II	Ability Enhancement Course-2	AEC-2 (English/ MIL Communication)	4
	Core Course-3	Computer Organization	4
	Core Course-3 Practical / Tutorial	Computer Organization LAB	2
	Core Course-4	Data Structures	4
	Core Course-4 Practical/Tutorial	Data Structures LAB	2
	Generic Elective/ Interdisciplinary Course -2	GE/IC-2 (Numerical Techniques)	4
	Generic Elective/ Interdisciplinary Course -2 Practical/Tutorial	GE/IC-2 LAB/Tutorial (Numerical Techniques LAB)	2
III	Core Course-5	Programming using C++	4
	Core Course-5 Practical/Tutorial	Programming using C++ LAB	2
	Core Course-6	Database Systems	4
	Core Course-6 Practical/Tutorial	Database Systems LAB	2
	Core Course-7	Principles of Management	4
	Core Course-7 Practical/ Tutorial	Principles of Management Tutorial	2
	Skill Enhancement Course-1	SEC-1 (Python Programming)	4
	Generic Elective/ Interdisciplinary Course -3	GE/IC-3 (Statistical Techniques)	4
	Generic Elective/ Interdisciplinary Course -3 Practical/Tutorial	GE/IC-3 LAB/Tutorial (Statistical Techniques LAB)	2
IV	Core Course-8	JAVA Programming	4
	Core Course-8 Practical/Tutorial	JAVA Programming LAB	2
	Core Course-9	Business Accounting	4
	Core Course-9 Practical/Tutorial	Business Accounting Tutorial	2
	Core Course-10	Operating Systems	4
	Core Course-10 Practical/Tutorial	Operating Systems LAB	2
	Skill Enhancement Course-2	SEC-2 (Android Programming)	4
	Generic Elective/ Interdisciplinary Course -4	GE/IC-4 (Operations Research)	4
	Generic Elective/ Interdisciplinary Course -4 Practical/Tutorial	GE/IC-4 LAB/Tutorial (Operations Research LAB)	2
V	Core Course-11	Web Technology	4
	Core Course-11 Practical/Tutorial	Web Technology LAB	2
	Core Course-12	Software Engineering	4
	Core Course-12 Practical/Tutorial	Software Engineering Lab	2
	Discipline Specific Elective-1	DSE-1 (Data Science)	4
	Discipline Specific Elective-1 Practical/Tutorial	DSE-1 LAB/ Tutorial (Data Science LAB)	2
	Discipline Specific Elective-2	DSE-2 (Managerial Economics)	4

	Discipline Specific Elective-2 Practical/Tutorial	DSE-2 LAB/ Tutorial (Managerial Economics Tutorial)	2
VI	Core Course-13	Management Accounting	4
	Core Course-13 Practical/Tutorial	Management Accounting Tutorial	2
	Core Course-14	Computer Networks	4
	Core Course-14 Practical/Tutorial	Computer Networks LAB	2
	Discipline Specific Elective-3	DSE-3 (Financial Management)	4
	Discipline Specific Elective-3 Practical/Tutorial	DSE-3 LAB/ Tutorial (Financial Management Tutorial)	2
	Discipline Specific Elective-4	DSE-4 (Project Work / E-Commerce)	6/4
	Discipline Specific Elective-4 Practical/Tutorial	DSE-4 LAB/ Tutorial (E-Commerce Tutorial)	2

CORE Papers:

CORE – 1: Digital Logic

CORE – 2: Programming Using C

CORE – 3: Computer Organization

CORE – 4: Data Structure

CORE – 5: Programming Using C++

CORE – 6: Database Systems

CORE – 7: Principles of Management

CORE – 8: Java Programming CORE – 9:

Business Accounting CORE – 10:

Operating Systems CORE – 11: Web

Technologies CORE – 12: Software

Engineering CORE – 13: Management

Accounting CORE – 14: Computer

Networks

Discipline Specific Electives (DSE) Papers:

DSE–1: Data Science

DSE–2: Managerial Economics

DSE–3: Financial Management DSE–4:

Project Work / E-Commerce

Skill Enhancement Courses (SEC): SEC –

1: Python Programming SEC – 2:

Android Programming

Ability Enhancement Courses (AEC): AEC –

1: Environmental Science.

AEC – 2: English/ MIL Communication.

Generic Elective (GE)/ Interdisciplinary Course (IC):

GE/IC – 1: Discrete Mathematical Structures

GE/IC – 2: Numerical Techniques

GE/IC – 3: Statistical Techniques

GE/IC – 4: Operations Research

Detailed Syllabus

CORE–1: DIGITAL LOGIC

OBJECTIVES

- To understand different methods used for the simplification of Boolean functions and binary arithmetic.
- To design and implement combinational circuits, synchronous & asynchronous sequential circuits.
- To study in detail about Semiconductor Memory Systems.

Unit-1

Character Codes, Decimal System, Binary System, Decimal to Binary Conversion, Hexadecimal Notation, Boolean Algebra, Basic Logic Functions: Electronic Logic Gates, Synthesis of Logic Functions, Minimization of Logic Expressions, Minimization using Karnaugh Maps, Synthesis with NAND and NOR Gates, Tri-State Buffers

Unit-2

Arithmetic: Addition and Subtraction of Signed Numbers, Addition/ Subtraction Logic Unit, Design of Fast Adders: Carry-Lookahead Addition, Multiplication of Positive Numbers, Signed-Operand Multiplication: Booth Algorithm, Fast Multiplication: Bit-Pair Recodng Multipliers, Carry-Save Addition of Summands, Integer Division, Floating-Point Numbers and Operations: IEEE Standard for Floating-Point Numbers, Arithmetic Operations on Floating-Point Numbers, Guard Bits and Truncation, Implementing Floating-Point Operations.

Unit-3

Flip-Flops, Gated Latches, Master-Slave Flip-Flops, Edge-Triggering, T Flip-Flops, JK Flip-

Flops. Registers and Shift Registers, Counters, Decoders, Multiplexers, Programmable Logic

Devices (PLDs), Programmable Array Logic (PAL), Complex Programmable Logic Devices (CPLDs), Field-Programmable Gate Array (FPGA), Sequential Circuits, UP/ DOWN Counters, Timing Diagrams, The Finite State Machine Model, Synthesis of Finite State Machines.

Unit-4

Memory System: Semiconductor RAM Memories, Internal Organization of Memory Chips, Static Memories, Asynchronous DRAMS, Synchronous DRAMS, Structure of Large Memories, Memory System Considerations, RAMBUS Memory. Read-Only Memories: ROM, PROM, EPROM, EEPROM, Flash Memory, Speed, Size, and Cost of Memory. Secondary Storage: Magnetic Hard Disks, Optical Disks, Magnetic Tape Systems.

Text Books:

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/e (TMH)

Reference Books:

1. M. Morris Mano: Digital Logic and Computer Design, Pearson

CORE–1 Practical: Digital Logic Lab

1. Introduction to Xilinx software (VHDL)

Write the VHDL code for

2. Realizing all logic gates.

3. Combination Circuit.

4. ADDER.

5. SUBTRACTOR.

6. MUX.

7. DE-MUX.

8. Encoder.

9. Decoder.

10. PAL.

11. PLA.

Write the VHDL program for the following Sequential Logic Circuits

12. Flip Flops.

13. Shift Registers.

14. Counters.

15. Memory Elements.

CORE–2: PROGRAMMING USING

C OBJECTIVES:

- To learn basics of C programming language.
- To be able to develop logics to create programs/ applications in C.

Unit-1

Introduction: Introduction to Programming Language, Introduction to C Programming, Keywords & Identifiers, Constants, Variables, Input and Output Operations, Compilation and pre-processing, **Data types**: Different data types, Data types qualifier, modifiers, Memory representation, size and range, **Operators:** Operators (Arithmetic, Relational, Logical, Bitwise, Assignment & compound assignment, Increment & Decrement, Conditional), Operator types (unary, binary, ternary). Expressions, Order of expression (Precedence and associativity)

Control structures: Decision Making and Branching (Simple IF Statement, IF…ELSE Statement, Nesting IF… ELSE Statement, ELSE IF Ladder), Selection control structure (Switch Statement).

Unit-2

Loops: The WHILE Statement, The DO…WHILE Statement, The FOR Statement, Jumps in Loops, **Array:** Concept of Array, Array Declaration, types of array (one and multiple dimension), Character Arrays and Strings, Subscript and pointer representation of array, Array of Pointers, Limitation of array, **Pointers**: Concept of Pointer (null pointer, wild pointer, dangling pointer, generic pointer), Pointer Expressions, Accessing the Address of a Variable, Declaring Pointer Variables, Initializations of Pointer Variable, Accessing a Variable through its Pointer, Pointer arithmetic.

Unit-3

Storage class: Types (auto, register, static, extern), scope rules, declaration and definition. **Function**: Function & types (User defined function, library function) Function Definition, Declaration, Function Calls, Header file and library, Function Arguments, string handling function (strlen, strcmp, strcpy, strncpy, strcat, strstr), Function recursion, Functions Returning Pointers, Pointers to Functions, Command line arguments, Application of pointer (dynamic memory allocation).

Unit-4

Structure and Union: Defining, Declaring, Accessing, Initialization Structure, nested structure, self-referential structure, bit-field, Arrays of Structures, Structures and Functions, Unions, difference between structure and union, active data member, structure within union, Self-referential Structure.

File: File Management in C, Defining and Opening a File, File opening modes (read, write, append), Closing a File, File operations, file and stream, Error Handling During I/O Operations, sequential and random access file, low level and high level file.

Text Books:

1. E. Balagurusamy, “Programming in ANSI C”, 4/e, (TMH)

Reference Books:

1. B. Kernighan & Dennis Ritchie, “The C Programming Language”, 2/e PHI

2. Paul Deitel, Harvey Deitel, “C: How to Program”, 8/e, Prentice Hall.
3. P.C. Sethi, P.K. Behera, “Programming using C”, Kalyani Publisher, Ludhiana

Core-2 Practical/Tutorial: Programming Fundamentals using C Lab

1. Write a Program to find greatest among three numbers.
2. Write a Program to all arithmetic operation using switch case.
3. Write a Program to print the sum and product of digits of an integer.
4. Write a Program to reverse a number.
5. Write a Program to compute the sum of the first n terms of the following series

   S = 1+1/2+1/3+1/4+……
6. Write a Program to compute the sum of the first n terms of the following series

   S =1-2+3-4+5…….
7. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
8. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
9. Write a Program to compute the factors of a given number.
10. Write a program to swap two numbers using macro.
11. Write a Program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
```

12. Write a Program to perform following actions on an array entered by the user:
    a) Print the even-valued elements
    b) Print the odd-valued elements
    c) Calculate and print the sum and average of the elements of array
    d) Print the maximum and minimum element of array
    e) Remove the duplicates from the array
    f) Print the array in reverse order

    The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.
13. Write a Program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
14. Write a program that swaps two numbers using pointers.
15. Write a program in which a function is passed address of two variables and then alter its contents.
16. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main( ) function.
17. Write a program to find sum and average of n elements entered by the user. To write this program, allocate memory dynamically using malloc( ) / calloc( ) functions.
18. Write a menu driven program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat function.
    c) Concatenate two strings using strcat function.
    d) Compare two strings
    e) Calculate length of the string (use pointers)
    f) Convert all lowercase characters to uppercase
    g) Convert all uppercase characters to lowercase
    h) Calculate number of vowels
    i) Reverse the string
19. Given two ordered arrays of integers, write a program to merge the two-arrays to get an

ordered array.

20. Write a program to copy the content of one file to other.

CORE–3: COMPUTER ORGANIZATION

OBJECTIVES

- To study the basic organization of digital computers (CPU, memory, I/O, software).
- To have a better understanding and utilization of digital computers.
- To be familiar with Assembly Language Programming (ALP)

Unit-1

Basic Structure of Computers: Computer Types, Functional Units, Input Unit, Memory Unit, Arithmetic and Logic Unit, Output Unit, Control Unit, Basic Operational Concepts, Bus Structures, Software. Machine Instructions and Programs: Numbers, Arithmetic Operations, and Characters: Number Representation, Addition of Positive Numbers, Addition and Subtraction of Signed Numbers, Overflow of Integer Arithmetic, Floating-Point Numbers & Operations, Characters, Memory Locations and Addresses, Byte Addressability, Word Alignment, Accessing Numbers, Characters, and Character Strings, Memory Operations, Instructions and Instruction Sequencing, Register Transfer Notation, Basic Instruction Types, Instruction Execution and Straight-Line Sequencing, Branching, Condition Codes, Generating Memory Addresses, Addressing Modes, Implementation of Variables and Constants, Indirection and Pointers, Indexing and Arrays, Relative Addressing.

Unit-2

Basic Processing Unit: Register Transfers, Performance on Arithmetic or Logic Operation, fetching a Word from Memory, Storing a Word in Memory. Execution of a Complete Instruction, Branch Instruction, Multiple Bus Organization Hardwired Control, A Complete Processor. Micro-programmed Control: Microinstructions, Microprogram Sequencing, Wide-Branch Addressing, Microinstructions with Next-Address Field, Prefetching Microinstructions, Emulation.

UNIT-3

Input/ Output Organization: Accessing I/O Devices, Interrupts, Interrupt Hardware, Enabling & Disabling Interrupts, Handling Multiple Devices, Controlling Device Requests, Exceptions. Direct Memory Access, Bus Arbitration, Buses, Synchronous Bus, Asynchronous Bus, Interface Circuits: Parallel Port, Serial Port, Standard I/O Interfaces, Peripheral Component Interconnect (PCI) Bus, SCSI Bus, Universal Serial Bus (USB)

Unit-4

Pipelining: Role of Cache Memory, Pipeline Performance, Data Hazards: Operand Forwarding, Handling Data Hazards in Software, Side Effects. Instruction Hazards: Unconditional Branches, Conditional Branches and Branch Prediction. Influence on Instruction Sets: Addressing Modes, Condition Codes, Data path and Control Considerations. Superscalar Operation: Out-of-Order Execution, Execution Completion, Dispatch Operation, RISC & CISC Processors.

Text Books

1. Carl Hamacher, Z. Vranesic, S. Zaky: Computer Organization, 5/Ed (TMH)

Reference Books

1. William Stallings: Computer Organization and Architecture (Design for Performance), 9/Ed
2. S. Brown, & Z. Vranesic, “Fundamentals of Digital Logic Design with VHDL”, 2/Ed, McGraw-Hill

CORE–3 Practical/Tutorial: Computer Organization Lab

1. Study of the complete Architecture of 8085 Microprocessor along with its instruction set.
2. Introduction to GNU Simulator 8085, with its features.
3. Write an Assembly Language Program to add N consecutive numbers.
4. Write an Assembly Language Program to find the smallest and largest number from a given series.
5. Write an Assembly Language Program for subtraction of two 8-bit numbers.
6. Write an Assembly Language Program for displaying a Rolling message “Hello 123”.
7. Write an Assembly Language Program to perform ASCII to Decimal conversion.
8. Write an Assembly Language Program to add two unsigned binary numbers.
9. Write an Assembly Language Program to subtraction of two unsigned binary numbers.

Demonstrate the followings:

10. Assembling and Dis-assembling of computer.
11. Trouble shooting in Computer.

CORE–4: DATA STRUCTURE

OBJECTIVES

- To learn how the choice of data structures impacts the performance of programs.
- To study specific data structures such as arrays, linear lists, stacks, queues, hash tables, binary trees, binary search trees, heaps and AVL trees.
- To learn efficient searching and sorting techniques.

Unit-1

Introduction: Basic Terminology, Data structure, Time and space complexity, Review of Array, Structures, Pointers.

Linked Lists: Dynamic memory allocation, representation, Linked list insertion and deletion, Searching, Traversing in a list, Doubly linked list, Sparse matrices.

Unit-2

Stack: Definition, Representation, Stack operations, Applications (Infix–Prefix–Postfix Conversion & Evaluation, Recursion).

Queues: Definition, Representation, Types of queue, Queue operations, Applications.

Unit-3

Trees: Tree Terminologies, General Tree, Binary Tree, Representations, Traversing, BST, Operations on BST, Heap tree, AVL Search Trees, M-way search tree, Applications of all trees.

Unit-4

Sorting: Exchange sorts, Selection Sort, Bubble sort, Insertion Sorts, Merge Sort, Quick Sort, Radix Sort, Heap sort.

Searching: Linear search, Binary search.

Text Books:

1. Classic Data Structure , D. Samanta , PHI , 2/ed.

Reference Books:

1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data Structures", Galgotia Publications, 2000.
2. Sastry C.V., Nayak R, Ch. Rajaramesh, Data Structure & Algorithms, I. K. International Publishing House Pvt. Ltd, New Delhi.

CORE – 4 Practical/Tutorial: Data Structure Lab

Write a C/ C++ Program for the followings

1. To insert and delete elements from appropriate position in an array.
2. To search an element and print the total time of occurrence in the array.
3. To delete all occurrence of an element in an array.
4. Array implementation of Stack.
5. Array implementation of Linear Queue.
6. Array implementation of Circular Queue.
7. To implement linear linked list and perform different operation such as node insert and delete, search of an item, reverse the list.
8. To implement circular linked list and perform different operation such as node insert and delete.
9. To implement double linked list and perform different operation such as node insert and delete.
10. Linked list implementation of Stack.
11. Linked list implementation of Queue.
12. Polynomial representation using linked list.
13. To implement a Binary Search Tree.
14. To represent a Sparse Matrix.
15. To perform binary search operation.
16. To perform Bubble sort.
17. To perform Selection sort.

18. To perform Insertion sort.
19. To perform Quick sort.
20. To perform Merge sort.

CORE–5: PROGRAMMING USING C++

OBJECTIVES

- To know about the Object Oriented Programming concepts.
- To learn basics of C++ programming language.
- To be able to develop logics to create programs/ applications in **C++.**

Unit-1

Principles of Object-Oriented Programming: Object-Oriented Programming (OOP) Paradigm, Basic Concepts of OOP, Benefits of OOP, Characteristics of OOPS, Object Oriented Languages, Applications of OOP.
Introduction to C++, Difference between C & C++, Tokens, Data types, Operators, Structure of C++ Program, C++ statements, Expressions and Control Structures.
Functions in C++: Argument passing in function, Inline Functions, Default Arguments, Const. Arguments, Friend function.

Unit-2

Classes and Objects: Defining Member Functions, Making an outside Function Inline, Nested Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friend Functions.
Constructors & Destructors: Constructors, Parameterized Constructors, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Destructors.

Unit-3

Inheritance: Basics of Inheritance, Type of Inheritance, Virtual Base Classes, Abstract Classes, Member Classes, Nesting of Classes. Polymorphism: Pointers, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions, Function Overloading, Operator Overloading.

Unit-4

Managing Console I/O Operations: C++ Streams, C++ Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators.
Files: Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes, File Pointers and their Manipulations, Sequential Input and Output Operations, Updating a File: Random Access, Error Handling during File Operations, Command-line Arguments.

Text Books

1. E. Balgurusawmy, Object Oriented Programming with C++, 4/e (TMH).
2. Paul Deitel, Harvey Deitel, "C++: How to Program", 9/e. Prentice Hall.

Reference Books:

1. Bjarne Stroustroup, Programming - Principles and Practice using C++, 2/e, Addison-Wesley 2014
2. Herbtz Schildt, C++: The Complete reference, MGH, 4/ed.
3. P. C. Sethi, P. K. Behera, "Programming in C++"- Kalyani Publisher, Ludhiana

CORE–5 Practical/Tutorial: Programming using C++ Lab

1. Write a Program to find greatest among three numbers using nested if…else statement.
2. Write a Program to check a number is prime or not.
3. Write a Program to find the GCD and LCM of two numbers.
4. Write a program to print the result for following series: 1! + 2! + 3! + ……
5. Write a program to print multiplication table from 1 to 10.
6. Write a Program for Swapping of two numbers using pass by value.
7. Write a Program for Swapping of two numbers using pass by address.
8. Write a Program for Swapping of two numbers using pass by reference.
9. Write a Program to find sum of four numbers using default argument passing.
10. Write a Program to find square and cube of a number using inline function.
11. Write a Program to find the factorial of a number.
12. Write a Program to find reverse of a number.
13. Write a program to find sum of four numbers using default argument passing in member function.
14. Write a Program to find area of circle, triangle and rectangle using function overloading.
15. Write a program to distinguish the properties of static and non-static ata members.
16. Write a program to show the method of accessing static private member function.
17. Write a program to show the ways of calling constructors and destructors.
18. Write a program to perform ++ operator overloading using member function.
19. Write a program to perform ++ operator overloading using friend function.
20. Write a program to perform + operator overloading for two complex number addition.
21. Write a program to perform + operator overloading for string concatenation.
22. Write a program to perform single inheritance.
23. Write a program to perform multiple inheritance.
24. Write a program to create an integer array using new operator and find the sum and average of array elements.
25. Write a program to implement virtual destructor.
26. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
27. Write a program to Copy the contents of one file to other.

CORE-6: DATABASE SYSTEMS

OBJECTIVES

- To learn the fundamental elements of database system.
- To learn the basic concepts of relational database management systems.

- To learn various SQL commands.

Unit-1

Introduction to Database and Database Users, Database System Concepts and Architecture: data Models, schema, and instances, Conceptual Modeling and Database Design: Entity Relationship (ER) Model: Entity Types, Entity Sets, Attributes, Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, ER Naming Conventions. Enhanced Entity-Relationship (EER) Model.

Unit-2

Database Design Theory and Normalization: Functional Dependencies, Normal Forms based on Primary Keys, Second and third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

Unit-3

Relational data Model and SQL: Relational Model Concepts, Basic SQLs, SQL Data Definition and Data types, Constraints in SQL, Retrieval Queries in SQL, INSERT, DELETE, UPDATE Statements in SQL, Relational Algebra and Relational Calculus: Unary Relational Operations: SELECT and PROJECT, Binary Relation: JOIN and DIVISION.

Unit-4

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing, Transaction and System Concepts, Properties of Transactions, Recoverability, Serializability, Concurrency Control Techniques, Locking techniques for Concurrency Control, Concurrency Control based on Time-Stamp Ordering.

Text Book:

1. Fundamentals of Database Systems, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson Education

Reference Book:

1. An Introduction to Database System, Date C. J. - Pearson Education, New Delhi - 2005

CORE-6 Practical/Tutorial: Database Systems Labs

Create and use the following database schema to answer the given queries.

EMPLOYEE Schema

Field	Type	NULL	KEY	DEFAULT
Eno	Char(3)	NO	PRI	NIL
Ename	Varchar(50)	NO		NIL

Job_type	Varchar(50)	NO		NIL
Manager	Char(3)	Yes	FK	NIL
Hire_date	Date	NO		NIL
Dno	Integer	YES	FK	NIL
Commission	Decimal(10,2)	YES		NIL
Salary	Decimal(7,2)	NO		NIL

DEPARTMENT Schema

Field	Type	NULL	KEY	DEFAULT
Dno	Integer	No	PRI	NULL
Dname	Varchar(50)	Yes		NULL
Location	Varchar(50)	Yes		New Delhi

Query List

1. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
2. Query to display unique Jobs from the Employee Table.
3. Query to display the Employee Name concatenated by a Job separated by a comma.
4. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
5. Query to display the Employee Name and Salary of all the employees earning more than $2850.
6. Query to display Employee Name and Department Number for the Employee No= 7900.
7. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.
8. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
9. Query to display Name and Hire Date of every Employee who was hired in 1981.
10. Query to display Name and Job of all employees who don't have a current Manager.
11. Query to display the Name, Salary and Commission for all the employees who earn commission.
12. Sort the data in descending order of Salary and Commission.
13. Query to display Name of all the employees where the third letter of their name is 'A'.
14. Query to display Name of all employees either have two 'R's or have two 'A's in their name and are either in Dept No = 30 or their Mangers Employee No = 7788.
15. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
16. Query to display the Current Date.
17. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.
18. Query to display Name and calculate the number of months between today and the date each employee was hired.
19. Query to display the following for each employee <E-Name> earns <Salary> monthly but wants <3*Current Salary>. Label the Column as Dream Salary.
20. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.

21. Query to display Name, Hire Date and Day of the week on which the employee started.
22. Query to display Name, Department Name and Department No for all the employees.
23. Query to display Unique Listing of all Jobs that are in Department # 30.
24. Query to display Name, Department Name of all employees who have an 'A' in their name.
25. Query to display Name, Job, Department No. and Department Name for all the employees working at the Dallas location.
26. Query to display Name and Employee no. Along with their Manger's Name and the Manager's employee no; along with the Employees Name who do not have a Manager.
27. Query to display Name, Department No. And Salary of any employee whose department No. and salary matches both the department no. And the salary of any employee who earns a commission.
28. Query to display Name and Salaries represented by asterisks, where each asterisk (*) signifies $100.
29. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees.
30. Query to display the number of employees performing the same Job type functions.
31. Query to display the no. of managers without listing their names.
32. Query to display the Department Name, Location Name, No. of Employees and the average salary for all employees in that department.
33. Query to display Name and Hire Date for all employees in the same dept. as Blake.
34. Query to display the Employee No. And Name for all employees who earn more than the average salary.
35. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.
36. Query to display the names and salaries of all employees who report to King.
37. Query to display the department no, name and job for all employees in the Sales department.

CORE–7: PRINCIPLES OF

MANAGEMENT OBJECTIVES

- To understand the basic principles of management.
- To provide a basis of understanding towards working of business organization through the process of management.

Unit-1

Nature of Management: Meaning, Definition, it's nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization.

Evolution of Management Thought: Contribution of F.W.Taylor, Henri Fayol ,Elton Mayo, Chester Barhard & Peter Drucker to the management thought. Various approaches to management (i.e. Schools of management thought)Indian Management Thought.

Unit-2

Functions of Management (Part-I)

Planning - Meaning - Need & Importance, types levels– advantages & limitations, Forecasting - Need & Techniques, Decision making - Types - Process of rational decision

making & techniques of decision making,
Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation – Decentralization,

Unit-3

Functions of Management (Part-II)

Staffing - Meaning & Importance, Direction - Nature – Principles, Communication - Types & Importance, Motivation - Importance – theories, Leadership - Meaning - styles, qualities & functions of leaders
Controlling-Need, Nature, importance, Process & Techniques, Coordination - Need, Importance.

Unit-4

Strategic Management

Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India.

Text Books:

1. Horold Koontz and Iteinz Weibrich, Essential of Management, McGraw Hills International
2. K.Aswathapa, Essential of Business Administration, Himalaya Publishing House

Reference Books:

1. L.M.Parasad Principles & practice of management - Sultan Chand & Sons - New Delhi
2. Tripathi, Reddy, Principles of Management, Tata McGraw Hill

CORE-7 Practical/Tutorial: Principles of Management Tutorial Classes

CORE – 8: JAVA PROGRAMMING

OBJECTIVES

1. To learn the fundamentals of Object Oriented Programming in Java environment.
2. To learn the use of Java language and the Java Virtual Machine.
3. To write simple Java programming applications.

Unit-1

Introduction to Java: Java History, Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords (super, this, final, abstract, static, extends, implements, interface) , Data Types, Wrapper class, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods). Input through keyboard using Command line Argument, the Scanner class, Buffered Reader class.

Unit-2

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Class Variables & Methods, Objects, Object reference, Objects as parameters, final classes, Garbage Collection.

Constructor- types of constructor, this keyword, super keyword. Method overloading and Constructor overloading. Aggregation vs Inheritance, Inheritance: extends vs implements, types of Inheritance, Interface, Up-Casting, Down-Casting, Auto-Boxing, Enumerations, Polymorphism, Method Overriding and restrictions. Package: Pre-defined packages and Custom packages.

Unit-3

Arrays: Creating & Using Arrays (1D, 2D, 3D and Jagged Array), Array of Object, Referencing Arrays Dynamically. Strings and I/O: Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability& Equality, Passing Strings To & From Methods, String Buffer Classes and StringBuilder Classes. IO package: Understanding Streams File class and its methods, Creating, Reading, Writing using classes: Byte and Character streams, File Output Stream, File Input Stream, File Writer, File Reader, Input Stream Reader, Print Stream, Print Writer. Compressing and Uncompressing File.

Unit-4

Exception Handling, Threading, Networking and Database Connectivity: Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Text Books:

1. E. Balagurusamy, “Programming with Java”, TMH, 4/Ed,

Reference books:

1. Herbert Schildt, “The Complete Reference to Java”, TMH, 10/Ed.

CORE – 8 Practical/Tutorial: Java Programming Lab

1. To find the sum of any number of integers entered as command line arguments.
2. To find the factorial of a given number.
3. To convert a decimal to binary number.
4. To check if a number is prime or not, by taking the number as input from the keyboard.
5. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
6. Write a program that show working of different functions of String and StringBufferclasss like set Char At( ), set Length( ), append( ), insert( ), concat ( )and equals( ).
7. Write a program to create a – “distance” class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer
8. Modify the – “distance” class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
9. Write a program to show that during function overloading, if no matching argument is found, then Java will apply automatic type conversions (from lower to higher data type)
10. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword.

11. Write a program to show the use of static functions and to pass variable length arguments in a function.
14. Write a program to demonstrate the concept of boxing and unboxing.
15. Create a multi-file program where in one file a string message is taken as input from the user and the function to display the message on the screen is given in another file (make use of Scanner package in this program).
16. Write a program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program – "Divide By Zero" that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate different mouse handling events like mouse Clicked( ), mouse Entered( ), mouse Exited( ), mouse Pressed( ), mouse Released( ) & mouse Dragged( ).
23. Write a program to demonstrate different keyboard handling events.

CORE – 9: BUSINESS

ACCOUNTING OBJECTIVES

- To impart the basic business accounting knowledge.

Unit-1

Introduction: Financial Accounting-definition and Scope, objectives of Financial Accounting, Accounting v/s Book Keeping terms used in accounting, users of accounting information and limitations of Financial Accounting.

Conceptual Framework: Accounting Concepts, Principles and Conventions, Accounting Standards concept, objectives, benefits, brief review of Accounting Standards in India, Accounting Policies, Accounting as a measurement discipline, valuation Principles, accounting estimates

Unit-2

Recording of transactions: Voucher system; Accounting Process, Journals, Subsidiary Books, Ledger, Cash Book, Bank Reconciliation Statement, Trial Balance.

Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation.

Unit-3

Preparation of final accounts: Preparation of Trading and Profit & Loss Account and

Balance Sheet of sole proprietary business

Unit-4

Introduction to Company Final Accounts: Important provisions of Companies Act, 1956 in respect of preparation of Final Accounts, Understanding of final accounts of a Company.

Computerized Accounting: Computers and Financial application, Accounting Software packages, An overview of computerized accounting system - Salient features and significance, Concept of grouping of accounts, Codification of accounts, Maintaining the hierarchy of ledger, Generating Accounting Reports.

Text Books :

1. Anil Chowdhry, "Fundamentals of Accounting & Financial Analysis", Pearson Education
2. Rajesh Agarwal, R. Srinivasan, "Accounting Made Easy", TMH

Reference Books:

1. Amrish Gupta, "Financial Accounting for Management", Pearson Education
2. S. N. Maheshwari, "Financial Accounting for Management: Vikas Publishing House

CORE-9 Practical/Tutorial: Business Accounting Tutorial

CORE–10: OPERATING SYSTEM

OBJECTIVES

- To understand Operating system structure and services.
- To understand the concept of a Process, memory, storage and I/O management.

Unit–1

Introduction to Operating System, System Structures: Operating system services, system calls, system programs, Operating system design and implementation, Operating system structure.

Unit–2

Process Management: Process Concept, Operations on processes, Process scheduling and algorithms, Inter-process Communication, Concepts on Thread and Process, Deadlocks: Deadlock detection, deadlock prevention, and deadlock avoidance fundamentals.

Unit-3

Memory Management Strategies: Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management: Concepts, implementation (Demand Paging), Page Replacement, Thrashing.

Unit–4

Storage Management: File System concept, Access Methods, File System Mounting, File Sharing and File Protection, Implementing File Systems, Kernel I/O Systems.

Text book:

1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin, and Greg Gagne,

Eighth Edition, Wiley Student Edition 2009.

Reference book:

1. Modern Operating System, Tanenbaum, Pearson, 4/Ed. 2014
2. Richard F Ashley, Linux with Operating System Concepts, Chapman and Hall/CRC Published August 26, 2014
3. Richard Blum, Linux Command Line and Shell Scripting Bible, O' Reilly

CORE-10 Practical/Tutorial: Operating System Lab

1. Write a program (using *fork()* and/or *exec()* commands) where parent and child execute:
   a) same program, same code.
   b) same program, different code.
   c) before terminating, the parent waits for the child to finish its task.
2. Write a program to report behavior of Linux kernel including kernel version, CPU type and model. (CPU information)
3. Write a program to report behavior of Linux kernel including information on configured memory, amount of free and used memory. (memory information)
4. Write a program to print file details including owner access permissions, file access time, where file name is given as argument.
5. Write a program to copy files using system calls.
6. Write a program using C to implement FCFS scheduling algorithm.
7. Write a program using C to implement Round Robin scheduling algorithm.
8. Write a program using C to implement SJF scheduling algorithm.
9. Write a program using C to implement non-preemptive priority based scheduling algorithm.
10. Write a program using C to implement preemptive priority based scheduling algorithm.
11. Write a program using C to implement SRTF scheduling algorithm.
12. Write a program using C to implement first-fit, best-fit and worst-fit allocation strategies.

CORE – 11: WEB TECHNOLOGY

OBJECTIVES

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Unit-1

Web Essentials: Clients, Servers and Communication:

The Internet – Basic Internet protocols – The WWW, HTTP request message – response message, web clients web servers – case study.
Introduction to HTML: HTML, HTML domains, basic structure of an HTML document – creating an HTML document, mark up tags, heading, paragraphs, line breaks, HTML tags. Elements of HTML, working with text, lists, tables and frames, working with hyperlink, images and multimedia, forms and controls

Unit-2

Introduction to cascading style sheets: Concepts of CSS, creating style sheet, CSS properties, CSS styling (background, text format, controlling fonts), working with the block elements and objects. Working who lists and tables, CSS ID and class. Box model (introduction, border properties, padding properties, margin properties), CSS colour, groping, Dimensions, display, positioning, floating, align, pseudo class, Navigation bar, image sprites.

Unit-3

Java scripts: Client side scripting, what is java script, simple java script, variables, functions, conditions, loops and repetitions. Java scripts and objects, java script own objects, the DOM and web browser environment, forms and validations.
DHTML: Combining HTML, CSS, java scripts, events and buttons, controlling your browser.

Unit-4

PHP: Starting to script on server side, PHP basics, variables, data types, operators, expressions, constants, decisions and loop making decisions. Strings – creating, accessing strings, searching, replacing and formatting strings. Arrays: Creation, accessing array, multidimensional arrays, PHP with Database.

Text Book:

1. Web Technologies – Black Book – DreamTech Press
2. Matt Doyle, Beginning PHP 5.3 (wrox-Willey publishing)
3. John Duckett, Beginning HTML, XHTML, CSS and Java script.

Reference Book:

1. HTML, XHTML and CSS Bible, 5ed, Willey India-Steven M. Schafer.

CORE – 11 Practical/Tutorial: Web Technology Lab

1. Acquaintance with elements, tags and basic structure of HTML files.
2. Practicing basic and advanced text for formatting.
3. Practice use of image, video and sound in HTML documents.
4. Designing of web pages- Document layout, list, tables.
5. Practicing Hyperlink of web pages, working with frames.
6. Working with forms and controls.
7. Acquaintance with creating style sheet, CSS properties and styling.
8. Working with background, text, font, list properties.
9. Working with HTML elements box properties in CSS.

10. Develop simple calculator for addition, subtraction, multiplication and division operation using java script.
11. Create HTML page with java script which takes integer number as a input and tells whether the number is odd or even.
12. Create HTML page that contains form with fields name, Email, mobile number, gender, favorite colour and button; now write a java script code to validate each entry. Also write a code to combine and display the information in text box when button is clicked.
13. Write a PHP program to check if number is prime or not.
14. Write a PHP program to print first ten Fibonacci numbers.
15. Create a MySQL data base and connect with PHP.
16. Write PHP script for string and retrieving user information from my SQL table.
    a. Write a HTML page which takes Name, Address, Email and Mobile number from user (register PHP).
    b. Store this data in MySQL data base.
    c. Next page display all user in HTML table using PHP (display .PHP).
17. Using HTML, CSS, Javascript, PHP, MySQL, design a authentication module of a web page.

CORE – 12: SOFTWARE ENGINEERING

OBJECTIVES:

- To learn the way of developing software with high quality and the relevant techniques.
- To introduce software engineering principles for industry standard.
- To focus on Project management domain and Software risks management.

Unit-1

Introduction: Evolution of Software to an Engineering Discipline, Software Development Projects, Exploratory Style of Software Development, Emergence of Software Engineering, Changes in Software Development Practices, Computer Systems Engineering.
Software Lifecycle Models: Waterfall Model and its Extensions, Rapid Application Development (RAD), Agile Development Models, Spiral Model.

Unit-2

Software Project Management: Software Project Management Complexities, Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO, Halstead's Software Science, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management.

Unit-3

Requirement Analysis and Specification: Requirements Gathering and Analysis, Software Requirement Specifications, Formal System Specification Axiomatic Specification, Algebraic Specification, Executable Specification and 4GL.

Software Design: Design Process, Characterize a Good Software Design, Cohesion and Coupling, Layered Arrangements of Modules, Approaches to Software Design (Function Oriented & Object-Oriented).

Unit-4

Coding and Testing: Coding: Code Review, Software Documentation, Testing, Unit Testing, Black Box and White Box Testing, Debugging, Program Analysis Tools, Integration Testing, System Testing, Software Maintenance.

Text Book:

1. Fundamental of Software Engineering, Rajib Mall, Fifth Edition, PHI Publication, India.

Reference Books:

1. Software Engineering– Ian Sommerville, 10/Ed, Pearson.
2. Software Engineering Concepts and Practice – Ugrasen Suman, Cengage Learning India Pvt, Ltd.

CORE – 12 Practical/Tutorial: Software Engineering Lab

S. No. Practical Title

1. • Problem Statement,
   - Process Model
2. Requirement Analysis:
   - Creating a Data Flow
   - Data Dictionary, Use Cases
3. Project Management:
   - Computing FP
   - Effort
   - Schedule, Risk Table, Timeline chart
4. Design Engineering:
   - Architectural Design
   - Data Design, Component Level Design
5. Testing:
   - Basis Path Testing

Sample Projects:

1. **Criminal Record Management:** Implement a criminal record management system for jailers, police officers and CBI officers.
2. **Route Information**: Online information about the bus routes and their frequency and fares
3. **Car Pooling**: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.
4. Patient Appointment and Prescription Management System
5. Organized Retail Shopping Management Software
6. Online Hotel Reservation Service System

7. Examination and Result computation system
8. Automatic Internal Assessment System
9. Parking Allocation System
10. Wholesale Management System

CORE – 13: MANAGEMENT ACCOUNTING OBJECTIVES

- To encourage the acquisition of knowledge and skills relating to the application of management accounting concepts and techniques for business decisions.
- To introduce the short-term and long-term strategic decision-making models.

Unit-1

Nature, Scope of Management Accounting: Meaning, definition, nature and scope of Management Accounting; Comparison of Management Accounting with Cost Accounting and Financial Accounting. Cost concepts: Meaning, Scope, Objectives, and Importance of Cost Accounting; Cost, Costing, Cost Control, and Cost Reduction; Elements of Cost, Components of total Cost, Cost Sheet. Classification of Costs: Fixed, Variable, Semi- variable, and Step Costs; Product, and Period Costs; Direct, and Indirect Costs; Relevant, and Irrelevant Costs; Shut-down, and Sunk Costs; Controllable, and Uncontrollable Costs; Avoidable, and Unavoidable Costs; Imputed / Hypothetical Costs; Out-of-pocket Costs; Opportunity Costs; Expired, and Unexpired Costs; Conversion Cost. Cost Ascertainment: Cost Unit and Cost Center. Introduction to Overhead allocation, Overhead apportionment, and Overhead absorption.

Unit-2

Cost-Volume-Profit Analysis: Contribution, Profit-Volume Ratio, Margin of safety, Cost Break-even Point, Composite Break-even Point, Cash Break-even Point, Key Factor, Break-even Analysis. Relevant Costs and Decision Making: Pricing, Product Profitability, Make or Buy, Exploring new markets, Export Order, Sell or Process Further, Shut down vs. Continue.

Unit-3

Budgets and Budgetary Control: Meaning, Types of Budgets, Steps in Budgetary Control, Fixed and Flexible Budgeting, Cash Budget. Responsibility Accounting: Concept, Significance, Different responsibility centers, Divisional performance – Financial measures, Transfer pricing.

Unit-4

Standard Costing and Variance Analysis: Meaning of Standard Cost and Standard Costing, Advantages, Limitations and Applications; Material, Labor, Overhead and Sales variances. Introduction to Target Costing, Life Cycle Costing, Quality Costing, and Activity based Costing.

Text Books:

1. C.T. Horngren, Gary L. Sundem, Jeff O. Schatzberg, and Dave Burgstahler: Introduction to Management Accounting, Pearson
2. M.N. Arora: A Textbook of Cost and Management Accounting, Vikas Publishing House Pvt. Ltd.

Reference Books:

1. M.Y. Khan, and P.K. Jain, Management Accounting: Text Problems and Cases, McGraw Hill Education (India) Pvt. Ltd.

CORE – 13 Practical/Tutorial: Management Accounting Tutorial

CORE – 14: COMPUTER NETWORKS

OBJECTIVES

- To learn how do computers and terminals actually communicate with each other.
- To understand the parts of a communication network and how they work together.

Unit-1

Introduction to Data Communications and Network Models: Protocols and Standards, Layers in OSI Models, Analog and Digital Signals, Transmission Modes, Transmission Impairment, Data Rate Limits, Performance, Digital Transmission, Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge (fundamental concepts only).

Unit-2

Signal Conversion: Digital-to-Digital Conversion, Analog-to-Digital Conversion, Digital-to-analog Conversion, Analog-to-analog Conversion.
Transmission Media: Guided Media, Unguided Media, Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch.

Unit-3

Error Detection and Correction: Checksum, CRC, Data Link Control: Framing, Flow and Error Control, Noiseless Channels, Noisy channels, (Stop and Wait ARQ, Slidding Window Protocol , Go Back N, Selective Repeat) HDLC, Point-to-Point Protocol. Access Control: TDM, CSMA/CD, and Channelization (FDMA, TDMA, and CDMA).

Unit-4

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Virtual-Circuit Networks: Frame Relay and ATM, Transport Layer: Process-Process Delivery: UDP, TCP. Application layers: DNS, SMTP, POP, FTP, HTTP, Basics of WiFi (Fundamental concepts only), Network Security: Authentication, Basics of Public Key and Private Key, Digital Signatures and Certificates (Fundamental concepts only).

Text Books:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan,TMH.

Reference Books:

1. Computer Networks, A. S. Tanenbaum, 4th edition, Pearson Education.

CORE – 14 Practical/Tutorial: Computer Networks Lab

Use C/C++/ any Network Simulator

1. Simulate Even Parity generator and checker.

2. Simulate two dimensional Parity generator and checker.

3. Simulate checksum generator and checker.
4. Simulate Hamming code method.
5. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
6. Simulate and implement stop and wait protocol for noisy channel.
7. Simulate and implement go back n sliding window protocol.
8. Simulate and implement selective repeat sliding window protocol.
9. Simulate and implement distance vector routing algorithm.

DSE-1: DATA SCIENCE

OBJECTIVES:

- To learn emerging issues related to various fields of data science.
- To understand the underlying principles of data science, exploring data analysis.
- To learn the basics of R Programming.

Unit-1

Data Scientist's Tool Box: Turning data into actionable knowledge, introduction to the tools that will be used in building data analysis software: version control, markdown, git, GitHub, R, and RStudio.

Unit-2

R Programming Basics: Overview of R, R data types and objects, reading and writing data, Control structures, functions, scoping rules, dates and times, Loop functions, debugging tools, Simulation, code profiling.

Unit-3

Getting and Cleaning Data: Obtaining data from the web, from APIs, from databases and from colleagues in various formats, basics of data cleaning and making data "tidy".

Unit-4

Exploratory Data Analysis: Essential exploratory techniques for summarizing data, applied before formal modeling commences, eliminating or sharpening potential hypotheses about the world that can be addressed by the data, common multivariate statistical techniques used to visualize high-dimensional data.

Text Books:

1. Rachel Schutt, Cathy O'Neil, "Doing Data Science: Straight Talk from the Frontiline" : Schroff/O'Reilly, 2013.

Reference Books:

1. Foster Provost, Tom Fawcett, "Data Science for Business" What You Need to Know About Data Mining and Data-Analytic Thinking by O'Reilly, 2013.
2. John W. Foreman, "Data Smart: Using Data Science to Transform Information into Insight" : John Wiley & Sons, 2013.
3. Eric Seigel, "Predictive Analytics: The Power to Predict who Will Click, Buy, Lie, orDie", 1st Edition, by Wiley, 2013.

DSE-1 Practical/Tutorial: Data Science Lab

1. Write a program that prints "Hello World" to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n

3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement linear search.
8. Implement binary search.
9. Implement matrices addition, subtraction and Multiplication
10. Fifteen students were enrolled in a course. There ages were:

20 20 20 20 20 21 21 21 22 22 22 22 23 23 23

i. Find the median age of all students under 22 years
ii. Find the median age of all students
iii. Find the mean age of all students
iv. Find the modal age for all students
v. Two more students enter the class. The age of both students is 23. What is now mean, mode and median?

DSE–2: MANAGERIAL

ECONOMICS OBJECTIVES:

- To introduce the economic concepts.
- To familiarize with the students the importance of economic approaches in managerial decision making.
- To understand the applications of economic theories in business decisions.

Unit-1:

Demand, Supply and Market equilibrium: individual demand, market demand, individual supply, market supply, market equilibrium; Elasticity of demand and supply: Price elasticity of demand, income elasticity of demand, cross price elasticity of demand, elasticity of supply; Theory of consumer behavior: cardinal utility theory, ordinal utility theory (indifference curves, budget line, consumer choice, price effect, substitution effect, income effect for normal, inferior and giffen goods), revealed preference theory.

Unit-2:

Producer and optimal production choice: optimizing behavior in short run (geometry of product curves, law of diminishing margin productivity, three stages of production), optimizing behavior in long run (isoquants, isocost line, optimal combination of resources) Costs and scale: traditional theory of cost (short run and long run, geometry of cot curves, envelope curves), modern theory of cost (short run and long run), economies of scale, economies of scope.

Unit-3:

Theory of firm and market organization: perfect competition (basic features, short run equilibrium of firm/industry, long run equilibrium of firm/industry, effect of changes in demand, cost and imposition of taxes); monopoly (basic features, short run equilibrium, long run equilibrium, effect of changes in demand, cost and imposition of taxes, comparison with perfect competition, welfare cost of monopoly), price discrimination, multiplant monopoly;

monopolistic competition (basic features, demand and cost, short run equilibrium, long run equilibrium, excess capacity); oligopoly (Cournot's model, kinked demand curve model, dominant price leadership model, prisoner's dilemma)

Unit-4:

Factor market: demand for a factor by a firm under marginal productivity theory (perfect competition in the product market, monopoly in the product market), market demand for a factor, supply of labour, market supply of labour, factor market equilibrium.

Text Books:

1. Yogesh Maheswari, Managerial Economics, PHI Learning, New Delhi.
2. G. S. Gupta, Managerial Economics, Tata Mcgraw-Hill, New Delhi.

Reference Books:

1. Moyer &Harris, Managerial Economics, Cengage Learning, New Delhi.
2. Geetika, Ghosh & Choudhury, Managerial Economics, Tata Mcgrawhill, New Delhi.
3. Dominick Salvatore, Principles of Microeconomics, Oxford University Press, (5th Ed.)

DSE-2 Practical/Tutorial: Managerial Economics

Tutorial DSE-3: FINANCIAL MANAGEMENT

OBJECTIVES:

- To introduce students to financial planning, its objectives, its benefits, its stages, and the factors that help towards the success of financial planning.
- To introduce students about the methods used in financial planning to assess the short-term financial needs.

Unit-1

Nature of Financial Management: Finance and related disciplines; Scope of Financial Management; Profit Maximization, Wealth Maximization - Traditional and Modern Approach; Functions of finance – Finance Decision, Investment Decision, Dividend Decision; Objectives of Financial Management; Organization of finance function; Concept of Time Value of Money, present value, future value, and annuity; Risk & Return: Historical return, expected return, absolute return, holding period return, annualized return, arithmetic & geometric return; Risk - Systematic & unsystematic risk – their sources and measures.

Unit-2

Long -term investment decisions: Capital Budgeting - Principles and Techniques; Nature and meaning of capital budgeting; Estimation of relevant cash flows and terminal value; Evaluation techniques - Accounting Rate of Return, Net Present Value, Internal Rate of Return & MIRR, Net Terminal Value, Profitably Index Method. Concept and Measurement of Cost of Capital: Explicit and Implicit costs; Measurement of cost of capital; Cost of debt; Cost of perpetual debt; Cost of Equity Share; Cost of Preference Share; Cost of Retained Earning; Computation of over-all cost of capital based on Historical and Market weights.

Unit-3

Capital Structures: Approaches to Capital Structure Theories - Net Income approach, Net Operating Income approach, Modigliani-Miller (MM) approach, Traditional approach, Capital Structure and Financial Distress, Trade-Off Theory. Dividend Policy Decision - Dividend and Capital; The irrelevance of dividends: General, MM hypothesis; Relevance of

dividends: Walter's model, Gordon's model; Leverage Analysis: Operating and Financial Leverage; EBIT -EPS analysis; Combined leverage.

Unit-4

Working Capital Management: Management of Cash - Preparation of Cash Budgets (Receipts and Payment Method only); Cash management technique, Receivables Management-Objectives; Credit Policy, Cash Discount, Debtors Outstanding and Ageing Analysis; Costs - Collection Cost, Capital Cost, Default Cost, Delinquency Cost, Inventory Management (Very Briefly) - ABC Analysis; Minimum Level; Maximum Level; Reorder Level; Safety Stock; EOQ, Determination of Working Capital.

Text Books:

1. M. Y. Khan, P. K. Jain, Financial Management Text Problem and Cases, TMH.
2. I. M. Pandey, Financial Management, Theory and Practices, Vikas Publishing House.

Reference Books:

1. R. A. Brealey, S. C. Myers, F. Allen, P. Mohanty: Principles of Corporate Finance, McGraw Hill Higher Education.
2. J. V. Horne, J. M. Wachowicz, Fundamentals of Financial Management, Prentice Hall.

DSE-3 Practical/Tutorial: Financial Management Tutorial

DSE-4: SOFTWARE PROJECT WORK / E-COMMERCE DSE-4: E-

COMMERCE

OBJECTIVES

- To introduce the concepts of electronic commerce.
- To make the user understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.

Unit-1

Introduction to E-Commerce: Definition and scope of E-Commerce and M-Commerce, E-Commerce trade cycle, Electronic Markets, Internet Commerce, Benefits and Impacts of E-Commerce.

Elements of E-Commerce: Various elements, e-visibility, e-shops, Delivery of goods and services, Online payments, After- sales services, Internet E-Commerce security.

Unit-2

EDI and Electronic Payment Systems: Introduction and definition of EDI, EDI layered Architecture, EDI technology and standards, EDI communications and transactions, Benefits and applications of EDI with example, Electronic Payment Systems: credit/debit/smart cards, e-credit accounts, e-money.

Unit-3

Introduction to EC models: Inter-organization and intra-organization E-Commerce, E-Commerce Models: B2B, B2C, C2B, C2C, G2C, C2G

E-Business: Introduction to Internet bookshops, Grocery Suppliers, Software Supplies and support, Electronic newspapers, Virtual auctions, Online share dealing, e-diversity.

Unit-4

E-Security and Legal Issues: Security concerns in E-Commerce, Privacy, integrity, authenticity, non-repudiation, confidentiality, SSL, Digital Signatures and fire walls, IT Act 2000, Cyber-crimes and cyber laws

Mobile Commerce and Future of E-Commerce: Introduction to Mobile Commerce, Benefits of Mobile Commerce, Impediments of M-Commerce, M-Commerce framework, Emerging and future trends.

Text Books:

1. G.S.V.Murthy, E-Commerce Concepts, Models, Strategies, Himalaya Publishing House.
2. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, "E-Commerce Fundamentals and Applications, Wiley Student Edition.

Reference Books:

1. Gray P. Schneider , Electronic commerce, International Student Edition.

DSE-4 Practical/Tutorial: E-Commerce Tutorial

SEC – 1: PYTHON PROGRAMMING

OBJECTIVES:

- To enable the students to understand the basic principles of the Python Language.
- To use the tools to do simple programs in python.

Unit-1

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

Unit-2

Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Unit-3

Overview of Programming: Structure of a Python Program, Elements of Python

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator)

Unit-4

Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.

Text Books

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011

Reference Books

1. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

Online References:

1. Python Tutorial/Documentation www.python.or 2015
2. http://docs.python.org/3/tutorial/index.html
3. http://interactivepython.org/courselib/static/pythonds
4. http://www.ibiblio.org/g2swap/byteofpython/read/

Software Lab based on Python Programming:

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon users choice.
2. Write a Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Write a Program to display the first n terms of Fibonacci series.
5. Write a Program to find factorial of the given number.
6. Write a Program to find sum of the following series for n terms: 1 – 2/2! + 3/3!--------- n/n!
7. Write a Program to calculate the sum and product of two compatible matrices.

AEC–1: Environmental Science

AEC–2: English Communication/MIL

SEC-2: ANDROID PROGRAMMING

Assessment: 10)

OBJECTIVES:

- To learn the basics of Android Programming.
- To develop simple Android applications.

Unit-1

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

Unit-2

Overview of Object Oriented programming using Java: OOPs Concepts: Inheritance, Polymorphism, Interfaces, Abstract class, Threads, Overloading and Overriding, Java Virtual Machine.

Unit-3

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating

an android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.

Unit-4

User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, Dialog.

Database: Understanding of SQLite database, connecting with the database.

Text Books:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

Reference Book:

1. James C. Sheusi, "Android application Development for Java Programmers", Cengage Learning, 2013.
2. M. Burton, & D. Felker, "Android Application Development for Dummies", 2/e, Wiley India.

Online References:

1. http://www.developer.android.com
2. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebo
3. http://developer.android.com/guide/components/fundamentals.html
4. http://developer.android.com/training/multiscreen/screensizes.html
5. http://developer.android.com/guide/topics/ui/controls.html

Software Lab based on Android Programming:

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.
2. Create an application with login module. (Check username and password).
3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.
4. Create a menu with 5 options and selected option should appear in text box.
5. Create a list of all courses in your college and on selecting a particular course teacher-in- charge of that course should appear at the bottom of the screen.
6. Create an application with three option buttons, on selecting a button colour of the screen will change.
7. Create and Login application as above. On successful login, pop up the message.
8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

GE/IC–1: DISCRETE MATHEMATICAL

STRUCTURES OBJECTIVES

- To learn the mathematical foundations for Computer Science.
- Topics covered essential for understanding various courses.

Unit-1

Logics and Proof: Propositional Logic, Propositional Equivalences, Predicates and Quantifiers Nested Quantifiers, Rules inference, Mathematical Induction.

Sets and Functions: Sets, Relations, Functions, Closures of Equivalence Relations, Partial ordering well ordering, Lattice, Sum of products and product of sums principle of Inclusions and Exclusions

Unit-2

Combinatory: Permutations, Combinations, Pigeonhole principle

Recurrence Relation: Linear and Non-linear Recurrence Relations, Solving Recurrence Relation using Generating Functions.

Unit-3

Graphs: Introduction to graphs, graphs terminologies, Representation of graphs, Isomorphism,

Connectivity & Paths: Connectivity, Euler and Hamiltonian Paths, Introduction to tree, tree traversals, spanning tree and tree search: Breadth first search, Depth first search, cut-set, cut- vertex.

Unit-4

Modeling Computation: Finite State Machine, Deterministic Finite Automata (DFA), Non- Deterministic Finite Automata (NFA), Grammars and Language, Application of Pumping Lemma for Regular Language.

Text Books:

1. "Discrete Mathematics and its Applications with Combinatory and Graph Theory" 7th edition by Kenneth H. Rosen.

Reference Books:

1. Elements of Discrete Mathematics by C. L. Liu and D.P. Mohapatra, TMH, 2012
2. J. P Tremblay, R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH, 1997.

GE/IC-1 Practical/Tutorial: Discrete Mathematical Structures Lab

Write the following programs using C/ C++

1. Tower of Hanoi
2. Graph representation using Adjacency List.
3. Graph representation using Adjacency Matrix.

4. String Matching using finite state machine.
5. Detecting whether a number is even or odd using Finite State Machine.
6. To identify keywords such as char, const, continue using Finite State Machine.
7. To find the power set for a given set.
8. To find GCD of two numbers using recursion.
9. To find Binomial coefficients.
10. To find Permutation and Combination result for a given pair of values n and r.
11. To check a number is prime or not.
12. To calculate the Euclidean distance between two points.
13. To find the Roots of polynomials.
14. Find the shortest path pair in a plane.

GE/IC-2: NUMERICAL

TECHNIQUES OBJECTIVES:

- To learn various numerical techniques.
- To be able to implement different numerical techniques using programming language.

Unit-1

Floating point representation and computer arithmetic, Significant digits, Errors: Round-off error, Local truncation error, Global truncation error, Order of a method, Convergence and terminal conditions, Efficient computations.

Unit-2

Bisection method, Secant method, Regula−Falsi method Newton−Raphson method, Newton's method for solving nonlinear systems.

Unit-3

Interpolation: Lagrange's form and Newton's form Finite difference operators, Gregory Newton forward and backward differences Interpolation Piecewise polynomial interpolation: Linear interpolation.

Unit-4

Numerical integration: Trapezoid rule, Simpson's rule (only method), Newton−Cotes formulas, Gaussian quadrature, Ordinary differential equation: Euler's method Modified Euler's methods, Runge-Kutta second methods

Text books

1. S.S. Sastry, "Introductory Methods of Numerical Analysis", EEE , 5/ed.
2. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publisher, 6/e (2012)

Reference books

1. Numerical Analysis: J. K. Mantri & S. Prahan, Laxmi Publication.
2. Introduction to Numerical Analysis, Josef Stoer and Roland Bulirsch, Springer.

GE/IC – 2 Practical/Tutorial: Numerical Methods Lab

Implement using C/ C++ or MATLAB/ Scilab

1. Find the roots of the equation by bisection method.
2. Find the roots of the equation by secant/Regula−Falsi method.
3. Find the roots of the equation by Newton's method.
4. Find the solution of a system of nonlinear equation using Newton's method.
5. Find the solution of tri-diagonal system using Gauss Thomas method.
6. Find the solution of system of equations using Jacobi/Gauss-Seidel method.
7. Find the cubic spline interpolating function.
8. Evaluate the approximate value of finite integrals using Gaussian/Romberg integration.
9. Solve the boundary value problem using finite difference method.

GE/IC–3: STATISTICAL

TECHNIQUES OBJECTIVES

- To understand the concept of population and sample.
- To use frequency distribution to make decision.
- To understand and to calculate various types of averages and variation.

Unit-1

Statistical Methods: Definition and scope of Statistics, concepts of statistical population and sample. **Data:** quantitative and qualitative, attributes, variables, scales of measurement nominal, ordinal, interval and ratio. **Presentation:** tabular and graphical, including histogram.

Unit-2

Measures of Central Tendency: mathematical and positional. **Measures of Dispersion:** range, quartile deviation, mean deviation, standard deviation, coefficient of variation, Moments, absolute moments, factorial moments, skewness and kurtosis, Sheppard's corrections.

Unit-3

Bivariate data: Definition, scatter diagram, simple, partial and multiple correlation (3-variables only), rank correlation. Simple linear regression.

Unit-4

Principle of least squares and fitting of polynomials and exponential curves. Theory of

attributes: Independence and association of attributes, consistency of data, measures of association and contingency, Yule's coefficient of colligation.

Text Books:

1. S.C. Gupta, Fundamentals of Statistics, Sultan chand & sons, Delhi.
2. A.M.Goon, M.K.Gupta and B. Dasgupta, Fundamentals of Statistics, The World Press, Kolkata.

Reference Books:

1. S.P. Gupta, Statistical Methods, Sultan Chand and sons New Delhi

GE/IC–3 Practical/Tutorial: Statistical Techniques Lab

List of Practical

1. Graphical representation of data.
2. Problems based on measures of central tendency.
3. Problems based on measures of dispersion.
4. Problems based on combined mean and variance and coefficient of variation.
5. Problems based on moments, skewness and kurtosis.
6. Fitting of polynomials, exponential curves.
7. Karl Pearson's correlation coefficient.
8. Correlation coefficient for a bivariate frequency distribution.
9. Lines of regression, angle between two lines of regression and estimated values of variables.
10. Spearman rank correlation with and without ties.
11. Partial and multiple correlations.
12. Planes of regression and variances of residuals for given simple correlations.

GE/IC-4: OPERATIONS

RESEARCH OBJECTIVES:

- To enable the students to understand various operational research methods.
- To learn various methods of solving optimization problems.

Unit-1

Linear Programming: Formulation of L.P. Problems, Graphical Solutions (Special cases: Multiple optimal solution, infeasibility, unbounded solution); Simplex Methods (Special cases: Multiple optimal solution, infeasibility, degeneracy, unbounded solution) Big-M method and Two-phase method; Duality and Sensitivity (emphasis on formulation & economic interpretation); Formulation of Integer programming, Zero- one programming, Goal Programming.

Unit-2

Elementary Transportation: Formulation of Transport Problem, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method. (Special cases: Multiple Solutions, Maximization case, Unbalanced case, prohibited routes) Elementary Assignment: Hungarian Method, (Special cases: Multiple Solutions, Maximization case, Unbalanced case, Restrictions

on assignment.)

Unit-3

Network Analysis: Construction of the Network diagram, Critical Path - float and slack analysis (Total float, free float, independent float), PERT, Project Time Crashing

Unit-4

Decision Theory: Pay off Table, Opportunity Loss Table, Expected Monetary Value, Expected Opportunity Loss, Expected Value of Perfect Information and Sample Information

Text Books:

1. N. D. Vohra, Quantitative Management, Tata McGraw Hill.
2. P. K. Gupta, Man Mohan, Kanti Swarup, Operations Research, Sultan Chand.

Reference Books:

1. V. K. Kapoor, Operations Research, Sultan Chand & Sons.
2. J. K. Sharma, Operations Research Theory & Applications, Macmillan India Limited.

GE/IC-4 Practical/Tutorial: Operations Research Lab

Use C/C++ for implantation of the following Problems.

1. Mathematical formulation of L.P.P and solving the problem using graphical method.
2. Mathematical formulation of L.P.P and solving the problem using Simplex technique.
3. Allocation problem using Transportation model
4. Allocation problem using Assignment model
5. Networking problem using CPM and PERT

Equipment:

1. Desktop Computer

Core i5 (minimum 8th Generation Processor, 8 GB RAM, 2 TB HDD)

Number of Desktops: 30 (or as per student strength). It must be connected through structured Local Area Network (LAN).

2. Software

LibreOffice, Scilab, C, C++, Java, Assembler, VHDL, Linux/ Unix Prolog etc. , preferably Open Source Software.

Faculty Training:

Faculty training may be organized for the following Courses in phased manner (six month before the beginning of the Subject in the concerned semester).

i. Digital Logic
ii. Computer Organization
iii. Data Structures
iv. Operating Systems
v. Database Systems
vi. Java Programming
vii. Web Technology
viii. Data Science
ix. Android Programming
x. Python Programming

CORSE STRUCTURE OF U.G. MATHEMATICS

Preamble

Mathematics is an indispensable tool for much of science and engineering. It provides the basic language for understanding the world and lends precision to scientific thought. The mathematics program at Universities of Odisha aims to provide a foundation for pursuing research in Mathematics as well as to provide essential quantitative skills to those interested in related fields. With the maturing of the Indian industry, there is a large demand for people with strong analytical skills and broad-based background in the mathematical sciences.

COURSE STRUCTURE FOR MATHEMATICS HONORS

Semester	Course	Course Name	Credits
I	AECC-I	AECC-I	04
	C-I	Calculus	04
	C-I	Practical	02
	C-II	Discrete Mathematics	05
	C-II	Tutorial	01
	GE-I	GE-I	05
	GE-I	Tutorial	01
			22
II	AECC-II	AECC-II	04
	C-III	Real Analysis	05
	C-III	Tutorial	01
	C-IV	Differential equations	04
	C-IV	Practical	02
	GE-II	GE-II	05
	GE-II	Tutorial	01
			22
III	C-V	Theory of Real functions	05
	C-V	Tutorial	01
	C-VI	Group Theory-I	05
	C-VI	Tutorial	01
	C-VII	Partial differential equations and system of ODEs	04
	C-VII	Practical	02
	GE-III	GE-III	05
	GE-III	Tutorial	01
	SECC-I	SECC-I	04

			28
IV	C-VIII C-VIII	Numerical Methods and Scientific Computing Practical	04 02
	C-IX C-IX	Topology of Metric spaces Tutorial	05 01
	C-X C-X	Ring Theory Tutorial	05 01
	GE-IV GE-IV	GE-IV (Theory) Tutorial	05 01
	SECC-II	SECC-II	04
			28
Semester	Course	Course Name	Credits
V	C-XI C-XI	Multivariable Calculus Tutorial	05 01
	C-XII C-XII	Linear Algebra Tutorial	05 01
	DSE-I DSE-I	Linear Programming Tutorial	05 01
	DSE-II DSE-II	Probability and Statistics Tutorial	05 01
			24
VI	C-XIII C-XIII	Complex analysis Tutorial	05 01
	C-XIV C-XIV	Group Theory-II Tutorial	05 01
	DSE-III DSE-III	Differential Geometry Tutorial	05 01
	DSE-IV	Number Theory/Project	06
			24
		TOTAL	**148**

B.A./B.SC.(HONOURS)-MATHEMATICS

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 5 papers suggested)

Generic Elective for non Mathematics students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper –

For practical paper: Mid term : 15 marks, End term : 60 marks, Practical- 25 marks

For non practical paper: Mid term : 20 marks, End term : 80 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper –

Practical paper-40 hours theory classes + 20 hours Practical classes

Non Practical paper-50 hours theory classes + 10 hours tutorial

CORE PAPER-1

CALCULUS

Objective: The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of mathematical nature as well as practical problems. More precisely, main target of this course is to explore the different tools for higher order derivatives, to plot the various curves and to solve the problems associated with differentiation and integration of vector functions.

Expected Outcomes: After completing the course, students are expected to be able to use Leibnitz's rule to evaluate derivatives of higher order, able to study the geometry of various types of functions, evaluate the area, volume using the techniques of integrations, able to identify the difference between scalar and vector, acquired knowledge on some the basic properties of vector functions.

UNIT-I

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of the type $e^{ax+b}\sin x, e^{ax+b}\cos x, (ax+b)^n \sin x, (ax+b)^n \cos x$, concavity and inflection points, asymptotes, curve tracing in Cartesian coordinates, tracing in polar coordinates of standard curves, L' Hospitals rule, Application in business ,economics and life sciences.

UNIT-II

Riemann integration as a limit of sum, integration by parts, Reduction formulae, derivations and illustrations of reduction formulae of the type

$\int \sin^n x\,dx, \int \cos^n x\,dx, \int \tan^n x\,dx, \int \sec^n x\,dx, \int (\log x)^n\,dx, \int \sin^n x \cos^n x\,dx,$

definite integral, integration by substitution.

UNIT-III

Volumes by slicing, disks and washers methods, volumes by cylindrical shells, parametric equations, parameterizing a curve, arc length, arc length of parametric curves, area of surface of revolution, techniques of sketching conics, reflection properties of conics, rotation of axes and second degree equations, classification into conics using the discriminant, polar equations of conics.

UNIT-IV

Triple product, introduction to vector functions, operations with vector-valued functions, limits and continuity of vector functions, differentiation and integration of vector functions, tangent and normal components of acceleration.

LIST OF PRACTICALS

(Using any software/ MATLAB to be performed on a Computer.)

1. Plotting the graphs of the functions $e^{ax+b}, \log(ax+b), 1/ax+b, \sin(ax+b), \cos(ax+b)$ and $|ax+b|$ to illustrate the effect of a and b on the graph.
2. Plotting the graphs of the polynomial of degree 4 and 5.
3. Sketching parametric curves (E.g. Trochoid, cycloid, hypocycloid).

4. Obtaining surface of revolution of curves.
5. Tracing of conics in Cartesian coordinates /polar coordinates.
6. Sketching ellipsoid, hyperboloid of one and two sheets (using Cartesian co-ordinates).

BOOKS RECOMMENDED:

1. H. Anton, I. Bivens and S. Davis, *Calculus*, 10thEd.,John Wiley and Sons (Asia)P.Ltd., Singapore, 2002.
2. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
3. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.

BOOKS FOR REFERNCE:

1. James Stewart, Single Variable Calculus, Early Transcendentals, Cengage Learning, 2016.
2. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi,2005.

CORE PAPER-II

DISCRETE MATHEMATICS

Objective: This is a preliminary course for the basic courses in mathematics and all its applications. The objective is to acquaint students with basic counting principles, set theory and logic, matrix theory and graph theory.

Expected Outcomes: The acquired knowledge will help students in simple mathematical modeling. They can study advance courses in mathematical modeling, computer science, statistics, physics, chemistry etc.

UNIT-I

Sets, relations, Equivalence relations, partial ordering, well ordering, axiom of choice, Zorn's lemma, Functions, cardinals and ordinals, countable and uncountable sets, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments, Well-ordering property of positive integers, Division algorithm, Divisibility and

Euclidean algorithm, Congruence relation between integers, modular arithmetic, Chinese remainder theorem, Fermat's little theorem.

UNIT-II

Principles of Mathematical Induction, pigeonhole principle, principle of inclusion and exclusion Fundamental Theorem of Arithmetic, permutation combination circular permutations binomial and multinomial theorem, Recurrence relations, generating functions, generating function from recurrence relations.

UNIT-III

Matrices, algebra of matrices, determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix, Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems, Eigen values, Eigen vectors of amatrix.

UNIT-IV

Graph terminology, types of graphs, sub-graphs, isomorphic graphs, Adjacency and incidence matrices, Paths, Cycles and connectivity, Eulerian and Hamiltonian paths, Planar graphs.

BOOKS RECOMMENDED:

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
2. Kenneth Rosen Discrete mathematics and its applications Mc Graw Hill Education 7th edition.
3. V Krishna Murthy, V. P. Mainra, J. L. Arora, An Introduction to Linear Algebra, Affiliated East-West Press Pvt. Ltd.

BOOKS FOR REFERENCE:

1. J. L. Mott, A. Kendel and T.P. Baker: Discrete mathematics for Computer Scientists and Mathematicians, Prentice Hall of India Pvt Ltd, 2008.

CORE PAPER-III

REAL ANALYSIS

Objective: The objective of the course is to have the knowledge on basic properties of the field of real numbers, studying Bolzano-Weierstrass Theorem , sequences and convergence of sequences, series of real numbers and its convergence etc. This is one of the core courses essential to start doing mathematics.

Expected Outcome: On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis and understand limits and their use in sequences, series, differentiation and integration. Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

UNIT-I

Review of Algebraic and Order Properties of R, ε-neighborhood of a point in R, Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima, The Completeness Property of R, The Archimedean Property, Density of Rational (and Irrational) numbers in R., Intervals, Interior point, , Open Sets, Closed sets, , Limit points of a set , Illustrations of Bolzano-Weierstrass theorem for sets, closure, interior and boundary of a set.

UNIT-II

Sequences and Subsequences, Bounded sequence, Convergent sequence, Limit of a sequence. Limit Theorems, Monotone Sequences,. Divergence Criteria, Bolzano Weierstrass Theorem for Sequences, Cauchy sequence, Cauchy's Convergence Criterion. Infinite series, convergence and divergence of infinite series, Cauchy Criterion, Tests for convergence: Comparison test, Limit Comparison test, Ratio Test, Cauchy's nth root test, Integral test, Alternating series, Leibniz test, Absolute and Conditional convergence.

UNIT-III

Limits of functions (epsilon-delta approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits, Infinite limits and limits at infinity, Continuous functions, sequential criterion for continuity & discontinuity. Algebra of continuous functions, Continuous functions on an interval, Boundedness Theorem, Maximum Minimum Theorem, Bolzano's Intermediate value theorem, location of roots theorem, preservation of

intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem, Monotone and Inverse Functions.

UNIT-IV

Differentiability of a function at a point & in an interval, Caratheodory's theorem, chain Rule, algebra of differentiable functions, Mean value theorem, interior extremum theorem. Rolle's theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities.

BOOKS RECOMMENDED:

1. R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis (3^{rd} Edition), John Wiley and Sons (Asia) Pvt. Ltd., Singapore,2002.
2. G. Das and S. Pattanayak, Fundamentals of Mathematical Analysis, TMH Publishing Co.

BOOKS FOR REFERENCE:

1. S.C. Mallik and S. Arora-Mathematical Analysis, New Age International Publications.
2. A.Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014.
3. Brian S. *Thomson*, Andrew. M. *Bruckner*, and Judith B. *Bruckner*, *Elementary Real Analysis*, Prentice Hall,2001.
4. Gerald G. Bilodeau, Paul R. Thie, G.E. Keough, *An Introduction to Analysis*, Jones & Bartlett, Second Edition, 2010.

CORE PAPER-IV

DIFFERENTIAL EQUATIONS

Objective: Differential Equations introduced by Leibnitz in 1676 models almost all Physical, Biological, Chemical systems in nature. The objective of this course is to familiarize the students with various methods of solving differential equations and to have a qualitative applications through models. The students have to solve problems to understand the methods.

Expected Outcomes: A student completing the course is able to solve differential equations and is able to model problems in nature using Ordinary Differential Equations. This is also

prerequisite for studying the course in Partial Differential Equations and models dealing with Partial Differential Equations.

UNIT-I

Differential equations and mathematical models, General, Particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equations and Bernoulli's equation, special integrating factors and transformations.

UNIT-II

Introduction to compartmental models, Exponential decay radioactivity (case study of detecting art forgeries), lake pollution model (with case study of Lake Burley Griffin), drug assimilation into the blood (case study of dull, dizzy and dead), exponential growth of population, Density dependent growth, Limited growth with harvesting.

UNIT-III

General solution of homogeneous equation of second order, principle of superposition, Wronskian, its properties and applications, method of undetermined coefficients, Method of variation of parameters, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation.

UNIT-IV

Equilibrium points, Interpretation of the phase plane, predatory-pray model and its analysis, epidemic model of influenza and its analysis, battle model and its analysis.

Practical / Lab work to be performed on a computer:

Modeling of the following problems using *Matlab / Mathematica / Maple* etc.

1. Plotting of second & third order solution family of differential equations.
2. Growth & Decay model (exponential case only).
3. (a) Lake pollution model (with constant/seasonal flow and pollution concentration)/
   (b) Case of single cold pill and a course of cold pills.
   (c) Limited growth of population (with and without harvesting).

4. (a) Predatory- prey model (basic volterra model, with density dependence, effect of DDT, two prey one predator).
   (b) Epidemic model of influenza (basic epidemic model, contagious for life, disease with carriers).
   (c) Battle model (basic battle model, jungle warfare, long range weapons).
5. Plotting of recursive sequences.

BOOKS RECOMMENDED:

1. J. Sinha Roy and S Padhy: A course of Ordinary and Partial differential equation Kalyani Publishers, New Delhi.
2. Belinda Barnes and Glenn R. Fulford, *Mathematical Modeling with Case Studies, A Differential Equation Approach using Maple and Matlab,* 2ndEd., Taylor and Francis group, London and New York,2009.

BOOKS FOR REFERENCE:

1. Simmons G F, Differential equation, Tata Mc Graw Hill, 1991.
2. Martin Braun, Differential Equations and their Applications, Springer International, Student Ed.
3. S. L. Ross, Differential Equations, 3rd Edition, John Wiley and Sons, India.
4. C.Y. Lin, Theory and Examples of Ordinary Differential Equations, World Scientific, 2011.

CORE PAPER-V THEORY OF REAL FUNCTIONS

Objective: The objective of the course is to have knowledge on limit theorems on functions, limits of functions, continuity of functions and its properties, uniform continuity, differentiability of functions, algebra of functions and Taylor's theorem and, its applications. The student how to deal with real functions and understands uniform continuity, mean value theorems.

Expected Outcome: On the completion of the course, students will have working

knowledge on the concepts and theorems of the elementary calculus of functions of one real variable. They will work out problems involving derivatives of function and their applications. They can use derivatives to analyze and sketch the graph of a function of one variable, can also obtain absolute value and relative extrema of functions. This knowledge is basic and students can take all other analysis courses after learning this course.

UNIT-I

L' Hospital's Rules, other Intermediate forms, Cauchy's mean value theorem, Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, Relative extreme, Taylor's series and Maclaurin's series, expansions of exponential and trigonometric functions.

UNIT-II

Riemann integration; inequalities of upper and lower sums; Riemann conditions of integrability. Riemann sum and definition of Riemann integral through Riemann sums; equivalence of two definitions; Riemann integrability of monotone and continuous functions; Properties of the Riemann integral; definition and integrability of piecewise continuous and monotone functions. Intermediate Value theorem for Integrals; Fundamental theorems of Calculus.

UNIT-III

Improper integrals: Convergence of Beta and Gamma functions. Pointwise and uniform convergence of sequence of functions, uniform convergence, Theorems on continuity, derivability and integrability of the limit function of a sequence of functions**.**

UNIT-IV

Series of functions; Theorems on the continuity and derivability of the sum function of a series of functions; Cauchy criterion for uniform convergence and Weierstrass M-Test Limit superior and Limit inferior, Power series, radius of convergence, Cauchy Hadamard Theorem, Differentiation and integration of power series; Abel's Theorem; Weierstrass Approximation Theorem.

BOOKS RECOMMENDED:

1. R.G. Bartle & D. R. Sherbert, Introduction to Real Analysis, John Wiley &Sons.
2. G. Das and S. Pattanayak, *Fundamentals of mathematics analysis*, TMH Publishing Co.

3. S. C. Mallik and S. Arora, *Mathematical analysis*, New Age International Ltd., New Delhi.

BOOK FOR REFERENCES:

1. A. Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014
2. K. A. Ross, *Elementary analysis: the theory of calculus*, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004A.Mattuck, Introduction toAnalysis, Prentice Hall
3. Charles G. Denlinger, *Elements of real analysis*, Jones and Bartlett (Student Edition), 2011.

CORE PAPER-VI
GROUP THEORY-I

Objective: Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce students to basic concepts of group theory and examples of groups and their properties. This course will lead to future basic courses in advanced mathematics, such as Group theory-II and ring theory.

Expected Outcomes: A student learning this course gets idea on concept and examples of groups and their properties . He understands cyclic groups, permutation groups, normal subgroups and related results. After this course he can opt for courses in ring theory, field theory, commutative algebras, linear classical groups etc. and can be apply this knowledge to problems in physics, computer science, economics and engineering.

UNIT-I

Symmetries of a square, Dihedral groups, definition and examples of groups including permutation groups and quaternion groups (illustration through matrices), elementary properties of groups, Subgroups and examples of subgroups, centralizer, normalizer, center of a group,

UNIT-II

Product of two subgroups, Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations, properties of permutations, even and odd permutations,

alternating group,

UNIT-III

Properties of·· cosets, Lagrange's theorem and consequences including Fermat's Little theorem, external direct product of a finite number of groups, normal subgroups, factor groups.

UNIT-IV

Cauchy's theorem for finite abelian groups, group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, first, second and third isomorphism theorems.

BOOKS RECOMMENDED:

1. Joseph A. Gallian, *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi
2. John B. Fraleigh, *A First Course in Abstract Algebra,* 7th Ed., Pearson, 2002.

BOOK FOR REFERENCES:

1. M. *Artin, Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. Joseph 1. Rotman, *An Introduction to the Theory of Groups,* 4th Ed., Springer Verlag, 1995.
3. I. N. Herstein, *Topics in Algebra,* Wiley Eastern Limited, India, 1975.

CORE PAPER-VII

PARTIAL DIFFERENTIAL EQUATIONS AND SYSTEM OF ODEs

Objective: The objective of this course is to understand basic methods for solving Partial Differential Equations of first order and second order. In the process, students will be exposed to Charpit's Method, Jacobi Method and solve wave equation, heat equation, Laplace Equation etc. They will also learn classification of Partial Differential Equations and system of ordinary differential equations.

Expected Outcomes: After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, non linear evolution equations etc. All these courses are important in engineering and industrial applications for solving boundary value problem.

UNIT-I

Partial Differential Equations - Basic concepts and Definitions, Mathematical Problems. First-Order Equations: Classification, Construction and Geometrical Interpretation. Method of Characteristics for obtaining General Solution of Quasi Linear Equations. Canonical Forms of First-order Linear Equations. Method of Separation of Variables for solving first order partial differential equations.

UNIT-II

Derivation of Heat equation, Wave equation and Laplace equation. Classification of second order linear equations as hyperbolic, parabolic or elliptic. Reduction of second order Linear Equations to canonical forms.

UNIT-III

The Cauchy problem, Cauchy problem of an infinite string. Initial Boundary Value Problems, Semi-Infinite String with a fixed end, Semi-Infinite String with a Free end. Equations with non-homogeneous boundary conditions, Non- Homogeneous Wave Equation. Method of separation of variables, Solving the Vibrating String Problem, Solving the Heat Conduction problem

UNIT-IV

Systems of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients, Basic Theory of linear systems in normal form, homogeneous linear systems with constant coefficients: Two Equations in two unknown functions, The method of successive approximations.

LIST OF PRACTICALS (USING ANY SOFTWARE)

(i) Solution of Cauchy problem for first order PDE.

(ii) Finding the characteristics for the first order PDE.

(iii) Plot the integral surfaces of a given first order PDE with initial data.

(iv) Solution of wave equation $\frac{\partial^2 u}{\partial t^2} - c\frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions

(a) $u(x, 0) = \phi(x), u_t(x,0) = \psi(x), x \in R, t>0$

(b) $u(x,0)=\phi(X), u_t(x, 0) = \psi(x), u(0,t)=0, x \in (0, \infty), t>0$

(c) $u(x, 0)=\phi(x), u_t(x, 0) = \psi(x), u_x(0,t) = 0, x \in (O, \infty), t>0$

(d) $u(x, 0) = \phi(x), ut(x, 0) = \psi(x), u(0,t) = 0, u(l,t) = 0, 0<x<l, t>0$

(v) Solution of wave equation $\frac{\partial u}{\partial t} - \kappa \frac{\partial^2 u}{\partial x^2} = 0$ for the following associated conditions

$u(x, 0) = f(x), u(0,t) = a, u(l, t) = b, 0<x<l, t>0$ $u(x, 0) = \psi(x), x \in R, 0<t<T$

$u(x,O)= \phi(x), u(0,t)=a, x \in (O, \infty), t \in O$

BOOKS RECOMMENDED :

1. Tyn Myint-U and Lokenath Debnath, *Linear Partial Differential Equations for Scientists and Engineers*, 4th edition, Birkhauser, Indian reprint, 2014.
2. S.L. Ross, *Differential equations,* 3rd Ed., John Wiley and Sons, India,

BOOK FOR REFERENCES:

1. J Sinha Roy and S Padhy: A course of Ordinary and Partial differential equation Kalyani Publishers,New Delhi,
2. Martha L Abell, James P Braselton, *Differential equations with MATHEMATICA*, 3rd Ed., Elsevier Academic Press, 2004.
3. Robert C. Mc Owen: Partial Differential Equations, Pearson Education Inc.
4. T Amarnath: An Elementary Course in Partial Differential Equations, Narosa Publications.

CORE PAPER-VIII

NUMERICAL METHODS AND SCIENTIFIC COMPUTING

Use of Scientific Calculator is allowed.

Objective: Calculation of error and approximation is a necessity in all real life, industrial and scientific computing. The objective of this course is to acquaint students with various numerical

methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of systems of linear equations and differential equations, interpolation, differentiation, evaluating integration.

Expected Outcome: Students can handle physical problems to find an approximate solution. After getting trained a student can opt for advance courses in numerical analysis in higher mathematics. Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

UNIT-I

Rate of convergence, Algorithms, Errors: Relative, Absolute, Round off, Truncation. Approximations in Scientific computing, Error propagation and amplification, conditioning, stability and accuracy, computer arithmetic mathematical software and libraries, visualisation, Numerical solution of non-linear equations: Bisection method, Regula- Falsi method, Secant method, Newton- Raphson method, Fixed-point Iteration method.

UNIT-II

Rate of convergence of the above methods. System of linear algebraic equations: Gaussian Elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis. Computing eigen-values and eigenvectors

UNIT-III

Polynomial interpolation: Existence uniqueness of interpolating polynomials. Lagrange and Newtons divided difference interpolation, Error in interpolation, Central difference & averaging operators, Gauss-forward and backward difference interpolation. Hermite and Spline interpolation, piecewise polynomial interpolation.

UNIT-IV

Numerical Integration: Some simple quadrature rules, Newton-Cotes rules, Trapezoidal rule, Simpsons rule, Simpsons *3/8th* rule, Numerical differentiation and integration, Chebyshev differentiation and FFT, Richard-son extrapolation.

PRACTICAL/LAB WORK TO BE PERFORMED ON A COMPUTER:

Use of computer aided software (CAS), for example *Matlab / Mathematica / Maple / Maxima* etc., for developing the following Numerical programs:

(i) Calculate the sum *1/1* + *1/2* + *1/3* + *1/4* + ---------- + 1/*N.*

(ii) To find the absolute value of an integer.

(iii) Enter- 100 integers into an array and sort them in an ascending' order.

(iv) Any two of the following

(a) Bisection Method

(b) Newton Raphson Method

(c) Secant Method

(d) Regular Falsi Method

(v) Gauss-Jacobi Method

(vi) SOR Method or Gauss-Siedel Method

(vii) Lagrange Interpolation or Newton Interpolation

(viii) Simpson's rule.

Note: For any of the CAS *Matlab / Mathematica / Maple / Maxima* etc., Data types-simple data types, floating data types, character data types, arithmetic operators and operator precedence, variables and constant declarations, expression, input/output, relational operators, logical operators and logical expressions, control statements and loop statements, Arrays should be introduced to the students.

BOOKS RECOMMENDED:

1. M. K. Jain, S. R. K. Iyengar and R. K. Jain, *Numerical Methods for Scientific and Engineering Computation,* New age International Publisher, India,
2. Michael Heath: Scientific Computing : An introductory Survey.

BOOK FOR REFERENCES:

1. B. Bradie, *A Friendly Introduction to Numerical Analysis,* Pearson Education, India, 2007.
2. Kendall E. Atkinson: An Introduction to Numerical Analysis
3. C. F. Gerald and P. O. Wheatley, *App.ied Numerical Analysis,* Pearson Education, India, 7th Edition, 2008
4. S. D. Conte & S. de Boor: Elementary Numerical Analysis: An Algorithmic Approach.

CORE PAPER-IX

TOPOLOGY OF METRIC SPACES

Objective: This is an introductory course in topology of metric spaces. The objective of this

course is to impart knowledge on open sets, closed sets, continuous functions, connectedness and compactness in metric spaces.

Expected Outcomes: On successful completion of the course students will learn to work with abstract topological spaces. This is a foundation course for all analysis courses in future.

UNIT-I

Metric spaces, sequences in metric spaces, Cauchy sequences, complete metric spaces, open and closed balls, neighborhood, open set, interior of a set, limit point of a set, closed set, diameter of a set, Cantor's theorem,

UNIT-II

Subspaces, Countability Axioms and Separability, Baire's Category theorem

UNIT-III

Continuity: Continuous mappings, Extension theorems, Real and Complex valued Continuous functions, Uniform continuity, Homeomorphism, Equivalent metrics and isometry, uniform convergence of sequences of functions.

UNIT-IV

Contraction mappings and applications, connectedness, Local connectedness, Bounded sets and compactness, other characterization of compactness, continuous functions on compact spaces,

BOOKS RECOMMENDED:

1. Satish Shirali & Harikishan L. Vasudeva, *Metric Spaces*, Springer Verlag London (2006) (First Indian Reprint 2009)

BOOK FOR REFERENCES:

1. S. Kumaresan, *Topology of Metric Spaces*, Narosa Publishing House, Second Edition 2011.

CORE PAPER-X
RING THEORY

Objective: This is a second course in modern algebra which deals with ring theory. Some

basics of ring theory like rings, subrings, ideals, ring homomorphisms and their properties and. This course is an integral part of any course on Modern algebra the ohers being Group theory and Field Theory.

Expected Outcomes: After completing this course, this will help students to continue more courses in advanced Ring theory modules, Galois groups.

UNIT-I

Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring, Ideals, ideal generated by a subset of a ring, factor rings, operations on ideals.

UNIT-II

Prime and maximal ideals. Ring homomorphisms, properties of ring homomorphisms, Isomorphism theorems I, II and III, field of quotients.

UNIT-III

Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion, Unique factorization in Z[x].

UNIT-IV

Divisibility in integral domains, irreducibles, primes, unique factorization domains, Euclidean domains.

BOOKS RECOMMENDED:

1. Joseph A. Gallian, *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi.
2. John B. Fraleigh, *A First Course in Abstract Algebra,* 7th Ed., Pearson, 2002.

BOOK FOR REFERENCES:

1. M. *Artin, Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. Joseph 1. Rotman, *An Introduction to the Theory of Groups,* 4th Ed., Springer Verlag, 1995.
3. I. N. Herstein, *Topics in Algebra,* Wiley Eastern Limited, India, 1975.

CORE PAPER - XI

MULTIVARIATE CALCULUS

Objective: The objective of this course to introduce functions of several variable to a student after he has taken a course in one variable calculus. The course will introduce partial derivatives and several of its consequences and will introduce double and triple integrals along with line integrals which are fundamental to all streams where calculus can be used.

Expected Outcomes: After reading this course a student will be able to calculate partial derivatives, directional derivatives, extreme values and can calculate double, triple and line integrals. He will have idea of basic vector calculus including green's theorem, divergence theorem.and stokes theorem. He can take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.

UNIT-I

Functions of several variables, limit and continuity of functions of two variables. Partial differentiation, total differentiability and differentiability, sufficient condition for differentiability. Chain rule for one and two independent parameters, directional derivatives, the gradient, maximal and normal property of the gradient, tangent planes.

UNIT-II

Extrema of functions of two variables, method of Lagrange multipliers, constrained optimization problems.

Definition of vector field, divergence and curl, Double integration over rectangular region, double integration over nonrectangular region. Double integrals in polar co-ordinates,

UNIT-III

Triple integrals, Triple integral over a parallelepiped and solid regions. Volume by triple integrals, cylindrical and spherical co-ordinates. Change of variables in double integrals and triple integrals.

UNIT-IV

Line integrals, Applications of line integrals: Mass and Work. Fundamental theorem for line integrals, conservativevector fields, independence of path. Green's theorem, surface integrals,

integrals over parametrically defined surfaces. Stokes' theorem, The Divergence theorem.

BOOKS RECOMMENDED:

1. M. J, Strauss, G. L. Bradley and K. J. Smith, Calculus (3rd Edition), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
2. S C Mallik and S Arora: Mathematical Analysis, New Age International Publications

BOOK FOR REFERENCES:

1. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi, 2005.
2. E. Marsden, A.J. Tromba and A. Weinstein, *Basic Multivariable Calculus*, Springer(SIE). Indian reprint, 2005.
3. James Stewart, *Multivariable Calculus, Concepts and Contexts*,2nd Ed., Brooks/*Cole*, Thomson Learning, USA, 2001.
4. S Ghorpade, B V Limaye, Multivariable calculus, Springer international edition

CORE PAPER –XII
LINEAR ALGEBRA

Objective: Linear algebra is a basic course in almost all branches of science. A full course in undergraduate program will help students in finding real life applications later.. The objective of this course is to introduce a student the basics of linear algebra and some of its application

Expected Outcomes: The student will use this knowledge wherever he/She goes after undergraduate program. It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics and what not.

UNIT-I

Vector spaces, subspaces, examples, algebra of subs paces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.

Linear transformations, null space, range, rank and nullity of a linear transformation.

UNIT-II

Matrix representation of a linear transformation, Algebra of linear transformations, Isomorphisms, Isomorphism theorems, invertibility and isomorphisms, change of coordinate

matrix, Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators, Basics of Fields.

UNIT-III

Eigenspaces of a linear operator, diagonalizability. Invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator, Inner product spaces and norms, Gram-Schmidt orthogonalization process,

UNIT-IV

Orthogonal complements, Bessel's inequality, the adjoint of a linear operator, Least Squares Approximation, minimal solutions to systems of linear equations, Normal and self-adjoint operators, Orthogonal projections and Spectral theorem.

BOOKS RECOMMENDED:

1. Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, *Linear Algebra* (4th Edition), Pearson, 2018.

BOOKS FOR REFERENCE:

1. Rao A R and Bhim Sankaram Linear Algebra Hindustan Publishing house.
2. Gilbert Strang, Linear Algebra and its Applications, Thomson, 2007.

CORE PAPER-XIII
COMPLEX ANALYSIS

Objectives: The objective of the courseis aimed to provide an introduction to the theories for functions of a complex variable. The concepts of analyticity and complex integration are presented. The Cauchy's theorem and its applications, the calculus of residues and its applications are discussed in detail.

Expected Outcomes: Students will be able to handle certain integrals not evaluated earlier and will know a technique for counting the zeros of polynomials. This course is prerequisite to many other advance analysis courses.

UNIT-I

Complex Numbers and Complex plane: Basic properties, convergence, Sets in the Complex plane, Functions on the Complex plane: Continuous functions, holomorphic functions, power series, Integration along curves.

UNIT-II

Cauchy's Theorem and Its Applications: Goursat's theorem, Local existence of primitives and Cauchy's theorem in a disc, Evaluation of some integrals, Cauchy's integral formulas.

UNIT-III

Morera's theorem, Sequences of holomorphic functions, Holomorphic functions defined in terms of integrals, Schwarz reflection principle, Zeros and poles.

UNIT-IV

Meromorphic Functions and the Logarithm: The residue formula, Examples, Singularities and meromorphic functions, The argument principle and applications, The complex logarithm.

BOOKS RECOMMENDED:

1. Elias M. Stein & Rami Shakarchi, Complex Analysis, Princeton University press, Princeton and Oxford, 2003.

BOOKS FOR REFERENCE:

1. James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications* (Eighth Edition), McGraw - Hill International Edition, 2009.
2. G. F. Simmons, *Introduction to Topology and Modern Analysis*, Mcgraw-Hill, Edition 2004.
3. Joseph Bak and Donald 1. Newman, *Complex analysis* (2ndEdition), Undergraduate Texts in Mathematics, Springer-Verlag New York, Inc., New York, 1997.

CORE PAPER-XIV
GROUP-THEORY-II

Objective: The objective of this course **i**s to be exposed to more advanced results in group theory after completing a basic course. The course introduces results on automorphism, commutator subgroup, group action Sylow theorems etc.

Expected Outcomes: The knowledge of automorphism helps to study more on field theory. Students learn on direct products, group actions, class equations and their applications with proof of all results . This course helps to opt for more advanced courses in algebra and linear classical groups.

UNIT-I

Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups. characteristic subgroups.

UNIT-II

Commutator subgroup and its properties, Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental Theorem of finite abelian groups.

UNIT-III

Group actions, stabilizers and kernels, permutation representation associated with a given group action, Application of group actions: Generalized Cayley's theorem, Index theorem.

UNIT-IV

Groupsactingonthemselvesbyconjugation, classequationandconsequences, conjugacyin S_n, p - groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of A_n for $n \neq 5$, non-simplicity tests.

BOOKS RECOMMENDED:

1. John B. Fraleigh, *A First Course in Abstract Algebra,* Narosa Publishing House, New Delhi.

2. Joseph A. Gallian *Contemporary Abstract Algebra* (4th Edition), Narosa Publishing House, New Delhi.

BOOK FOR REFERENCES:

1. M. Artin, *Abstract Algebra,* 2nd Ed., Pearson, 2011.
2. David S. Dummit and Richard M. Foote, *Abstract Algebra,* 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2004.
3. J.R. Durbin, *Modern Algebra,* John Wiley & Sons, New York Inc., 2000.

Discipline Specific Elective Paper-1

LINEAR PROGRAMMING

Objective: The objective of this course is to familiarize industrial problems to students with various methods of solving Linear Programming Problems, Transportation Problems, Assignment Problems and their applications. Also, students will know the application of linear Programming method in Game Theory.

Expected Outcomes: More knowledge on this topic in higher studies will help students to deal industrial models. This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.

UNIT-I

Introduction to linear Programming problem, Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method, Big-M method and their comparison.

UNIT-II

Duality, formulation of the dual problem, primal-dual relationships, Fundamental Theorem of Duality, economic interpretation of the dual.

UNIT-III

Transportation problem and its mathematical formulation, northwest-corner method least cost method and Vogel approximation method for determination of starting basic solution, algorithm for solving transportation problem. Assignment problem and its mathematical formulation, Hungarian method for solving assignment problem.

UNIT-IV

Game theory: formulation of two person zero sum games, solving two person zero sum games, games with mixed strategies, graphical solution procedure, linear programming solution of games.

BOOKS RECOMMENDED:

1. Kanti Swarup, Operations Research, Sultan Chand & Sons, New Delhi. Books.

BOOKS FOR REFERENCE:

1. S. Hillier and G.J. Lieberman, *Introduction to Operations Research- Concepts and Cases* (9th Edition), TataMcGraw Hill, 2010.
2. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, *Linear Programming and Network Flows* (2nd edition), John Wiley and Sons, India, 2004.
3. G. Hadley, *Linear Programming*, Narosa Publishing House, New Delhi, 2002.
4. Hamdy A. Taha, *Operations Research: An Introduction* (10th edition), Pearson, 2017.

Discipline Specific Elective Paper-II

Probability and Statistics

Objective: The objective of the course is to expertise the student to the extensive role of statistics in everyday life and computation, which has made this course a core course in all branches of mathematical and engineering sciences.

Expected Outcome: The students shall learn probability and statistics for various random variables, multivariate distributions, correlations and relations. He shall learn law of large numbers and shall be able to do basic numerical calculations.

UNIT-I

Probability: Introduction, Sample spaces, Events, probability of events, rules of probability, conditional probability, independent events, Bayes's theorem,

Probability distributions and probability densities: random variables, probability distributions, continuous random variables, probability density functions, Multivariate distributions, joint distribution function, joint probability density function, marginal distributions, conditional distributions, conditional density, The theory in practice, data analysis, frequency distribution, class limits, class frequencies, class boundary, class interval, class mark, skewed data, multimodality, graphical representation of the data, measures of location and variability. Population, sample, parameters

UNIT-II

Mathematical Expectation: Introduction, expected value of random variable, moments, Chebyshev's theorem, moment generating functions, product moments, moments of linear combinations of random variables, conditional expectations, the theory in practice, measures of location, dispersion

UNIT-III

Special probability distributions: Discrete Uniform distribution, binomial distribution, Negative binomial, geometric, hypergeometric, poisson, multinomial distribution, multinomial. Special probability densities; Uniform distribution, gamma, exponential, gamma, chi-square, beta distribution, normal, normal approximation to binomial, bivariate normal, Functions of random variables, distribution function technique, transformation technique-one variable, several variables, moment generating function technique,

UNIT-IV

Sampling distributions: population distribution, random sample, sampling distribution of mean, Central Limit theorem, Sampling distribution of the mean: finite populations, chi-square, t, F distributions, regression and correlation: Bivariate regression, regression equation, Linear regression, method of least squares.

BOOKS RECOMMENDED:

1. Irwin Miller and Marylees Miller, *John E. Freund's Mathematical Statistics with Applications* (8thEdition), Pearson, Asia, 2014.

BOOK FOR REFERENCES:

l. Robert V. Hogg, Joseph W. McKean and Allen T. Craig, *Introduction to Mathematical Statistics,* Pearson Education, Asia, 2007.

2. Alexander M. Mood, Franklin A. Graybill and Duane C. Boes, *Introduction to the Theory of Statistics*, (3rd Edition), Tata McGraw- Hill, Reprint 2007.

3. Sheldon Ross, *Introduction to Probability Models* (9th Edition), Academic Press, Indian Reprint, 2007.

Discipline Specific Elective Paper-III

DIFFERENTIAL GEOMETRY

Objective: After learning methods on curve tracing and Analytic Geometry, the objective of this course is to teach Differential geometry of curves and surfaces which trains a student using tools in calculus to derive intrinsic properties of plain curves and space curves.
Expected Outcome: After completing this course a student will learn on serret-Frenet formulae, relation between tangent, normal and binormals, first and second fundamental forms and ideas on various curvatures. He has scope to take more advanced courses in surface theory and geometry.

UNIT-I

Theory of Space Curves: Space curves, Planer curves, Curvature, torsion and Serret-Frenet formulae. Osculating circles, Osculating circles and spheres. Existence of space curves.

UNIT-II

Evolutes and involutes of curves. Theory of Surfaces: Parametric curves on surfaces, surfaces of revolution, helicoids, Direction coefficients. First and second Fundamental forms.

UNIT-III

Principal and Gaussian curvatures. Lines of curvature, Euler's theorem. Rodrigue's formula, Conjugate and Asymptotic lines. Developables: Developable associated with space curves and curves on surfaces, Minimal surfaces.

UNIT-IV

Geodesics: Canonical geodesic equations. Nature of geodesics on a surface of revolution. Clairaut's theorem. Normal property of geodesics. Torsion of a geodesic. Geodesic curvature. Gauss-Bonnet theorem. Surfaces of constant curvature.

BOOKS RECOMMENDED:

1. T.J. Willmore, *An Introduction to Differential Geometry*, Dover Publications, 2012.

BOOK FOR REFERENCES:

1. A. Pressley, Elementary Differential Geometry, Springer Internationl Edition, 2014.
2. O'Neill, *Elementary Differential Geometry*, 2nd Ed., Academic Press, 2006.
3. C.E. Weatherburn, *Differential Geometry of Three Dimensions*, Cambridge University Press 2003.
4. D.J. Struik, *Lectures on Classical Differential Geometry*, Dover Publications, 1988.

Discipline Specific Elective Paper-IV
NUMBER THEORY

Objective: The main objective of this course is to build up the basic theory of the integers, prime numbers and their primitive roots, the theory of congruence, quadratic reciprocity law and number theoretic functions, Fermat's last theorem, to acquire knowledge in cryptography specially in RSA encryption and decryption.

Expected Outcomes: Upon successful completion of this course students will able to know the basic definitions and theorems in number theory, to identify order of an integer, primitive roots, Euler's criterion, the Legendre symbol, Jacobi symbol and their properties, to understand modular arithmetic number-theoretic functions and apply them to cryptography.

UNIT- I

Linear Diophantine equation, prime counting function, statement of prime number theorem, Goldbach conjecture, linear congruences, complete set of residues, Chinese remainder theorem, Fermat's little theorem, Wilson's theorem.

UNIT-II

Number theoretic functions, sum and number of divisors, totally multiplicative functions, definition and properties of the Dirichlet product, the Mobius inversion formula, the greatest integer function, Euler's phi-function, Euler's theorem, reduced set of residues, some properties of Euler's phi-function.

UNIT-III

Order of an integer modulo *n*, primitive roots for primes, composite numbers having primitive roots, Euler's criterion, the Legendre symbol, Jacobi symbol and their properties, quadratic reciprocity, quadratic congruences with composite moduli.

UNIT-IV

Affine ciphers, Hill ciphers, p vg h v g gv ublic key cryptography, RSA encryption and decryption, the equation $x^2+y^2=z^2$, Fermat's Last Theorem.

BOOKS RECOMMENDED:

1. David M.Burton, *Elementary Number Theory* (6thEdition), TataMcGraw-Hill Edition, Indian reprint, 2007.

BOOK FOR REFERENCES:

1. Thomas Koshy, *Elementary Number Theory with Applications (*2nd Edition),

Academic Press, 2007.
2. Neville Robinns, *Beginning Number Theory* (2ndEdition), Narosa Publishing House Pvt. Limited, Delhi,2007.

OR

Discipline Specific Elective Paper-IV

PROJECT

Guidelines for +3 (CBCS) Under Graduate(B.A./B.Sc.) Mathematics (Honours) Project

1. Any student registering for doing project is required to inform the HOD, Mathematics the name of his/her project supervisor(s) at the time of pre-registration.
2. By the last date of add and drop, the student must submit the "Project Registration Form'', appended as Annexure-I to this document, to the HOD, Mathematics. This form requires a project title, the signature of the student, signature(s) of the supervisor(s) and the signature of the HOD, Mathematics of the college/university.
3. The project supervisor(s) should normally be a faculty member(s) of the Department of Mathematics and the topic of the project should be relevant to Mathematical Sciences. If a student desires to have a Project Supervisor from another department of the institute, the prior approval for the same should be sought from the HOD, Mathematics.
4. A student may have at the most two Project Supervisors. If a student desires to have two supervisors, at least one of these should be from the Department of Mathematics.
5. The student(s) will be required to submit one progress report and a final report of the Project to the HOD, Mathematics. The progress report is to be submitted in the sixth week of the semester in which the project is undertaken. The hard copy and an electronic version of the final report of the project should be submitted two weeks before the end semester examination of the sixth semester. In addition the student will be required to make an oral presentation in front of a committee **(**Under Graduate (B.A./ B.Sc.) Mathematics (Honours) Project committee of the college in which supervisor is one of the members) constituted for this purpose by the Department of Mathematics of the college.
6. The student is expected to devote about 100 hours. The project will be evaluated by a committee of faculty members at the end of the sixth semester. The committee will be constituted by the Under Graduate (B.A./B.Sc.) Mathematics (Honours) Project committee of the college keeping in mind the areas of project they will cover.

7. In each semester the grade of a student will be awarded by the committee in consultation with his/her project supervisor(s). The project is evaluated on the basis of the following components: First Progress Reports: 20%; second/Final Report: 30%; Presentation: 30%; Viva: 20%.
8. Project progress reports should normally be no longer than 250 words and final report should not be longer than 40 A4 size pages in double spacing. Each final project report need to contain the following: (i) Abstract (ii) Table of contents (iii) Review of literature (iv) Main text(v) List of references. It may be desirable to arrange the main text as an introduction, the main body and conclusions.

GUIDELINES FOR STRUCTURING CONTENTS

Sequence of Contents:

The following sequence for the thesis organization should be followed:

(i) Preliminaries	Title Page
	Certificate
	Abstract/Synopsis
	Acknowledgement and/ or Dedication
	Table of Contents
	List of Figures, Tables, Illustrations,
	Symbols, etc (wherever applicable)
(ii) Text of Thesis	Introduction
	The body of the thesis, summary and conclusions
(iii) Reference Material	List of References, Bibliography
(iv) Appendices	

NOTE:

1. *Synopsis/Abstract* should be self-complete and contain no citations for which the thesis has to

be referred.

2. The Text of the Thesis

(a) Introduction:

Introduction may be the first chapter or its first major division. In either case, it should contain a brief statement of the problem investigated. It should outline the scope, aim, general character of the research and the reasons for the student's interest in the problem.

(b) The body of Thesis

This is the substance of the dissertation inclusive of all divisions, subdivisions, tables, figures, etc.

(c) Summary and conclusions

If required, these are given as the last major division (chapter) of the text. A further and final subdivision titled "*Scope* for Further Work" may follow.

(d) Reference material

The list of references should appear as a consolidated list with references listed either alphabetically or sequentially as they appear in the text of the thesis.

For referencing an article in a scientific journal the suggested format should contain the following information: authors, title, name of journal, volume number, page numbers and year. For referencing an article published in a book, the suggested format should contain, authors, the title of the book, editors, publisher, year, page number of the article in the book being referred to. For referencing a thesis the suggested format should contain, author, the title of thesis, where thesis was submitted or awarded, year.

ANNEXURE – I
DEPARTMENT OF MATHEMATICS
PROJECT REGISTRATION FORM

Name of the college/university: Name of the student:

Roll No. :

e-mail :

Name of the supervisor(s):

Department(s):

e-mail(s):

Title of the Project: Signature of the Student: Signature of supervisor(s): (i)

(ii) Signature of HOD, Mathematics:

GENERIC ELECTIVES (TWO PAPER CHOICE)

Generic Elective Paper I CALCULUS

AND DIFFERENTIAL EQUATIONS

Objective: Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.

Excepted Outcomes: After completing the course, students are expected to be able to apply knowledge of calculus and differential equations in the areas of their own interest.

UNIT-I

Curvature, Asymptotes, Tracing of Curves (Catenary, Cycloid, Folium of Descartes), Rectification, Quadrature, Elementary ideas about Sphere, Cones, Cylinders and Conicoids.

UNIT-II

Reviewoflimits,continuityanddifferentiabilityoffunctionsofonevariable and their properties, Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's theorem and Cauchy's form of remainder, Taylor's series, Maclaurin's series of $sinx$, $cosx$, e^x, $\log(1+x)$, $(1+x)^m$, L' Hospital's Rule, other Intermediate forms.

UNIT-III

Limitand Continuity of functions of several variables, Partial derivatives, Partial derivatives of higher orders, Homogeneous functions, Change of variables, Mean value theorem, Taylors theorem and Maclaurin's theorem for functions of two variables(statements &applications), Maxima and Minima of functions of two and three variables, Implicit functions, Lagrange's multipliers (Formulae & its applications), Concepts of Multiple integrals & its applications.

UNIT-IV

Ordinary Differential Equations of order one and degree one (variables separable, homogeneous, exact and linear). Equations of order one but higher degree. Second order linear equations with constant coefficients, homogeneous forms, Second order equations with variable coefficients, Variation of parameters.

BOOKS RECOMMENDED:

1. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
2. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.
3. S.C. Mallik and S. Arora-Mathematical Analysis, New Age International Publications.
4. J. Sinharoy and S. Padhy: A Course of Ordinary and Partial Differential Equations, Kalyani Publishers.

BOOK FOR REFERENCES:

1. H.Anton,I.Bivens and S.Davis,*Calculus*,10th Ed.,John Wiley and Sons (Asia) P. Ltd., Singapore, 2002.
2. Shanti Narayan and P.K. Mittal-Analytical Solid Geometry, S. Chand & Company Pvt. Ltd., New Delhi.
3. Martin Braun-Differential Equations and their Applications-Martin Braun, Springer International.
4. B. P.Acharya and D. C.Sahu: Analytical Geometry of Quadratic Surfaces, Kalyani Publishers.

Generic Elective Paper II

ALGEBRA

Objective: This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural

numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces, matrices are introduced here.

Expected Outcomes: The acquired knowledge will help students to study further courses in mathematics like, group theory, ring theory and field theory and linear algebra. It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.

UNIT-I

Sets, relations, Equivalence relations, partial ordering, well ordering, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments

UNIT-II

Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers, Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

UNIT-III

Matrices, algebra of matrices, determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix, Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems,.

UNIT-IV

Vector spaces and subspaces, examples, linear independence, linear dependence, basis, dimension, examples, Introduction to linear transformations, matrix representation of a linear transformation, Eigen values, Eigen vectors of amatrix.

BOOKS RECOMMENDED:

1. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.
2. V Krishna Murthy, V P Mainra, J L Arora, An Introduction to Linear Algebra ,

Affiliated East-West Press Pvt. Ltd

BOOKS FOR REFERENCE:

1. David C. Lay, Linear Algebra and its Applications,3rd Ed., Pearson Education Asia, Indian Reprint,2007.
2. B S Vatsa and Suchi Vatsa Theory of Matrices New age International third edition 2010.
3. Ward Cheney, David kincaid. Linear algebra theory and applications, Jones and Bartlett , 2010.

OR

GENERIC ELECTIVES (FOUR PAPERS CHOICE)

Generic Elective Paper I CALCULUS AND

DIFFERENTIAL EQUATIONS

Objective: Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.

Excepted Outcomes: After completing the course, students are expected to be able to apply knowledge of calculus and differential equations in the areas of their own interest.

UNIT-I

Curvature, Asymptotes, Tracing of Curves (Catenary, Cycloid, Folium of Descartes), Rectification, Quadrature, Elementary ideas about Sphere, Cones, Cylinders and Conicoids.

UNIT-II

Reviewoflimits,continuityanddifferentiabilityoffunctionsofonevariable and their properties, Rolle's theorem, Mean value theorems, Taylor's theorem with Lagrange's theorem and Cauchy's form of remainder, Taylor's series, Maclaurin's series of $\sin x$, $\cos x$, e^x, $\log(1+x)$, $(1+x)^m$, L' Hospital's Rule, other Intermediate forms.

UNIT-III

Limitand Continuity of functions of several variables, Partial derivatives, Partial derivatives of higher orders,

Homogeneous functions, Change of variables, Mean value theorem, Taylors theorem and Maclaurin's theorem for functions of two variables(statements &applications), Maxima and Minima of functions of two and three variables, Implicit functions, Lagranges multipliers (Formulae & its applications), Concepts of Multiple integrals & its applications.

UNIT-IV

Ordinary Differential Equations of order one and degree one (variables separable, homogeneous, exact and linear). Equations of order one but higher degree.Second order linear equations with constant coefficients, homogeneous forms, Second order equations with variable coefficients, Variation of parameters.

BOOKS RECOMMENDED:

1. Shanti Narayan, P. K. Mittal, Differential Calculus, S. Chand, 2014.
2. Shanti Narayan, P. K. Mittal, Integral Calculus, S. Chand, 2014.
3. S.C. Mallik and S. Arora-Mathematical Analysis, New Age InternationalPublications.
4. J. Sinharoy and S. Padhy: A Course of Ordinary and Partial Differential Equations, Kalyani Publishers.

BOOKS FOR REFERENCE:

1. H. Anton, I. Bivens and S.Davis, *Calculus*, 10th Ed., John Wiley and Sons (Asia) P.Ltd., Singapore, 2002.
2. Shanti Narayan and P.K. Mittal-Analytical Solid Geometry, S. Chand & Company Pvt. Ltd., New Delhi.
3. Martin Braun-Differential Equations and their Applications-Martin Braun, Springer International.
4. B. P.Acharya and D. C. Sahu: Analytical Geometry of Quadratic Surfaces, Kalyani Publishers.

Generic Elective Paper II

ALGEBRA

Objective: This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces, matrices are introduced here.

Expected Outcomes: The acquired knowledge will help students to study further courses in mathematics like, group theory, ring theory and field theory and linear algebra. It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.

UNIT-I

Sets ,relations, Equivalence relations, partial ordering, well ordering, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, statements, compound statements, proofs in Mathematics, Truth tables, Algebra of propositions, logical arguments

UNIT-II

Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers, Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

UNIT-III

Matrices, algebra of matrices , determinants, fundamental properties, minors and cofactors, product of determinant, adjoint and inverse of a matrix, Rank and nullity of a matrix,

Systems of linear equations, row reduction and echelon forms, solution sets of linear systems, applications of linear systems,.

UNIT-IV

Vector spaces and subspaces, examples, linear independence, linear dependence, basis, dimension, examples, Introduction to linear transformations, ,matrix representation of a linear transformation, Eigen values, Eigen vectors of amatrix.

BOOKS RECOMMENDED:

1 Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, 3rd Ed., Pearson Education (Singapore) P. Ltd., Indian Reprint, 2005.

2 V Krishna Murthy, V P Mainra, J L Arora, An Introduction to Linear Algebra , Affiliated East-West Press Pvt. Ltd

BOOKS FOR REFERENCE:

1. David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint,2007.

2. B S Vatsa and Suchi Vatsa Theory of Matrices New age International third edition 2010.

3. Ward Cheney, David Kincaid. Linear algebra theory and applications, Jones and Bartlett ,2010

Generic Elective Paper III

REAL ANALYSIS

Objective: The objective of the course is to have the knowledge on basic properties of the field of real numbers, studying Bolzano-Weiersstrass Theorem , sequences and convergence of sequences, series of real numbers and its convergence etc. This is one of the core courses essential to start doing mathematics.

Expected Outcome: On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real

analysis and understand limits and their use in sequences, series, differentiation and integration. Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

UNIT-I

Review of Algebraic and Order Properties of R, ε-neighborhood of a point in R, Idea of countable sets, uncountable sets and uncountability of R, Bounded above sets, Bounded below sets, Bounded Sets, Unbounded sets, Suprema and Infima, The Completeness Property of R, The Archimedean Property, Density of Rational (and Irrational) numbers in R.

UNIT-II

Intervals, Interior point, Open Sets, Closed sets, Limit points of a set , Illustrations of Bolzano- Weierstrass theorem for sets, closure, interior and boundary of a set. Sequences, Bounded sequence, Convergent sequence, Limit of a sequence. Limit Theorems, Monotone Sequences, Monotone Convergence Theorem. Subsequences, Divergence Criteria, Monotone Subsequence Theorem (statement only). Bolzano Weierstrass Theorem for Sequences, Cauchy sequence, Cauchy's Convergence Criterion.

UNIT-III

Infinite series, convergence and divergence of infinite series, Cauchy Criterion, Tests for convergence: Comparison test, Limit Comparison test, Ratio Test, Cauchy's nth root test, Integral test, Alternating series, Leibniz test, Absolute and Conditional convergence.

UNIT-IV

Sequence and Series of functions, pointwise and uniform convergences, M_n test, M test, statement of results about uniform convergence, differentiability and integrability of function, power series and radius of convergence.

BOOKS RECOMMENDED:

1. S.C. Mallik and S. Arora- Mathematical Analysis, New Age InternationalPublications.
2. G. Das and S. Pattanayak, Fundamentals of Mathematical Analysis, TMH Publishing Co.

BOOKS FOR REFERENCE:

1. R.G. Bartle and D. R. Sherbert, Introduction to Real Analysis (3rd Edition), John Wiley and Sons (Asia) Pvt. Ltd., Singapore,2002.
2. A. Kumar, S. Kumaresan, *A basic course in Real Analysis*, CRC Press, 2014.
3. Brian S. *Thomson*, Andrew. M. *Bruckner*, and Judith B. *Bruckner*, *Elementary Real Analysis*, Prentice Hall,2001.
4. Gerald G. Bilodeau, Paul R. Thie, G.E. Keough, *An Introduction to Analysis*, Jones & Bartlett, Second Edition, 2010.

Generic Elective Paper IV NUMERICAL

METHODS

Objective: Calculation of error and approximation is a necessity in all real life, industrial and scientific computing. The objective of this course is to acquaint students with various numerical methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of nonlinear equations, systems of linear equations, differential equations, Interpolation, differentiation, evaluating integration.

Expected Outcome: Students can handle physical problems to find an approximated solution. After getting trained a student can opt for advance courses in Numerical analysis in higher mathematics. Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

UNIT-I

Algorithms, Convergence, Bisection method, False position method, Fixed point iteration method, Newton's method, Secant method.

Gauss Elimination and Gauss Jordan methods, LU decomposition, Gauss-Jacobi, Gauss- Siedel.

UNIT-II

Lagrange and Newton interpolation: linear and higher order, finite difference operators.

UNIT-III

Numerical differentiation: forward difference, backward difference and central Difference.

UNIT-IV

Integration: trapezoidal rule, Simpson's rule, Euler's method, Runge-Kutta methods of orders two and four.

BOOKS RECOMMENDED:

1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, *Numerical Methods for Scientific and Engineering Computation*, 5th Ed., New age International Publisher, India, 2007.

BOOKS FOR REFERENCE:

1. S. S. Sastry, Introductory method for Numerical Analysis, PHI New Delhi,2012.
2. S. D. Conte and Carl De Boor, Elementary Numerical Analysis, Mc Graw Hill, 1980.

Course structure of UG Physics Honors

SEMESTER	COURSE OPTED	COURSE NAME	Credits
I 4 Papers (400 Marks)	Ability Enhancement Compulsory Course-I	AECC-1	4
	Core course-I	Mathematical Physics-I	4
	Core Course-I Practical/Tutorial	Mathematical Physics-I Lab	2
	Core course-II	Mechanics	4
	Core Course-II Practical/Tutorial	Mechanics Lab	2
	Generic Elective -1	GE-1	4
	Generic Elective -1	Practical/Tutorial	2
II 4 Papers (400 Marks)	Ability Enhancement Compulsory Course-II	AECC-II	4
	Core course-III	Electricity and Magnetism	4
	Core Course-III Practical/Tutorial	Electricity and Magnetism Lab	2
	Core course-IV	Waves and Optics	4
	Core Course-IV Practical/Tutorial	Waves and Optics Lab	2
	Generic Elective -2	GE-2	4
	Generic Elective -2	Practical/Tutorial	2
III 5 Papers (500 Marks)	Core course-V	Mathematical Physics-II	4
	Core Course-V Practical/Tutorial	Mathematical Physics-II Lab	2
	Core course-VI	Thermal Physics	4
	Core Course-VI Practical/Tutorial	Thermal Physics Lab	2
	Core course-VII	Analog Systems and Applications	4
	Core Course-VII Practical/Tutorial	Analog Systems & Applications Lab	2
	Skill Enhancement Compulsory Course - 1	SECC-1	4
	Generic Elective -3	GE-3	4
	Generic Elective -3	Practical/Tutorial	2
IV 5 Papers (500 Marks)	Core course-VIII	Mathematical Physics III	4
	Core Course-VIII Practical/Tutorial	Mathematical Physics-III Lab	2
	Core course-IX	Elements of Modern Physics	4
	Core Course-IX Practical/Tutorial	Elements of Modern Physics Lab	2
	Core course-X	Digital Systems and Applications	4
	Core Course-X Practical/Tutorial	Digital Systems & Applications Lab	2
	Skill Enhancement Compulsory Course - 2	SECC -2	4
	Generic Elective -4	GE-4	4
	Generic Elective -4	Practical/Tutorial	2
V	Core course-XI	Quantum Mechanics &	4

4 Papers **(400 Marks)**		**Applications**	
	Core Course-XI Practical/Tutorial	**Quantum Mechanics Lab**	**2**
	Core course-XII	**Solid State Physics**	**4**
	Core Course-XII Practical/Tutorial	**Solid State Physics Lab**	**2**
	Discipline Specific Elective -1	**DSE-1**	**5**
	Discipline Specific Elective -1	**Practical/Tutorial**	**1**
	Discipline Specific Elective -2	**DSE-2**	**5**
	Discipline Specific Elective- 2	**Practical/Tutorial**	**1**
VI **4 Papers** **(400 Marks)**	**Core course-XIII**	**Electro-magnetic Theory**	**4**
	Core Course-XIII Practical/Tutorial	**Electro-magnetic Theory Lab**	**2**
	Core course-XIV	**Statistical Mechanics**	**4**
	Core Course-XIV Practical/Tutorial	**Statistical Mechanics Lab**	**2**
	Discipline Specific Elective -3	**DSE-3**	**5**
	Discipline Specific Elective -3	**Practical/Tutorial**	**1**
	Discipline Specific Elective-4	**DSE-4**	**4/5**
	Discipline Specific Elective -4	**Practical/Tutorial**	**2/1**
	Alternative to Discipline Specific Elective-4	**(Eligible Students may do a Project in DSE-IV)**	**6**
		Total Credits	**148**

Generic Elective Papers (GE) (Minor-Physics) for other Departments/Disciplines: (Credit: 06 each)

Depending on their requirements, Universities may choose 2 (two)GE subjects with 2 papers from each subject or only one GE subject with 4 papers from it.

Two papers GE subject will be :

1. **GE-I** (Mechanics & Properties of matter, Oscillation & Waves, Thermal Physics, Electricity and Magnetism & Electronics) + Lab

2. **GE-II** (Optics, Special Theory of Relativity, Atomic Physics, Quantum Mechanics and Nuclear Physics)+ Lab

A student who chooses to read only Physics subject GE will take 4 DSC papers of the Pass Course as below

1. **GE-I** as **DSC-1**(Mechanics)+ Lab
2. **GE-II** as **DSC-2**,(Electricity, Magnetism & Emt))+ Lab
3. **GE-III** as **DSC-3**,(Thermal Physics & Statiscal Mechanics))+ Lab
4. **GE-IV** as **DSC-4** (Waves and Optics)+ Lab

(GE-I same paper as DSC-1,GE-II same as DSC-2 ,GE-III same as DSC-3,GE-IV same as DSC-4)

SEC papers can be chosen from the general pool or physics specific courses as indicated.

PHYSICS

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (out of the 5 papers suggested)

Generic Elective for non Physics students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper –

For practical paper: Mid term : 15 marks, End term : 60 marks, Practical- 25 marks

For non practical paper: Mid term : 20 marks, End term : 80 marks

Total – 100 marks Credit per paper – 6

Teaching hours per paper –

Practical paper-40 hours theory classes + 20 hours Practical classes

Non Practical paper-50 hours theory classes + 10 hours tutorial

CORE PAPER-1

MATHEMATICAL PHYSICS-I

The emphasis of course is on applications in solving problems of interest to physicists. The students are to be examined entirely on the basis of problems, seen and unseen.

UNIT-I

Calculus -I: Plotting of functions, Intuitive ideas of continuous, differentiable functions and plotting of curves, Approximation: Taylor and binomial series (statements only), First Order Differential Equations and Integrating Factor, Second Order Differential equations: Homogeneous Equations with constant coefficients, Wronskian and general solution, Statement of existence and Uniqueness Theorem for Initial Value Problems, Particular Integral.

UNIT-II

Calculus-II: Calculus of functions of more than one variable: Partial derivatives, exact and inexact differentials. Integrating factor, with simple illustration, Constrained Maximization using Lagrange Multipliers,

Vector algebra: Recapitulation of vectors: Properties of vectors under rotations. Scalar product and its invariance under rotations, Vector product, Scalar triple product and their interpretation in terms of area and volume respectively, Scalar and Vector fields.

UNIT-III

Orthogonal Curvilinear Coordinates: Orthogonal Curvilinear Coordinates, Derivation of Gradient, Divergence, Curl and Laplacian in Cartesian, Spherical and Cylindrical Coordinate Systems, Comparison of velocity and acceleration in cylindrical and spherical coordinate system

Dirac Delta function and its properties: Definition of Dirac delta function. Representation as limit of a Gaussian function and rectangular Function, Properties of Dirac delta function.

UNIT-IV

Vector Differentiation: Directional derivatives and normal derivative, Gradient of a scalar field and its geometrical interpretation, Divergence and curl of a vector field, Del and Laplacian operators, Vector identities

Vector Integration: Ordinary Integrals of Vectors, Multiple integrals, Jacobian, Notion of infinitesimal line, surface and volume elements, Line, surface and volume integrals of Vector fields, Flux of a vector field, Gauss' divergence theorem, Green's and Stokes Theorems and their applications (no rigorous proofs)

Text Books:

1 Mathem•aticalMethodsforPhysicists,G.B.Arfken,H.J.Weber,F.E.Harris (2013,7th Edition., Elsevier)

2 Adva•nced Engineering Mathematics, Erwin Kreyszig (Wiley India) , 2008

Reference books:

1. Mathematical Physics C. Harper (Prentice Hall India), 2006
2. Complex Variable: Schaum's Outlines Series M. Spiegel (2nd Edition , Mc-Graw Hill Education)
3. Complex variables and applications, J. W. Brown and R.V.Churchill
   Mathematical Physics, Satya Prakash (Sultan Chand)
4. Mathematical Physics, B. D. Gupta (4th edition, Vikas Publication), 2009
5. Mathematical Physics and Special Relativity, M. Das, P.K. Jena and B.K.Dash (Srikrishna Prakashan) ,2009
6. Mathematical Physics–H.K.Dass, Dr. Rama Verma (S. Chand Publishing) , 2011

CORE PAPER I LAB:

The aim of this Lab is not just to teach computer programming and numerical analysis but to emphasize its role in solving problems in Physics.

- Highlights the use of computational methods to solve physical problems
- The course will consist of lectures(both theory and practical)in the Lab
- Evaluation done not on the programming but on the basis of formulating the problem
- Aim at teaching students to construct the computational problem to be solved
- Students can use any one operating system Linux or Microsoft Windows

Introduction and Overview: Computer architecture and organization, memory and Input/output devices.

Basics of scientific computing: Binary and decimal arithmetic, Floating pointnumbers, algorithms, Sequence, Selection and Repetition, single and double precision arithmetic, underflow and overflow emphasize the importance of making equations in terms of dimension less variables, Iterative methods. Algorithm

Errors and error Analysis: Truncation and round off errors, Absolute and relative errors, Floating point computations. Systematic and Random Errors, Propagation of Errors, Normal Law of Errors, Standard and Probable Error.

Review of C and C++ Programming: Introduction to Programming, constants,

variables and Fundamentals data types, operators and Expressions, I/O statements, scanf and printf, c in and c out, Manipulators for data format- ting, Control statements (decision making and looping statements) (If Statement, Ifelse Statement, Nested If structure, Else If Statement, Ternary operator, Go to Statement. Switch Statement. Unconditional and Conditional Looping.While Loop. Do-While Loop. FOR Loop. Break and Continue Statements. Nested Loops), Arrays (1D and 2D) and strings, user defined functions, Structures and Unions, Idea of classes and objects

Programs: Sum and average of a list of numbers, largest of a given list of numbers and its location in the list, sorting of numbers in ascending descending order, Binary search,

Random number generation: Area of circle, area of square, volume of sphere, value of π and applications in physics lab.

Reference Books:

1. Introduction to Numerical Analysis, S.S. Sastry, 5th Edition., 2012, PHI Learning Pvt. Ltd.
2. Schaum's Outline of Programming with C++.J.Hubbard,2000, McGraw–Hill Pub.
3. Numerical Recipes in C:The Art of Scientific Computing, W.H. Pressetal, 3rd Edition. 2007, Cambridge University Press.
4. A first course in Numerical Methods, U.M. Ascher and C. Greif, 2012, PHI Learning.
5. Elementary Numerical Analysis, K.E. Atkinson, 3rd Edn. , 2007, Wiley India Edition.
6. Numerical Methods for Scientists and Engineers, R.W. Hamming, 1973, Courier Dover Pub.
7. An Introduction to computational Physics,T.Pang, 2nd Edn., 2006, Cambridge Univ. Press.

CORE II
MECHANICS

UNIT-I

Rotational Dynamics: Centre of Mass, Motion of CoM, Centre of Mass and Laboratory frames, Angular momentum of a particle and system of particles, Principle of conservation of angular momentum, Rotation about a fixed axis, Moment of Inertia, Perpendicular and Parallel Axis Theorems, Routh Rule, Calculation of moment of inertia for cylindrical and spherical bodies, Kinetic energy of rotation, Eulers Equations of Rigid Body motion, Motion involving both translation and rotation. Moment of Inertia of a Fly wheel.

Non-Inertial Systems: Non-inertial frames and fictitious forces, Uniformly rotating frame, Laws of Physics in rotating coordinate systems, Centrifugal force, Coriolis force and its applications.

UNIT-II Elasticity: Relation between Elastic constants, Twisting torque on a Cylinder or Wire, Bending of beams, External bending moment, Flexural rigidity, Single and double cantilever

Surface Tension: Excess pressure across a curved membrane, Quink's drop

Fluid Motion: Kinematics of Moving Fluids: Poiseuilles Equation for Flow of a Liquid through a Capillary Tube, Surface tension, Gravity waves and ripple

Viscocity: Poiseuilles Equation for Flow of a Liquid with corrections.

UNIT-III Gravitation and Central Force Motion: Law of gravitation, Gravitational potential energy, Inertial and gravitational mass, Potential and field due to spherical shell and solid sphere, Motion of a particle under a central force field, Two-body problem and its reduction to one-body problem and its solution, Differential Equation of motion with central force and its solution, The first Integrals (two), Concept of power Law Potentials, Keplers Laws of Planetary motion, Satellites:. Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS), Physiological effects on astronauts.

UNIT-IV

Oscillations: Simple Harmonic Oscillations. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Equation of motion and solution (cases of oscillatory, critically damped and over damped) Forced oscillations: Transient and steady states; Resonance, sharpness of resonance; power dissipation and Quality Factor, Bar Pendulum, Katers Pendulum

Special Theory of Relativity: Michelson-Morley Experiment and its out- come, Postulates of Special Theory of Relativity, Lorentz Transformations, Simultaneity and order of events, Lorentz contraction,Timedilation,Relativistic transformation of velocity, Frequency and wave number, Relativistic addition of velocities, Variation of mass with velocity, Massless Particles, Mass-energy Equivalence, Relativistic Doppler effect, Relativistic Kinematics, Transformation of Energy and Momentum.

Text Books:

1. Mechanics, D.S. Mathur, PS Hemne (S. Chand Publishing) ,2012
2. Introduction to Special Relativity, R. Resnick (John Wiley), 2007

Reference Books:

1. Introduction to Mechanics Daniel Klapnner and Robert Kolenkow, McgrawHill.2007
2. Mechanics by K.R Simon, 1971
3. Mechanics, Berkeley Physics, vol.1, C.Kittel, W. Knight, etal (Tata McGraw-Hill), 2007
4. Physics, Resnick, Halliday and Walker (8/e.2010,Wiley)
5. Theoretical Mechanics-M.R. Spiegel (Tata McGraw Hill), 2017
6. Feynman Lectures, Vol. I, R.P.Feynman, R.B.Leighton, M.Sands (Pearson),2012
7. Mechanics-M.Das, P.K.Jena and R.N. Mishra (Srikrishna Publications), 2009

CORE PAPER-II LAB

(minimum 5 experiments are to be done):

1. To study surface tension by capillary rise method

2 To determine the height of a building using a Sextant.

3 To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c) Modulus of rigidity.

4 To determine the Moment of Inertia of a Flywheel.

5 To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuilles method).

6 To determine the Modulus of Rigidity of a Wire by Maxwells needle.

7 To determine the value of g using Bar Pendulum.

8 To determine the value of g using Kater's Pendulum

Reference Books:

1 Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

3 A Text Book of Practical Physics, I.Prakash and Ramakrishna, 11thEdn, 2011, Kitab Mahal.

CORE PAPER-III

ELECTRICITY AND MAGNETISM

UNIT-I

Electric Field and Electric Potential

Electric field: Electric field lines, Electric flux, Gauss Law with applications to charge distributions with spherical, cylindrical and planar symmetry, Conservative nature of Electrostatic Field. Electrostatic Potential, Potential and Electric Field of a dipole, Force and Torque on a dipole placed in electric field, Potential calculation indifferent simple cases, Laplace and Poisson's equations, The Uniqueness Theorem, Method of Images and its application to (1) Plane Infinite Sheet and (2) Sphere.

Electrostatic energy of system of charges, Electrostatic energy of a charged sphere, Conductors in an electrostatic Field, Surface charge and force on a conductor.

UNIT-II

Magnetic Field: Magnetic Force, Lorentz Force, Biot Savarts Law, Current Loop as a Magnetic Dipole and its Dipole Moment (analogy with Electric Dipole), Amperes Circuital Law and its application to (1) Solenoid (2) Toroid (3) Helmhotz coil, Properties of B: curl and divergence, Vector Potential, Ballistic Galvanometer: Torque on a current Loop, Current and Charge Sensitivity, Electromagnetic damping, Logarithmic damping, CDR.

UNIT-III

Dielectric Properties of Matter: Electric Field in matter, Polarization, Polarization Charges, Electrical Susceptibility and Dielectric Constant, Capacitor (parallel plate, spherical, cylindrical) filled with dielectric, Displacement vector D, Relations between E, P and D, Gauss Law in dielectrics. Magnetic Properties of Matter: Magnetization vector (M), Magnetic Intensity (H), Magnetic Susceptibility and permeability, Relation between B, H, M, Ferromagnetism, B-H curve and hysteresis.

Electromagnetic Induction: Faradays Law, Lenzs Law, Self Inductance and Mutual Inductance, Reciprocity Theorem, Energy stored in a Magnetic Field, Introduction to Maxwell's Equations

UNIT-IV

Electrical Circuits: AC Circuits: Kirchhoff's laws for AC circuits, Complex Reactance and Impedance, Series LCR Circuit: (1) Resonance (2) Power Dissipation (3) Quality Factor, (4) Band Width, Parallel LCR Circuit.

Network theorems: Ideal Constant-voltage and Constant-current Sources, Network Theorems: Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem, Maximum Power Transfer theorem, Applications to DC and AC circuits. Transient Currents Growth and decay of current in RC and LR circuits.

Text Books:

1. Introduction to Electrodynamics – D.J. Griffiths (Pearson, 4thedition, 2015)
2. Foundations of Electromagnetic Theory-Ritz and Milford (Pearson) 4th Edition

Reference Books:

1. Classical Electrodynamics, J. D. Jackson (Wiley), 1998
2. Electricity and Magnetism D. C. Tayal (Himalaya Publishing house), 2014
3. Electricity, Magnetism and Electromagnetic Theory- S. Mahajan and Choudhury (Tata McGraw Hill)-2012
4. Feynman Lectures Vol.2, R. P. Feynman, R. B. Leighton, M. Sands (Pearson)-2008
5. Electricity and Magnetism, J. H. Fewkes and J. Yarwood. Vol. I (Oxford Univ. Press)

CORE PAPER-II1

(minimum of 6 experiments are to be done)

Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, c)DC Current, (d) Capacitances, and (e) Checking electrical fuses.

1. To study the characteristics of a series RC Circuit.
2. To determine an unknown Low Resistance using Potentiometer.
3. To determine an unknown Low Resistance using Carey Fosters Bridge.
4. And compare capacitances using DeSautys bridge.
5. Measurement of field strength B and its variation in a solenoid/ artificial coil (determine dB/dx)
6. To verify the Thevenin and Norton theorems.
7. To determine self inductance of a coil by Andersons bridge.
8. To study response curve of a Series LCR circuit and determine its (a) Reso- nant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width.
9. To study the response curve of a parallel LCR circuit and determine its (a) Antiresonance frequency and (b) Quality factor Q.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4. A Laboratory Manual of Physics for undergraduateclasses, D.P.Khandelwal, 1985, Vani Pub.

CORE PAPER-1V: WAVES AND OPTICS

UNIT - I

Geometrical Optics : Fermats principle, reflection and refraction at plane interface, Matrix formulation of geometrical Optics, Cardinal points and Cardinal planes of an optical system, Idea of dispersion, Application to thick Lens and thin Lens, Ramsden and Huygens eyepiece. Wave Optics : Electromagnetic nature of light. Definition and properties of wave front Huygens Principle. Temporal and Spatial Coherence.

UNIT - II

Wave Motion : Plane and Spherical Waves, Longitudinal and Transverse Waves, Plane Progressive (Traveling) Waves, Wave Equation, Particle and Wave Velocities, Differential Equation, Pressure of a Longitudinal Wave, Energy Transport, Intensity of Wave. Superposition of two perpendicular Harmonic Oscillations : Graphical and Analytical Methods, Lissajous Figures (1:1 and 1:2) and their uses, Superposition of N harmonic waves.

UNIT- III

Interference : Division of amplitude and wave front, Young's double slit experiment, Lloyds Mirror and Fresnels Bi-prism, Phase change on reflection: Stokes treatment, Interference in Thin Films: parallel and wedge-shaped films, Fringes of equal inclination (Haidinger Fringes), Fringes of equal thickness (Fizeau Fringes), Newton's

Rings: Measurement of wavelength and refractive index. Interferometer : Michelsons Interferometer-(1) Idea of form of fringes (No theory required), (2) Determination of Wavelength, (3) Wavelength Difference, (4) Refractive Index, and (5) Visibility of Fringes, Fabry-Perot interferometer.

UNlT - IV

Fraunhofer diffraction: Single slit, Circular aperture, Resolving Power of a telescope, Double slit, Multiple slits, Diffraction grating, Resolving power of grating. Fresnel Diffraction: Fresnels Assumptions, Fresnels Half-Period Zones for Plane Wave, Explanation of Rectilinear Propagation of Light, Theory of a Zone Plate: Multiple Foci of a Zone Plate, Fresnels Integral, Fresnel diffraction pattern of a straight edge, as lit and a wire.

Text Books:

1 OpticsP.K.Chakrabarty, New Central Agency 3rd Edition 2012

2.Optics - Ajoy Ghatak (McGraw Hill)-2017

Reference Books:

2 Optics-E.Hecht (Pearson)-2008

3 Fundamentals of Optics- F.A. Jenkins and H.E.White (McGraw-Hill)-2017

4 Geometrical and Physical Optics R.S. Longhurst (Orient Black swan)-1986

5 A text book of Optics N. Subrahmanyam and Brij Lal (S.Chand Publishing), 2006

6 The Physics of Vibrations and Waves- H.J. Pain (JohnWiley)-2013

7 Principles of Optics- Max Born and Emil Wolf(Pergamon Press) 7th Edition 1999

8 The Physics of Waves and Oscillations-N.K.Bajaj (McGraw Hill)-1998

CORE PAPER-IV LAB

(minimum 5 experiments are to be done)

1. To determine the frequency of an electric tuning fork by Meldes experiment and verify 2 T law.
2. To plot the I-D curve and to determine the refractive index of a prism
3. To determine refractive index of the Material of a prism using sodium source.

4. To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.
5. To determine wavelength of sodium light using Newton's Rings.
6. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
7. To determine dispersive power and resolving power of a plane diffraction grating.

Reference Books:

1 Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal

3 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

4 A Laboratory Manual of Physics for undergraduate classes, D.P. Khandelwal, 1985, Vani

CORE PAPER-V

MATHEMATICAL PHYSICS-II

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

UNIT-I

Fourier Series-I: Periodic functions, Orthogonality of sine and cosine functions, Dirichlet Conditions (Statement only), Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients, Complex representation of Fourier series, Expansion of functions with arbitrary period,

Expansion of non-periodic functions over an interval, Even and odd functions and their Fourier expansions and Application, Summing of Infinite Series, Term-by-Term differentiation and integration of Fourier Series, Parseval Identity.

UNIT-II

Frobenius Method and Special Functions: Singular Points of Second Order Linear Differential Equations and their importance, Singularities of Bessel's and Laguerre Equations, Frobenius method and its applications to differential equations:LegendreandHermiteDifferentialEquations,LegendreandHermite Polynomials: Rodrigue's Formula, Generating Function, Orthogonality.

UNIT-III

Polynomials: Simple recurrence relations of Legendre and Hermite Polynomials, Expansion of function in a series of Legendre Polynomials, Associated Legendre Differential Equation, Associated Legendre polynomials, Spherical Harmonics

Some Special Integrals: Beta and Gamma Functions and relation between them, Expression of Integrals in terms of Gamma Functions, Error Function (Probability Integral).

UNIT-IV

Partial Differential Equations: Solutions to partial differential equations using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry. Conducting and dielectric sphere in an external uniform electric field. Wave equation and its solution for vibrational modes of a stretched string

Text Books:

1. MathematicalMethodsforPhysicists,G.B.Arfken,H.J.Weber,F.E.Harris (2013, 7th Edn., Elsevier)
2. Advanced Engineering Mathematics, Erwin Kreyszig (Wiley India) 9th Edition 2011

Reference Books:

1. Mathematical Physics and Special Relativity, M. Das, P.K. Jena and B.K. Dash (Srikrishna Prakashan)-2009
2. Mathematical Physics–H. K. Dass, Dr. Rama Verma (S. Chand Publishing) -2011

3 Mathematical Physics C. Harper (Prentice Hall India)-1978
4 Schaum's Outlines Series M. Spiegel (2nd Edition, McGraw Hill Education)-2004
5 Complex variables and applications J.W.Brown and R.V.Churchill-2017
6 Mathematical Physics, Satya Prakash (Sultan Chand)-2014
7 Mathematical Physics B.D. Gupta (4th edition, Vikas Publication-2009

CORE PAPER-V LAB

The aim of this Lab is to use the computational methods to solve physical problems. Course will consist of lectures (both theory and practical) in the Lab. Evaluation done on the basis of formulating the problem but not on the programming

Topics

Introduction to Numerical computation software Scilab: Introduction to Scilab, Advantages and disadvantages, Scilab computation software Scilab environment, Command window, Figure window, Edit window, Variables and arrays, Initialising variables in Scilab, Multidimensional arrays, Subarray, Special values, Displaying output data, data file, Scalar and array operations, Hierarchy of operations, Built in Scilab functions, Introduction to plotting, 2D and 3D plotting (2), Branching Statements and program design, Relational and logical operators, the while loop, for loop, details of loop operations, break and continue statements, nested loops, logical arrays and vectorization (2) User defined functions, Introduction to Scilab functions, Variable passing in Scilab, optional arguments, preserving data between calls to a function, Complex and Character data, string function, Multidimensional

arrays (2) an introduction to Scilab file processing, file opening and closing, Binary I/ o functions, comparing binary and formatted functions, Numerical methods and developing the skills of writing a program(2).

Curve fitting, Least square fit Goodness of fit, standard constant Deviation:

Ohms law to calculate R, Hooke's law to calculate spring constant

Solution of Linear system of equations by Gauss elimination Solution

method and Gauss Seidal method. Diagonalization matrices, Inverse of a matrix, Eigen vectors, problems: Solution of mesh equations of electric circuits(3meshes),Solution of coupled spring mass systems (3masses)

Solution of ODE :

First order Differential equation Euler, modified Euler, Runge- Kutta methods, Second order differential equation. Fixed difference method: First order differential equations

- Radioactive decay
- Current in RC and LC circuits with DC source
- Newton's law of cooling
- Classical equations of motion

Second order Differential Equation

- Harmonic oscillator (no friction)
- Damped Harmonic oscillator
- Over damped
- Critical damped
- Oscillatory
- Forced Harmonic oscillator
- Transient and Steady state solution
- Apply above to LCR circuits also

Reference Books:

1 Mathematical Methods for Physics and Engineers, K.FRiley, M.P.Hobson and S. J.20 Bence, 3rd ed., 2006, Cambridge University Press

2 Complex Variables, A.S. Fokas and M.J. Ablowitz, 8th Ed., 2011, Cambridge Univ. Press

3 First course in complex analys is with applications, D.G.Zill and P.D.Shanahan, 1940, Jones and Bartlett

4 Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A.V. Wouwer, P. Saucez, C.V. Fernndez. 2014 Springer

5 Scilab by example: M. Affouf 2012, ISBN: 978-1479203444

6 Scilab (A free software to Matlab):
H.Ramchandran,A.S.Nair.2011S.Chand and Company

7 Scilab Image Processing: Lambert M. Surhone. 2010 Beta script Publishing

CORE PAPER-VI

THERMAL PHYSICS

UNIT-I

Introduction to Thermodynamics Recapitulation of Zeroth and First law of thermodynamics,

Second Law of Thermodynamics: Reversible and Irreversible process with examples, Kelvin-Planck and Clausius Statements and their Equivalence, Carnots Theorem, Applications of Second Law of Thermodynamics: Thermodynamic Scale of Temperature and its Equivalence to Perfect Gas Scale.

Entropy: Concept of Entropy, Clausius Theorem. Clausius Inequality, Second Law of Thermodynamics in terms of Entropy, Entropy of a perfect gas, Principle of increase of Entropy, Entropy Changes in Reversible and Irreversible processes with examples, Entropy of the Principle of Increase of Entropy, Temperature Entropy diagrams for Carnot's Cycle, Third Law of Thermodynamics, Unattainability of Absolute Zero.

UNIT-II

Thermodynamic Potentials: Extensive and Intensive Thermodynamic Variables,

Thermodynamic Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibbs Free Energy, Their Definitions, Properties and Applications, Surface Films and Variation of Surface Tension with Temperature, Magnetic Work, Cooling due to adiabatic demagnetization

Phase Transitions: First and second order Phase Transitions with examples, Clausius Clapeyron Equation and Ehrenfest equations

Maxwell's Thermodynamic Relations: Derivations and applications of Maxwell's Relations, Maxwell's Relations: (1) Clausius Clapeyron equation (2) Relation

between C_p and C_v (3) TdS Equations,(4)Joule-Kelvin coefficient for Ideal and Van der Waal Gases (5) Energy equations (6) Change of Temperature during Adiabatic Process.

UNIT-III

Kinetic Theory of Gases

Distribution of Velocities: Maxwell-Boltzmann Law of Distribution of Velocities in an Ideal Gas and its Experimental Verification, Sterns Experiment, Mean, RMS and Most Probable Speeds, Degrees of Freedom, Law of Equipartition of Energy (No proof required), Specific heats of Gases.

Molecular Collisions: Mean Free Path, Collision Probability, Estimates of Mean Free Path,

Transport Phenomenon in Ideal Gases: (1) Viscosity, (2) Thermal Conductivity and (3) Diffusion. Brownian Motion and its Significance.

UNIT-IV

Real Gases: Behavior of Real Gases: Deviations from the Ideal Gas Equation, The Virial Equation, Andrews Experiments on CO_2 Gas. Critical Constants, Continuity of Liquid and Gaseous State. Vapour and Gas, Boyle Temperature, Van der Waals Equation of State for Real Gases, Values of Critical Constants, Law of Corresponding States, Comparison with Experimental Curves, P-V Diagrams, Joules Experiment, Free Adiabatic Expansion of a Perfect Gas, Joule- Thomson Porous Plug Experiment, Joule-Thomson Effect for Real and Van der Waal Gases, Temperature of Inversion, Joule-Thomson Cooling

Text Books:

1. Thermal Physics, A. B. Gupta (Books and allied Ltd)-2010
2. Heat and Thermodynamics, M.W. Zemansky, Richard Dittman (McGraw- Hill)-1981

Reference Books:

1. Theory and experiments on thermal Physics, P.K.Chakrabarty (New central book agency limited)-2017

2 Thermodynamics, Kinetic Theory and Statistical Thermodynamics- Sears and Salinger(Narosa)-1988

3 A Treatise on Heat- Meghnad Saha and B.N.Srivastava (The Indian Press) Heat, Thermodynamics and Statistical Physics, N.Subrahmanyam and Brij Lal (S.Chand Publishing)-2008

4 Thermal and Statistical Physics M.Das, P.K. Jena, S. Mishra, R.N.Mishra (Shri Krishna Publication)-2009

CORE PAPER-VI LAB

(minimum 5 experiments are to be done):

1 To determine Mechanical Equivalent of Heat, J, by Callender and Barnes constant flow method.

2 To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charltons disc method.

3 To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).

4 To study the variation of Thermo-emf of a Thermocouple with Difference of Temperature of its Two Junctions.

5 To determine the specific heat of liquid by the method of cooling

6 To determine the specific heat of solid by applying radiation correction.

Reference Books:

1 Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 A Text Book of Practical Physics, I. Prakash and Ramakrishna, 11th Ed., 2011, Kitab Mahal

3 Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

4 A Laboratory Manual of Physics for undergraduate classes, D.P. Khandelwal, 1985, Vani Publications.

CORE PAPER-VII

ANALOG SYSTEMS AND APPLICATIONS

UNIT-I

Semiconductor Diodes: P and N type semiconductors, energy level diagram, conductivity and Mobility, Concept of Drift velocity, PN junction fabrication (simple idea), Barrier formation in PN Junction Diode, Static and Dynamic Resistance, Current flow mechanism in Forward and Reverse Biased Diode, Drift velocity, derivation for Barrier Potential, Barrier Width and current Step Junction.

Two terminal device and their applications: (1) Rectifier Diode: Half-waveRectifiers.center-tappedandbridgetypeFull-waveRectifiers,Calculation of Ripple Factor and Rectification Efficiency, L and C Filters (2) Zener Diode and Voltage Regulation, Principle and structure of LEDS, (2) Photo diode(3) Solar Cell.

UNIT II

Bipolar Junction Transistors: n-p-n and p-n-p transistors, Characterstics of CB, CE and CC Configurations, Current gains a and b, Relation between a and b, Load line analysis of Transistors, DC Load line and Q-point, Physical mechanism of current flow, Active, Cut-off and Saturation Regions.

Transistors Biasing: Transistor Biasing and Stabilization circuits, Fixed Bias and Voltage Divider Bias.

Amplifiers: Transistors as 2-port network h-parameter Equivalent Circuit, Analysis of a single stage CE amplifier using Hybrid Model, Input and Output impedance, Current, Voltage and Power Gains, Classification of class A, B and C amplifiers, Push-pull amplifier (class B)

UNIT-III

Coupled Amplifier: RC-coupled amplifier and it's frequency response.

Feedback in Amplifiers: Effect of Positive and Negative Feedback on In- put Impedance, Output Impedance, Gain Stability, Distortion and Noise. Sinusoidal Oscillations: Barkhausen's Gaterian for self-sustained oscillations. RC Phase shift oscillator, determination of Frequency, Hartley and Colpitt's oscillators.

UNIT-IV

Operational Amplifiers (Black Box approach): Characteristics of an Ideal and Practical OP-AMP (IC741). Open-loop and Closed loop Gain. Frequency Response. CMRR, Slew Rate and concept of virtual ground.

Application of Op-Amps: (1) Inverting and non-inverting amplifiers (2) Adder

(3) Subtractor (4) Differentiator, (5) Integrator (6) Log amplifier, (7) Zero crossing detector (8) Wein bridge oscillator.

Text Books:

1. Foundations of Electronics-Raskhit and Chattopadhyay (New age International Publication), 15th Edition-2018

2. Concept of Electronics- D.C.Tayal (Himalay Publication)-2018

Reference Books:

1. Electronic devices and circuits R.L.Boylstad (Pearson India)-2009
2. Electronic Principles- A.P.Malvino (Tata McGraw Hill)-2008
3. Electronic Devices and Circuits- S.Salivahar and NS Kumar -(Tata McGraw Hill) 3rd Edition-2012
4. OP-Amps and Linear Integrated Circuit-R. A. Gayakwad (Prentice Hall) 4th Edition, 2000
5. Physics of Semiconductor devices, Donald A Neamen (Prentice Hall)
6.

CORE PAPER-VII LAB

(minimum 5 experiments are to be done)

1 To study the V-I characteristics of a Zener diode and its use as voltage regulator.

2 Study of V-I and power curves of solar cells, and find maximum power point and efficiency.

3 To study the characteristics of a Bipolar Junction Transistor in CE configuration and draw load line

4 To study the various biasing configurations of BJT for normal class A operation.

5 To study the frequency response of voltage gain of a RC-coupled transistor amplifier.

6 To design and study OP Amp-IC (741/351) as inverting and non inverting amplifier

7 To design and study OP Amp-IC (741/351) as integrator and differentiation and study frequency response.

8 To design and study OP Amp-IC (741/351) as adder and subtractor.

9 To design a Wien bridge oscillator for given frequency using a nop-amp.

10 To design a phase shift oscillator of given specifications using BJT.

1. To study the Colpitt's oscillator.

Reference Books:

1. Modern Digital Electronics, R.P. Jain, 4th Edition, 2010, Tata McGrawHill.
2. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-Graw Hill.
3. Microprocessor Architecture Programming and applications with 8085, R.S. Goankar, 2002, Prentice Hall.
4. Microprocessor 8085:Architecture, Programming and interfacing, A. Wadhwa, 2010, PHI Learning.

CORE PAPER-VIII

MATHEMATICAL PHYSICS-III

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems; known or unknown.

UNIT-I

Complex Analysis: Brief Revision of Complex Numbers and their Graphical Representation Eulers formula, De Moivre's theorem, Roots of complex Numbers, Functions of Complex Variables, Analyticity and Cauchy-Riemann Conditions, Examples of analytic functions, Singular functions: poles and branch points, order of singularity, branch cuts, Integration of a function of a complex variable, Cauchys Inequality, Cauchys Integral formula, Simply and multiply connected region, Laurent and Taylors expansion, Residues and Residue Theorem, Application in solving simple Definite Integrals.

UNIT-II

Integral Transforms-I: Fourier Transforms: Fourier Integral theorem, Fourier Transform,Examples,FourierTransformoftrigonometric,Gaussian,finitewave train and other functions, Representation of Dirac delta function as a Fourier Integral,

Fourier transform of derivatives, Inverse Fourier Transform.

UNIT-III

Integral Transforms-II : Convolution theorem, Properties of Fourier Trans- forms (translation, change of scale, complex conjugation), Three dimensional Fourier transforms with examples, Application of Fourier Transforms to differential equations: One dimensional Wave and Diffusion/Heat flow Equations.

UNIT-IV

Laplace Transforms: Laplace Transforms (LT) of Elementary functions,

Properties of Laplace Transforms: Change of Scale Theorem, Shifting Theorem, LTs of Derivatives and Integrals of Functions, Derivatives and Integrals of Functions, Derivatives and Integrals of LTs. LT of Unit Step function, Dirac Delta function, Periodic Functions, Inverse LT, Application of Laplace Transforms to Differential Equations: Damped Harmonic Oscillator, Simple Electrical Circuits.

Text Books:

1 Mathemati•ca lMethods for Physicists, G.B.Arfken, H.J.Weber, F.E.Harris (2013,7th Edn., Elsevier)

2 Advanced Engineering Mathematics, Erwin Kreyszig (Wiley India) 10th Edition 2014

Reference Books:

1 Mathematic•al Physics and Special Relativity–M.Das, P.K. Jena and B.K. Dash (Srikrishna Prakashan)-2009

2 Mathem•atical Physics–H. K. Das, Dr. Rama Verma (S. Chand Publishing) 2011

3 Complex•Variable: Schaum's Outlines Series M. Spiegel (2nd Edition , Mc-Graw Hill Education)-2004

4 Complex variables and applications J.W.Brown and R.V.Churchill 7th Edition 2003

5 Mathematical Physics, Satya Prakash (Sultan Chand)-2014

6 Mathematical Physics B.D.Gupta (4th edition, Vikas Publication)-2009

CORE PAPER-VIII LAB

20 clasees (2 hrs. duration each)

Scilab based simulations (XCos) experiments based on Mathematical Physics problems like

- Solve Simple Differential Equations like

$\frac{dy}{dx} = e^x$, with $y(x=0) = 0$

$\frac{dy}{dx} + e^x = x$, with $y(x=0)=0$

$\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = -y$, with $y(x=0)=0$, $y'(x=0)=1$

$y'' + e^{-x}\frac{dy}{dx} = -y$, with $y(x=0)=0$, $y'(x=0)=1$

- Direct Delta Function

Evaluate $\int_{-3}^{3} dx \; \frac{(x+3)}{\sqrt{2\pi\sigma^2}} \; e^{-\frac{(x-2)^2}{2\sigma^2}}$, for $\sigma = 0.1, 0.01, 0.001$ and show that it tends to 5.

- **Fourier Series:**

Program to sum

Evaluate the Fourier coefficients of a given periodic function (square wave)

- **Frobenius method and Special functions:**

$\int_{-1}^{1} d\mu \; P_n(\mu) \; P_m(\mu) = \frac{2}{2n+1}\delta_{m,n}$

Plot $P_n(x)$, Legendre polynomial of degree n, and $J_n(x)$, Bessel function of first kind.

Show recursion relation

• Calculation of error for each data point of observations recorded in experiments done in previous semesters (choose any two).

• Calculation of least square fitting manually without giving weightage to error. Confirmation of least square fitting of data through computer program.

• Evaluation of trigonometric functions e.g. sin θ, Given Bessels function at N points find its value at an intermediate point.

Complex analysis: Calculate $\int \frac{dx}{(x^2+2)}$ and check it with computer integration.

• Integral transform: FFT of e^{-x^2}

Reference Books:

1. Mathematical Methods for Physics and Engineers, K.F Riley, M.P.Hobson and S. J. Bence, 3rd ed., 2006, Cambridge University Press
2. Mathematics for Physicists, P.Dennery and.Krzywicki,1967,Dover Publications
3. Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez. 2014 Springer ISBN: 978-3319067896
4. Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
5. Scilab(A free software to matlab):H.Ramchandran, A.S.Nair. 2011 S. Chand and Company
6. Scilab Image Processing: Lambert M. Surhone. 2010 Beta script Publishing

CORE PAPER-IX

ELEMENTS OF MODERN PHYSICS

UNIT- I

Atomic Spectra and Models: Inadequacy of classical physics, Brief Review of Black body Radiation, Photoelectric effect, Compton Effect, dual nature of radiation wave nature of particles, Atomic spectra, Line spectra of hydrogen atom, Ritz Rydberg combination principle, Alpha Particle Scattering, Ruther- ford Scattering Formula, Rutherford Model of atom and its limitations.

Atomic Model: Bohrs Model of Hydrogen atom, explanation of atomic spec- tra, correction for finite mass of the nucleus, Bohr correspondence principle, limitations of Bohr model, discrete energy exchange by atom, Frank Hertz Experiment, Sommerfelds modification of Bohr's Theory.

UNIT- II

Wave Packet: superposition of two waves, phase velocity and group velocity, wave packets, Gaussian Wave Packet, spatial distribution of wave packet, Localization of wave packet in time, Time development of a wave packet, Wave Particle Duality, Complemntarity.

Wave Particle Duality: de Broglie hypothesis, Experimental confirmation of matter wave, Davisson Germer Experiment, velocity of deBroglie wave, wave particle duality, Complementarity.

Uncertainty Principle: Heisenberg Uncertainty Principle, Illustration of the PrinciplethroughthoughtExperimentsofGammaraymicroscopeandelectron diffraction through a slit, Estimation of ground state energy of harmonic oscillator and hydrogen atom, non existence of electron in the nucleus, Uncertainty and complementarities.

UNIT- III

Nuclear Physics- I: Size and structure of atomic nucleus and its relation with atomic weight, Impossibility of an electron being in the nucleus as a con- sequence of the uncertainty principle, Nature of the nuclear force, NZ graph, Liquid Drop model: semi empirical mass formula and binding energy, Nuclear Shell Model and magic numbers.

UNIT- IV

Nuclear Physics- II: Radioactivity, stability of the nucleus, Law of radioactive decay, Mean life and Half life Alpha decay, Beta decay-energy released, spectrum and Paulis prediction of neutrino, Gamma ray emission energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus, Fission and fusion mass deficit, relativity and generation of energy, Fission- nature of fragments and emission of neutrons, Nuclear reactor: slow neutron interacting with Uranium 235, Fusion and thermo nuclear reactions driving stellar energy (brief qualitative discussion).

Text Books:

1. Concepts of Modern Physics Arthur Beiser (McGraw Hill)-2002
2. Modern Physics Murugeshan and Sivaprasad (S.Chand) 18th Edition 2016

Reference Books:

1. QuantumMechanics:TheoryandApplications,A.K.GhatakandS.Lokanathan, (Macmillan)-2004
2. Introduction to Quantum Theory, David Park (Dover Publications)-1974
3. Theory and Problems of Modern Physics, Schaum's outline, R.Gautreau and W.Savin- (Tata McGraw-Hill) 2nd Edition
4. Physics for scientists and engineer with Modern Physics-Jewell and Serway- (CENGAGE Learnings) 2010.
5. Modern Physics of Atoms and Molecules Bransden and Joachim (Pearson India)-2003
6. Atomic and Nuclear Physics-A.B.Gupta (New Central)-2009
7. Theoretical Nuclear Physics , J.M.Blatt and V.F. Weisskof (Springer)-2003

CORE PAPER-IX LAB

(minimum 4 experiments are to be done):

1. To show the tunneling effect in tunnel diode using I-V characteristics.
2. To determine the wavelength of laser source using diffraction of single slit.

3. To determine the wavelength of laser source using diffraction of double slits.
4. To determine (1) wavelength and (2) angular spread of He-Ne laser using plane diffraction grating.
5. To determine the Plancks constant using LEDs of at least 4 different colours.
6. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
7. To setup the Millikan oil drop apparatus and determine the charge of an electron.

Reference Books:

1 Adva•nced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House

2 Adv•anced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers

3 A Te•xt Books Book of Practical Physics, I. Prakashand Ramakrishna, 11th Edn, 2011,Kitab Mahal

CORE PAPER-X

DIGITAL SYSTEMS AND APPLICATIONS

UNIT-I

Integrated Circuits (Qualitative treatment only): Active and Passive Components, Discrete components, Wafer Chip, Advantages and Drawbacks of ICs, Scale of Integration: SSI, MSI, LSI and VLSI (basic idea and definitions only), Classification of ICs, Examples of Linear and Digital ICs.

Digital Circuits: Difference between Analog and Digital Circuits, Binary Numbers, Decimal to Binary and Binary to Decimal Conversation, BCD, Octal and Hexadecimal numbers, AND, OR and NOT. Gates (realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNOR Gates and application as Parity Checkers.

UNIT-II

Boolean algebra: De Morgans Theorems: Boolean Laws, Simplification of Logic

Circuit using Boolean Algebra, Fundamental Products, Idea of Minterms and Maxterms, Conversion of a Truth table into Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map.

Introduction to CRO: Block Diagram of CRO, Electron Gun, Deflection system and Time Base, Deflection Sensitivity,

Applications of CRO: (1) Study of Wave Form, (2) Measurement of Volt- age, Current, Frequency and Phase Difference.

UNIT-III

Data Processing Circuits: Basic Idea of Multiplexers, De-multiplexers, Decoders, Encoders.

Arithmetic Circuits: Binary Addition. Binary Subtraction using 2s complement. Half and Full Adders. Half and Full Subtractors, 4 bit binary Adder/ Subtractor.

Timers: IC 555: block diagram and application is Astable multivibrator and Monostable multivibrator.

UNIT-IV

Introduction to Computer Organization: Input/output Devices, Data storage (idea of RAM and ROM), Computer memory, Memory organization and addressing, Memory Interfacing, Memory Map.

Shift registers: Serial-in-serial-out, Serial-in-Parallel-out, Parallel-in-Serial- out and Parallel-in-Parallel-out. Shift Registers (only up to 4 bits)

Counters (4 bits): Ring Counter, Asynchronous counters, Decade Counter. Synchronous Counter.

Text Books:

1. Foundation of Electronics-Rakshit Chattopadhaya (New Age) -2015
2. Digital Circuits and Logic design: Samuel C. Lee(Printice Hall)-1976
3. Digital Principles and Applications - A.P. Malvino, D.P.Leach and Saha (Tata McGraw)- 7th Edition 2011

Reference Books:

1. The Art of Electronics by Paul Horowitz and Wilfield Hill ,Cambridge University -2006
2. Electronics by Allan R. Hambley, Prentice Hall - 1994
3. Digital Logic and Computer design M. Morris Mano (Pearson) -2016
4. Concepts of Electronics D.C.Tayal (Himalaya Publishing house) -2018

CORE PAPER--X LAB

(minimum 6 experiments are to be done):

1. Student should know how to measure (a) Voltage, and (b) Time period of a periodic waveform using CRO and to test a Diode and Transistor using a Millimeter.
2. To design a switch (NOT gate) using a transistor.
3. To verify and design AND, OR, NOT and XOR gates using NAND gates.
4. Half Adder, Full Adder and 4-bit binary Adder.
5. Half Subtractor, Full Subtractor, Adder- Subtractor using Full AdderI.C.
6. To build Flip-Flop(RS,Clocked RS,D- type and JK) circuits using NAND gates.
7. To design an stable multivibrator of given specifications using 555Timer.
8. To design a monostable multivibrator of given specifications using 555 Timer.

Reference Books:

1 Basic Electronics: A Text Books lab manual, P.B. Zbar, A.P. Malvino,

2 M.A. Miller, 1994, Mc-Graw Hill.

3 OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.

4 Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.

Electronic Devices and circuit Theory, R.L.Boylestad and L.D. Nashelsky, 2009, Pearson

CORE PAPER-XI

QUANTUM MECHANICS AND APPLICATIONS

UNIT-I

Schrodinger equation : Time dependent Schrodinger equation , Properties of Wave Function, Interpretation of wave function, Probability and probability current densities in three dimensions, Conditions for Physical Acceptability of Wave Function, Normalization, Linearity and Superposition Principles. Wave function of a free particle ,Wave Packet, Fourier Transform and momemtum space Wave function ,Spread of Gaussian Wave packet, Evolution with time, Position and Momentum Uncertainty.

UNIT-II

Operators: Operators, Commutator Algebra, Position, Momentum Angular Momentum and Energy operators, Hermitian Operators, Expectation values of position and momentum, Ehrenfest Theorem, Eigenvalues and Eigen functions of Hermitian Operator, Energy Eigen Spectrum, Degeneracy, Orthonormality of Eigen functions, Linear Dependance. Orthogonalisation.

UNIT-III

Time Independent Schrodinger equation in one dimension (1d), 2d and 3d, Hamiltonian, stationary states and energy eigen values, expansion of an arbitrary wave function as a linear combination of energy eigen functions, General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states. General Discussion of Bound states in an arbitrary potential: Continuity of wave function, Boundary condition and emergence of discrete energy levels, Application to one dimensional problem-Square well potential, Quantum mechanics of simple Harmonic Oscillator-Energy Levels and energy eigen functions, ground state, zero point energy and uncertainty principle, One dimensional infinitely rigid box energy eigen values and eigen functions, normalization, quantum dot as example, Quantum mechanical scattering and tunnelling in one dimension across a step potential and rectangular potential barrier.

UNIT-IV

Atoms in Electric and Magnetic Fields: Electron angular momentum. Space quantization, Electron Spin and Spin Angular Momentum, Larmors Theorem, Spin Magnetic Moment, Stern Gerlach Experiment,Vector Atom Model, L-S and J-J coupling, Zeeman Effect, Electron Magnetic Moment and Magnetic Energy, Gyro magnetic Ratio and Bohr Magnet on Atoms in External Magnetic Fields:- Normal and Anomalous Zeeman Effect, Paschenback and Stark Effect (qualitative Discussion only)

Text Books:

1. Introduction to Quantum Theory, D. J. Griffiths(Pearson)-2015
2. Introduction to Quantum Theory David Park (Dover Publications)-1974

Reference Books :

1. Quantum Mechanics, Theory and applications A. Ghatak and S. Lokanathan (McMillan India)-2004
2. Quantum Mechanics-G.Aruldhas (Printice Hall of India)-2008
3. Quantum Physics–S. Gasiorowicz (Wiley)-2007
4. Quantum Mechanics -J.L. Powell and B. Craseman (Narosa)-1998
5. Introduction to Quantum Mechanics M.Das and P.K.Jena (Shri Krishna Publication)-2006

CORE PAPER- XI LAB

Mechanics like (Use finite difference method,matrixmethod,ODE Solver method

1. Solva the s-nave 8elmxliqgar equation for the ground state and the first excited state of the hydrogen atom:

$$\frac{d^2y}{dr^2} = A(r)u(r),\ A(r) = \frac{2m}{\hbar^2}[V(r) - E],\ V(r) = -\frac{e^2}{r},$$

whera m é the reduced mass of the electron. Obtain the energy eigenvalues and pbt theoorr«spoadiag mive tiln‹nioas. Raneaber that thegroud ask e‹eportbe b@oga atoa b -13.&Y.Ibkee=3.795 1 kc= 1973(‹Fâ) aadm=D.511 x 1PeF/z?

2. 8olw the radial $thmdiager Ignition & an stm:

t*-9——4(r)u(r), A(r)= tP(r)- ,wheremiathereduwd xuus4 the sjaes›(w6icbczobe cttoea D& 4eazaa 4 soéetroa), fortbesctaaed ooulomb potential: F(r) = — e*' °

Sindtbeeaergy (iaeY) oftbegroi›adstateoftbeato‹atosoaccuracy af three sigpiâcaal digits. Also, plot the correspondigg nave function. e = 3.RS 7t)1 ' 19T3(«7â) aadm=0.511xlPeV/P, sada=3 1*A,1â. The ground state energy is expected to be above -l2 eV in ail thee ,

S. Soln the»a›e radid Mxofingn guation lor a p&ide oIaaum:
=fi(r)o{r), d(r)=;w(F(r)—£),forsllnanlarmoécozi&brpoential!

$V(r) = \frac{kr^2}{2} + \frac{br^3}{3}$. fe enup{é Me¥) of the puficle o an axuacy d thru st@leant digits, Aho, plot the arnponding cafe nnction, Ch‹xae ri = S4UeF/8,1 = l0OUeF//tn', h = 0,l0,34UeF//tn*. In thne Fék, c

110 M eV for all three cases.]

4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule: $\frac{d^2y}{dr^2} = A(r)u(r)$, $A(r) = \frac{2m}{\hbar^2}[V(r) - E]$, where m is the reduced mass of the two-atom system for the Morse potential $V(r) = D(e^{-2\alpha r} - e^{-\alpha r})$, where $r = r - r_0$ Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of three significant digits. Also plot the corresponding wave functions for the choices given below:

a) $m = 940x10^6 eV/c^2, D = 0.755501eV, \alpha = 1.44, r_0 = 0.131349\mathring{A}$

b) $m = 940x106eV/c^2, D = 0.755501eV, \alpha = 1.44, r_0 = 0.131349\mathring{A}$

Laboratory Based Experiments : (to be taken up depending on availability of equipment)

1. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
2. Study of Zeeman effect: with external magnetic field; Hyper fine splitting
3. To show the tunneling effect in tunnel diode using I-V characteristics.
4. Quantum efficiency of CCDs

Reference Books:

1 Scha•um's outline of Programming with C++. J.Hubbard,2000,McGraw– Hill Publication

2 Num•erical Recipes in C: The Art of Scientific Computing, W.H. Pressetal., 3rd Edition., 2007, Cambridge University Press.

3 An i•ntroduction to computational Physics, T. Pang, 2nd Edn.,2006, Cam- bridge Univ. Press

4 Simu•lation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez.2014 Springer.

5 Scila•b (A Free Software to Matlab): H. Ramchandran, A.S. Nair. 2011S. Chand and Co.

6 Scila•b Image Processing: L.M.Surhone.2010 Beta script Publishing ISBN:9786133459274

CORE PAPER-XII

SOLID STATE PHYSICS

UNIT-I

Crystal Structure: Solids, Amorphous and Crystalline Materials, Lattice translation Vectors, Lattice with a Basis. Central and Non-Central Elements. Unit Cell, Miller Indices, Types of Lattices, Reciprocal Lattice, Brillouin zones, DiffractionofX-raysbycrystals,BraggLaw,AtomicandGeometricalFactor

UNIT-II

Elementary Lattice Dynamics: Lattice Vibrations and Phonons: Linear, Monotomic and Diatomic Chains, Acoustical and Optical Phonons, Qualitative Description of the phonon spectrum in solids, Dulong and Petits Law, Einstein and Debye theories of specific heat of solids, T^3 Law

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials, Classical Langevins theory of dia and Paramagnetic Domains, Curies law, Weiss Theory of Ferro magnetism and Ferro magnetic Domains, Discussion of B-H Curve, Hysteresis and Energy Loss.

UNIT-III

Dielectric Properties of Materials: Polarization Local Electrical Field at an Atom, Depolarization Field, Electric Susceptibility, Polari ability, Clausius

Mosotti Equation, Classical theory of Electronic Polarizability.

Lasers: Einsteins A and B coefficients, Meta stable States, Spontaneous and Stimulated emissions, Optical Pumping and population Inversion, Three Level and Four Level Lasers, Ruby Laser and He-Ne Laser.

UNIT-IV

Elementary band theory: Kronig-Penny model of band Gap, Conductor, Semiconductor (P and N type) and insulator, Conductivity of Semiconductor, mobility, Hall Effect, Measurement of conductivity (04 problem method) and Hall Coefficient.

Superconductivity: Experimental Results, Critical Temperature, Critical magnetic field, Meissner effect, Type I and type II Superconductors, Londons Equation and Penetration Depth, Isotope effect, Idea of BCS theory (No derivation)

Text Books:

1. Introduction to Solid State Physics- Charles Kittel (Wiley India) 8th Edition 2012
2. LASERS: Fundamentals and Applications-Thyagarajan and Ghatak (McMillan India)-2011

Reference Books:

1. Solid State Physics-N. W. Ashcroft and N.D. Mermin(Cengage)-2003
2. Solid State Physics- R.K.Puri and V.K. Babbar (S.Chand Publication)-2010
3. Solid State Physics S. O. Pillai (New Age Publication)-2008
4. Lasers and Non linear Optics B.B.Laud (Wiley Eastern)-2011
5. Elements of Solid State Physics-J.P. Srivastava (Prentice Hall of India)-2014
6. Elementary Solid State Physics-Ali Omar (Addison Wiley)-2002

CORE PAPER-XII LAB

(minimum 4 experiments are to be done)

1. Measurement of susceptibility of paramagnetic solution (Quinck's Tube-Method)

2. To measure the Magnetic susceptibility of Solids.
3. To measure the Dielectric Constant of a dielectric Materials and variation with frequency
4. To determine the Hall coefficient of a semiconductor sample.
5. To draw the BH curve of Fe using solenoid and to determine the energy loss from Hysteresis
6. To measure the resistivity and band gap of a given semiconductor by four-problem method.
7. To study PE hysteresis loop of a ferroelectric crystal

Reference Books:

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. A Text Books Book of Practical Physics, I. Prakash and Ramakrishna, 11 Ed., 2011, Kitab Mahal
4. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice- Hall of India.

CORE PAPER-XIII
ELECTROMAGNETIC THEORY

Maxwell Equations: Maxwell's equations, Displacement Current, Vector and Scalar Potentials, Gauge Transformations: Lorentz and Coulomb Gauge, Boundary Conditions at Interface between Different Media, Wave Equations, Plane Waves in Dielectric Media, Poynting Theorem and Poynting Vector, Electro- magnetic (EM) Energy Density, Physical Concept of Electromagnetic Field Energy Density

UNIT-II

EM Wave Propagation in Unbounded Media: Plane EM waves through vacuum and isotropic dielectric medium, transverse nature of plane EM waves,

refractive index and dielectric constant, wave impedance, Propagation through conducting media, relaxation time, skin depth, Electrical conductivity of ionized gases, plasma frequency, refractive index, skin depth, application to propagation through ionosphere.

UNIT-III

EM Wave in Bounded Media: Boundary conditions at a plane interface between two media, Reflection and Refraction of plane waves at plane interface between two dielectric media, Laws of Reflection and Refraction, Fresnel's Formulae for perpendicular and parallel polarization cases, Brewster's law, Reflection and Transmission coefficients, Total internal reflection, evanescent waves, Metallic reflection (normal Incidence)

UNIT IV

Polarization of Electromagnetic Waves: Description of Linear, Circular and Elliptical Polarization, Uniaxial and Biaxial Crystals, Light Propagation in Uniaxial Crystal, Double Refraction, Polarization by Double Refraction, Nicol Prism, Ordinary and extraordinary refractive indices, Production and detection of Plane, Circularly and Elliptically Polarized Light,

Phase Retardation Plates: Quarter-Wave and Half- Wave Plates. Babinets Compensator and its Uses, Analysis of Polarized Light.

Rotatory Polarization: Optical Rotation, Biots Laws for Rotatory Polarization, Fresnels Theory of optical rotation, Calculation of angle of rotation, Experimental verification of Fresnels theory, Specific rotation, Laurents half- shade polarimeter.

Text Books:

1. Introduction to Electrodynamics, D.J. Griffiths (Pearson)-2015
2. Principles of Optics- Max Born and E. Wolf- Cambridge University Press-1999

Reference Books:

1. Classical Electrodynamics by J.D. Jackson (Willey)-2007
2. Foundation of electromagnetic theory: Ritz and Milford (Pearson)-2008
3. Electricity and Magnetism : D C Tayal (Himalaya Publication)-2014
4. Optics : A.K.Ghatak (McGraw Hill Education)- 2017
5. Electricity and Magnetism: Chattopadhyaya, Rakhit (New Central)-2018

CORE PAPER XIII LAB

(minimum 4 experiments are to be done):

1. To verify the law of Malus for plane polarized light.
2. To determine the specific rotation of sugar solution using Polarimeter.
3. To analyze elliptically polarized Light by using a Babinets compensator.
4. To determine the refractive index of liquid by total internal reflection using Wollastonsair-film.
5. To determine the refractive Index of (1) glass and (2) a liquid by total internal reflection using a Gaussian eye piece.
6. To study the polarization of light by reflection and determine the polarizing angle for air-glass interface.
7. To verify the Stefan's law of radiation and to determine Stefan's constant.
8. To determine the Boltzmann constant using V-I characteristics of PN junction diode.
9. To determine wavelength and velocity of ultrasonic wave in liquid.

Reference Books:

1. Adva•nced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Adva•nced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Te•xt Books Book of Practical Physics, I.Prakashand Ramakrishna, 11 Ed., 2011, Kitab Mahal Electromagnetic Field Theory for Engineers and Physicists, G. Lehner, 2010,Springer

CORE PAPER-XIV

STATISTICAL MECHANICS

UNIT- I

Classical Statistics-I: Macrostate and Microstate, Elementary Concept of Ensemble, Micro canonical, Canonical and Grand Canonical ensemble, Phase Space, Entropy and Thermodynamic Probability, Maxwell-Boltzmann Distribution Law, Partition Function.

UNIT- II

Classical Statistics-II : Thermodynamic Functions of an Ideal Gas, classical Entropy Expression, Gibbs Paradox, Sackur Tetrode equation, Law of equi partition of Energy (with proof)- Applications to Specific Heat and its Limitations, Thermodynamic Functions of a two energy levels system, Negative Temperature.

UNIT-III

Quantum Statistics: Identical particles, macrostates and microstates, Fermions and Bosons, Bose Einstein distribution function and Fermi- Dirac distribution function. Bose- Einstein Condensation, Bose deviation from Plancks law, Effect of temperature on Fermi-Dirac distribution function, degenerate Fermi gas, Density of States Fermi energy.

UNIT-IV

Radiation: Properties of Thermal Radiation, Blackbody Radiation, Pure Temperature dependence, Kirchhoffs law, Stefan Boltzmann law: Thermodynamic proof, Radiation Pressure, Weins Displacement law, Wiens distribution Law, Sahas Ionization Formula, Rayleigh Jeans Law, Ultra Violet catastrophe.

Plancks Law of Black body Radiation: Experimental verification, Deduction of (1) Wiens Distribution Law, (2) Rayleigh Jeans Law, (3) Stefan Boltzmann Law, (4) Weins Displacement Law from Plancks Law.

Text Books:

1. Introduction to Statistical Physics by Kerson Huang(Wiley).-2008
2. Statistical Physics ,Berkeley Physics Course, F.Reif (Tata McGraw-Hill)-2017

ReferenceBooks:

1. Statistical Mechanics, B.K.Agarwal and Melvin Eisner (New Age International)-2013
2. Thermodynamics, Kinetic Theory and Statistical Thermodynamics: Francis W.Sears and Gerhard L. Salinger (Narosa) 1998
3. Statistical Mechanics: R.K.Pathria and Paul D. Beale (Academic Press)-2011

CORE PAPER-XIV LAB

Use C/C++/ Sci lab for solving the problems based on Statistical Mechanics like

1. Plot Plancks law for Black Body radiation and compare it with Weins law and find Wein's constant and Stefan constant
2. plot Raleigh-Jeans Law at high temperature (room temperature) and low temperature.
3. Plot Specific Heat of Solids by comparing (a) Dulong-Petit law, (b) Einstein distribution function, (c) Debye distribution function for high temperature (room temperature) and low temperature and compare them for these two cases
4. Plot Maxwell-Boltzmann distribution function
5. Plot Fermi-Dirac distribution function
6. Plot Bose-Einstein distribution function.

Reference Books:

1. Elem•entary Numerical Analysis, K.E. Atkinson, 3rdEdn. 2007, Wiley India Edition
2. Statis•tical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Edition,

1996, Oxford University Press.

3. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears and Gerhard L. Salinger, 1986, Narosa.
4. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009,Springer
5. Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernndez. 2014 Springer ISBN: 978-3319067896
6. Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
7. Scilab Image Processing:L. M.Surhone. 2010, Betascript Pub., ISBN: 978-6133459274

Discipline Specific Elective Paper-1

CLASSICAL DYNAMICS

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

UNIT-I

Generalised co-ordinates and Velocities, Generalised Force, Principle of virtual work Derivation of Lagranges equation of motion from D Alemberts Principles, Lagrangian and its Application to Simple, Compound and Double Pendulums, Single Particle in Space, At woods Machine, Dumbbell, Linear harmonic oscillator.

UNIT-II

Hamiltons Principle, Calculus of Variation and derivation of Euler-Lagranges equation, Langranges Equations derived from Hamiltons Principles, Hamiltoian and its applications to Shortest Distance between two points in a plane, Geodesic

Problem, minimum surface of revolution, Brachistochrone problem, The Equations of motion and first integrals, The equivalent one-dimensional problem and classification of orbits, canonical momenta, Hamiltions equations of motion, Motion of charged particles in external electric and magnetic fields, Applications to central force motion and coupled oscillators.

UNIT- III

Special theory of Relativity (Postulates of special theory of relativity), Lorentz transformations, Minkowski space, The invariant interval, light cone and world lines, space time diagrams, Times-dilation, length contraction and Twin paradox, Variation of mass with velocity mass energy relation

UNIT- IV

Four Vectors: Space Like, Time-like and light-like. Four velocity and acceleration, Four momentum and energy-momentum relation. Doppler effects from a four vector perspective, Concept of four-force, Conservation of four momentum, Application to two body decay of anun stable particle

Text Books:

1. Classical Mechanics, H.Goldstein, C.P. Poole, J.L. Safko (Pearson) - 20112.Classical Mechanics N C Rana and P S Joag.-2017

Reference Books:

1. Mechanics-D.S.Mathur (Sultan Chand)-2000
2. Solved problems in Classical Mechanics, O.L. Delange and J.Pierrus (Oxford Press)(2010)
3. Classical Mechanics-M. Das, P.K. Jena, M. Bhuyan, R.N. Mishra(Srikrishna Prakashan)-2009
4. Mathematical Physics with Classical Mechanics-Satya Prakash (Sultan Chand and sons)-2014

5. Introduction to classical dynamics R.K.Takwale and S.Puranik (Tata McGraw Hill)-2017
6. Classical Mechanics J.C. Upadhyay (Himalayan Publisher)-2017
7. Classical Dynamics of particles and systems -S.T.Thorton and Marion (Cengage publication)-2012

Discipline Specific Elective Paper-1I

Nuclear and Particle Physics

UNIT-I

General properties of Nuclei: Constituents of nucleus and their intrinsic properties, Quantitative facts about mass, radius, charge density (matter density), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment electric moments, nuclear excites states.

Radioactivity decays: (a) Alpha decay: basics of alpha- decay processes, theory of alpha-emission, Gamow factor, Geiger Nuttall law (b) beta-decay: energy kinematics for beta-decay, positron emission, electron capture, neutrino hypothesis.

(c) Elementary idea of Gamma decay.

UNIT-II

Nuclear Models: Liquid drop model approach, semi empirical mass formula and significance of its various terms, conditions of nuclear stability, two nucleon separation energies, evidence for nuclear shell structure, nuclear magic number, basic assumption of shell models.

UNIT-III

Detector for nuclear radiations: Detector for nuclear radiations: Gas detectors: estimation of electric field, mobilityof particle, for ionization chamber and GM Counter. Basic Principle of Scintillation Detectors and Construction of photo-

multiplier tube (PMT). Semiconductor Detectors (Si and Ge) for charge Particle and photo detection (Concept of charge carrier and mobility), neutron detector.

Particle Accelerators: Van-de Graff generator (Tandem Accelerator), Lin- ear accelerator, Cyclotron, Synchrotrons

UNIT-IV

Particle Physics: Particle interactions, basic features, types of particles and its families,

Symmetries and conservation laws: Energy and momentum, angular momentum, parity, baryon number, Lepton number, Isospin, strangeness and charm, Elementary ideas of quarks and gluons.

Text Books:

1. Introduction to Nuclear Physics By Roy and Nigam-2014
2. Atomic and Nuclear Physics- N.Subramanyam, Brij Lal and Jivan Seshan (S. Chand Publishing)-2007

Reference Books:

1. Introduction to Modern Physics- H.S.Mani and G.K. Mehta(Affilated east and west) -2018
2. Introductory nuclear Physics-Kenneth S. Krane (Wiley India Pvt. Ltd)-1987
3. Introduction to Elementary Particles-D. Griffith (John Wiley and Sons)-2008
4. Concepts of Nuclear Physics - Bernard L. Cohen. (Tata Mcgraw Hill). -2017
5. Concepts of Modern Physics-Arthur Beiser (McGraw Hill)-2017

DisciplineSpecificElectivePaper- II1

Nano Materials and Applications

UNIT-I

Nanoscale Systems: Length scales in physics, Nanostructures: 1D, 2D and 3D

nanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, size effects in nano systems, Quantum confinement Applications of Schrodinger equation-infinite potential well, potential step, potential box, quantum confinement of carriers in 3D, 2D, 1D nanostructure and its consequences.

UNIT-II

Synthesis of Nanostructure Materials: Top down and bottoms up approach, Photo lithography Ball milling. Gas phase condensation, Vacuum deposition, Physical vapour deposition (PVT): Thermal evaporation, E-beam evaporation, Pulsed Laser deposition, Chemical vapour deposition (CVD), Sol-Gel Electrodeposition,Spraypyrolysis,Hydrothemalsynthesis,Preparationthrough colloidal methods, MBE growth of quantum dots.

UNIT-III

Characterization: X-Ray Diffraction, Optical Microscopy, Scanning Electron Microscopy, Transmission Electron Microscopy, Atomic Force Microscopy, Scanning Tunneling Microscopy

UNIT-IV

Applications: Applications of nano particles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron devices (no derivation). CNT based transistors. Nonmaterial Devices: Quantum dots hetero structure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots- magmetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS)

Text Books:

1. S.K. Kulkarni, Nanotechnology: Principles and Practices (Capital Publishing Company)-3rd Edition 2014

2. Nano science and nano technology, K.K. Choudhary (Narosa)-2016

Reference Books:

1. Nano Science and nano technology, Sundar Singh (Pragati Prakashan)-2017
2. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.)-2007
3. Richard Booker, Earl Boysen, Nanotechnology(John Wiley and Sons)-2005
4. M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama, Nanoparticle Technology Handbook (Elsevier, 2007)
5. K.K. Chattopadhya and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited)-2009

Discipline Specific Elective Paper-1V

Project

OR

Basic Instrumentation

Basic Instrumentation

UNIT-I

Basic of Measurement: Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects.

Multimeter: Principles of measurement of dc voltage and dc current, ac volt- age, ac current and resistance. Specifications of a multimeter and their significance.

Electronic Voltmeter: Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement (block diagramonly).Specifications of an electronic Voltmeter/ Multimeter and their significance.

AC mill voltmeter: Type of AC mill voltmeters: Amplifier- rectifier, and rectifier-amplifier. Block diagram ac mill voltmeter, specifications and their significance.

UNIT-II

Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only no mathematical treatment), brief discussion on screen phosphor, visual persistence and chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance.

Use of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle ofworking.

UNIT-III

Signal Generators and Analytical Instruments: Block diagram, explanation and specifications of low frequency signal generators, pulse generator, and function generator, Brief idea for testing, specifications, Distortion factor meter, wave analysis.

UNIT-IV

Digital Instruments: Principle and working of digital meters, Comparison of analog and digital instruments, Characteristics of a digital meter, Working principles of digital voltmeter.

Digital Multimeter: Block diagram and working of a digital multimeter, Working principle of time interval, frequency and period measurement using universalcounter/frequencycounter,time-basestability,accuracyandresolution.

The test of lab skills will be of the following test items:

1. Use of an oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment,
4. Use of Digital multimeter /VTVM for measuring voltages
5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil /transformer.

7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

Laboratory Exercises:

1. To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
2. To observe the limitations of a multimeter for measuring high frequency voltage and currents.
3. To measure Q of a coil and its dependence on frequency, using a Q-meter.
4. Measurement of voltage, frequency, time period and phase angle using CRO.
5. Measurement of time period, frequency, average period using universal counter/ frequency counter.
6. Measurement of rise, fall and delay times using a CRO.
7. Measurement of distortion of a RF signal generator using distortion factor meter.
8. Measurement of R, L and C using a LCR bridge/universal bridge.

Open Ended Experiments:

1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

More emphasis should be given on hands-on experiments.

Text Books:

1. A Text Books book of electrical technology-B.L.Theraja and A.K. Theraja (S. Chand Publishing)-2014
2. Digital circuits and systems Venugopal (Tata McGraw Hill)-2011

Reference Books :

1. Digital Electronics-Subrata Ghoshal (Cengage Learning)-2017
2. Electronic Devices and circuits - S. Salivahanan and N. S.Kumar (Tata Mc-Graw Hill)-2012
3. Electronic Devices-Thomas L. Floyd (Pearson)-2015

Additional Reference Books for Practical papers:

1. An advanced course in Practical Physics- Chattopadhayay, Rakshit-

Central-2013
2. Practical Physics-B.B.Swain (Kitab Mahal)-2014
3. Advanced practical Physics-B.Ghosh and KG Majumdar (Vol. I and II)-Shreedhar Publication-2004
4. ALaboratoryManualofPhysicsforUndergraduateClasses,D.P.Khandelwal (Vani Publication)-1985
5. B.Sc. Practical Physics- C.L.Arora (S.Chand Publishing)-2010
6. B.Sc. Practical Physics H. Singh and P.S. Hemne (S. Chand Publishing)-2002

GENERIC ELECTIVE (GE)

Generic Elective Paper I

(Mechanics and Properties of matter, Oscillation and Waves, Thermal Physics, Electricity and Magnetism and Electronics

UNIT-I

Mechanics and Properties of Matter

Moment of Inertia Parallel axis and perpendicular axis theorem, M.I. of a Solid sphere and Solid cylinder, Gravitational potential and field due to a thin spherical shell and a solid sphere at external points and internal points, Relation among elastic constants, depression at free end of a light cantilever, Surface tension,pressure,differenceacrossacurvedmembrane,viscousflow,Poiseulles formula.

UNIT-II

Oscillation and Waves

Simple harmonic motion, damped harmonic motion, under damped, over damped and critically damped motion, Forced vibration, Resonance, Wave equation in a medium, Velocity of Longitudinal waves in an elastic medium and velocity of transverse wave in a stretched string, Composition of SHM, Lissajous figures for

superposition of two orthogonal simple harmonic vibrations (a) with same frequency, (b) frequency with 2:1.

UNIT-III

Thermal Physics

Entropy, change in entropy in reversible and irreversible process, Carnot engine and its efficiency. Carnot Theorem, Second law of thermodynamics, Kelvin-Planck, Clausius formula. Thermal conductivity, differential equation for heat flow in one dimension, Maxwell thermodynamic relation (statement only), Clausius Clapeyron equation, Black body radiation, Planck radiation formula (No derivation).

UNIT-IV

Electricity and Magnetism

Gauss law of electrostatics, use of Gauss law to compute electrostatic field due to a linear charge distribution, Magnetic induction B, Lorentz force law, Biot Savarts law, Magnetic induction due to long straight current carrying conductor, and in the axis of a current carrying circular coil, Amperes Circuital law,itsdifferentialform,Thelawofelectromagneticequations,itsdifferential and integral form, Maxwells electro-magnetic equations and their physical significance, Growth and decay of currents in LR and RC circuits, time constant, alternating currents in RC, RL and LCR circuits, impedance, power factor, resonance.

P-type and N-type semiconductors, PN-Junction as rectifier, Half wave and Full wave rectifiers (Bridge type), efficiency, ripple factor, use of RC, LC, and filters, working of PNP and NPN transistors, transistor configurations in CE and CB circuits and relation between α and β. JFET, its operation and characteristics of V-Icurve.

Text Books:

1. Elements of Properties of Matter D.S. Mathur (S. Chand Publication)-2010
2. Heat and Thermodynamics A.B. Gupta and H.B. Ray (New Central

Book Agency)-2010

3. A Text Books book of oscillations, waves and acoustics(5thed.)M. Ghosh and D. Bhattacharya (S. Chand Publication)-2018
4. Electricity and magnetism- R. Murugeshan (S.Chand publishing)-2017
5. Fundamentals of Electronics-Raskhit and Chattopadhyay (New age International Publication)-2018

Reference Books:

1. Physics of Degree students Vol.I M. Das, P.K. Jena etal (Sri krishna Prakashan)-2006
2. Physics of Degree students Vol.II M. Das, P.K. Jena etal (Sri krishna Prakashan)-2006
3. Waves and Oscillations (2nd ed) N. Subramaniyam and Brij Lal (Vikas Publications)-1994
4. A Text Books book of Sound (2nd ed) - N. Subramaniyam and Brij Lal (S. Chand Publications)-1999

Generic Elective Paper I Lab-

(minimum 6 experiments are to be done)

1. To determine the moment of inertia of a fly wheel.
2. To determine the Young's modulus Y of a wire by Searl's method.
3. To determine the modulus of rigidity of a wire by Maxwell's needle/Torsion Pendulum (Dynamic method).
4. To determine g by bar pendulum.
5. To determine the value of Y of a rubber by using travelling microscope.
6. To determine the Rigidity of modulus by static method.
7. To determine the frequency of a telescope by using Sonometer.
8. Verification of Laws of Vibration of a string by using Sonometer.
9. To compare capacitances using De Sauty bridge.
10. To determine the Law of resistance by using Foster bridge.
11. Compare the specific heat of two liquids by method of Cooling.

Reference Books:

1. Advanced Practical Physics for students, B.L. Flintand H.T.Worsnop, 1971, Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P. Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, NewDelhi

Generic Elective Paper -II

(Optics, Special Theory of Relativity, Atomic Physics, Quantum Mechanics and Nuclear Physics)

UNIT-I

Optics-I: Elementary ideas of monochromatic aberrations and their minimization, chromatic aberration, achromatic combination, Theory of formation of primary and secondary rainbow, condition of interference, coherent sources, Youngs double slit experiment, biprism and measurement of wave length of light of by it, color of thin films and Newton's rings, Fresnel and Fraunhoffer diffraction, diffraction by single slit plane transmission grating.

Optics-II : Electromagnetic nature of light, polarized and unpolarized light, polarization by reflection and refraction, Brewster's Law, Mauls Law, Double refraction, Ordinary and extraordinary rays.

UNIT-II Atomic Physics

Inadequacy of classical physics, brief outline of Rayleigh Jeans theory and Planck's quantum theory of radiation, particle nature of electromagnetic radiation photo electric effect, Compton effect, dual nature of radiation, wave nature of particles, de- Broglie hypothesis, matter wave, wave-particle duality, Davisson- Germer experiment.

Bohr's theory of Hydrogen atom, explanation of Hydrogen Spectra, correction for finite mass of the nucleus, Bohrs correspondence principle, limitations of Bohr's

theory, Discrete energy, exchange by atom Frank Hertz experiment.

UNIT-III

Quantum Mechanics : Heisenberg's Uncertainty relation, Time dependent Schrodinger's wave equation in one dimension and three dimensions, The physical interpretation of the wave function, Probability density and probability current density, Equation of continuity, Normalization of the Wave function, Expectation value of an observable, Ehrenfest's theorem. Time independent Schrodinger's wave equation in one dimension particle in a box, energy eigen values and eigen functions.

UNIT-IV

Nuclear Physics : Properties of the nucleus Charge, Size, Spin, Magnetic Moment, Mass, Mass defect, Binding energy, Packing fraction, Nuclear force and its characteristics features, Radioactive decay laws, average life, half life, nuclear fission, nuclear fusion, Linear accelerators, and cyclotron.

Relativity: Galilean transformation, Newtonian relativity and its limitation, Michelson Morley experiment and it's consequence, postulates of special theory of relativity. Lorentz transformation, length contraction, time dilation, relativistic mass and momentum, mass energy relation.

Text Books:

1. University Physics, H. D. Young, R. A. Freedman (Person)-2017
2. Fundamentals of Physics, Resnick, Halliday, Walker (WIley)-2015

Reference Books:

1. A Text Books book of Optics N. Subrahmanyam and Brij Lal (S.Chand Publishing)-2006
2. Introduction to Special Relativity-R. Resnick (John Wiley)-2007
3. Concepts of Modern Physics Arthur Beiser (McGraw Hill)-2017
4. Modern Physics H.S. Mani and G.K.Mehta-2018.

Generic Elective Paper II LAB (minimum 6 experiments are to be done):

1. Determination of E.C.E. of a Copper by taking 3readings.
2. Determination of Refractive index of the material of a prism using Sodium light.
3. To determine the wavelength of light using plane diffraction grating.
4. To determine the wavelength of light using Newton's ring.
5. Determination of refractive index of (a) glass and (b) liquid by using travelling microscope.
6. To plot the I-D curve and to determine the refractive index of a prism
7. Determination of radius of curvature of a convex/concave mirror by using Kohlrausch's method.
8. T o determine the magnifying power of a giventelescope.
9. To Obtain the static characteristics of a P-N-P/N-P-N transistor/ Triode Valve.
10. To determine the reduction factor of a tangent Galvanometer.
11. To study the Variation of magnetic field along the axis of a circular coil carrying current.

Reference Books:

1. Advanced Practical Physics for students, B.L.Flint and H.T. Worsnop, (1971), Asia Publishing House
2. A Laboratory Manual of Physics for Undergraduate Classes, D.P.Khandelwal (1985), Vani Publication
3. A Text Books of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition (2011), Kitab Mahal, New Delhi

Faculty Training to be imparted in the following Topics

Computational Physics Lab—C, C++,

Scilab Programming for Core I,C-V,C-VIII,C-XI and C-XIII Practicals.

2. Digital Electronics. Theory and Practicals.

3. Quantum Mechanics Problem Solving

4. Solid State Physics- Elementary Band Theory and Superconductivity

5. Statistical Mechanics.-Quantum Distribution

6. Nanotechnology.

ESSENTIAL LABORATORY EQUIPMENT RECOMMENDED :

Every college must have CRO, Function generator, Laser and Logic Gate packages.

Course Structure of U.G. Zoology Honours				
Semester	**Course**	**Course Name**	**Credit**	**Total marks**
Semester-I	AECC I	AECC I	4	100
	Core I (Theory)	Non-chordates I: Protista to Pseudocoelomates	4	75
	Core I (Practical)	Non-chordates I: Protista to Pseudocoelomates	2	25
	Core II (Theory)	Principles of Ecology	4	75
	Core II (Practical)	Principles of Ecology	2	25
	GE 1 (Theory)	GE 1 (Theory)	4	75
	GE I (Practical)	GE I (Practical)	2	25
Semester-II	AECC 2	AECC 2	4	100
	Core III (Theory)	Non chordates II: Coelomates	4	75
	Core III (Practical)	Non chordates II: Coelomates	2	25
	Core IV (Theory)	Cell biology	4	75
	Core IV (Practical)	Cell biology	2	25
	GE II (Theory)	GE II (Theory)	4	75
	GE II (Practical)	GE II (Practical)	2	25
Semester-III	Core V (Theory)	Diversity of Chordates	4	75
	Core V (Practical)	Diversity of Chordates	2	25
	Core VI (Theory)	Physiology: Controlling and Coordinating systems	4	75
	Core VI (Practical)	Physiology: Controlling and Coordinating systems	2	25
	Core VII (Theory)	Fundamentals of Biochemistry and microbiology	4	75
	Core VII (Practical)	Fundamentals of Biochemistry and microbiology	2	25
	SEC 1	SEC 1	4	100
	GE III (Theory)	GE III (Theory)	4	75
	GE III (Practical)	GE III (Practical)	2	25
Semester-IV	Core VIII (Theory)	Comparative anatomy of Vertebrates	4	75

	Core VIII (Practical)	Comparative anatomy of Vertebrates	2	25
	Core IX (Theory)	Physiology: Life Sustaining Systems	4	75
	Core IX (Practical)	Physiology: Life Sustaining Systems	2	25
	Core X (Theory)	Biochemistry of Metabolic Processes	4	75
	Core X (Practical)	Biochemistry of Metabolic Processes	2	25
	SEC 2	SEC 2	4	100
	GE IV (Theory)	GE IV (Theory)	4	75
	GE IV (Practical)	GE IV (Practical)	2	25
Semester-V	Core XI (Theory)	Molecular Biology	4	75
	Core XI (Practical)	Molecular Biology	2	25
	Core XII (Theory)	Principles of Genetics	4	75
	Core XII (Practical)	Principles of Genetics	2	25
	DSE I (Theory)	DSE 1	4	75
	DSE I (Practical)	DSE 1	2	25
	DSE II (Theory)	DSE II	4	75
	DSE II (Practical)	DSE II	2	25
Semester-VI	Core XIII (Theory)	Developmental Biology	4	75
	Core XIII (Practical)	Developmental Biology	2	25
	Core XIV (Theory)	Evolutionary Biology	4	75
	Core XIV (Practical)	Evolutionary Biology	2	25
	DSE III (Theory)	DSE III	4	75
	DSE III (Practical)	DSE III	2	25
	DSE IV (Theory with Practical /Project)	Project/ Economic Zoology	6	100
		Total	**148**	**2600**

ZOOLOGY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers (Out of 9 suggested papers)

Generic Elective for Non Zoology students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 15 marks, End term: 60 marks (Theory) + 25 marks (Practical), Total – 100 marks

Credit per paper – 6

Teaching hours per paper – 40 hours (theory) + 10 hours (practical)

Core Paper I

Non-Chordates I: Protista to Pseudocoelomates

Unit 1: Protista, Parazoa, Metazoa and Porifera

General characteristics and Classification up to classes. Study of *Euglena*, *Amoeba*. Life cycle and pathogenicity of *Plasmodium vivax* and *Entamoeba histolytica*. Locomotion and Reproduction in Protista.General characteristics and Classification up to classes, Canal system and spicules in sponges.

Unit 2: Cnidaria & Ctenophora

General characteristics and Classification up to classes, Metagenesis in *Obelia*, Polymorphism in Cnidaria, Corals and coral reefs. General characteristics and Evolutionary significance of Ctenophora.

Unit 3: Platyhelminthes

General characteristics and Classification up to classes. Life cycle and pathogenicity of *Fasciola hepatica* and *Taenia solium.*

Unit 4: Nemathelminthes

General characteristics and Classification up to classes. Life cycle, and pathogenicity of *Ascaris lumbricoides* and *Wuchereria bancrofti*. Parasitic adaptations in helminthes.

Note: Classification to be followed from "Barnes, R.D. (1982). Invertebrate Zoology, V Edition"

PRACTICAL

1. Study of whole mount of *Euglena*, *Amoeba* and *Paramecium*, Binary fission and Conjugation in *Paramecium*.

2. Examination of pond water collected from different places for diversity in protista.

3. Study of *Sycon* (T.S. and L.S.), *Hyalonema*, *Euplectella, Spongilla*.

4. Study of *Obelia, Physalia, Millepora, Aurelia, Tubipora, Corallium, Alcyonium, Gorgonia*,

Metridium, Pennatula, Fungia, Meandrina, Madrepora.

5. One specimen/slide of any ctenophore.

6. Study of adult *Fasciola hepatica*, *Taenia solium* and their life cycles (Slides/microphotographs).

7. Study ofadult *Ascaris lumbricoides* and its life stages (Slides/micro-photographs).

8. To submit a Project Report on any related topic onlife cycles/coral/ coral reefs.

Note: Classification to be followed from "Ruppert and Barnes (2006) Invertebrate Zoology, 8th edition, Holt Saunders International Edition"

TEXT BOOKS

1. Kotpal RL; Modern Textbook of Zoology – Invertebrates; Rastogi Publications - Meerut; 2016 edition
2. Richard Busca, W. Moore, Stephen M. Shuster. Invertebrates; OUP USA; 3rd edition (19 January 2016)

SUGGESTED READINGS

1. Richard Fox , Robert D. Barnes, Edward E. Ruppert, Invertebrate Zoology: A Functional Evolutionary Approach, Brooks/Cole; 7th edition 2003
2. Barrington, E.J.W.Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson.
3. Hyman, L.H. Invertebrate Series (Recent edition)
4. Verma P. S. A Manual of Practical Zoology: Invertebrates. S Chand Publication
5. Parker JJ and WA Haswel Textbook of Zoology. Vol I and II

Core Paper II Principles of Ecology

Unit 1: Ecosystem and Applied Ecology

Ecology: Autecology and synecology, Types of ecosystems with one example in detail, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids Nutrient and biogeochemical cycle with one example of Nitrogen cycle. Ecology in Wildlife Conservation and Management. Laws of limiting factors, Study of physical factors- (Light, temperature).

Unit 2: Population

Attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion Exponential and logistic growth, equation and patterns, r and K strategies. Population regulation - density-dependent and independent factors, Population interactions, Gause's Principle with laboratory and field examples.

Unit 3: Community

Community characteristics: species richness, dominance, diversity, abundance,vertical stratification, Ecotone and edge effect; Ecological succession with one example. Theories pertaining to climax community.

Unit – 4: Biometry

Biological data, graphical representation of data (frequency polygon and histogram), sampling techniques, measures of central tendency (Mean, median and mode), Measures of dispersion (range, quartile deviation, mean deviation and standard deviation), Hypothesis and hypothesis testing (Chi-square test, t- test)

PRACTICAL

1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.
2. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.
3. Study of an aquatic ecosystem: Phytoplankton and zooplankton collection, preservation and mounting, Measurement of temperature, turbidity/penetration of light, determination of pH, Dissolved Oxygen content (Winkler's method), BOD, COD, Free CO_2, Hardness, TDS.
4. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary.
5. Chi-square analysis using seeds/beads/*Drosophila*.
6. Problems on standard deviation.
7. Graphical representation of data (Frequency polygon and Histogram).

Text Book

1. Odum, E.P. and Barrett, G.W., (2018). Fundamentals of Ecology, 5th Edition
2. Smith and Smith, Elements of Ecology, Global Edition; Pearson Education India; ninth edition (14 May 2015)
3. Myra Samuels, J. Witmer,A. Schaffner, Statistics for the life sciences, Prentice Halls, Boston, 4th edition, 2012

Suggested Readings

1. Kormondy, (2017). Concepts of Ecology, Updated 4/e, Pearson
2. Colinvaux, P. A. (1993). Ecology. II Edition. Wiley, John and Sons, Inc. Krebs, C. J. (2001). Ecology. VI Edition. Benjamin Cummings.
3. Ricklefs, R.E., (2000). Ecology. 5th Edition. Chiron Press
4. Dash M.C., Fundamentals of Ecology. Mc GrawHill
5. Smith TM and Smith RL, Elements of Ecology, 8th Edition,Pearson education INC, USA
6. Miller, G.T. and Spoolman, S.E. (2017) Environmental Science, 14th Edition. Cengage Publication, New Delhi.
7. Baneerjee Pranab Kumar, Introduction to biostatistics, S Chand & Company; 3rd Rev. Edn. 2006 edition
8. Chainy GBN, Mishra G, Mohanty PK, 2016, Basic Biostatistics, Kalyani Publisher 3rd edition

Core Paper III

Non- Chordates II: Coelomates

Unit 1: Coelomates and Annelids

Evolution of coelom and metamerism. General characteristics and Classification up to classes; Excretion in Annelida.

Unit 2: Arthropoda and Onychophora

General characteristics and Classification up to classes. Vision and Respiration in

Arthropoda. Metamorphosis in Insects. Social life in bees and termites. Onychophora: General characteristics and Evolutionary significance.

Unit 3: Mollusca

General characteristics and Classification up to classes. Respiration in Mollusca. Torsion and detorsion in Gastropoda. Evolutionary significance of trochophore larva.

Unit 4: Echinodermata

General characteristics and Classification up to classes. Water-vascular system in Asteroidea, Larval forms in Echinodermata, Affinities with Chordates.

Note: Classification to be followed from "Ruppert and Barnes (2006)Invertebrate Zoology,8th edition, Holt Saunders International Edition"

PRACTICAL

1. Study of following specimens:
2. Annelids - *Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria*
3. Arthropods – *Tachypleus,Carcinoscorpious, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina*, Cancer, *Eupagurus, Scolopendra, Julus, Bombyx, Periplaneta*, termites and honey bees
4. Onychophora –*Peripatus*
5. Molluscs - *Chiton, Dentalium, Pila, Doris, Helix, Unio, Ostrea, Pinctada, Sepia, Octopus, Nautilus*
6. Echinodermates - *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria and Antedon*
7. Study of digestive system, nephridia of earthworm (Virtual).
8. T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm.
9. Mount of mouth parts and dissection of digestive system and nervous system of *Periplaneta.*
10. To submit a Project Report on any related topic to larval forms (crustacean, mollusc and echinoderm)

Text Books

1. Kotpal RL (2014) Text book of Zoology, Invertebrate, Rastogi Publication
2. Jordan and Verma PS (2009) Invertebrate Zoology. S Chand publication.

Suggested Readings

1. Barrington, E.J.W. (1979). Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson.
2. Barnes, R.S.K., Calow, P., Olive, P. J. W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
3. Verma P S. (2010) A Manual of Practical Zoology: Non-chordates. S Chand Publication

Core Paper IV Cell biology

Unit 1: Overview of cells and plasma membrane

Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions, Various models of plasma membrane structure. Transport across membranes: Active and Passive transport, Facilitated transport. Cell junctions: Tight junctions, Desmosomes, Gap

junctions.

Unit 2: Cytoskeleton & Endomembrane System

Structure and Functions: Microtubules, Microfilaments and Intermediate filaments; Structure and Functions: Endoplasmic Reticulum, Golgi apparatus, Lysosomes.

Unit 3: Mitochondria and Peroxisomes

Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis; Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis. Peroxisomes.

Unit 4: Nucleus, Cell Division and Cell signalling

Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus; Chromatin: Euchromatin and Hetrochromatin and packaging (nucleosome); Mitosis, Meiosis, Cell cycle and its regulation; GPCR and Role of second messenger (cAMP)

Practical

1. Preparation of temporary stained squash of onion root tip to study various stages of mitosis.
2. Study of various stages of meiosis.
3. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.
4. Preparation of permanent slide to demonstrate:
   i. DNA by Feulgen reaction
   ii. DNA and RNA by MGP
   iii. Mucopolysaccharides by PAS reaction
   iv. Proteins by Mercuric bromophenol blue/Fast Green
5. Demonstration of osmosis (RBC/ Egg etc.).

Text Books

1. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). Cell and Molecular Biology. VIII Edition. Lippincott Williams and Wilkins, Philadelphia.
3. S Harisha (2007) Biotechnology procedures and experiments handbook., Infinity Science Press, Hingham

Suggested Readings

1. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008). MolecularBiology of the Cell, V Edition, Garland publishing Inc., New York and London.
2. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
3. Suvarna S, Lyton C, Bancroft JD (2013) Theory and practice of histological techniques, Churchill Livingstone, Elsevier, UK
4. Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. V Edition. ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA.

Core Paper V

Diversity and distribution of Chordates

Unit 1: Protochordates and Origin of Chordates

Protochordata: General characteristics of Hemichordata, Urochordata and Cephalochordata;
Study of larval forms in protochordates; Retrogressive metamorphosis in Urochordata. General characteristics and outline classification Chordata. Dipleurula concept and the Echinoderm theory of origin of chordates.

Unit 2: Agnantha, Pisces & Amphibia

General characteristics of Agnatha: General characteristics and classification of cyclostomes up to class Chondrichthyes and Osteichthyes: classification up to order, Migration, Parental care in fishes, Accessory respiratory organs in pisces, Evolutionary significance of Dipnoi.
Amphibian: Origin of Tetrapoda (Evolution of terrestrial ectotherms); General characteristics and classification up to order. Parental care in Amphibia.

Unit 3: Reptilia& Aves

General characteristics and classification up to order in reptiles; Affinities of *Sphenodon*; Poison apparatus and Biting mechanism in snakes. General characteristics and classification up to order in Aves *Archaeopteryx* - a connecting link; Flight adaptations and Migration in birds.

Unit 4: Mammals & Zoogeography

General characters and classification up to order; Affinities of Prototheria; Adaptive radiation with reference to locomotory appendages. Zoogeographical realms, Theories pertaining to distribution of animals, Plate tectonic and Continental drift theory, distribution of vertebrates in different realms.

PRACTICAL

1. Protochordata: *Balanoglossus, Herdmania, Branchiostoma,* Colonial Urochordata, Sections of *Balanoglossus* through proboscis and branchio-genital regions, Sections of *Amphioxus* through pharyngeal, intestinal and caudal regions. Permanent slides of Herdmania spicules.
2. Agnatha: *Petromyzon* and *Myxine*.
3. Fishes*: Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/ Diodon, Anabas,* Flat fish.
4. Amphibia*: Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamander.*
5. Reptilia: *Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus*. Key for Identification of poisonous and non-poisonous snakes
6. Aves: Study of six common birds from different orders. Types of beaks and claws. Study of feathers.
7. Mammalia: *Sorex*, Bat (Insectivorous and Frugivorous), *Funambulus,* Loris, *Herpestes, Erinaceous*.
8. Power point presentation on study of any two animals from two different classes by students. Submission of album of local species.

TEXT BOOKS

1. Kotpal RL; Modern Textbook of Zoology –Vertebrates; Rastogi Publications - Meerut; 2016 edition
2. Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford University Press.
3. Tiwari SK (2006) Fundamentals of World Zoogeography, Sarup & Sons

SUGGESTED READINGS

1. Pough H. Vertebrate life, VIII Edition, 2007 Pearson International.
2. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
3. Hickman CP, Roberts LS, Keen S, Larson A, I'AnsonH, Isenhour DJIntegrated Principle of Zoology, 14th edition, 2008, McGrawHill publication
4. Verma PS and Srivastava PC. (2011)Advanced Practical Zoology. S Chand Publication.

Core Paper VI

Physiology: Controlling and Coordinating Systems

Unit 1: Tissues & Tissue system

Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue. Structure and types of bones and cartilages, Ossification, bone growth and resorption.

Unit 2: Muscle & Nervous System

Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction. Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types of synapse, Synaptic transmission and, Neuromuscular junction; Reflex action and its types - reflex arc; Physiology of hearing and vision.

Unit 3: Reproductive System

Histology of testis and ovary; Physiology of male and female reproduction; Hypothalamus-Pituitary & Gonadal axis. Puberty, Ovarian Cycle, Methods of contraception in male and female, Placental hormones.

Unit 4: Endocrine System

Histology of endocrine glands – Hypothalamus (Neuroendocrine gland) pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action; Classification of hormones and mechanism of hormone action, (steroidal and non- steroidal hormones).

PRACTICAL

1. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex).
2. Study of permanent slides- Squamous epithelium, Striated muscle fibres and nerve cells.
3. Study of permanent slides-Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid.
4. Microtomy: Preparation of permanent slides/photographs/computer models of any five types of mammalian (Goat/rat,etc) tissues

TEXT BOOKS

1. Marieb EN and Hoehn K, Human Physiology,(2013), 9th edition, Pearson Education,

USA.

2. Endocrinology, Hadley ME and Levine JE (2009), Pearson Education India; 6 edition
3. Textbook of Medical Physiology, Guyton & Hall, Elsevier, 12th edition, 2016

SUGGESTED BOOKS

1. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition., Lippincott W. & Wilkins
2. Martini F H, Nath J L and Bartholomew E F.(2015) Fundamentals of Anatomy and Physiology. Pearson Education Publication,
3. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. /W.B.Saunders Company.
4. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.

Core Paper VII

Fundamentals of Biochemistry and microbiology

Unit 1: Carbohydrates & Lipids

Structure and Biological importance: Monosaccharides, Disaccharides, Polysaccharides andGlycoconjugates; Structure and Significance: Physiologically important saturated and unsaturated fatty acids, Tri-acylglycerols, Phospholipids, Glycolipids, Steroids.

Unit 2: Proteins

Amino acids: Structure, Classification and General properties of α-amino acids; Physiological importance of essential and non-essential α-amino acids.
Proteins: Bonds stabilizing protein structure; Levels of organization in proteins; Renaturation, Denaturation; Introduction to simple and conjugate proteins
Immunoglobulins: Basic Structure, Classes and Function, Antigenic Determinants.

Unit 3: Enzymes

Nomenclature and classification; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Factors affecting rate of enzyme-catalyzed reactions; Derivation of Michaelis-Menten equation, Concept of Km and Vmax, Lineweaver- Burk plot; Multi-substrate reactions; Enzyme inhibition; Allosteric enzymes and their kinetics; Regulation of enzyme action.

Unit 4: Microbiology

Bacteria: Classification, structure and reproduction

Virus: classification, structure and reproduction, bacteriophages, viriods, prions, microbes of food, agriculture and industry

Bacterial (typhoid, cholera and tuberculosis) and viral (swine flu, zika fever and AIDS) diseases of human

PRACTICAL

1. Qualitative tests of functional groups in carbohydrates, proteins and lipids.
2. Paper chromatography of amino acids.
3. Action of salivary amylase under optimum conditions.
4. Effect of pH, temperature and inhibitors on the action of salivary amylase./Urease/acid or

alkaline phosphatase

5. Demonstration of proteins separation by SDS-PAGE.
6. Identification of different bacteria and viruses through slide/photographs

TEXT BOOKS

1. Satyanarayan and Chakrapani , (2017) Biochemistry, Elsevier; Fifth edition
2. Cox, M.M and Nelson, D.L. (2008). Lehninger's Principles of Biochemistry, V Edition, W.H. Freeman and Co., New York.
3. Jeremy M. Berg, Lubert Stryer, John L. Tymoczko, Gregory J. Gatto, Biochemistry, 8th edition, 2015.
4. Victor W., Rodwell, David A., Bender, Kathleen M., Botham, Peter J., Kennelly, P. Anthony,Harper's Illustrated Biochemistry, 31st edition.
5. Tortora GJ, Funke BR and Case CL (2016) Microbiology: An introduction, Pearson India Education Services Pvt.Ltd.11th edition

SUGGESTED READING

1. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw- Hill Companies Inc.
2. Watson, J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M. and Losick, R. (2008). Molecular Biology of the Gene, VI Edition, Cold Spring Harbor Lab. Press, Pearson Publication.
3. Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.
4. Devasena T. (2010). EnzymologyOxford University Press; 1 edition
5. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007). Biochemistry, VI Edition, W.H. Freeman and Co., New York.
6. Pelezar Jr.MJ,Chan E.C.S. and Krieg NR (2001) Microbiology, Mc-Graw Hill Education

Core Paper VIII Comparative Anatomy of Vertebrates

Unit 1: Integumentary & Skeletal System

Structure, functions and derivatives of integument (Scale, claw, nail, hair, feather and dentition). Axial and appendicular skeleton, Jaw suspensorium, Visceral arches.

Unit 2: Digestive & Respiratory System

Alimentary canal and associated glands; Respiration through skin, gills, lungs and air sacs; Accessory respiratory organs.

Unit 3: Circulatory and Urinogenital system

General plan of circulation, evolution of heart and aortic arches; Succession of kidney, Evolution of urinogenital ducts, Types of mammalian uteri.

Unit 4: Nervous System & Sense Organs

Comparative account of brain;Nervous system, Spinal cord, Cranial nerves in mammals. Classification of receptors: Brief account of visual and auditory receptors in man. Chemo and mechano receptors

PRACTICAL

1. Study of placoid, cycloid and ctenoid scales through permanent slides/photographs

2. Disarticulated skeleton of Frog, *Varanus*, Fowl, Rabbit.
3. Carapace and plastron of turtle /tortoise (Photographs, charts etc).
4. Mammalian skulls: One herbivorous and one carnivorous animal.
5. Study of structure of any two organs (heart, lung, kidney, eye and ear) from video recording (may be included if dissection not permitted).
6. Project on skeletal modifications in vertebrates (may be included if dissection not permitted).

TEXT BOOKS

1. Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education
2. Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies
3. R. K. Saxena and Sumitra Saxena (2016). Comparative Anatomy of Vertebrates 2nd edition.

SUGGESTED READINGS

1. Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate tructure, John Wiley and Sons
2. Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House

Core Paper IX Physiology: LifeSustaining Systems

Unit 1: Physiology of Digestion

Structural organization and functions of gastrointestinal tract and associated glands; Mechanical and chemical digestion of food; Absorptions of carbohydrates, lipids, proteins, water, minerals and vitamins; Hormonal control of secretion of enzymes in gastrointestinal tract.

Unit 2: Physiology of Respiration

Histology of trachea and lung; Mechanism of respiration, Pulmonary ventilation; Respiratory volumes and capacities; Transport of oxygen and carbon dioxide in blood; Respiratory

pigments, Dissociation curves and the factors influencing it; Carbon monoxide poisoning; Control of respiration.

Unit 3: Renal Physiology and Blood

Structure of kidney and its functional unit; Mechanism of urine formation; Regulation of water balance; Regulation of acid-base balance. Components of blood and their functions; Structure and functions of haemoglobin haemostasis: Haemopoiesis, Blood clotting system, Blood groups: Rh factor, ABO and MN.

Unit 4: Physiology of Heart

Structure of mammalian heart; Coronary circulation; Structure and working of conducting myocardial fibers. Origin and conduction of cardiac impulses Cardiac cycle; Cardiac output and its regulation, Frank-Starling Law of the heart, nervous and chemical regulation of heart rate. Electrocardiogram, Blood pressure and its regulation.

PRACTICAL

1. Determination of ABO Blood group
2. Enumeration of red blood cells and white blood cells using haemocytometer
3. Estimation of haemoglobin using Sahli's haemoglobinometer

4. Preparation of haemin and haemochromogen crystals
5. Recording of blood pressure using a sphygmomanometer
6. Examination of sections of mammalian slides: oesophagus, stomach, duodenum, ileum, rectum liver, trachea, lung, kidney.

TEXT BOOKS

1. Marieb E.N. and Hoehn K.N. (2009) Human Physiology. Pearson Education Publication , 9th edition
2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.
3. Guyton & Hall, (2016) Textbook of Medical Physiology. Elsevier, 12th edition,

SUGGESTED READINGS

1. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
2. Vander A, Sherman J. and Luciano D. (2014). Vander's Human Physiology: The Mechanism of Body Function. XIII Edition, McGraw Hills.
3. Moyes C.D., Schulte PM (2016), Principles of physiology, 2nd edition, Pearson education, 3rd.
4. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. W.B. Saunders Company.

Core Paper X Biochemistry of Metabolic Processes

Unit 1: Overview of Metabolism

Catabolism vs Anabolism, Stages of catabolism, Compartmentalization of metabolic pathways, Shuttle systems and membrane transporters; ATP as "Energy Currency of cell"; coupled reactions; Use of reducing equivalents and cofactors; Intermediary metabolism and regulatory mechanisms.

Unit 2: Carbohydrate Metabolism

Sequence of reactions and regulation of glycolysis, Citric acid cycle, Phosphate pentose pathway, Gluconeogenesis, Glycogenolysis and Glycogenesis.

Unit 3: Lipid and protein Metabolism

β-oxidation and omega -oxidation of saturated fatty acids with even and odd number of carbon atoms; Biosynthesis of palmitic acid; Ketogenesis
Catabolism of amino acids: Transamination, Deamination, Urea cycle; Fate of C-skeleton of Glucogenic and Ketogenic amino acids.

Unit 4: Oxidative Phosphorylation

Redox systems; Review of mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System

PRACTICAL

1. Estimation of total protein in given solutions
2. Detection of SGOT and SGPT or GST and GSH in serum/ tissue
3. To study the enzymatic activity of Trypsin/ Lipase.
4. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
5. Dry Lab (Virtual): To trace the labelled C atoms of Acetyl-CoA till they evolve as CO_2 in the TCA cycle.

TEXT BOOKS

1. Satyanarayan and Chakrapani , (2017) Biochemistry, Elsevier; Fifth edition.
2. Cox, M.M and Nelson, D.L. (2008). Lehninger Principles of Biochemistry, VEdition, W.H. Freeman and Co., New York.

SUGGESTED READINGS

1. Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw-Hill Companies Inc.
2. Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007).Biochemistry, VI Edition, W.H. Freeman and Co., New York.
3. Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.

Core Paper XI Molecular Biology

Unit 1: Nucleic Acids, DNA Replication & Repair

Salient features of DNA and RNA, Watson and Crick model of DNA.,Nucleic acids cot curves, denaturation and renaturation of DNA, DNA Replication in prokaryotes and eukaryotes, mechanism of DNA replication, Semi-conservative, bidirectional and semi-discontinuous replication, RNA priming, Replication of circular and linear ds-DNA, replication of telomeres, Pyrimidine dimerization and mismatch repair.

Unit 2: Transcription & Translation

RNA polymerase and transcription Unit, mechanism of transcription in prokaryotes and eukaryotes, synthesis of rRNA and mRNA, transcription factors and regulation of transcription.

Genetic code, Degeneracy of the genetic code and Wobble Hypothesis; Process of protein synthesis in prokaryotes: Ribosome structure and assembly in prokaryotes, fidelity of protein synthesis, aminoacyl tRNAsynthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Inhibitors of protein synthesis; Difference between prokaryotic and eukaryotic translation.

Unit 3: Post Transcriptional Modifications and Processing of Eukaryotic RNA

Structure of globin mRNA; Split genes: concept of introns and exons, splicing mechanism, alternative splicing, exon shuffling, and RNA editing, Processing of tRNA.

Unit 4: Gene Regulation & Regulatory RNAs

Transcription regulation in prokaryotes: Principles of transcriptional regulation with examples from lac operon and trp operon; Transcription regulation in eukaryotes: Activators, repressors, enhancers, silencer elements; Gene silencing, RNA interference, miRNA, siRNA.

PRACTICAL

1. Study of Polytene chromosomes from *Chironomous / Drosophila* larvae
2. Preparation of liquid culture medium (LB) and raise culture of E. coli
3. Estimation of the growth kinetics of E. coli by turbidity method
4. Preparation of solid culture medium (LB) and growth of E. coli by spreading and streaking
5. Quantitative estimation of Salmon sperm/calf thymus DNA using colorimeter (Diphenylamine reagent) or spectrophotometer (A_{260}nm measurement)

6. Quantitative estimation of RNA using Orcinol reaction
7. Study and interpretation of electron micrographs/ photograph showing
(a) DNA replication, (b) Transcription and (c) Split genes.

TEXT BOOKS

1. Karp, G. (2010) Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. Lewin B. (2013). Gene XI, Jones and Bartlett.
3. De Robertis E.D.P. (2017) Cell and Molecular Biology 8Ed.
4. Arnold Berk , Chris A. Kaiser, Harvey Lodish , Angelika Amon , Hidde Ploegh, Anthony Bretscher, Monty Krieger Kelsey C. Martin(2016) Molecular Cell Biology. 8th edition.

SUGGESTED READINGS

1. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
2. Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter: Molecular Biology ofthe Cell, IV Edition.
3. Cooper G. M. and Robert E. Hausman R. E. The Cell: A Molecular Approach**,** V Edition, ASM Press and Sinauer Associates.
4. McLennan A., Bates A., Turner, P. and White M. (2015). Molecular Biology IV Edition. GS, Taylor and Francis Group, New York and London.

Core Paper XII

Principles of Genetics

Unit 1: Mendelian Genetics, Linkage, Crossing Over and Chromosomal Mapping Principles of inheritance, Incomplete dominance and co-dominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Sex-linked, sex-influenced and sex-limited characters inheritance. Polygenic inheritance with suitable examples; simple numericals based on it.

Linkage and crossing over, Cytological basis of crossing over, Molecular mechanisms of crossing over including models of recombination, Recombination frequency as a measure of linkage intensity, Two factor and three factor crosses, Interference and coincidence, Somatic cell hybridization.

Unit 2: Mutations

Types of gene mutations (Classification), Types of chromosomal aberrations (Classification, figures and with one suitable example of each), Molecular basis of mutations in relation to UV light and chemical mutagens; Detection of mutations: CLB method, attached X method.

Unit 3: Sex Determination & Extra-chromosomal Inheritance

Chromosomal mechanisms of sex determination in *Drosophila* and Man; Criteria for extra-chromosomal inheritance, Antibiotic resistance in *Chlamydomonas*, Mitochondrial mutations in *Saccharomyces*, Infective heredity in *Paramecium* and Maternal effects.

Unit 4: Recombination in Bacteria and Viruses & Transposable Genetic Elements

Conjugation, Transformation, Transduction, Complementation test in Bacteriophage. Transposons in bacteria, Ac-Ds elements in maize and P elements in Drosophila, Transposons in human.

PRACTICAL

1. Study of Mendelian laws and geneinteractions.
2. Linkage maps based on data from conjugation, transformation and transduction.
3. Linkage maps based on data from *Drosophila* crosses.
4. Study of human karyotype (normal and abnormal).
5. Pedigree analysis of some human inherited traits.

TEXT BOOKS

1. Benjamin Pierce, (2015) Genetics- A Conceptual Approach, 5th edition, WH Freeman publication
2. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition.

SUGGESTEDREADINGS

1. Benjamin Cummings. Russell, P. J. (2009). Genetics- A Molecular Approach.III Edition.
2. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.
3. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B.Introduction to Genetic Analysis. IX Edition. W. H. Freeman and Co.
4. Fletcher H. and Hickey I. (2015). Genetics. IV Edition. GS, Taylor and Francis Group, New York and London.

Core Paper XIII

Developmental Biology

Unit 1: Introduction to Developmental Biology, Gametogenesis & Fertilization

Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division. Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy.

Unit 2: Early Embryonic Development

Cleavage: Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers.

Unit 3: Late Embryonic Development

Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta).

Unit 4: Post Embryonic Development & Implications of Developmental Biology

Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories. Teratogenesis: Teratogenic agents and their effects on embryonic development; In vitro fertilization, Stem cell (ESC), Amniocentesis.

PRACTICAL

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages).
2. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages).
3. Study of the developmental stages and life cycle of *Drosophila* from stock culture.
4. Study of different sections of placenta (photomicropgraph/ slides).
5. Project report on *Drosophila* culture/chick embryo development.
6. Study of developmental stages by raising chick embryo in thelaboratory

TEXT BOOKS

1. Lewis Wolpert (2010). Principles of Development. II Edition, Oxford University Press.
2. Gilbert, S. F. (2017). Developmental Biology, XI Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.

SUGGESTED READINGS

1. Carlson, R. F. Patten's Foundations of Embryology.
2. Kalthoff (2008). Analysis of Biological Development, II Edition, McGraw-Hill Publishers.
3. Verma PS and Agrawal VK, Chordata Embryology (2010) (S Chand Publication).

Core Paper XIV

Evolutionary Biology

Unit 1: Theories, Evidences of Evolution and Extinction

Life's Beginnings: Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of eukaryotes. Historical review of evolutionary concept: Lamarckism, Darwinism, Neo- Darwinism.Evidences of Evolution: Fossil record (types of fossils, transitional forms, geological time scale, evolution of horse, Sources of variations: Heritable variations and their role in evolution. Extinctions, Back ground and mass extinctions (causes and effects), detailed example of K-T extinction.

Unit 2: Process of Evolutionary changes

Population genetics: Hardy-Weinberg Law (statement and derivation of equation, application of law to human Population); Evolutionary forces upsetting H-W equilibrium; Natural selection (concept of fitness, selection coefficient, derivation of one unit of selection for a dominant allele, genetic load, mechanism of working, types of selection, density-dependent selection, heterozygous superiority, kin selection, adaptive resemblances, sexual selection). Genetic Drift (mechanism, founder's effect, bottleneck phenomenon); Role of Migration and Mutation in changing allele frequencies.

Unit 3: Species concept and Speciation

Product of evolution: Micro evolutionary changes (inter-population variations, clines, races, Species concept, Isolating mechanisms, modes of speciation—allopatric, sympatric, Parapatric. Adaptive radiation / macroevolution (exemplified by Galapagos finches);

Unit 4: Concept of Origin and Evolution of man

Origin and evolution of man, Unique hominin characteristics contrasted with primate characteristics, primate phylogeny from *Dryopithecus* leading to *Homo sapiens*, molecular analysis of human origin. Phylogenetic trees, Multiple sequence alignment, construction and interpretation of phylogenetic trees.

PRACTICAL

1. Study of fossils from models/ pictures
2. Study of homology and analogy from suitable specimens
3. Study and verification of Hardy-Weinberg Law by chi square analysis
4. Demonstration of role of natural selection and genetic drift in changing allele frequencies using simulation studies
5. Graphical representation and interpretation of data of height/ weight of a sample of 100 humans in relation to their age and sex.
6. Construction of phylogenetic trees with the help of bioinformatics tools (Clustal X, Phylip, NJ) and its interpretation.

TEXT BOOKS

1. Campbell, N.A. and Reece J.B (2011). Biology. IX Edition. Pearson, Benjamin, Cummings.
2. Rastogi B.B., (2018). Organic Evolution, MedTech; 3rd edition

SUGGESTED READINGS

1. B.K. and Hallgrimson, B. (2008). Evolution IV Edition. Jones and Barlett Publishers.
2. Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates. Snustad. S Principles of Genetics.
3. Ridley,M (2004) Evolution III Edition Blackwell publishing Hall.

Discipline Specific Elective Paper-1 Animal

Behaviour and Chronobiology

Unit 1: Animal Behaviour

Origin and history of Ethology; Brief profiles of Karl von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen; Proximate and ultimate behavior; Objective of behaviour, Behaviour as a basis of evolution; Behaviour as a discipline of science; Innate behaviour, Instinct, Stimulus filtering, Sign stimuli and Code breakers.

Unit 2: Patterns of Behaviour

Stereotyped Behaviours (Orientation, Reflexes); Individual behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and operant conditioning, Habituation, Imprinting.

Unit 3: Social and Sexual Behaviour

Social Behaviour: Concept of Society; Communication and the senses; Altruism; Insects' society with Honey bee as example; Foraging in honey bee and advantages of the waggle dance.

Sexual Behaviour: Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in

parental care.

Unit 4: Chronobiology

Historical developments in chronobiology; Biological oscillation: the concept of Average, amplitude, phase and period. Adaptive significance of biological clocks, Relevance of biological clocks, Types and characteristics of biological rhythms: Short- and Long-term rhythms; Circadian rhythms; Tidal rhythms and Lunar rhythms; Concept of synchronization and masking; Photic and non-photic zeitgebers; Circannual rhythms; Photoperiod and regulation seasonal reproduction of vertebrates; Role of melatonin.

PRACTICAL

1. To study nests and nesting habits of the birds and social insects.
2. To study the behavioural responses of wood lice in dry and humid condition.
3. To study geotaxis behaviour in earthworm.
4. To study the phototaxis behaviour in insectlarvae.
5. Study and actogram construction of locomotor activity of suitable animal models.
6. Study of circadian functions in humans (daily eating, sleep and temperature patterns).
7. Visit to Forest/ Wild life Sanctuary/Biodiversity Park/Zoological Park to study behavioral activities of animals and prepare a short report.

TEXT BOOKS

1. John A (2009) Animal Behaviour.9th edition, Sinauer Associate Inc., USA.
2. Vinod Kumar (2002) Biological Rhythms: Narosa Publishing House, Delhi/ Springer-Verlag, Germany.

SUGGESTED READINGS

1. AK Pati. Chronobiology: The Dimension of Time in Biology and Medicine. PINSA (Bilogical Sciences). Part B 67 (6). 323-372, Dec., 2001.
2. David McF. Animal Behaviour. Pitman Publishing Limited, London, UK.
3. Manning A and Dawkins MS. An Introduction to Animal Behaviour. Cambridge University Press, USA.
4. Paul WS and John A (2013) Exploring Animal Behaviour. 6th Edition. Sinauer Associate Inc., Massachusetts, USA.
5. Jay. C. Dunlap, Jennifer. J. Loros, Patricia J. DeCoursey (ed). 2004, Chronobiology Biological Timekeeping: J, Sinauer Associates, Inc. Publishers, Sunderland, MA, USA.

OR

Animal Biotechnology

Unit 1. Introduction to Animal Biotechnology

Concept and scope of biotechnology, Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC and Expression vectors (characteristics).
Restriction enzymes: Nomenclature, detailed study of Type II, Construction of genomic and cDNA libraries and screening by colony and plaque hybridization Transformation techniques: Calcium chloride method and electroporation

Unit 2. Molecular Techniques

Southern, Northern and Western blotting, DNA sequencing: Sanger method Polymerase Chain Reaction, DNA Finger Printing and DNA microarray

Unit 3. Genetically Modified Organisms

Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection, Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock-out mice.

Unit 4. Culture Techniques and Applications

Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Thalassemia, Haemophilia and Sickle cell anemia),Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy.

PRACTICAL

1. Genomic DNA isolation from *E. coli* / Animal tissue
2. Plasmid DNA isolation (pUC 18/19) from *E. coli*
3. Restriction digestion of plasmid DNA / Lambda Phage DNA
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from the data provided.
6. To study following techniques through photographs
    a. Southern Blotting
    b. Northern Blotting
    c. Western Blotting
    d. DNA Sequencing (Sanger's Method)
    e. PCR
    f.DNA fingerprinting

TEXT BOOKS

1. BD Singh, (2014) Biotechnology: Expanding Horizons, Kalyani Publishers
2. U.Satyanarayan and U Chakrapani, (2014) Biotechnology, Books & Allied Ltd

SUGGESTED READINGS

1. Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). An Introduction to GeneticAnalysis. IX Edition. Freeman and Co., N.Y.,USA.
2. Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007). Recombinant DNA- Genes and Genomes- AShort Course. III Edition, Freeman and Co., N.Y.,USA.
3. Brown, T.A. (2015). Gene Cloning and DNA Analysis. 7th Edition, Academic Press, California, USA.

OR

ENDOCRINOLOGY

Unit 1: **Introduction to Endocrinology**

History of endocrinology, Types of endocrine glands and hormones, Characteristic and Transport of Hormones, Neurosecretions and Neurohormones.

Unit 2: Epiphysis, Hypothalamo-hypophysial Axis

Structure of pineal gland, Secretions and their functions in biological rhythms and reproduction. Structure of hypothalamus, Hypothalamic nuclei and their functions, Regulation of neuroendocrine glands, Feedback mechanisms Structure of pituitary gland, Hormones and their functions, Hypothalamohypophysial portal system, Disorders of pituitary gland.

Unit 3: Peripheral Endocrine Glands

Structure, Hormones, Functions and Regulation of Thyroid gland, Parathyroid, Adrenal, Pancreas. Structure, Hormones, Functions and Regulation of Ovary and Testis. Hormones in homeostasis, Disorders of endocrine glands.

Unit 4: Regulation of Hormone Action

Hormone action at Cellular level: Hormone receptors, transduction and regulation Hormone action at Molecular level: Molecular mediators, Genetic control of hormone action.

PRACTICAL

1. Dissect and display of Endocrine glands in laboratory bredrat*
2. Study of the permanent slides of all the endocrine glands
3. Compensatory ovarian/ adrenal hypertrophy in vivo bioassay in laboratory bredrat*
4. Demonstration of Castration/ ovariectomy in laboratory bred rat*
5. Estimation of plasma level of any hormone using ELISA
6. Designing of primers of any hormone
7. Report on endocrine disorders in human

(*Subject to UGC guidelines)

TEXT BOOKS

1. C. Donnell Turner (2012) General Endocrinology Pub- Affiliated East-West press Pvt. Ltd.-New Delhi; 6th Edition
2. Hadley, M.E. and Levine J.E. (2007). Endocrinology, 6th Edition. Pearson Prentice-Hall, Pearson Education Inc., New Jersey

SUGGESTED READINGS

1. Stephen Nussey and Saffron Whitehead (2001). Endocrinology: An Integrated Approach; Oxford: BIOS Scientific Publishers

Discipline Specific Elective Paper-

1I Basics of Neuroscience

Unit 1: Introduction to Neuroscience & Nervous System

Origins of Neuroscience; Neuroanatomy, Neurophysiology, and Systems Neurobiology. Introduction to the structure and function of the nervous system: Cellular components: Neurons; Neuroglia; Neuron doctrine; The prototypical neuron – axons and dendrites as unique structural components of neurons.

UNIT 2: Cellular and Molecular Neurobiology

Molecular and cellular approaches used to study the CNS at the level of single molecules, The ionic bases of resting membrane potential; The action potential- its generation and properties; The action potential conduction. Synapse: Synaptic transmission, Types of synapses; synaptic function; Principles of chemical synaptic transmission; Principles of synaptic integration; EPSPs and IPSPs. Ion channels, Neural transmission.

Unit 3. Neurotransmitters

Different types of neurotransmitters– catecholamines, amino acidergic and peptidergic neurotransmitters; Transmitter gated channels; G-protein coupled receptors and effectors,

neurotransmitter receptors; Ionotropic and metabotropic receptors.

UNIT 4: Neurobiology and Neuropharmacology of Behaviour

The principles of signal transduction and information processing in the vertebrate central nervous system, and the relationship of functional properties of neural systems with perception and behavior; sensory systems, molecular basis of behavior including learning and memory. Molecular pathogenesis of pain and neurodegenerative diseases such as Parkinson's, Alzheimer's, psychological disorders, Addiction.

PRACTICAL

1. Dissection and study of *Drosophila* nervous system using GFPreporter.
2. Observation and quantitation of *Drosophila* photoreceptor neurons in healthy and diseased condition.
3. Nerve Cell preparation from the spinal cord.
4. Study of neurons and/ or myelin by Nissl, Giemsa or Luxol Fast Blue staining.
5. Study of olfaction in Drosophila.
6. Study of novelty, anxiety and spatial learning in mice.

TEXT BOOKS

1. Kandel, Schwartz and Jessell (2000) Principles of Neural Science-4th Edn-Eds. - McGraw- Hill Companies
2. Mark F. Baer; Barry W. Connors,(2015) Neuroscience: Exploring the brain . Lippincott Williams and Wilkins

SUGGESTED READINGS

1. From Molecules to Networks: An Introduction to Cellular and Molecular Neuroscience by John H. Byrne. Ruth Heidelberg and M. Neal Waxham.
2. Neuroscience-Eds. Dale Purves (3rd Edn)-Sinauer Associates, Inc.-2004.
3. Nerve Cells and Animal Behaviour-2nd Edn-Peter J Simmons and David Young-CUP-2003.
4. Essential Psychopharamacology- Neuroscientific Basis and Practical Applications-2nd Edn.-Stephan M. Stahl-CUP-2000.
5. Phantoms in the Brain - Vilayanur S. Ramachandran and Sandra Blakeslee-1998 The Human Brain Book - Rita Carter-2009

OR

Reproductive Biology

Unit 1: Reproductive System and Endocrinology

Reproductive System: Development and differentiation of gonads, genital ducts, external genitalia,mechanism of sex differentiation.

Gonadal hormones and mechanism of hormone action, steroids, glycoprotein hormones, and prostaglandins, hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophin secretion in male and female.

Unit 2: Functional anatomy of male reproduction

Outline and histology of male reproductive system in rat and human; Testis: Cellular functions, germ cell, system cell renewal; Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism; Epididymal function and sperm maturation; Accessory glands functions; Sperm transportation in male tract

Unit 3: Functional anatomy of female reproduction

Outline and histology of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (rat and human) and their regulation, changes in the female tract; Ovum transport in the fallopian tubes; Sperm transport in the female tract, fertilization, prevention of polyspermy; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto- maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation

Unit 4: Reproductive Health

Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning.

PRACTICAL

Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.

1. Examination of vaginal smear rats from live animals.
2. Surgical techniques: principles of surgery in endocrinology. Ovarectomy, hysterectorny, castration and vasectomy in rats.
3. Examination of histological sections from photomicrographs/ permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
4. Human vaginal exfoliate cytology.
5. Sperm count and sperm motility in rat
6. Study of modern contraceptive devices.

TEXT BOOKS

1. Austin, C.R. and Short, R.V. (1982) Reproduction in Mammals. Cambridge University Press.
2. C. Donnell Turner (2012) General Endocrinology Pub- Affiliated East-West press Pvt. Ltd.-New Delhi; 6th Edition
3. Tandulwadkar Sunita R (2015) The Art & Science of Assisted Reproductive Technology,Jaypee Brothers Medical Publishers

SUGGESTED READINGS

1. Tony M. Plant and Anthony J. Zeleznik (2015) Knobil and Neill's Physiology of Reproduction, Academic Press

OR

Immunology

Unit 1: Innate and Adaptive Immunity

Historical perspective of Immunology, Early theories of Immunology, Cells and organs of the Immune system. Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral), Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune dysfunctions (brief account of autoimmunity with reference to Rheumatoid Arthritis and tolerance, AIDS).

Unit 2: Antigens and Immunoglobulins

Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes, Immunoglobulins: Structure and functions of different classes of immunoglobulins, Antigen antibody interactions, Immunoassays (ELISA- Direct, Indirect, Competitive, Sandwich and RIA)

Unit 3: Major Histocompatibility Complex, Cytokines and Complement system

Structure and functions of MHC molecules. Endogenous and exogenous pathways of antigen processing and presentation; Cytokines -Properties and functions of cytokines, Therapeutics Cytokines Complement System -Components and pathways of complement activation.

Unit 4: Hypersensitivity and Vaccines

Gell and Coombs' classification and brief description of various types of hypersensitivities Vaccines -**v**arious types of vaccines, Advances in vaccine production.

PRACTICAL

1. Study of lymphoid organs.
2. Histological study of spleen, thymus and lymph nodes through slides/ photographs
3. Preparation of stained blood film to study various types of White blood cells.
4. ABO blood group determination.
5. Total WBC counting.
6. Demonstration of ELISA.
7. Demonstration of Bone marrow smears to study Immune cells.

TEXT BOOKS

2. Abbas K. Abul and Lechtman H. Andrew (2017) Cellular and Molecular Immunology. V Edition. Saunders Publication.
3. Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2017). Immunology, VI Edition. W.H. Freeman and Company.

SUGGESTED READINGS

1. Peter J. Delves and Seamus J. Martin (2017) Roitt′s Essential Immunology, Wiley-Blackwell; 13th edition

Discipline Specific Elective Paper-

III Fish and Fisheries

Unit 1: Systematics, Morphology and Physiology

Systematic classification of native/exotic fishes (upto classes), Types of fins and their modification; Locomotion in fishes; Hydrodynamics; Types of scales, Use of scales in classification and determination of age of fish; Gills and gas exchange; Swim bladder; Reproductive strategies (Special reference to Indian fishes); Electric organs; Bioluminescence; Mechanoreceptors; Schooling; Migration

Unit 2: Fisheries

Inland fisheries; Marine fisheries; Environmental factors influencing the seasonal variation in fish; Fishing crafts and Gears; Depletion of Fisheries resources; Fisheries laws and regulations.

Unit 3: Aquaculture

Sustainable aquaculture; Extensive, semi-intensive and intensive culture of fish; Polyculture; Composite fish culture; brood stock management; Induced breeding of fish; Management of fin fish hatcheries; Preparation and maintenance of fish aquarium. Factors affecting aquaculture.

Unit 4:Fish Pathology and Transgenesis

Fish diseases: bacterial, viral and parasites; Preservation, diagnosis and treatment, Processing of harvested fish, Fishery byproducts; Transgenic fish, zebrafish as a model organism in research.

PRACTICAL

1. Study of *Petromyzon, Myxine, Pristis, Chimaera, Exocoetus, Hippocampus, Gambusia, Labeo, Heteropneustes, Anabas*
2. Study of different types of scales (Through permanent slides and photographs)
3. Study of crafts and gears used in fisheries.
4. Water quality criteria for aquaculture: assessment of pH, conductivity, total solids and total dissolve solids.
5. Study of air breathing organs in *Channa, Heteropneustes, Anabas and Clarias*.
6. Demonstration of induced breeding in fishes (Virtual).
7. Demonstration of parental care in fishes (Virtual).
8. Project report on a visit to any fish farm/ pisciculture unit/ zebra fish rearing lab

TEXT BOOKS

1. Q Bone and R Moore (2008), Biology of fishes, Taylor and Francis group, CRC Press, UK
2. S.S. Khanna and H.R. Singh (2014) A textbook of fish biology and fisheries, Narendra Publishing House, 3rd edition.

SUGGESTED READINGS

1. D H Evans and J D Claiborne, The Physiology of fishes, Taylor and Francis group, CRC, UK
2. R J Mogdans and B G Kapoor, The senses of fish: Adaptations for the reception of natural stimuli, Springer, Natherland
3. C B L Srivastava, Fish biology, Narendra Publishing House
4. J R Norman, A History of fishes, Hill and Wang Publishers.

OR

Wildlife Conservation And Management

Unit 1:

Wildlife

Values of wild life - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies, Conservation and protection Laws, wild animal of India and Odisha.

Habitat analysis, Physical parameters: Topography, Geology, Soil and water; Biological Parameters: food, cover, forage, browse and cover estimation; Standard evaluation procedures: remote sensing and GIS.

Unit 2: Management of habitats

Setting back succession; Grazing logging; Mechanical treatment; Advancing thesuccessional process; Cover construction; Preservation of general genetic diversity;Restoration of degraded habitats, In situ and Ex situ conservation, Wild life Protection act, wildlife trade and related laws.

Unit 3: Population estimation

Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, Hair identification, Census methods; Bio- telemetry; Care of injured and diseased animal; Quarantine; Common diseases of wild animals.

Unit 4: Management planning of wildlife in protected areas

Estimation of carrying capacity; Eco tourism / wild life tourism in forests; Concept of climax persistence; Ecology of perturbence, National parks & sanctuaries, Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India; Management challenges in Tiger reserve.

PRACTICAL

1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna India and Odisha.
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System,Various types of Cameras and lenses).
3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, animal sounds.
4. Demonstration of different field techniques for flora and fauna.
5. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences)
6. Submission of field study report (national park/ reserve forest/ sanctuary)

TEXT BOOKS

1. Gopal Rajesh (2011) Fundamentals of Wildlife Management, Natraj Publishers.
2. Caughley, G., and Sinclair, A.R.E. (1994). Wildlife Ecology and Management. Blackwell Science.

SUGGESTED READINGS

1. Woodroffe R., Thirgood, S. and Rabinowitz, A. (2005). People and Wildlife, Conflict or Co-existence? Cambridge University.
2. Bookhout, T.A. (1996). Research and Management Techniques for Wildlife and Habitats, 5 th edition. The Wildlife Society, Allen Press.
3. Sutherland, W.J. (2000). The Conservation Handbook: Research, Management and Policy. Blackwell Sciences.
4. Hunter M.L., Gibbs, J.B. and Sterling, E.J. (2008). Problem-Solving in Conservation Biology and Wildlife Management: Exercises for Class, Field, and Laboratory.Blackwell Publishing.

Discipline Specific Elective Paper-

IV Economic Zoology

Unit 1: Bee-keeping and Bee Economy (Apiculture)

Varieties of honey bees and Bee pasturage; Setting up an apiary: Langstroth's/Newton's hive, bee veil, brood and storage chambers, iron frames and comb sheets, drone excluder, rearing equipments, handling of bees, artificial diet; Honey extraction techniques; Physico-chemical analysis of honey; Other beneficial products from bee.

Unit 2: Silk and Silk Production (Sericulture)

Different types of silk and silk worms in India; Rearing of *Bombyx mori*, Rearing racks and trays, disinfectants, rearing appliances, black boxing, Chawki rearing, bed cleaning, mountages, harvesting of cocoons; Silkworm diseases: Pebrine, Flacherie, Grasserie, Muscardine and Aspergillosis, and their management; Silkworm pests and parasites: Uzi fly, Dermestid beetles and their management; Silk reeling techniques and Quality assessment of silk fibre.

Unit 3: Aquaculture

Induced breeding of fish; Management of hatchery of fish; Management of nursery, rearing and stocking ponds; Preparation and maintenance of fish aquarium; Preparation of compound diets for fish; Role of water quality in aquaculture; Fish diseases: Bacterial, viral and parasitic; Preservation and processing of harvested fish; Fishery by-products. Prawn farming; Culture of crab; Pearl culture.

Unit 4: Dairy and Poultry Farming

Introduction; Indigenous and exotic breeds; Rearing, housing, feed and rationing; Commercial importance of dairy and poultry farming; Varietal improvement techniques; Diseases and their management; Dairy or poultry farm management and business plan; Visit to any dairy farm or Poultry farm.

PRACTICAL

1. Submission of report on anyone field visits related to Aquaculture/Apiculture/ Sericulture/Poultry/ Dairy farm.
2. Study of different types of bees (Queens, Drones and Worker bees).
3. Study of different types of silk moths.
4. Study of different types of pearls.
5. Study of different types of fish diseases.

6. Identification of different types of scales in fishes.
7. Study of different types of fins.
8. Study of different modified structures of fishes (Saw of sawfish, Hammer of hammer head fish, tail of sharks etc.)
9. Identification of various types of natural silks.

TEXT BOOKS

1. Sarkar, Kundu and Chaki. (2014) Introduction to Economic Zoology. NCBA Publisher.
2. T.V.R. Pillay (Author), M.N. Kutty (2011) Aquaculture: Principles and Practices, Wiley India Pvt Ltd; Second edition

SUGGESTED READINGS

1. Dhyan Singh Bisht, Apiculture, ICAR Publication.
2. Dunham RA (2004) Aquaculture and Fisheries Biotechnology – Genetic Approaches. CABI publications, U.K.
3. Hafez ESE (1962) Reproduction in Farm Animals. Lea and Fabiger Publishers.
4. Knobil E and Neill JD (2006) The Physiology of Reproduction. Vol.2. Elsevier Publishers, USA.
5. Prost PJ (1962) Apiculture. Oxford and IBH, New Delhi.
6. Singh S. Beekeeping in India, Indian council of Agricultural Research, New Delhi.
7. Srivastava CBL (1999) Fishery Science and Indian Fisheries. Kitab Mahal publications, India.

OR

Project Work

Each student has to undertake a project work under the guidance of a teacher and submit the project report in the form of a thesis. There will be a presentation of the project work before an external examiner.

Generic Elective Paper

I Animal Diversity

Unit 1: Protista, Porifera, Radiata, Aceolomates and Pseudocoelomates

General characters of Protozoa; Life cycle of *Plasmodium,* General characters and canal system in Porifera, General characters of Cnidarians and polymorphism, General characters of Helminthes; Life cycle of *Taenia solium*, General characters of Nemethehelminthes; Parasitic adaptations

Unit 2: Coelomate Protostomes, Arthropoda, Mollusca and Coelomate Deuterostomes

General characters of Annelida, Metamerism, General characters, Social life in insects,General characters of mollusca, torsion in gastropod, pearl formation, General characters of Echinodermata, larval form in Echinodermata.

Unit 3: Protochordata , Pisces, Amphibia

Salient features, Osmoregulation, Migration of Fishes, General characters, Adaptations for terrestrial life, Parental care in Amphibia.

Unit 4: Reptiles, Aves and Mammals

Amniotes, Origin of reptiles, Terrestrial adaptations in reptiles, Origin of birds; Flight adaptations, early evolution of mammals; Primates; Dentition in mammals.

PRACTICAL

1. Study of following specimens:

Non Chordates*: Euglena, Noctiluca, Paramecium, Sycon, ,Physalia, Tubipora,*

Metridium, Taenia, Ascaris, Nereis, Aphrodite, Leech, Peripatus, T. gigas, Limulus, Hermitcrab, Daphnia, Millipede, Centipede, Beetle, *Chiton, Dentalium, Octopus, Asterias* and *Antedon*.

Chordates: *Balanoglossus, Amphioxus, Petromyzon, Pristis, Hippocampus, Labeo, Icthyophis/Uraeotyphlus, Salamander, Rhacophorus Draco, Uromastix, Naja, Viper*, model of *Archaeopteryx*, any three common birds-(Crow, duck, Owl), Squirrel and Bat.

2. Study of following Permanent Slides:

Cross section of *Sycon*, Sea anemone and *Ascaris* (male and female). T. S. of Earthworm passing through pharynx, gizzard, and typhlosolar intestine. Bipinnaria and Pluteus larva

3. Temporary mounts of Septal & pharyngeal nephridia of earthworm.

Unstained mounts of Placoid, cycloid and ctenoid scales.

TEXT BOOKS

1. Kotpal RL. (2016) Modern Textbook of Zoology –Vertebrates; Rastogi Publications – Meerut.
2. Kotpal RL.(2016) Modern Textbook of Zoology –Invertebrates; Rastogi Publications – Meerut.

SUGGESTED READINGS

1. Barnes, R.D. (1992). Invertebrate Zoology. Saunders College Pub. USA.
2. Campbell & Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.
3. Raven, P.H. and Johnson, G. B. (2004). Biology, 6th edition, Tata McGraw Hill Publications, New Delhi.
4. Kardong, K.V. (2002). Vertebrates Comparative Anatomy. Function and Evolution. Tata McGraw Hill Publishing Company. New Delhi.

OR

Insect Vectors and Diseases

Unit 1: Insects, Concept of Vectors, Insects as Vectors

General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth parts with reference to. feeding habits, Brief introduction of Carrier and Vectors (mechanical and biological vector),Reservoirs, Host-vector relationship, Vectorial capacity, Adaptations as vectors, Host Specificity, Classification of insects up to orders, detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera

Unit 2: Dipteran as Disease Vectors

Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies; Study of mosquito- borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis; Control of mosquitoes Study of sand fly-borne diseases – Visceral Leishmaniasis, Cutaneous Leishmaniasis, Phlebotomus fever; Control of Sand fly, Study of house fly as important mechanical vector, Myiasis, Control of house fly

Unit 3: Siphonaptera and Siphunculata as Disease Vectors

Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas, Human louse (Head, Body and Pubic louse) as important insect vectors; Study of louse-borne diseases –Typhus fever, Relapsing fever, Trench fever, Vagabond's disease, Phthiriasis; Control of human louse

Unit 4: Hempitera as Disease Vectors

Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures

PRACTICAL

1. Study of different kinds of mouth parts of insects
2. Study of following insect vectors through permanent slides/ photographs: *Aedes, Culex, Anopheles, Pediculushumanuscorporis, Phithirus pubis, Xenopsylla cheopis, Cimexlectularius, Phlebotomus argentipes, Musca domestica* through permanent slides/ photographs
3. Study of different diseases transmitted by above insect vectors.
4. Submission of a project report on any one of the insect vectors and disease transmitted.

TEXT BOOKS

1. Mathews, G. (2011). Integrated Vector Management: Controlling Vectors of Malaria and Other Insect Vector Borne Diseases. Wiley-Blackwel
2. Chapman, R.F. (1998). The Insects: Structure and Function. IV Edition, Cambridge University Press, UK

SUGGESTED READINGS

1. Mike Service (2012) Medical Entomology for StudentsCambridge University Press; 5th edition.
2. Pedigo L.P. (2002). Entomology and Pest Management. Prentice Hall Publication

5

UNIT 1: Aquatic Biomes

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, Streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs

UNIT 2: Freshwater Biology

Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification,
Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes-Nitrogen, Sulphur and Phosphorous

Streams: Different stages of stream development, Physico-chemical, environment, Adaptation of hill-stream fishes.

UNIT 3: Marine Biology

Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

UNIT 4: Management of Aquatic Resources

Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD.
015

PRACTICAL

1. Determine the area of a lake using graphimetric and gravimetricmethod.
2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, Free, Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from nearby lake/ water body.
4. Instruments used in limnology (Secchi disc, Van Dorn Bottle, Conductivity meter, Turbidity meter, PONAR grab sampler) and their significance.
5. A Project Report on a visit to a Sewage treatment plant/Marine bioreserve/ Fisheries Institutes.

TEXT BOOKS

1. Wetzel RG (2001)Limnology: Lake and River Ecosystems, Academic Press; 3rd edition

SUGGESTED READINGS

1. Anathakrishnan : Bioresources Ecology 3rd Edition
2. Odum and Barrett : Fundamentals of Ecology, 5th Edition
3. Pawlowski: Physicochemical Methods for Water and Wastewater Treatment, 1st Edition
4. Trivedi and Goyal : Chemical and biological methods for water pollution studies
5. Welch : Limnology Vols. I-II

OR

Food, Nutrition And Health

Unit 1: Basic concept of food and nutrition

Food Components and food-nutrients, Concept of a balanced diet, nutrient needs and dietary
pattern for various groups, adults, pregnant and nursing mothers, infants, school children, adolescents and elderly

Unit 2: Nutritional Biochemistry:

Carbohydrates, Lipids, Proteins- Definition, Classification, their dietary source and role Vitamins- Fat-soluble and Water-soluble vitamins- their dietary source and importance Minerals- Iron, calcium, phosphorus, iodine, selenium and zinc: their biological functions

Unit 3: Health

Introduction to health- Definition and concept of health, Major nutritional Deficiency diseases- Protein Energy Malnutrition (kwashiorkor and marasmus), Vitamin A deficiency disorders, Iron deficiency disorders, Iodine deficiency disorders- their causes, symptoms, treatment, prevention and government programmes, if any. Life style related diseases- hypertension, diabetes mellitus, and obesity- their causes and prevention through dietary and lifestyle modifications, Social health problems- smoking, alcoholism, drug dependence and Acquired Immuno Deficiency Syndrome (AIDS) - their causes, treatment and prevention, Common ailments- cold, cough, and fevers, their causes and treatment

Unit 4: Food hygiene:

Potable water- sources and methods of purification at domestic level Food and Water borne infections: **Bacterial infection**: Cholera, typhoid fever, dysentery; **Viral infection**: Hepatitis, Poliomyelitis, **Protozoan infection**: amoebiasis, giardiasis; **Parasitic infection**: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention. Brief account of food spoilage: Causes of food spoilage andtheir preventive measures

01

PRACTICAL

1. To detect adulteration in a) Ghee b) Sugars c) Tea leaves and d) Turmeric
3. Estimation of Lactose in milk
4. Ascorbic acid estimation in food by titrimetry
5. Estimation of Calcium in foods by titrimetry
6. Study of the stored grain pests from slides/ photograph (*Sitophilus oryzae*, *Trogoderma granarium*, *Callosobruchus chinensisand Tribolium castaneum*): their identification, habitat and food sources, damage caused andcontrol. Preparation of temporary mounts of the above stored grain pests.
7. Project- Undertake computer aided diet analysis and nutrition counseling for different age groups. OR Identify nutrient rich sources of foods **(fruits and vegetables),** their seasonal availability and price OR Study of nutrition labeling on selected foods

TEXT BOOKS

1. Mudambi, SR and Rajagopal, MV (2018). Fundamentals of Foods, Nutrition and Diet Therapy; Sixth Ed; New Age International Publishers.
2. Bamji MS, Rao NP, and Reddy V.(2017) Text Book of Human Nutrition; Oxford &

IBH Publishing Co. Pvt Ltd., 4th edition

SUGGESTED READINGS

1. Srilakshmi B. Nutrition Science; 2002; New Age International (P) Ltd.
2. Srilakshmi B. Food Science; Fourth Ed; 2007; New Age International (P) Ltd.
3. Swaminathan M. Handbook of Foods and Nutrition; Fifth Ed; 1986; BAPPCO

Generic Elective Paper III Human Physiology

Unit 1: Digestion and Respiratory Physiology

Structure and function of digestive glands; Digestion and absorption of carbohydrates, fats and proteins; Nervous and hormonal control of digestion (in brief), Ventilation, External and internal Respiration, Transport of oxygen and carbon dioxide in blood, Factors affecting transport of gases.

Unit 2: Functioning of Excitable Tissue (Nerve and Muscle)

Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fiber); Structure of skeletal muscle, Mechanism of muscle contraction (Sliding filament theory), Neuromuscular junction

Unit 3: Renal Physiology and Cardiovascular Physiology

Functional anatomy of kidney, Mechanism and regulation of urine formation, Structure of heart, Coordination of heartbeat, Cardiac cycle, ECG

Unit 4: Endocrine and Reproductive Physiology

Structure and function of endocrine glands (pituitary, thyroid, parathyroid, pancreas, adrenal, ovaries, and testes), Brief account of spermatogenesis and oogenesis, Menstrual cycle.

PRACTICAL

1. Preparation of temporary mounts: Neurons and Blood film.
2. Preparation of haemin and haemochromogen crystals.
3. Estimation of haemoglobin using Sahli's haemoglobinometer.
4. Examination of permanent histological sections of mammalian oesophagus, stomach, duodenum, rectum, lung, kidney, thyroid, pancreas, adrenal, testis, ovary.

TEXT BOOKS

1. Marieb EN and Hoehn K, (2015) Human Physiology, 10th global edition, Pearson Education, USA.
2. Guyton, A.C. and Hall, J.E. (2011). Textbook of Medical Physiology, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.

SUGGESTED READINGS

1. Widmaier, E.P., Raff, H. and Strang, K.T. (2008). Vander's HumanPhysiology, XI Edition, McGraw Hill.
2. Kesar, S. and Vashisht, N. (2007). Experimental Physiology, Heritage Publishers.
3. Prakash, G. (2012). Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Company Ltd.

4. Tortora, G.J. and Derrickson, B.H. (2009). Principles of Anatomy and Physiology,

XII Edition, John Wiley and Sons, Inc.

OR

Environment and Public Health

UNIT 1: Environmental hazards

Sources of Environmental hazards, hazard identification and accounting, fate of toxic and persistent substances in the environment, dose Response Evaluation, exposure Assessment.

UNIT 2: Pollution

Air, water, noise pollution sources and effects, Pollution control; Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health

Unit 3: Waste Management Technologies

Sources of waste, types and characteristics, Sewage disposal and its management,
Solid waste disposal, biomedical waste handling and disposal, nuclear waste handling and disposal, Waste from thermal power plants, Case histories on Bhopal gas tragedy, Chernobyl disaster, Seveso disaster and Three Mile Island accident and their aftermath

Unit 4 Diseases

Causes, symptoms and control of: Tuberculosis, Asthma, Cholera, Typhoid, Malaria and AIDS

PRACTICAL (Credits 2)

1. To determine pH, Cl, SO_4, NO_3 in soil and water samples from different locations.

TEXT BOOKS

1. Cutter, S.L. (1999) Environmental Risk and Hazards, Prentice-Hall of India Pvt. Ltd., New Delhi.
2. Park K (2017) Parks Text Book Of Preventive & Social Medicine, Banarsidas Bhanot Publishers

SUGGESTED BOOKS

1. Kolluru Rao, Bartell Steven, Pitblado R and Stricoff 1996. "Risk Assessment and Management Handbook", McGraw Hill Inc., New York.
2. Kofi Asante Duah 1998 "Risk Assessment in Environmental management", John Wiley and sons, Singapore.
3. Kasperson, J.X. and Kasperson, R.E. and Kasperson,R.E., 2003. Global Environmental Risks, V.N.University Press, New York,
4. Joseph F Louvar and B Diane Louver 1997 Health and Environmental Risk Analysis fundamentals with applications, Prentice Hall, New Jersey.
5. Wardlaw GM, Hampl JS. Perspectives in Nutrition; Seventh Ed; 2007; McGraw Hill.
6. Lakra P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence.
7. Manay MS, Shadaksharaswamy. Food-Facts and Principles; 1998; New Age International (P) Ltd.

Generic Elective Paper IV Animal Biotechnology

UNIT 1: Introduction and Techniques in Gene manipulation

Concept and Scope of Biotechnology, Outline process of genetic engineering and recombinant DNA technology, Isolation of genes, Concept of restriction and modification: Restriction endonucleases, DNA modifying enzymes, Cloning Vectors: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, HAC. Shuttle and Expression Vectors**,** Construction of Genomic libraries and cDNA libraries, Transformation techniques: microbial, plants and animals: Cloning in mammalian cells, Integration of DNA into mammalian genome- Electroporation and Calcium, Phosphate Precipitation method.

UNIT2: Animal cell Culture

Basic techniques in animal cell culture and organ culture, Primary Culture and Cell lines, Culture media- Natural and Synthetic, Stem cells, Cryopreservation of cultures.
Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, DNA sequencing: Sanger method, Polymerase chain reaction, DNA Fingerprinting and DNA microarrays

UNIT 3: Fermentation

Different types of Fermentation: Submerged & Solid state; batch, Fed batch & Continuous; Stirred tank, Air Lift, Fixed Bed and Fluidized, Downstream Processing: Filtration, centrifugation, extraction, chromatography, spray drying and lyophilization

UNIT 4: Transgenic Animal Technology and Application in Health

Production of transgenic animals: nuclear transplantation, retroviral method,
DNA microinjection method, Dolly and Polly, Development of recombinant Vaccines, Hybridoma technology, Gene Therapy, Production of recombinant Proteins: Insulin and growth hormones.

PRACTICAL

1. Packing and sterilization of glass and plastic wares for cell culture.
2. Preparation of culture media.
3. Preparation of genomic DNA from *E. coli*/animals/ human.
4. Plasmid DNA isolation (pUC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard).
5. Restriction digestion of lambda (λ) DNA using EcoR1 and Hind III.
6. Preparation of competent cells and Transformation of E. coli with plasmid DNA using CaCl2, Selection of transformants on X-gal and IPTG (Optional).
7. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays.

TEXTBOOKS

1. BD Singh, (2014) Biotechnology: Expanding Horizons, Kalyani Publishers
2. U.Satyanarayan and U Chakrapani, (2014) Biotechnology, Books & Allied Ltd

SUGGESTED READINGS

1. T.A. Brown (2008): Gene cloning and DNA analysis: An Introduction, Blackwell Science.
2. Animal Cell Culture Methods Academic Press
3. P.K. Gupta: Biotechnology and Genomics, Rastogi publishers (2017).

4. B.D. Singh: Biotechnology, Kalyani publishers, 1998 (Reprint 2001).
5. Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009). An introduction to genetic analysis, IX Edition, Freeman & Co., N.Y., USA
6. Verma S A, Das S and Singh (2014) A. Laboratory Manual for Biotechnology. S Chand Publication.

OR

Cell and Molecular Biology

Unit 1: Cells and Plasma Membrane

Prokaryotic and Eukaryotic cells, Various models of plasma membrane; Transport across membranes, The Endoplasmic Reticulum; Golgi apparatus; Lysosomes; Structure and function of mitochondria

Unit 2: Nucleus, cell division

Ultra structure of nucleus; Mitosis, Meiosis, Cell cycle and its regulation

Unit 3: Nucleic Acids and DNA Replication

Salient features of DNA double helix; Watson and Crick model of DNA, Structure of RNA, tRNA, DNA Replication in prokaryotes and eukaryotes; Mechanism of DNA replication

Unit 4: Transcription and Translation

Mechanism of transcription in prokaryotes and Eukaryotes, Process of protein synthesis in prokaryotes and translation

PRACTICAL

1. Study of prokaryotic and eukaryotic cell types through permanent slides.
2. Study of mitosis and meiosis through squashing in Grasshopper.
3. Demonstration of transport through cell membrane.
4. Preparation of DNA and RNA models.
5. Demonstration of protein synthesis through models.

TEXT BOOKS

1. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments. VI Edition. John Wiley and Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). Cell and Molecular Biology. VIII Edition. Lippincott Williams and Wilkins, Philadelphia.

SUGGESTED READINGS

1. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008) Molecular Biology of the Cell. 5th Edition. Garland publishing Inc., New York.
2. Becker WM, Kleinsmith LJ, Hardin J and Bertoni G P (2009) The World of the Cell. 7th Edition. Pearson Benjamin Cummings Publishing, San Francisco.
3. Cooper GM and Hausman RE (2009) The Cell: A Molecular Approach. 5 th Edition. ASM Press, Washington D.C.
4. S Harisha (2007) Biotechnology procedures and experiments handbook., Infinity Science Press, Hingham

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Part of syllabus (ZOOLOGY B.Sc.) to be covered in Refresher Course

Theory

1. Linear and Y-shaped food chains
2. Energy flow through the ecosystem
3. Ecology in Wildlife Conservation and Management.
4. Laws of limiting factors
5. Gause's Principle with laboratory and field examples
6. Hypothesis and hypothesis testing (Chi-square test, t-test)
7. Global warming and Climate change
8. Impacts of environmental disturbances
9. Biodiversity patterns and global biodiversity hot spots; India as a mega-biodiversity nation
10. Solid waste management: Control measures of urban and industrial wastes
11. Convention on Biological Diversity (CBD)
12. Mitochondrial Respiratory Chain
13. Chemi-osmotic hypothesis
14. Cell signaling
15. Origin of chordates and Tetrapoda (Evolution of terrestrial ectotherms)
16. Adaptive radiation in mammals
17. Plate tectonic and Continental drift theory
18. Distribution of vertebrates in different realms
19. Ossification, bone growth and resorption
20. Neural receptors and transmission
21. Hypothalamus-Pituitary & Gonadal axis
22. Mechanism of hormone action
23. Structural organization of Proteins
24. Hypo-Hyperchromaticity of DNA
25. Enzyme kinetics
26. Respiratory pigments
27. Regulation of water and acid-base balance
28. Haemoglobin and haemopoiesis
29. Cardiac cycle
30. Biological oxidation reduction reactions
31. Oxidative Phosphorylation
32. Electron Transport System
33. DNA Damage & Repair
34. Regulation of transcription and translation
35. RNA editing
36. Operon concept
37. Gene silencing
38. RNA interference
39. Polygenic inheritance
40. Chromosome mapping

41. Molecular mechanisms of recombination
42. Detection of mutations
43. Molecular mechanism of sex determination in *Drosophila* and Man
44. Transposons
45. Cell-Cell interaction
46. Pattern formation
47. Differential gene expression
48. Metamorphosis and Regeneration
49. Teratogenesis
50. *In vitro* fertilization
51. Stem cell
52. Natural selection
53. Genetic drift
54. Species concept and Speciation
55. Phylogenetic trees
56. Insect vectors borne diseases and their control
57. RNA world & origin of life
58. Extinctions
59. Hardy-Weinberg Law
60. Coral reefs diversity and their role inecosystem
61. Origin and morphometry of lakes
62. Adaptation of hill-stream fishes.
63. Eutrophication and management of aquatic resources and conservation (legislations), Sewage
64. Nutritional Biochemistry
65. Life style related diseases
66. Social health problems
67. Food spoilage and their preventive measures
68. Environmental hazards
69. Effect of climate change on public health
70. Biomedical waste handling and disposal
71. Nuclear waste handling and disposal
72. Waste from thermal power plants
73. Cloning Vectors
74. Genomic libraries and cDNA libraries
75. Cloning in mammalian cells, Integration
76. Animal cell culture and organ culture
77. DNA sequencing
78. DNA Fingerprinting and DNA microarrays
79. Ttransgenic animals
80. Development of recombinant Vaccines
81. Gene Therapy
82. Artificial beehives and cross pollination
83. Aquarium Fish Industry
84. Hypertension

85. Commercial diagnostic kits
86. Research Design
87. Technical Reports and Thesis writing
88. Intellectual property Rights and Patent law
89. Plagiarism
90. Entrepreneurship in Sericulture
91. Behaviour as a basis of evolution
92. Social Behaviour in Honey bee
93. Biological clocks, and Circadian rhythms
94. Restriction enzymes
95. DNA Finger Printing
96. Transgenic animals
97. Molecular diagnosis of genetic diseases
98. Cells of the Nervous system
99. Neurotransmitters
100. Neurodegenerative diseases
101. Psychological disorders
102. MHC molecules
103. Therapeutics Cytokines
104. Complement System
105. Hypersensitivity
106. Advances in vaccine production
107. Sustainable aquaculture
108. Census methods in wildlife
109. Common diseases of wild animals 110. Eco tourism
111. Bee Economy
112. Dairy or poultry farm management and business plan
113. Developing Projects for students

Practical

1. Examination of pond water collected from different places for diversity inprotista.
2. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided.
3. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community.
4. Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.
5. Preparation of permanent slide to demonstrate: DNA by Feulgen reaction; DNA and RNA by MGP; Mucopolysaccharides by PAS reaction; Proteins by Mercuric bromophenol blue/Fast Green
6. Microtomy: Preparation of permanent slides/photographs/computer models of any five types of mammalian (Goat/rat,etc) tissues
7. Paper chromatography of amino acids.
8. Effect of pH, temperature and inhibitors on the action of salivary amylase./Urease /acid or alkaline phosphatases
9. Demonstration of proteins separation by SDS-PAGE.

10. Determination of ABO Blood group
11. Estimation of total protein in given solutions
12. Detection of SGOT and SGPT or GST and GSH in serum/ tissue
13. To study the enzymatic activity of Trypsin / Lipase.
14. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
15. Study of Polytene chromosomes from *Chironomous* / *Drosophila* larvae
16. Preparation of liquid culture medium (LB) and raise culture of *E. coli*
17. Study of Mendelian laws and geneinteractions.
18. Linkage maps based on data from conjugation, transformation andtransduction.
19. Linkage maps based on data from *Drosophila* crosses.
20. Study of human karyotype (normal and abnormal).
21. Pedigree analysis of some human inherited traits.
22. Study of homology and analogy from suitable specimens
23. Study and verification of Hardy-Weinberg Law by chi square analysis
24. Demonstration of role of natural selection and genetic drift in changing allele frequencies using simulation studies
25. Determine the area of a lake using graphimetric and gravimetric method.
26. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.
27. Estimation of Lactose in milk
28. Ascorbic acid estimation in food by titrimetry
29. Estimation of Calcium in foods by titrimetry
30. Preparation of temporary mounts: Neurons and Blood film.
31. Preparation of genomic DNA from *E. coli*/animals/ human.
32. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting, PCR, DNA Microarrays.
33. Study of mitosis and meiosis through squashing in Grasshopper.
34. Plasmid DNA isolation (pUC 18/19) from *E. coli*
35. Restriction digestion of plasmid DNA / Lambda Phage DNA
36. Construction of circular and linear restriction map from the data provided.
37. Estimation of plasma level of any hormone using ELISA
38. Observation and quantitation of *Drosophila* photoreceptor neurons in healthy and diseased condition.
39. Nerve Cell preparation from the spinal cord.
40. Study of neurons and/ or myelin by Nissl, Giemsa or Luxol Fast Blue staining.
41. Human vaginal exfoliate cytology.
42. Sperm count and sperm motility in rat
43. Demonstration of ELISA.
44. Demonstration of Bone marrow smears to study Immune cells.
45. Demonstration of different field techniques for flora and fauna.
46. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences)

List of instruments/equipments

SL No	Name of the equipment
1	Students' Compound Microscope
2	Stereo Microscope
3	Haemocytometer
4	pH Meter
5	UV-Visible Spectrometer
6	Bench Top Centrifuge
8	Paper Chromatography Unit
9	Digital Weighing balance
10	Laminar Airflow
11	BOD Incubator
12	Refrigerator
13	Hot Air Oven
14	Autoclave
15	Magnetic Stirrer with Hot Plate
16	Microtome
17	Gel electrophoresis unit with accessories
18	Trans illuminator
19	Water bath

STATE MODEL SYLLABUS FOR UNDERGRADUATE COURSES IN ARTS (2019-2020)

UNDER CHOICE BASED CREDIT SYSTEM

Skill Development
Employability
Entrepreneurship
All the three
Skill Development and Employability
Skill Development and Entrepreneurship
Employability and Entrepreneurship

Course structure of UG Economics Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Introductory Microeconomics	06	100
	C-II	Mathematical Methods for Economics I	06	100
	GE-I	Indian Economy	06	100
			22	
II	AECC-II	AECC-II	04	100
	C-III	Introductory Macroeconomics	06	100
	C-IV	Mathematical Methods for Economics II	06	100

	GE-II	Indian Economy II	06	100
			22	
III	C-V	Microeconomics I	06	100
	C-VI	Macroeconomics I	06	100
	C-VII	Statistical Methods for Economics	06	100
	GE-III	Introductory Microeconomics	06	100
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	Microeconomics II	06	100
	C-IX	Macroeconomics II	06	100
	C-X	Research Methodology	06	100
	GE-IV	Introductory Macroeconomics	06	100
	SECC-II	SECC-II	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI	Indian Economy I	06	100
	C-XII	Development Economics I	06	100

	DSE-I	1. Economic History of India (1857-1947) or 2. Public Economics	06	100
	DSE-II	1. Introductory Econometrics or 2. Odisha Economy or 3. Money and Banking	06	100
			24	
VI	C-XIII	Indian Economy II	06	100
	C-XIV	Development Economics II	06	100
	DSE-III	1. Environmental Economics or 2. History of Economic Thought	06	100
	DSE-IV	1. International Economics or 2. Agricultural Economics or 3. Project/Dissertation	06	100
			24	

ECONOMICS

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers (out of the 9 papers suggested)
Generic Elective for non Public Administration students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial
Dissertation : (content : 50; Seminar : 30; Viva Voce : 20)l

Core Paper I INTRODUCTORY MICROECONOMICS

Introduction:

This course is designed to expose the students to the basic principles of microeconomic theory. The

emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations.

Unit I: Exploring the Subject Matter of Economics, Markets and Welfare

The Ten Principles of Economics: How people make decisions; Working of the economy as a whole; Thinking Like an Economist: The economist as Scientist – The scientific method: Observation, Theory and more observation; Role of Assumptions; Economic Models; Why economists disagree; Graphs in Economics

The Market Forces; Markets and Competition; The Demand and Supply curves – Market vs Individual curves, Shifts in Demand and Supply Curves; Market Equilibrium and changes there in; Price Elasticity of Demand – determinants and computation; Income and Cross Elasticity of Demand; The Price Elasticity of Supply – determinants and computation; Consumer and Producer Surplus.

Unit II: Theory of Consumer Choice

The Budget Constraint; Preferences – representing preferences with indifference curves; Properties of Indifference Curves; Two extreme examples of indifference curves; Optimization – Equilibrium; Change in equilibrium due to changes in income, changes in price; Income and Substitution Effect; Derivation of Demand Curve; Three applications – Demand for Giffen goods, Wages and Labour Supply, Interest rate and Household saving.

Unit III: The Firm and Market Structures

Cost concepts; Production and Costs; The various measures of cost – Fixed and Variable cost, Average and Marginal cost; Cost curves and their shapes; Costs in the short run and in the long run; Economies and diseconomies of scale. Firms in Competitive Markets – What is a competitive market; Profit maximization and the competitive firm's supply curve; The marginal cost curve and the firm's supply decision; Firm's short-run decision to shut down; Firm's long-run decision to exit or enter a market; The supply curve in a competitive market – short run and long run.

Unit IV: The Input Markets

The Demand for Labour – The production function and the marginal product of labour; Value of the marginal product of labour and demand for labour; Shifts in labour demand curve; The supply of labour – the trade-off between work and leisure; Shifts in the labour supply curve; Equilibrium in the Labour Market; Other factors of production: Land and Capital; Linkages among factors of production.

Text Book:

- Principles of Economics, Gregory N Mankiw, 6e Cengage Learning India Private Limited, New Delhi

Reference Book:

- Karl E. Case and Ray C. Fair (2007): *Principles of Economics*, 8th Edition, Pearson Education Inc.

Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc

Core Paper II

MATHEMATICAL METHODS FOR ECONOMICS I

Introduction:

This is the first of a compulsory two-course sequence. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Unit I: Preliminaries and Functions of one Real Variable

Sets and set operations; Cartesian product; relations; functions and their properties; Number systems

Types of Functions- constant, polynomial, rational, exponential, logarithmic; Graphs and graphs of functions; Limit and Continuity of functions; Limit theorems.

Unit II: Derivative of a Function

Rate of change and derivative; Derivative and slope of a curve; Continuity and differentiability of a function; Rules of differentiation for a function of one variable; Application- Relationship between total, average and marginal functions.

Unit III: Functions of two or more Independent Variables

Partial differentiation techniques; Geometric interpretation of partial derivatives; Partial derivatives in Economics; Elasticity of a function – demand and cost elasticity, cross and partial elasticity.

Unit IV: Matrices and Determinants

Matrices: concept, types, matrix algebra, transpose, inverse, rank; Determinants: concept, properties, solving problems using properties of determinants, solution to a system of equations - Crammer's rule and matrix inversion method.

Text Book:

- A. C. Chiang and K. Wainwright (2005): *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition.

Reference Book:

- K. Sydsaeter and P. J. Hammond (2002): *Mathematics for Economic Analysis*. Pearson Educational Asia

Core Paper III INTRODUCTORY MACROECONOMICS

Introduction:

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variable like savings, investment, GDP, money, inflation, and the balance of payments.

Unit I: Basic Concepts in Macroeconomics

Macro vs. Micro Economics; Limitations of Macroeconomics; Stock and Flow variables, Equilibrium and Disequilibrium, Partial and General Equilibrium Statics – Comparative Statics and Dynamics; National Income Concepts – GDP, GNP, NDP and NNP at market price, factor cost, real and nominal; Disposable personal Income.

Unit II: Measurement of Macroeconomic Variables

Output, Income and Expenditure Approaches; Difficulties of Estimating National Income; National Income Identities in a simple 2-sector economy and with government and foreign trade sectors; Circular Flows of Income in 2, 3 and 4-sector economies; National Income and Economic Welfare; Green Accounting.

Unit III: Money and Changes in its Value

Evolution and Functions of Money, Quantity Theory of Money – Cash Transactions, Cash Balances and Keynesian Approaches, Value of Money and Index Number of Prices

Inflation – Meaning, Causes, and Anti-Inflationary Measures; Classical, Keynesian, Monetarist and Modern Theories of Inflation, Inflationary Gap, Deflation- Meaning, Causes, and Anti-Deflationary Measures, Depression and Stagflation; Inflation vs. Deflation.

Unit IV: Determination of National Income

The Classical Approach - Say's Law, Theory of Determination of Income and Employment with and without saving and Investment; Basics of Aggregate Demand and Aggregate Supply and Consumption-Saving– Investment Functions, The Keynesian Approach– Basics of Aggregate Demand and Aggregate Supply and Consumption, Saving, Investment Functions; The Principle of Effective Demand; Income Determination in a Simple 2-Sector Model; Changes in Aggregate Demand and Income- The Simple Investment Multiplier

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.

Core Paper IV MATHEMATICAL METHODS FOR

ECONOMICS II

Introduction:

This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general. The level of sophistication at which the material is to be taught is indicated by the contents of the prescribed textbook.

Unit I: Linear models:

Input- Output Model: Basic concepts and structure of Leontief's open and static Input-Output model; Solution for equilibrium output in a three industry model; The closed model.

Unit II: Second and Higher Order Derivatives and Integration:

Technique of higher order differentiation; Interpretation of second derivative; Second order derivative and curvature of a function; Concavity and convexity of functions; Points of inflection, Derivative of Implicit Function; Higher Order Partial Derivative.

Indefinite Integrals; Rules of Integration; Techniques of Integration: Substitution Rule, Integration by parts, and Partial Fractions; Definite Integral – Area Interpretation.

Unit III: Single and Multivariable Optimization:

Optimum values and extreme values; Relative maximum and minimum; Necessary versus sufficient conditions - First and Second derivative tests (using Hessian Determinants); Economic applications thereof, First and second order condition for extrema of multivariable functions; Convex functions and convex sets.

Unit IV: Optimization with Equality Constraints:

Effects of a constraint; Finding stationary value – Lagrange-Multiplier method (Two variable single constraint case only): First and second order condition; The Bordered Hessian determinant.

Text Book:

- A. C. Chiang and K. Wainwright (2005): *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition.

Reference Book:

- K. Sydsaeter and P. J. Hammond (2002): *Mathematics for Economic Analysis*. Pearson Educational Asia

Core Paper V MICROECONOMICS I

Introduction:

The course is designed to provide a sound training in microeconomic theory to formally analyze the behavior of individual agents. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts; this course looks at the behavior of the consumer and the producer and also covers the behavior of a competitive firm.

Unit I: Consumer Theory I

Preferences and Utility, Axioms of Rational Choice, Utility, Trades and Substitutions, Indifference curves; Mathematics of Indifference curves, Utility functions for specific preferences, the many good case; Utility Maximization and choice: the 2-good case (graphical analysis), the n-good case, Indirect utility function, the Lump sum principle, Expenditure minimization, properties of expenditure function.

Unit II: Consumer Theory II

The Income and Substitution Effects: Demand function, changes in income, changes in a goods price-Direct and Indirect Approaches (Slutsky), the Individual's Demand Curve, Compensated (Hicksian) demand curves and functions, demand elasticity, Consumer Surplus, Demand relationships among goods, the 2-good case, substitutes and complements, Net (Hicksian) substitutes, and Complements, Substitutability with many goods.

Unit III: Production Theory and Costs

Production Functions: Marginal productivity, Production with One Variable Input (labour) and with Two-Variable Inputs, Isoquant Maps and the Rate of Technical Substitution, Returns to Scale, Elasticity of Substitution, Some Simple Production Functions: Linear, Fixed Proportions, Cobb-Douglas; Technical Progress.

Definition of Cost and its properties, Cost minimizing input choices (Optimization principles, Expansion Path), Cost Functions and Shift in Cost Curves, Long-Run versus Short-Run Cost Curves.

Unit IV: Profit Maximization

The Nature and Behavior of Firms, Marginal Revenue – Relationship between Average and marginal revenue, Short-Run Supply by a Price-Taking Firm, Profit Functions and its Properties, Profit maximization – General conditions, Input demands.

Text Book:

- C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India.

Reference Books:

- H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition, W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems.

Core Paper VI MACROECONOMICS I

Introduction:

This course introduces the students to formal modeling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context. It also introduces the students to various theoretical issues related to an open economy.

Unit I: Consumption and Investment

Consumption – Income Relationship, Propensities to Consume and the Fundamental Psychological Law of Consumption; Implications of Keynesian Consumption Function; Factors Influencing

Consumption Function; Measures to Raise Consumption Function; Absolute, Relative, Permanent and Life – Cycle Hypotheses

Autonomous and Induced Investment, Residential and Inventory Investment, Determinants of Business Fixed Investment, Decision to Invest and MEC, Accelerator and MEI, Theories of Investment.

Unit II: Demand for and Supply of Money

Demand for Money – Classical, Neoclassical and Keynesian Approaches, The Keynesian Liquidity Trap and its Implications, Supply of Money, The Theory of Money Supply Determination and Money Multiplier, Measures of Money Supply in India.

Unit III: Aggregate Demand and Aggregate Supply

Derivation of Aggregate Demand and Aggregate Supply Curves in the IS-LM Framework; Nature and Shape of IS and LM curves; Interaction of IS and LM curves and Determination of Employment, Output, Prices and Investment; Changes in IS and LM curves and their Implications for Equilibrium.

Unit IV: Inflation, Unemployment and Expectations, and Trade Cycles

Inflation – Unemployment Trade off and the Phillips Curve – Short run and Long run Analysis; Adaptive and Rational Expectations; The Policy Ineffectiveness Debate; Meaning and Characteristics of Trade Cycles; Hawtrey's Monetary Theory, Hayek's Over-investment Theory and Keynes' views on Trade Cycles.

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi.

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.

Core Paper VII

STATISTICAL METHODS FOR ECONOMICS

Introduction:

This is a course on statistical methods for economics. It begins with some basic concepts and terminology that are fundamental to statistical analysis and inference. It is followed by a study and measure of relationship between variables, which are the core of economic analysis. This is followed by a basic discussion on index numbers and time series. The paper finally develops the notion of probability, followed by probability distributions of discrete and continuous random variables and introduces the most frequently used theoretical distribution, the Normal distribution.

Unit I: Data Collection and Measures of Central Tendency and Dispersion

Basic concepts: population and sample, parameter and statistics; Data Collection: primary and secondary data, methods of collection of primary data; Presentation of Data: frequency distribution; cumulative frequency; graphic and diagrammatic representation of data; Measures of Central Tendency: mean, median, mode, geometric mean, harmonic mean, their relative merits and demerits; Measures of Dispersion: absolute and relative - range, mean deviation, standard deviation, coefficient of variation, quartile deviation, their merits and demerits; Measures of skewness and kurtosis.

Unit II: Correlation and Regression Analysis

Correlation: scatter diagram, sample correlation coefficient - Karl Pearson's correlation coefficient and its properties, probable error of correlation coefficient, Spearman's rank correlation coefficient. Two variable linear regression analysis - estimation of regression lines (Least square method) and regression coefficients - their interpretation and properties, standard error of estimate.

Unit III: Time Series and Index Number

Time Series: definition and components, measurement of trend- free hand method, methods of semi-average, moving average and method of least squares (equations of first and second degree only), measurement of seasonal component; Index Numbers: Concept, price relative, quantity relative and value relative; Laspeyer's and Fisher's index, family budget method, problems in construction and limitations of index numbers, test for ideal index number.

Unit IV: Probability Theory and Sampling

Probability: Basic concepts, addition and multiplication rules, conditional probability; Meaning of Sampling, Types of Sampling: Probability Sampling versus Non-Probability Sampling; Simple Random Sampling and its selection, Systematic Sampling, Multi-stage Sampling, Quota Sampling; Error: Sampling and Non-sampling.

Text books:

- S. C. Gupta (2017): *Fundamentals of Statistics*, Himalaya Publishing House, Delhi

Reference Book:

- Murray R. Speigel (2017): *Theory & Problems of Statistics*, Schaum's publishing Series.

Core Paper VIII MICROECONOMICS II

Introduction:

This course is a sequel to Microeconomics I. The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers Market, general equilibrium and welfare, imperfect markets and topics under information economics.

Unit I: Firm Supply and Equilibrium

Market Environments; Pure competition; Supply decision of a competitive firm and Exceptions; Inverse Supply Function; Profits and Producer's Surplus; Long Run Supply Curve of a Firm; Long Run Average Costs; Short Run and Long Run Industry Supply; Industry Equilibrium in Short and Long Run; Meaning of Zero Profits; Economic Rent.

Unit II: General Equilibrium, Efficiency and Welfare

The Edge worth Box; Trade; Pareto Efficient Allocations; Existence of equilibrium and efficiency; The Welfare Theorems and their implications; The Firm; Production and the Welfare Theorems ; Production possibilities, comparative advantage and Pareto efficiency.

Unit III: Market Imperfections: Monopoly and Oligopoly

Barriers to Entry, Profit Maximization and Output Choice, Monopoly and resource Allocation, Monopoly, Product Quality and Durability, Price Discrimination, Second Degree Price Discrimination through Price Schedules, Regulation of Monopoly, Dynamic Views of Monopoly. Monopolistic competition; Price output determination; excess capacity under monopoliostic competition .

Unit IV: Game Theory

The Payoff Matrix of a Game; Nash Equilibrium; Mixed Strategies ;The Prisoner's Dilemma; Repeated Games; Enforcing a cartel; Sequential Games; A Game of entry deterrence.
Oligopoly – Choosing a strategy; Quantity and price leadership; Simultaneous Quantity Setting; Example of Cournot Equilibrium; Simultaneous Price Setting; Collusion.

Text Book:

- H. R. Varian (2010): Intermediate Microeconomics: A Modern Approach, 8th Edition, W.W. Norton and Company/Affiliated East-West Press (India). The workbook by Varian and Bergstrom may be used for problems.

Reference Book:

- C. Snyder and W. Nicholson (2012): Microeconomic Theory: Basic Principles and Extensions, 11th Edition, Cengage Learning, Delhi, India.
- Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc.

Core Paper IX MACROECONOMICS II

Introduction:

This course is a sequel to Macroeconomics I. In this course, the students are introduced to the long run dynamic issues like growth and technical progress. It also provides the micro-foundations to the various aggregative concepts used in the previous course.

Unit I: Modeling Economic Growth

Accumulation of Capital in the basic Solow Model; supply and demand for goods, growth in the capital stock and the steady state, Golden rule level of capital: Comparing steady states, transition to the golden rule steady state with too much and too little capital, Population Growth, Technological Progress- Solow version, Beyond Solow Model and Endogenous Growth.

Unit II: Open Economy and Macroeconomic Policy

Balance of payments- concept; meaning of equilibrium and disequilibrium in balance of payments; Determination of foreign exchange rate- the balance of payments theory; Fixed versus flexible exchange rates; Short-run open economy model- the basic Mundell-Fleming model; Macroeconomic Policies – Fiscal policy, Crowding –out and Crowding – in; Monetary policy and instruments, the Transmission Mechanism; Effectiveness of macroeconomic policies in open and closed economies.

Unit III: Classical and Keynesian Macroeconomics Thoughts

Keynes verses classics: Classical macroeconomics, Employment and output determination, Say's law, the quantity theory of money, Keynes's General theory: Keynes's main propositions; analysis of the labour market, Keynes's critique of Say's law and Quantity theory of money, the orthodox Keynesian school, underemployment equilibrium in the Keynesian model, the Phillips curve and orthodox Keynesian school.

Unit IV: Monetarist and New Classical Macroeconomic Thoughts

The orthodox monetarist school, the Quantity Theory of Money approach, the expectations augmented Phillips curve analysis, the orthodox monetarist school and stabilization policy. New Classical Economics: The influence of Robert e Lucas Jr, the structure of new classical models: the Rational Expectations hypothesis; and policy implications.

Text Book:

- N. Gregory Mankiw (2010): *Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Brian Snowdon and Howard R Vane (2005): Modern Macroeconomics: Its Origins, Development and Current State, Edward Elgar

Core Paper X Research Methodology

Introduction:

The course is to develop a research orientation among the students and to acquaint them with fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific social research methods and their approach. It includes discussions on sampling techniques, research designs and techniques of analysis.

Unit I: Basics of Research

Introduction to Research: Meaning, Objectives, Motivation, Types, Approaches, Significance, Research Process, Criteria of Good Research; Qualities of a Good Researcher, Research as a Career.

Unit II: Research Problem

Defining the Research Problem: What is a Research Problem? Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem; Research Design: Meaning, Need, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs.

Unit III: Issues in Research

Measurement in Research, Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Techniques of Measurement Tools, Scaling and Important Scaling Technique Research Ethics: codes and ethics, permissions to research, responsibilities, confidentiality, feedback, participatory research; Research Proposal and literature review: research proposal, review of literature, levels of analysis, using the library and internet, abstracting, word processing, plagiarism, Concept of IPR.

Unit IV: Actions in Research

English in report writing: words, sentences, paragraph, writing style; The Report: improving quality, sections, drawing conclusions, evaluation checklists, persistence; Common Citation Styles

Text Book:

- Kothari, C. R. (2004): Research Methodology: Methods and Techniques, New Age International Private Limited Publishers, New Delhi.

Reference Books:

- Guthrie, G. (2010): Basic Research Methods, Sage Publications India Private Limited, New Delhi.

Core Paper XI INDIAN ECONOMY I

Introduction:

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points. Given the rapid changes taking place in India, the reading list will have to be updated annually.

Unit I: Basic Characteristics of Indian Economy as a Developing Economy

Indian Economy in the Pre-British Period; The Structure and Organization of Villages and Towns; Industries and Handicrafts in Pre-British India; Colonialism; Economic Consequences of British Rule; Decline of Handicrafts and Progressive Ruralization; The Land System and Commercialization of Agriculture; Industrial Transition; Colonial Exploitation and Impacts – Underdevelopment; Colonization and Modernization; State Policies and Economic Underdevelopment; The Current State of Indian Economy

Unit II: Population and Human Development

Population Growth and Economic Development – size, growth and future of population; Causes of rapid population growth; Population and economic development; Population policy; Demographic issues– Sex and Age Composition of population; Demographic Dividend; Urbanization and Migration; Human Resource Development – Indicators and importance of Human Resource Development; Education policy; Health and nutrition.

Unit III: National Income in India – The Growth Story and Current Challenges

Trends in national and per capita income; Changes in sectoral composition of national income; Regional disparities in Growth and Income; Savings and Investment and Economic Growth – The Linkage; Poverty – Estimation and Trends, Poverty Alleviation Programs– MGNREGA, NRLM, SJSRY; Inequality –Measures and trends in India; Unemployment– Nature, Estimates, Trends, Causes and Employment Policy.

Unit IV: Economic Planning in India

Rationale, Features, Objectives, Strategies, Achievements and Assessment of Planning in India; Eleventh Five Year Plan– Objectives, Targets and Achievements; Twelfth Five Year Plan – Vision and Strategy; From Planning to NITI– Transforming India's Development Agenda.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Books:

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Indian Economy Datt and Sundharam, GauravDatt and AshwaniMahajan, S Chand Publications, 7th Revised Edition
- Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, Revised Nineteenth Edition 2008-09
- Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi

Core Paper XII

DEVELOPMENT ECONOMICS I

Introduction:

This is the first part of a two-part course on economic development. The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored. The course ends by linking political institutions to growth and inequality by discussing the role of the state in economic development and the informational and incentive problems that affect state governance.

Unit I: Study of Economic Development

Development Economics as subject; economic growth and economic development; Characteristics of underdeveloped countries – vicious cycle of poverty and cumulative causation; obstacles to economic development; measures of economic development – national and per capita income, basic needs approach, capabilities approach, three core values of development, PQLI, HDI, HPI, MDPI, GDI; capital formation and economic development.

Unit II: Theories of Economic Growth and Development

Classical theory, Marxian theory; Schumpeterian theory; Rostow's stages of economic growth; Solow model and convergence with population growth and technical progress.

Unit III: Poverty, Inequality, Agriculture, Industry and Development

Measuring poverty: Head Count Ratio, Poverty Gap Ratio, Squared Poverty Ratio, FGT Ratio; Measuring Inequality – Lorenz curve and Kuznets' inverted U hypothesis; Growth, poverty and inequality; Policy options – some basic considerations.

Agriculture, Industry and Economic Development: Role of agriculture; Transforming traditional agriculture; Barriers to agricultural development; Role of industrialization; Interdependence between agriculture and industries – A model of complementarities between agriculture and industry; terms of trade between agriculture and industry; functioning of markets in agrarian societies; interlinked agrarian markets.

Unit IV: Institutions and Economic Development:

Role of institutions in economic development; Characteristics of good institutions and quality of institutions; The pre-requisites of a sound institutional structure; Different measures of institutions – aggregate governance index, property rights and risk of expropriation; The role of democracy in economic development; Role of markets and market failure; Institutional and cultural requirements for operation of effective private markets; Market facilitating conditions; Limitations of markets in LDCs; Corruption and economic development – tackling the problem of corruption.

Text book:

- Todaro, Michael P and Stephen C Smith (2006): *Economic Development*, 8th Edition, Pearson

Reference Books:

- Debraj Ray (2009): *Development Economics,* Oxford University Press.
- Thirlwall, A P (2011): *Economics of Development*, 9th Edition, Palgrave Macmillan

Core Paper XIII INDIAN ECONOMY II

Introduction:

This course examines sector-specific polices and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list will have to be updated annually.

Unit I: Agricultural Development in India

Indian Agriculture: nature, importance, trends in agricultural production and productivity, factors determining production, land reforms, new agricultural strategies and green revolution, rural credit; Agricultural marketing and warehousing.

Unit II: Industrial Development in India

Trends in industrial output and productivities; Industrial Policies of 1948, 1956, 1977 and 1991; Industrial Licensing Policies – MRTP Act, FERA and FEMA; Growth and problems of SSIs, Industrial sickness; Industrial finance; Industrial labour.

Unit III: Tertiary Sector, HRD and the External Sector

Tertiary Sector: growth and contribution of service sector to GDP of India, share of services in employment; Human development – concept, evolution, measurement; HRD: indication, importance, education in India, Indian educational policy; Health and Nutrition.

Foreign Trade: role, composition and direction of India's foreign trade, trends of export and import in India, export promotion verses import substitution; Balance of Payments of India; India's Trade Policies; Foreign Capital – FDI, Aid and MNCs.

Unit IV: Indian Economy and Environment

Environmental Policies in India: The Environment (Protection) Act 1986, The Environment (Protection) Rules 1986, The National Forest Policy 1988, Policy statement for Abatement of Pollution 1992, National Conservation Strategy and Policy Statement on Environment and Development 1992, The National Environment Appellate Authority Act 1997, National Environmental Policy 2006; Global deal with Climate Change: Introduction, Intergovernmental Panel for Climate Change (IPCC), Impact of Climate Change on India, Global Response on Climate Change, Possible Role of India.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Books:

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Indian Economy Datt and Sundharam, GauravDatt and AshwaniMahajan, S Chand Publications, 7th Revised Edition
- Indian Economy Since Independence, ed by Uma Kapila, Academic Foundation, Revised Nineteenth Edition 2008-09
- Government of India (Current Year): Economic Survey, Ministry of Finance, New Delhi

Core Paper XIV DEVELOPMENT ECONOMICS II

Introduction:

This is the second unit of the economic development sequence. It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of communities and organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development.

Unit I: Population and Development

Demographic concepts : birth and death rates, age structure, fertility and its determinants, the Malthusian population trap and the microeconomic household theory of fertility; costs and benefits of population growth and the model of low level equilibrium trap; rural-urban migration – the Harris Todaro migration model and policy implications.

Unit II: Dualism and Economic Development

Dualism – geographic, social and technological; the theory of cumulative causation (Myrdal); the regional inequalities in the context of economic development; the inverted U relationship; international inequality and the centre periphery thesis; dependency, exploitation and unequal exchange; the dualistic development thesis and its implications.

Unit III: Environment and Development

Basic issues of environment and development – Development and environment inter-linkage; Poverty, environmental degradation and externalities; common property resources, renewable and non-renewable resources; concept of sustainable development; basics of climate change.

Unit IV: International Trade and Economic Development and Financing Economic Development

Trade and economic development; export led growth; terms of trade and economic growth – the Prebisch Singer Hypothesis; trade strategies for development – import substitution vs. export promotion; international commodity agreements; trade vs aid.

Saving, capital formation and economic development; financial sector and economic development; taxation, public borrowing and economic development; inflation, foreign finance, investment and foreign aid – controversies and opportunities.

Text Book:

- Todaro, Michael P and Stephen C Smith (2006): *Economic Development*, 8th Edition, Pearson

Reference Book:

- Thirlwall, A P (2011): *Economics of Development*, 9th Edition, Palgrave Macmillan.

DSE Group I

Discipline Specific Elective Paper-1

ECONOMIC HISTORY OF INDIA 1857-1947

Introduction:

This course analyses key aspects of Indian economic development during the second half of British colonial rule. In doing so, it investigates the place of the Indian economy in the wider colonial context, and the mechanisms that linked economic development in India to the compulsions of colonial rule. This course links directly to the course on India's economic development after independence in 1947.

Unit I: Introduction: Colonial India: Background and Introduction and Macro trends;

Overview of colonial economy**,** National Income; population; occupational structure.

Unit II: Agriculture

Agrarian structure and land relations; agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.

Unit III: Railways and Industry

Railways; the de-industrialization debate; evolution of entrepreneurial and industrial structure; nature of industrialization in the interwar period; constraints to industrial breakthrough; labor relations.

Unit IV: Economy and State in the Imperial Context

The imperial priorities and the Indian economy; drain of wealth; international trade, capital flows and the colonial economy – changes and continuities; government and fiscal policy.

Text Book:

- Tirthankar Roy, *The Economic History of India 1857-1947*, Oxford University Press, 3rd edition, 2011.

Discipline Specific Elective Paper-2

INTRODUCTORY ECONOMETRICS

Introduction:

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

Unit I: Introduction

Definition, Nature and scope of econometrics; Theoretical Probability Distributions: Binomial, Poisson and Normal distributions: their properties

Theory of Estimation: Estimation of parameters; properties of estimators – small sample and asymptotic properties; point and interval estimation.

Unit II: Hypothesis Testing

Testing of hypotheses: defining statistical hypotheses; Simple and composite hypotheses; Null and alternative hypothesis; Type I and Type II errors, Critical region; Neyman-Pearson lemma; Power of a test; Test statistics: z, chi square, t and F.

Unit III: Linear Regression Analysis

Two variable linear regression model – Assumptions; Least square estimates, Variance and co-variance between Least square estimates; BLUE properties; Standard errors of estimates; Co-efficient of determination; Inference in a two variable linear regression model; ANOVA; Forecasting. Introduction to multiple regression models.

Unit IV: Violation of Classical Assumptions

Heteroscedasticity, Multicollinearity and Auto-correlation: Meaning, consequences, tests and remedies.

Text Book:

- Gujarati, D & Sangeetha (2007); "Basic Econometrics", McGraw Hill Book Co.

Discipline Specific Elective Paper-3 ODISHA ECONOMY

Introduction:

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in Odisha in pre- and post-Independence period, with particular emphasis on

paradigm shifts and turning points. Given the rapid changes taking place in Odisha, the reading list will have to be updated annually.

Unit I: Odisha Economy before 1947

Orissa's Economy in the Nineteenth Century: Benevolence or Exploitation, Forces of Nature, Animal Power, The Company Steps in, Public Works and Public Health, Education, Disintegration of Village Economy, New Social Environment, Changing Position of Social Classes, The Moneylenders, The Borrowers, Money-flows from Village to Metropolis, Pauperization of Peasantry, The Wage Earners, Demographic Changes, Profiting from Rural Adversity; Diarchy in 1919 and Separation of Provincial Finances from Central Government in 1937; Emergence of Federal Finance (Ref.: Das 1976a and 1976b, GoO 2016).

Unit II: Macro Economy of Odisha

A macro glance of Odisha economy: aggregate income, broad sectoral decomposition, performance of districts, employment, child labour and bonded labour, employment programmes, consumption expenditure, cost of living; Odisha State public finances (Chapter 14 and 15 of Ref 1; & Chapter 2 and 9 of Ref 2).

Unit III: Agriculture, Industry, Infrastructure and Environment in Odisha\

Agriculture: land ownership and land tenure, agricultural wages and rural unemployment, production and productivity of major crops, agricultural inputs, agricultural policy; Animal Husbandry; Fisheries (Chapter 1 to 3 of Ref 1; & Chapter 3 of Ref 2)

Industry: Investment, industrial policy, and the growth of large industries, mining and quarrying; Construction; tertiary sector: tourism, transport and power; Water Resources, Forest Resources (Chapter 4 to 8 of Ref 1; & Chapter 4 & 5 of Ref 2).

Unit IV: Social Sector in Odisha

Poverty: income poverty and inequality; health sector: outcomes, infrastructure, finance, public health, NRHM; education: Literacy, Primary education, secondary education, higher education, SSA; human development (Chapter 9 to 13 of Ref 1; & Chapter 7 & 8 of Ref 2).

Text Book:

- Nayak, P., Panda, S. C., Pattanaik, P. K. (2016): The Economy of Odisha: A Profile, Oxford University Press, New Delhi.

Reference Book:

- GoO (Latest): Odisha Economic Survey, Planning and Convergence Department, Directorate of Economics and Statistics, Government of Odisha, Bhubaneswar.
- GoO (2004): *Human Development Report 2004 Orissa,* Planning and Coordination

Department, Government of Odisha, Bhubaneswar.

- GoO (2018): 80 Years Odisha Budget: Commemorative Volume, Department of Finance, Bhubaneswar.

Discipline Specific Elective Paper-4

MONEY, BANKING AND FINANCIAL MARKET

Introduction:

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control.

Financial and banking sector reforms and monetary policy with special reference to India are also covered.

Unit I: Money

Definition and functions of money; Types of money: legal tender money and bank money, near money; Value of money and index number; construction of index number; WPI, CPI, PPI, GDP deflator, Cost of living index

Demand for money- Classical and Keynesian approaches, Patinkin and the Real Balance Effect; Friedman's Quantity theory of money. Supply of Money- Measures of money supply: M_1,M_2, M_3 and M_4; High powered money and money multiplier.

Unit II: Commercial Banking

Meaning and types; Functions of commercial banks; the process of credit creation and its limitations**;** Balance sheet and portfolio management, Banking sector reforms in India; Lessons from Global Financial Crisis and Policy Response in India.

Unit III: Central Banking

Functions of a central bank; Quantitative and qualitative methods of credit control; Central Bank's Supervision and prudential measures for Financial stability; current monetary policy of India, liquidity adjustment facility (LAF) through Repo and reverse repo operation, MSF.

Unit IV: Financial Markets

Financial Market, Meaning, Types , Money market and Capital Market, Primary and Secondary Market, Stock Exchanges, SEBI; Role of Financial Markets for Economic Development.

Text Book

- L. M. Bhole and J. Mahukud, *Financial Institutions and Markets,* Tata McGraw Hill, 5th edition, 2011.

Discipline Specific Elective Paper-5 PUBLIC ECONOMICS

Introduction:

Public economics is the study of government policy from the points of view of economic efficiency and equity. The paper deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The subject encompasses a host of topics including public goods, market failures and externalities.

Unit I: Introduction to Public Finance and Public Budgets

Public Finance: meaning and scope, distinction between public and private finance; public good verses private good; Principle of maximum social advantage; Market failure and role of government; Public Budget: kinds of budget, economic and functional classification of the budget; Balanced and unbalanced budget; Balanced budget multiplier; Budget as an instrument of economic policy.

Unit II: Public Expenditure

Meaning, classification, principles, cannons and effects, causes of growth of public expenditure, Wagner's law of increasing state activities, Peacock-Wiseman hypotheses.

Unit III: Public Revenue

Sources of Public Revenue; Taxation - meaning, cannons and classification of taxes, impact and incidence of taxes, division of tax burden, the benefit and ability to pay approaches, taxable capacity, effects of taxation, characteristics of a good tax system, major trends in tax revenue of central and state governments in India.

Unit IV: Public Debt

Sources, effects, debt burden – Classical/ Ricardian views, Keynesian and post-Keynesian views; shifting - intergenerational equity, methods of debt redemption, debt management, tax verses debt.

Text Books:

- J. Hindriks and G. Myles (2006): *Intermediate Public Economics*, MIT Press.

Reference Book:

- R. A. Musgrave and P. B. Musgave(1989): *Public Finance in Theory and Practices.* McGraw Hill
- Bhatia H L (2018): *Public Finance.* Vikas Publishing House.

DSE Group II

Discipline Specific Elective

Paper- 1 Environmental

Introduction:

This course introduces the students to the basics of environmental economics to understand the fundamentals of environmental concerns and develop insights into valuation of environment.

Unit I: Economy and Environment

Nature and Scope of Environmental Economics- Environment and Economy interaction; Environment as a public good- Serious environmental problems of Developing Countries – Air pollution, water pollution and deforestation.

Global environmental problems, trade and environment, International Cooperation for Environmental Protections, Montreal and other protocols.

Unit II: The Economics of Pollution and Climate change

Pollution as externality, The market Approach to optimal pollution, Property rights and market bargain theorems, Coase theorem; Pigouvian Taxation, Subsidies and optimal pollution; Climate change – concept, causes, effects and management.

Unit III: Valuation of Environmental Damage

Methods and difficulties of environmental valuation, Economic value, Use value, Option value, Existence value; Direct and Indirect Valuation of Environmental Goods: The hedonic price approach, Contingent valuation, Travel cost approach.

Unit IV: Natural Resources and Sustainable Development

Natural resources- Renewable and exhaustible; Tragedy of commons, People's Participation in the management of common property resources; Sustainable Development Concepts, Sustainability rules, Indicators of sustainability, Solow/Hartwick, Natural capital stock, Safe Minimum Standard.

Text Book:

- Bhattacharya, R. N. (2002): Environmental Economics: An Indian Perspectives, OUP, New Delhi

Reference Book:

- Kolstad, C.D (1999); Environmental Economics Oxford University Press, New Delhi

Discipline Specific Elective Paper-2

INTERNATIONAL ECONOMICS

Introduction:

This course introduces the students to international trade and finance to understand the theories of international trade and develop insights into trade policy and balance of payments. The course

also develops insight into international financial system and the trade policy of India.

UNIT I: Importance of Trade and Trade Theories

Importance of the study of International Economics; Inter-regional and international trade; Theories of Trade-absolute advantage (Adam Smith), comparative advantage (David Ricardo) and opportunity cost (Haberler); Heckscher-Ohlin theory of trade — its main features, assumptions and limitations (Leontief Paradox) Factor Price Equalization theorem.

UNIT II: Trade Policy and International Economic Institutions

Concepts of terms of trade and their importance; Doctrine of reciprocal demand – Offer curve technique; Gains from trade ;Trade as an Engine of Growth and Concept of immiserizing growth, Tariffs and quotas – their impact in partial equilibrium analysis; General Equilibrium analysis of tariff and the concept of optimum tariff, Functions of IMF (Conditional Clause), Role of IMF in international liquidity, Reforms for the emergence of international monetary system; World Bank and WTO; Their achievements and failures; Their Role from the point of view of India.

UNIT III: Exchange Rate

Concept and Types of Exchange Rate (bilateral vs. trade-weighted exchange rate, cross exchange rate, spot, forward, futures), Demand for and Supply of foreign exchange, Exchange Rate Determination: Mint Parity Theory, Purchasing-Power Parity Theory, Fixed versus Flexible exchange rate.

UNIT IV: Balance of Trade and Payments

Concepts and components of balance of trade and balance of payments; Disequilibrium in balance of payments; Various measures to correct deficit in BOPs (Expenditure switching and expenditure reducing policies, Direct control), Depreciation Vs. Devaluation; Elasticity approach to devaluation, Foreign trade multiplier- Concept and implications.

Text Book:

- Mannur H. G (Recent Edition) *International Economics*, Vikash Publishing

Reference Books:

- SalvatoreDominick, *InternationalEconomics*,WileIndia.
- SoderstenBo andReedJ, *InternationalEconomics*, McMillanPublisher

Discipline Specific Elective Paper-3 AGRICULTURAL ECONOMICS

Course description

This course introduces students to the significance of agriculture in the Indian economy and helps

to understand the role agriculture in economic development. It is designed to develop insights into changing agricultural practices in India and assess the significance of agriculture in the era of liberalization.

UNIT I: Agriculture and Economic Growth

Role of Agriculture in Economic Development, sectoral changes and agriculture, agriculture in rural development, farm and non-farm employment issues, inter-linkages between agriculture and industry; empirical evidence of inter-dependence between agriculture and industry; Schultz's hypothesis on traditional agriculture – its criticisms; Mechanization of Indian Agriculture; Case for and against farm mechanization; Green revolution and trends of mechanization in India.

UNIT II: Agricultural Price and Marketing

Agricultural price policy for a developing economy – objectives and effectiveness of agricultural price policy, elements of agricultural price policy, features of an ideal agricultural price policy, agricultural price policy in India and public distribution system

Agricultural marketing – need and criteria for assessing efficiency, agricultural marketing system in India, development of a national agricultural marketing platform.

UNIT III: Risk and Uncertainty in Agriculture

Difference between risk and uncertainty, types of uncertainty in agriculture, measures for mitigating risk and uncertainty in agriculture, new agricultural insurance scheme of India

Rural credit in India, importance and estimates, agencies for rural credit, review of progress of institutional finance in rural India since independence.

UNIT IV: Agriculture in India

Agriculture in Indian Planning, Globalization and Indian agriculture, Case for and against privatization of agriculture, WTO and India's trade in agricultural commodities.

Text Book

- Sony, R. N. (2006), Leading Issues in Agricultural Economics, Vishal Publishing, Jalandhar.

Reference Book:

- Sadhu, A N and A Singh (2008), Fundamentals of Agricultural Economics, Himalaya Publishing House, Mumbai.

Discipline Specific Elective Paper-4

HISTORY OF ECONOMIC THOUGHT

Introduction:

This course provides a perspective to our intellectual history, development of economic thought and helps relate this thought to the current thinking. It introduces the students to the philosophers and economists who developed economic reasoning and modeling of economic activities. It also

helps create critical abilities and attitudes.

UNIT I: Introduction and Early Economic Thought

Mercantilism-main characteristics, Thomas Mur's views ; Physiocracy- main features, Tableau Economique, taxation; Early Classicism: Adam Smith- Theory of Value, Division of labour, capital accumulation, distribution, views on trade and economic progress; David Ricardo-theory of value, theory of rent, distribution, ideas on international trade and development.

UNIT II: Classicism Vs Marxism

Thomas Malthus- population theory, glut theory; Karl Marx-dynamic of social change, theory of value, surplus value, theory of profit, crisis of capitalism, Johns Stuart Mill- ideas on value, distribution, views as a synthesizer.

UNIT III: The Marginalists' Revolution

Economic ideas of Jevons, Walras and Menger, Bohm-Bowerk, Wicksell ; Marshall – Role of time element in price determination, ideas on consumer surplus, Marshal as a synthesizer.

UNIT IV: Indian Economic Thought

Main themes of Kautilya's Arthasashtra; Modern Economic Ideas: Dada Bhai Naoroji, M.K. Gandhi, village swaraj, non-violence, machines and labour, cottage industries; Comparison of Indian Economic thought with western Economic thought.

Text Book

- Gide, Charles and Rist, Charles (1973): A History of Economic Doctrines, Oxford University Press.
- Dasgupta, A K (1986): Epochs of Economic Theory, Oxford University Press, New Delhi.

Reference Book:

- O'Brien, D P (1975): Classical Economists, Oxford, Clarendon Press.
- Ekelund, Robert B. and Robert F. Hebert (1990): A History of Economic Theory and Method, third edition, New York: McGraw Hill.
- Henry W. Spiegel (1991): The Growth of Economic Thought, 3rd ed. Durham: Duke University Press.
- Tom Bottomore (1980): Dictionary of Marxist Thought, Basic Blackwell Publishers.
- Roll, Eric, History of Economic Thought, Faber and Faber Ltd.
- L N Rangarajan (1992): Kautilya: The Arthasastra, edited, rearranged, translated and introduced; Penguine books, New Delhi.

DSE Paper –4
DISSERTATION / RESEARCH PROJECT

(College can give this choice only for students with above 60% aggregate marks)

Introduction : The project is intended to establish the connection between Economics as confined to the text books and class rooms and Economics at play in the ground. It is expected to give an empirical content to the subject. Economics is defined as the study of mankind in the ordinary business of life. It studies individual as well as group behavior.

Project work at the undergraduate level is an in-depth study on a topic chosen by the student. The objective of the project work for the students at undergraduate level is to expose students to the social and real world contexts in which the subjects taught in the classroom have applications. Therefore, the topic must be related to the field of study the student is enrolled. It is undertaken with the guidance of a faculty supervisor, and involves a prolonged period of investigation and writing. The supervisor is supposed to help the student and mentor him/her throughout, from selection of the topic to submission of the project report.
The project output will be a project report written on the topic, chosen by the student and approved by the guide, in about 10000 words.

The process of project preparation typically comprises of an investigation of a particular topic, based on the application of philosophical and theoretical knowledge available in the already existing scientific literature and other published sources of information. The student may use already available data (texts, documents, artworks or existing data sets) or she may go for collection of data from the field. The final report should ideally have the following sections.
(1) Abstract (in about 500 words) containing a summary of the entire report.
(2) Introduction of the topic, arguments for choosing such a topic and the key investigation propositions.
(3) A review of the existing knowledge on the topic
(4) Information on the data and data treatment tools used in the study
(5) An analysis of data and findings
(6) Conclusions
(7) References

A good research project requires sincere efforts and honest dedication from students. Moreover, it requires an engagement of the student with an issue under probe for a fairly long period of time compared to their preparations of subjects for the examination.

A successful completion of the project report has several positive learning outcomes for the student. It empowers the student with the life skill of patience and persistence. It also helps the student to locate her theoretical understandings in the context of socio-economic and political realities.

Generic Elective Paper I INDIAN ECONOMY

Introduction: This paper introduces the students to the essentials of Indian economy with an intention of understanding the basic feature of the Indian economy and its planning process. It also aids in developing an insight into the agricultural and industrial development of India. The students will understand the problems and policies relating to the agricultural and industrial sectors of India and current challenges of Indian economy.

Unit I: Introduction to Indian Economy and Current Challenges

Colonialism & British Rule: Exploitation and under-development in India; Basic features of India Economy; Indian Economy as a developing economy; Demographic trends in India - Size and growth of population, Occupational structure, Sex composition, Age structure and demographic dividend; Causes of population growth and population policy; The problem of unemployment and recent policies for employment generation; The problem of inequality in income distribution and its causes, Policies to address inequality.

Unit II: Indian Agriculture

Role of Agriculture in Indian Economy; Cause of low productivity, Green Revolution and Land Reforms, Agricultural Finance-Sources and Problems; Agricultural Marketing in India.

Unit III: Industrial Development in India

Role of Industrialization in Indian Economy; Small Scale & Cottage Industries: Meaning, Role, Problems and Remedies; Industrial Policies of 1948, 1956, 1977 and1991; Problems of Industrial Development in India; Industrial Sickness.

Unit IV: Service Sector in India

Growth & Contribution to GDP; Composition and relative importance of service sector; Factors determining growth of the sector; ICT and IT – Spread and Policy; Sustainability of services led growth.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai

Reference Book

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.

Generic Elective Paper II INDIAN ECONOMY II

Introduction: : This paper is the part II of Indian economy deals with the external sector, financial markets in India, Indian Public Finances and Economic Reforms. This paper also throws some light on current challenges of Indian Economy.

Unit I: External Sector in India

Trends, Composition & Direction in exports from and imports of India; Problems of Balance of Payment: Causes of deficit in BOP & measures to correct it; Trade Policy- Export Promotion Vs Import Substitution; Foreign Trade Policy of India; WTO and India.

Unit II: Financial Markets in India

Commercial Banking in India- Nationalization of Banks; Lead bank scheme and branch expansion; RBI - Functions, Monetary Policy; Development Banking- IFCI,IDBI, SIDBI and NABARD

Unit III: Indian Public Finance

Public Expenditure-Growth and Composition, Causes of Growth of Public Expenditure in India: Tax Revenue of Central and State Governments; Concept of VAT; Deficit Financing in India-Revenue, Budget, Fiscal and Primary Deficits; Purpose and Effects of Deficit Financing; India's Fiscal Policy-Objectives.

Unit IV: Current Challenges Facing Indian Economy

Inflation – Causes, Consequences and Anti-inflationary Policy; Poverty – Poverty line and Estimates, Major Poverty Alleviation Programmes; Environmental Degradation – Growth and Environment; Population Growth and Environment; Environment Policy; Economic Reforms-Globalization, Macroeconomic Stabilization, Structural Reforms, and their impact on the Indian Economy; Foreign capital and MNCs-Role and consequences.

Text Book:

- Misra, S. K. and Puri V. K. Indian Economy — Its Development Experience. Himalaya Publishing House, Mumbai.

Reference Book

- Dutt R. and Sundharam K. P. M. *Indian Economy*. S. Chand & Company Ltd., New Delhi.
- Basu, Kaushik (2016): An Economist in the Real World: The Art of Policy Making in India,
  enguin.

Generic Elective Paper III INTRODUCTORY

MICROECONOMICS

Introduction:

This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situation.

Unit I: Exploring the Subject Matter of Economics, Markets

and Welfare

The Ten Principles of Economics: How people make decisions; Working of the economy as a whole; Thinking Like an Economist: The economist as Scientist – The scientific method: Observation, Theory and more observation; Role of assumptions; Economic Models; Why economists disagree; Graphs in Economics.

The market forces; Markets and competition; The demand and supply curves – Market vs. individual curves, Shifts in demand and supply curves; Market equilibrium and changes there in; Price elasticity of demand – determinants and computation; Income and cross elasticity of demand; The price elasticity of supply – determinants and Computation; Consumer and Producer Surplus.

Unit II: Theory of Consumer Choice

The Budget Constraint; Preferences – representing preferences with indifference curves; Properties of indifference curves; Two extreme examples of indifference curves; Optimization – Equilibrium; Change in equilibrium due to changes in income, changes in price; Income and substitution effect; Derivation of demand curve; Three applications – Demand for Giffen goods, Wages and Labour Supply, Interest rate and Household saving.

Unit III: The Firm and Market Structures

Cost concepts; Production and costs; The various measures of cost – Fixed and variable cost, average and marginal cost; Cost curves and their shapes; Costs in the short run and in the long run; Economies and diseconomies of scale. Firms in competitive markets – What is a competitive market; Profit maximization and the competitive firm's supply curve; The marginal cost curve and the firm's supply decision; Firm's short-run decision to shut down; Firm's long-run decision to exit or enter a market; The supply curve in a competitive market – short run and long run.

Unit IV: The Input Markets

The demand for labour – The production function and the marginal product of labour; Value of the marginal product of labour and demand for labour; Shifts in labour demand curve; The supply of labour – the trade-off between work and leisure; Shifts in the labour supply curve; Equilibrium in the labour market; Other factors of production: Land and capital; Linkages among factors of production.

Text Book:

- Principles of Economics, Gregory N Mankiw, 6e Cengage Learning India Private Limited, New Delhi.

Reference Book:

- Karl E. Case and Ray C. Fair (2007): *Principles of Economics*, 8th Edition, Pearson Education Inc.
- Pindyck, Robert and Daniel Rubinfeld (2018): Microeconomics, 9th Edition, Pearson Education Inc.

Generic Elective Paper IV INTRODUCTORY

MACROECONOMICS

Introduction:

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts

associated with the determination and measurement of aggregate macroeconomic variable like savings, investment, GDP, money, inflation, and the balance of payments.

Unit I: Basic Concepts in Macroeconomics

Macro vs. Micro Economics; Limitations of Macroeconomics ; Stock and Flow variables, Equilibrium and Disequilibrium, Partial and General Equilibrium Statics – Comparative Statics and Dynamics ; National Income Concepts – GDP, GNP, NDP and NNP at market price, factor cost, real and nominal; Disposable personal Income.

Unit II: Measurement of Macroeconomic Variables

Output, Income and Expenditure Approaches ; Difficulties of Estimating National Income; National Income Identities in a simple 2- sector economy and with government and foreign trade sectors; Circular Flows of Income in 2, 3 and 4-sector; economies; National Income and Economic Welfare; Green Accounting.

Unit III: Money and Changes in its Value

Evolution and Functions of Money, Quantity Theory of Money – Cash Transactions, Cash Balances and Keynesian Approaches, Value of Money and Index Number of Prices. Inflation – Meaning, Causes, and Anti-Inflationary Measures; Classical, Keynesian, Monetarist and Modern Theories of Inflation, Inflationary Gap, Deflation- Meaning, Causes, and Anti-Deflationary Measurers, Depression and Stagflation; Inflation vs. Deflation.

Unit IV: Determination of National Income

The Classical Approach - Say's Law, Theory of Determination of Income and Employment with and without saving and Investment; Basics of Aggregate Demand and Aggregate Supply and Consumption- Saving – Investment Functions, The Keynesian Approach – Basics of Aggregate Demand and Aggregate Supply and Consumption, Saving, Investment Functions; The Principle of Effective Demand; Income Determination in a Simple 2-Sector Model; Changes in Aggregate Demand and Income- The Simple Investment Multiplier.

Text Book:

- N. Gregory Mankiw (2010):*Macroeconomics*, 7th edition, Cengage Learning India Private Limited, New Delhi

Reference Book:

- Richard T. Froyen (2005): *Macroeconomics*, 2nd Edition, Pearson Education Asia, New Delhi.
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Course structure of UG Education Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	Educational Philosophy	04	75
	C-I Practical		02	25
	C-II	Educational Psychology	04	75
	C-II Practical		02	25
	GE-I	GE-I	04	75
	GE-I Practical		02	25
			22	
II	AEC-II	AEC-II	04	100
	C-III	Educational Sociology	04	75
	C-III Practical		02	25
	C-IV	Changing Pedagogical Perspective	04	75
	C-IV Practical		02	25
	GE-II	GE-II	04	75
	GE-II Practical		02	25
			22	
III	C-V	Educational Assessment and Evaluation	04	75
	C-V Practical		02	25
	C-VI	Educational Research	04	75
	C-VI Practical		02	25
	C-VII	Statistics in Education	04	75
	C-VII Practical		02	25
	GE-III	GE-III	04	75
	GE-III Practical		02	25
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	History of Education in India	04	75
	C-VIII Practical		02	25
	C-IX	Curriculum Development	04	75
	C-IX Practical		02	25

	C-X C-X Practical	Guidance and Counseling	04 02	75 25
	GE-IV GE-IV Practical	GE-IV	04 02	75 25
	SEC-II	SEC-II	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI C-XI Practical	Development of Education in Odisha	04 02	75 25
	C-XII C-XII Practical	Information and Communication Technology in Education	04 02	75 25
	DSE-I DSE-I Practical	A. Pedagogy of language (English) B. Pedagogy of language (Odia)	04 02	75 25
	DSE-II DSE-II Practical	A. Pedagogy of Social Sciences B. Pedagogy of Mathematics	04 02	75 25
			24	
VI	C-XIII C-XIII Practical	Contemporary Trends and Issues in Indian Education	04 02	75 25
	C-XIV C-XIV Practical	Educational Management and Leadership	04 02	75 25
	DSE-III DSE-III Practical	A. Policy and Practices in School Education in India B. Policy and Practices in Higher Education in India	04 02	75 25
	DSE-IV DSE-IV Practical	Inclusive Education (Theory)	04 02	75 25
	OR			
	DSE-IV	Dissertation	06	100*
			24	

EDUCATION

HONOURS PAPERS:

Core course – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non Education students – 4 papers. Universities where 2 subjects of two paper each are offered can offer GE1 and GE2

Marks per paper – Mid term : 15 marks, End term : 60 marks, Practical : 25 marks
Total – 100 marks
Credit per paper – 6

Core Paper I EDUCATIONAL PHILOSOPHY

Learning Objectives:

On completion of this course, the learners shall be able to:

- State and analyze the meaning of education and form own concept on education
- Explain philosophy as the foundation of education
- Analyze aims of education
- Describe the essence of different formal philosophies and draw educational implications
- Compare and contrast Indian and western philosophies of education

UNIT 1: Education in Philosophical Perspective

(i) Etymological meaning of education
(ii) Narrower and broader meaning of education, Lifelong education
(iii) Aims of Education- Individual and Social aims of education
(iv) Meaning and nature of philosophy
(v) Branches of Philosophy- Metaphysics, Epistemology and Axiology, and its educational implications
(vi) Functions of Philosophy in relation to education

UNIT 2: Formal Schools of Philosophy and Educational Implications

(i) Idealism, Naturalism, Pragmatism with reference to: Aims of education, curriculum, methods of teaching, role of teacher, discipline

UNIT 3: Indian Schools of Philosophy and their Educational Implications

(i) Common characteristics of Indian philosophy

(ii) Sankhya, Vedanta, , Buddhism, Jainism with reference to:

Philosophical tenets, aims of education, curriculum, methods of teaching, role of

teacher

UNIT 4: Educational Thought of Western and Indian Thinkers

i. Plato

ii. Dewey

iii. Gopabandhu Das

iv. Gandhi

v. Tagore

vi. Aurobindo

PRACTICAL

- Field visit to a seat of learning in the locality and prepare report.

NB: It will be evaluated by both the internal core -1 internal and External examiners.

Text Books

- Safaya, R.N. & Shaida, B.D. (2010). *Modern Theory and Principles of Education*. New Delhi: Dhanpatrai Publishing Company Pvt. Ltd. (Nayak, B.K. (2018).
- Ravi, Samuel.S. (2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Taneja, V.R. (2000). *Educational thought and practice*. New Delhi: Sterling Publishers Pvt. Limited.

Reference Books

- Aggrawal, J.C. (2013). *Theory and principle of education*. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. *et.al*. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT.
- Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dash, B.N. (2011) Foundation of education, New Delhi; Kalyani Publishers.
- Dewey, John (1916/1977). Democracy and education. New York: MacMillan.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Govt. of India (1986/'92). National policy on education. New Delhi: MHRD.
- Krishnamurthy, J. (1953). Education and significance of life. New Delhi: B.I. Publications
- Kumar Krishna (1996). Learning from conflict. New Delhi: Orient Longman.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson. Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Peters, R.S. (1967). The Concept of education. London: Routledge Kegan & Paul. Radhakrishnan, S. Indian philosophy Vol. I and Vol. II

- Ross, James S.(1981). Ground work of educational theory.Delhi: Oxford University Press
- Rusk, Robert R., Philosophical bases of education, London: Oxford University Press.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
- Srinivas, M.N., (1986). Social changes in modern India. Bombay: Allied Publishers.
- Wingo, G. Max (1975). Philosophies of education. New Delhi: Sterling Publisher Pvt. Limited.

Core Paper II EDUCATIONAL PSYCHOLOGY

Learning Objectives:

On completion of this course, the learners shall be able to:

- Explain the concept of educational psychology and its relationship with psychology.
- Understand different methods of educational psychology.
- Describe the theoretical perspectives of educational psychology.
- Explain the concepts of growth and development of child and adolescence, and underlined general principles of growth and development.
- Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.
- Specify the contexts and factors influencing development.
- Explain the theory of cognitive development and its educational implications.
- State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.
- Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

UNIT 1: Educational Psychology in Developmental Perspective

(i) Meaning, nature, scope and relevance of educational psychology
(ii) Methods of educational psychology- observation, experimentation, and case study
(iii) Application of educational psychology in understanding learner
(iv) Growth and Development-Concept, difference between growth and development, and principles of growth and development
(v) Characteristics of development during adolescence in different areas: Physical, social, emotional and intellectual (with reference to Piaget)

UNIT 2: Intelligence, Creativity and Individual difference

(i) Individual difference-concept, nature, factors and role of education
(ii) Intelligence- meaning and nature of intelligence, concept of I.Q, theories of intelligence- Two factor theories, Guildford's structure of intelligence (SI) model, Gardner's multiple theory of intelligence.
(iii) Measurement of intelligence- individual and group test, verbal, non-verbal test
(iv) Creativity- meaning, nature and stages of creative thinking, strategies for fostering creativity

UNIT 3: Learning and Motivation

(i) Learning- meaning, nature and factors of learning

(ii) Theories of learning with experiment and educational implications-

(iii) Classical conditioning, operant conditioning, insightful learning and constructivist approach to learning

(iv) Motivation – concepts, types, and techniques of motivation

UNIT 4: Personality and Mental health

(i) Personality- meaning and nature of personality

(ii) Theories- type theory and trait theory

(iii) Assessment of personality- subjective, objective and projective techniques

(iv) Mental health-concept, factors affecting mental health and role of teacher, mental health of teacher.

(v) Adjustment mechanism: Concept and Types

PRACTICAL

- Administration and interpretation of any psychological test relating to intelligence or personality

: It will be evaluated by both the Internal and External examiners.

Text Books

- Woolfolk, A. (2015). *Educational psychology (9th Ed.).* New Delhi: Pearson Publication
- Chauhan, S.S. (2010). *Advanced educational psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.
- Mangal, S.K. (2002). *Advanced educational psychology*. New Delhi: Prentice Hall of India.

Reference Books

- Arnett, J. (2007). Adolescence and emerging adulthood: A cultural approach. (3rd Edn.). Upper Saddle River, N.J.: Pearson.
- Berk, Laura E. (2011). Child development (9th Edn.). New Delhi: Prentice Hall of India.
- Flavell, J.H. (1963). The developmental psychology of Jean Piaget. New York: Van Nostrand
- Hurlock, E. B. (1980). Developmental psychology: All span approach. New York: McGraw Hill Book.
- Hurlock, E.B. (1980). Child development (6th Edn.). Tokyo: McGraw-Hill, Kogakusha Ltd.
- Hurlock, E.B. (2007). Child growth and development. New York: McGraw Hill.
- Kail, Robert V (2011). Children and their development (6th Edition). Englewood Cliffs, N.J: Prentice Hall.
- Stephens, J. M.; Evans, E. D.(1973). Development and classroom learning: An introduction to educational psychology. New York: Holt, Rinehart and Winston

CORE PAPER III
EDUCATIONAL SOCIOLOGY

Learning Objectives:

On completion of this course, the students shall :

- State the relationship between education and society.
- Understand the meaning of Educational Sociology and function of education as a social system.
- State different agencies of education and their functions.
- Justify the importance of education for social change.
- Describe the role of education in modernization and globalization.
- Describe the function of education to ensure equality and equity.

UNIT 1: Education and Society

(i) Relationship between education and society, school as a miniature society
(ii) Educational Sociology- Concept, nature, scope and importance;
(iii) Relationship between education and sociology.
(iv) Education as a process of socialization.
(v) Education and politics, education and economic development

UNIT 2: Agencies of Education

(i) Family- Importance, functions and role for education and socialization of the children
(ii) School - Importance, functions and role for education and socialization of the children
(iii) Society- Importance, functions and role for education and socialization of the children
(iv) Mass Media- Importance, functions and role for education and socialization of the children

UNIT 3: Education, Social change and Modernization

(i) Concept of social change and factors affecting Social Change
(ii) Education as an instrument of social change and social control
(iii) Concept and attributes of modernization
(iv) Education for accelerating the process of modernization
(v) Impact of globalization on education

UNIT 4: Equalization of Educational opportunities for ensuring equity and Inclusion

(i) Concept of equality, equity and inclusion: its educational implication
(ii) Ensuring equality in the education of SC and ST
(iii) Education for women empowerment
(iv) Inclusive education with reference to children with special needs (CWSN)

PRACTICAL

Field Visit: Study of a social unit (Home/School/Village/slum) and reporting.

NB: It will be evaluated by both the internal and external examiners

Text Books

- Mathur, S. S. (2000). *A sociological approach to Indian education.* Agra : Vinod Pustak Mandir.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson.
- Bahttacharya**,** S. (2006). Sociological Foundation of Education. New Delhi: Atlantic

Reference Books

- Ravi, Samuel.S.(2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Safaya, R.N. & Shaida, B.D. (2010), *Modern theory and principles of education*. New Delhi: Dhanpati Publising Company Pvt. Ltd.
- Aggrawal, J.C.(2013). Theory and principle of education. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. et.al. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT. Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dewey, John (1916/1977). Democracy and education. New York: MacMillan.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Govt. of India (1986/'92). National policy on education. New Delhi: MHRD.
  Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
  Saraswati, T.S. (Ed.) (1999).Culture, socialization and human development. Theory, research and applications in India. New Delhi: Sage Publication.
- Taneja, V.R. (2000). Educational thought and practice, New Delhi: Sterling Publishers Pvt. Limited.

Core Paper IV

CHANGING PEDAGOGICAL PERSPECTIVE

Learning Objectives:

On completion of this course, the students shall:

- Explain the concept of pedagogy

- Differentiate pedagogy from other allied concepts
- Explain different teaching task with example
- Establish relationship between teaching and learning
- List out different approaches and methods of teaching
- Prepare a lesson plan following different designs

UNIT 1: Concept of Teaching and Learning

(i) Meaning and definition of teaching and learning
(ii) Relationship between teaching and learning
(iii) Variables involved in teaching task: independent, dependent and intervening
(iv) Phases of teaching: Pre- active, inter- active and post- active
(v) Levels of teaching: memory, understanding and reflective
(vi) Lesson plan design- The Herbartian steps, 5 E and ICON design model

UNIT 2: Theories of Teaching

(i) Meaning and nature of teaching theory
(ii) Types of teaching theories:
(iii) Formal theories of teaching- communication theory of teaching
(iv) Descriptive theories of teaching– Gagne's hierarchical theory of instruction and Bruner's cognitive theory of instruction
(v) Normative theories of teaching - Mitra's psychological theory of teaching and Clarke's general theory of teaching

UNIT 3: Principles and maxims of teaching

(i) General principles of teaching
(ii) Psychological principles of teaching
(iii) Maxims of teaching
(iv) Core teaching skills: Introducing the lesson, explaining, illustrating with examples, stimulus variation, and reinforcement, questioning, probing questions, closure.

UNIT 4: Approaches and methods of Teaching

(i) Concept of approach, method, strategy and techniques
(ii) Methods of teaching: inductive-deductive, analytic- synthetic, problem solving and project
(iii) Shift in focus from teaching to learning- constructivist approach to learning

PRACTICAL

- Preparation of rating scale/ checklist /observation schedule to evaluate classroom teaching and reporting.

NB: It will be evaluated by both the internal and external examiners

Text Books

- Kochar, S.K.(2011). *Methods and Techniques of teaching*. Sterling Publisher Pvt. Ltd., New Delhi
- Chauhan, S.S.(1995). *Innovations of teaching learning process*. Vikash Publishing House, New Delhi
- Sharma, R.A.(1986).*Technology of Teaching*. International Publishing House, Meerut.

Reference Books

- Aggarwal, J.C.(1995). *Essentials of Educational Technology*. Vikash Publishing House, New Delhi
- Walia, J.S. (2013). *Educational Technology*. Jalandhar, Punjab: Ahim Publications.
- Mangal, S.K. and Mangal, U.(2010) *Essentials of Educational Technology*, New Delhi, PHI Learning Pvt. Limited
- Mangal, S.K.(1988) *Foundations of Educational Technology,* Ludhiana, Tandan Publications
- Nageswar Rao, S., Sreedhar, P. & Rao, B.(2007). *Methods and techniques of teaching*, Sonali Publications, New Delhi
- Oliver,R.A. (1963) *Effective teaching*, JM Dent & Sons
- Pathak, R.P. & Chaudhary, J. (2012) *Educational Technology*, Pearson, New Delhi
- Ryburn, W.M.(1955) *Principles of Teaching*, Geoffrey Cembridge, OUP
- Sampath,K, Pannir Salvam,A.,& Santhanam, S.(1981) *Introduction to Educational Technology*, Sterling Publisher, New Delhi

Core Paper V

EDUCATIONAL ASSESSMENT AND EVALUATION

Learning Objectives:

On completion of this course, the students will.

- State the nature, purpose and types of educational assessment and evaluation.
- Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.
- Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.
- Describe the characteristic of a good test.
- Analyze the trends and issues in learning and learner assessment.
- Analyze and interpret results of the assessment using standard score.
- Illustrate the principles of test construction in education.

UNIT 1: Assessment and Evaluation in Education

(i) Understanding the meaning and purpose of test, measurement, assessment and evaluation

(ii) Scales of measurement- nominal, ordinal, interval and ratio

(iii) Types of test- teacher made and standardized

(iv) Approaches to evaluation- placement, formative, diagnostic and summative

(v) Types of evaluation- norm referenced and criterion referenced
(vi)Concept and nature of continuous and compressive evaluation

UNIT 2: Instructional Learning Objectives

(i) Taxonomy of instructional learning objectives with special reference to cognitive domain
(ii) Criteria of selecting appropriate learning objectives, and stating of general and specific instructional learning objectives
(iii) Relationship of evaluation procedure with learning objectives
(iv) Difference between objective based objective type test and objective based essay type test

UNIT 3: Tools and Techniques of Assessment and construction of Test

(i) Steps of test construction: planning, preparing, trying out and evaluation
(ii) Principles of construction of objective type test items- matching, multiple choice, completion and true – false
(iii) Principles of construction of essay type test
(iv) Non- standardized tools: Observation schedule, interview schedule, rating scale, check list, portfolio and rubrics .

UNIT 4: Characteristics of a good Test

(i) Validity-concept, types and methods of validation
(ii) Reliability- concept and methods of estimating reliability
(iii) Objectivity- concept and methods of estimating objectivity
(iv)Usability- concept and factors ensuring usability

PRACTICAL

- Construction of Unit test on a school subject based on blueprint and reporting.

  NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C. (1997). *Essentials of examination system, evaluation, tests and measurement*. New Delhi: Vikas Publishing House Pvt Ltd.
- Goswami, M. (2011). *Measurement and evaluation in psychology and education*. Hyderabad: Neelkamal Publishers
  Gronlund, N.E. (2003). *Assessment of student Achievement*. Boston: Allyn & Bacon
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Anastasi, A.(1976). Psychological testing. New York: Macmillan Publishing Co.
- Anderson, L.W. (2003). Classroom assessment: Enhancing the quality of teacher decision making.
- Banks, S.R. (2005). *Classroom assessment: issues and PRACTICES*. Boston: Allyn & Bacon.

- Blooms, B.S.(1956). *Taxonomy of educational Learning Objectives*. New York: Longman Green and Company
- Cohen, R.J., Swerdlik, M.E., & Phillips, S.M. (1996). *Psychological testing and assessment. an introduction to the tests and measurement*. California: Mayfield Publishing Co.
- Earl, L.M. (2006). *Assessment as learning: using classroom assessment to maximize student learning*. Thousand Oaks, California: Corwin Press
- Hopkins, KD. (1998). *Educational and psychological measurement and evaluation.* Boston: Allyn and Bacon.
- Linn, R.L. & Gronlund, N.E. (2000). *Measurement and assessment in teaching.* London: Merrill Prentice Hall.

  Macmillan, J.H. (1997). *Classroom assessment, principles and practice for effective instruction.* Boston: Allyn and Bacon

- Mohan, R. (2016). *Measurement evaluation and assessment in education*. Delhi: PHI Learning Pvt. Ltd.
- National Council of Educational Research and Training (2006). *Position paper: Examination Reforms.* New Delhi: NCERT
- Noll, N.H. S cannell, D.P. & Craig, RC. (1979). *Introduction to educational measurement.* Boston: Houghton Miffin.

Core Paper VI
Educational Research

Learning Objectives: On completion of this course, the student will:

- Describe nature, scope and limitation of educational research.
- Understand different types and methods of educational research.
- Explain sources from where knowledge could be obtained.
- Describe the process of research in education.
- Analyze research design in education.
- Illustrate procedure of collecting and analyzing data.
- Prepare the research report.

UNIT 1: Concept and Types of Educational Research

(i) Concept and nature of research
(ii) Meaning, nature and scope of educational research
(iii) Types of research by purpose- fundamental, applied and action
(iv)Types of research by approach- quantitative and qualitative

UNIT 2: Design of Research and preparation of research proposal

(i) Steps of Research
(ii) Review of Related Literature; and identification of problem
(iii) Hypothesis: meaning, types, sources and characteristics of hypothesis
(iv)Concept of population and sample
(v) Sampling procedures- probability and non-probability
(vi)Tools and techniques for data collection(i.e. questionnaire, interview, observation and procedure of data collection , preparation of research proposal

UNIT 3: Methods of Research

Meaning nature and steps of:

(i) Survey method
(ii) Case-study method
(iii) Historical research
(iv)Experimental research

UNIT 4: Writing Research Report

(i) Data analysis and interpretation in research.
(ii) Steps for reporting research
(iii) Reporting style (APA Style)
(iv)Plagiarism checking
(v) Referencing Style (APA Style): Bibliography, Webliography

PRACTICAL

- Preparation of a Research Proposal on any Educational Topic (Issues/ Trends/ Problems/ Psychological Topics)

  NB: It will be evaluated by both Internal and External examiners.

Text Books

- Best J.W. and Kahn, J. V. (2006). *Research in education (*9th Ed.) New Delhi: Pearson Education Inc.
- Kaul, L. (1984). *Methodology of educational research.* New Delhi: Vikas Publication
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Nanda, G.C. & Khatoi, P.K. (2012). *Fundamentals of Educational Research and Statistics.* New Delhi: Ludhiana.
- Gay, L.R. (1990). *Educational research-competencies for analysis and application* (3rd Ed.), Macmillan Publishing Company, New York
- Ary, D., Jacobs, L. C., &Razavieh, A. (2002). *Introduction to research in education* (6th Ed.). Belmont, CA: Wadsworth/Thomson Learning.
- Bhandarkar, P.L. and Wilkinson,T.S. (2010). *Methodology and techniques of social research*. Himalaya Publishing House, New Delhi.
- Creswell, J.W. (2014). *Educational research-planning, conducting and evaluating quantitative and qualitative research (4th Ed.).* New Jersey, USA: Pearson Education Inc. (Indian Reprint available at PHI Learning Pvt.Ptd.)
- Kerlinger, F.N. (1973). *Foundation of behavioral research.* New York: Holt Rinehart & Winston.
- Rao, U. (2007). *Action research.* Himalaya Publishing House, New Delhi.
- Borg, W.R. & Gall, M.D. (1989). *Educational research: An introduction*. New York: Longman.
- Corey, S. M. (1953), *Action research to improve school practice*, New York: Teachers College Press
- Johnson, B. & Christensen, L. (2008). *Educational research: quantitative, qualitative, and mixed approaches*. London: Sage Publication
- McMillan, J.H. & Schumacher, S. (1989). *Research in Education- a Conceptual Introduction.* New York: Harper Collins.
- Mertler, C.A. (2006). *Action research: teachers as researchers in the classroom.*

London: Sage Publication

Core Paper VII STATISTICS IN EDUCATION

Learning Objectives:

On completion of this course, the students will:

- Describe the importance of statistics in education.
- Organise and represent educational data in tabular and graphical form.
- Compute and use various statistical measures of average, variation and bi-variate distribution to in analysis and interpretation of educational data.
- Describe the concept and importance of normal probability curve and interpret test scores in using normal probability curve.
- Understand the divergence of data from normality.

UNIT 1: Educational Statistics

(i) Educational Statistics-meaning, nature, scope and uses
(ii) Organization of Data: frequency distribution, cumulative frequency distribution
(iii) Graphical representation of data (histogram, frequency polygon , ogive and pie-diagram)

UNIT 2: Measures of Central Tendency and Variability

Mean, Median and Mode- concept, computational process, uses and limitations
(i) Range, Average Deviation, Quartile Deviation and Standard Deviation- Concept, computational process, uses and limitations

UNIT 3: Co-relational Statistics

(i) Meaning and types of correlation
(ii) Computation of coefficient of correlation by rank difference method; product moment method

UNIT 4: Normal Probability Curve and Divergence from Normality

(i) Normal Probability Curve- concept, properties and applications
(ii) Skewness and Kurtosis
(iii) Interpretation of derived scores: Z- score and T- score

PRACTICAL

- Analysis of Achievement Data of a particular class and Reporting

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggarwal,Y.P.(2009).*Statistical methods: concepts, application and computation*.New Delhi: Sterling Publishers Pvt. Ltd**.**
- Garrett, H.E. (1971). *Statistics in psychology and education.* New Delhi: Paragon International Publisher
- Mangal, S.K. (2008). *Statistics in education and psychology*. New Delhi: Prentice-

Hall of India Private Limited

Reference Books

- Ferguson, G.A.(1971). *Statistical analysis in psychology and education.* Kogakusha, Tokyo: McGraw-Hill
- Guilford, J.P. &Fruchter, B. (1981). *Fundamental statistics in psychology and education.* New York: McGraw Hill
- McCall, R. (1993). *Fundamental statistics for the behavioral Science.* New York: Harcourt Brace
- Ravid, Ruth. (2000). *Practical statistics for education*. New York: University Press of America.
- Seigel. S. & Castel Ian N.J. (1988). *Non-parametric statistics for the Behavioral Science.* Singapore: Graw- Hill Book Co.

Core Paper VIII

HISTORY OF EDUCATION IN INDIA

Learning Objectives:

On completion of this course, the student will

- Understand the development of education in India during ancient period, medieval period and pre-independence period.
- Describe the development of education in India during post-independence period.
- Describe major recommendations of different policies and committee reports on education in India.

UNIT 1: Education during Ancient Period

(i) Features of Vedic period with special reference to aims, curriculum and methods of teaching
(ii) Features of Buddhist period with special reference to aims, curriculum and methods of teaching
(iii) Relevance of Gurukul system and Buddhist centers of learning
(iv)Ancient seats of learning

UNIT 2: Education during Medieval Period

(i) Features of education during medieval period with special reference to aims, curriculum and methods of teaching
(ii) Educational institutions during Muslim period, important centers of education.
(iii) Relevance of Islamic period

UNIT 3: Education during pre-independence period

(i) Charter's Act(1813)
(ii) Maculay's Minute(1835)
(iii) Wood's Despatch (1854)
(iv)Indian Education Commission(1882)

(v) Calcutta University Commission(1917)

(vi)Hartog committee(1929)

UNIT 4: Education during post-independence period

Major recommendations of the following commissions and committees relating to the aims of education and curriculum:

(i) University Education Commission (1948-49)
(ii) Major recommendations of Secondary Education Commission (1952-53)
(iii) Major recommendations of Education Commission (1964-66)
(iv)National Policy on Education (1986), revised in 1992 and beyond

PRACTICAL

- Study on implementation of NPE(1986) in respect of recommendations for elementary level

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C.(2010). *Landmarks in the history of modern Indian education*. New Delhi: Vikash Publishing Pvt Ltd.
- Dash, B.N. (1911). *Development of education in India*. New Delhi: Ajanta Prakashan
- Das, K.K. (1993). *Development of education in India*. New Delhi: Kalyani Publishers.

Reference Books

- Naik, J.P. & Narullah, S. (1996). *A student's history of education in India.*New Delhi: Mc Millan India Ltd

  Rawat, P.L. (1989). *History of Indian education* New Delhi: Ram Prasad & Sons.

- Govt. of India. (1992, 1998). National policy on education, 1986 (As modified in 1992). Retrieved from http://mhrd.gov.in/sites/upload_files/mhrd/files/NPE86- mod92.pdf
- Keay, F.E. & Mitra, Sukumar (1978). A history of education in India. New Delhi: Oxford University Press.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ministry of Human Resource Development (2004).Learning without Burden: Report of the National Advisory Committee. New Delhi: Min. of HRD.
- Mookharjee, R.K. (1989). The Gupta Empire. Delhi: Motilal Banarsi Dass Publishers Pvt Ltd. Mukherji, S.M., (1966). History of education in India. Vadodara: Acharya Book Depot.
- Naik, J.P. and Syed, N., (1974). A student's history of education in India. New Delhi: MacMillan.
- Rawat, P.L.(1989). History of Indian education. New Delhi: Ram Prasad & Sons. Website, www.mhrd.gov.in

Core Paper IX CURRICULUM DEVELOPMENT

Learning Objectives:

On completion of this course, the students will

- Differentiate curriculum from courses of study, text book.
- Analyse bases and sources of curriculum.
- Describe different types of curriculum.

- Critically examine National curriculum framework- 2000 and 2005.
- Describe process of curriculum development and differentiate different models of curriculum development.
- Evaluate curriculum using different evaluation models.

UNIT 1: Curriculum

(i) Concept of syllabus, courses of study, text book and curriculum
(ii) Bases of curriculum- philosophical, sociological and psychological
(iii)Components of curriculum: learning objectives, contents, methods and evaluation
(iv)Concept of curriculum design

UNIT 2: Types of Curriculum

(i) Subject centered curriculum
(ii) Learner centered curriculum
(iii) Experience centered curriculum
(iv)Core curriculum

UNIT 3: Curriculum Organization

(i) Principles of curriculum construction
(ii) Selection and organization of content
(iii) Selection and organization of learning experiences
(iv)National curriculum framework- 2005 and its guiding principles

UNIT 4: Curriculum Development and Evaluation

(i) Curriculum development- its process, role of local authority, state level agencies like SCERT, BSE and National Agencies like CBSE, NCERT
(ii) Tyler and Taba Model of curriculum development
(iii) Meaning and nature of curriculum evaluation

PRACTICAL

- Content Analysis of any text book of elementary level

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Ornstein, A.C. & Hunkins, E (1998). *Curriculum. Foundations, Principles and Issues*. Boston: Allyn & Bacon, Boston.
- Oliva, P.F. (2001). *Developing the curriculum* (Fifth Ed.). New York, NY: Longman.
- Talla, M. (2012). *Curriculum Development: Perspectives, Principles and Issues.* New Delhi: Pearson Publications.

Reference Books

- Beane, J.A. ,Conrad, E.P. Jr. and Samuel JA, Jr. (1986). Curriculum planning and development, Boston: Allyn & Bacon.

- Brady, L. (1995). Curriculum development, New Delhi: Prentice Hall.
- Doll, R.C. (1996).Curriculum development: decesion-making and process, Boston: Allyn & Bacon. Krug, E.A.(1956). Curriculum planning. New York: Harper and Row Publishers.
- Oliva, P.F. (2001). *Developing the curriculum* (Fifth Ed.). New York, NY: Longman.
- Pratt, D.(1980). Curriculum design and development. New York: Macmillan Publishing Co. Inc.
- Popham, W.J. (1993). Modern educational measurement. Englewood Cliffs, N.J.: Prentice Hall.
- Saylor, J.G., Alexander, W.M. and Lewis, A.J.(1981). Curriculum planning for better teaching and learning. New York: Holt Rienehart & Winston.
- Taba, H. (1962). Curriculum development-theory and practice. New York: Harcourt Brace, Jovanoich. Tanner, D. and Tanner, L.(1975) Curriculum development- theory and practice. New York: Macmillan Publishing Co. Inc.
- Tyler, R.W.(1941). Basic principles of curriculum and instruction .Chicago: University of Chicogo Press.

Core Paper X GUIDANCE AND COUNSELLING

Learning Objectives:

On completion of this course, the students will

- State the concept, need, principles and bases of guidance.
- Use various tools and techniques of guidance in appropriate contexts.
- Explain the role of school in organizing different guidance programmes.
- State the concept, scope and type of counseling.
- Narrate the process, tools and techniques of counseling.
- Explain the qualities and role of a counselor.
- Describe different programmes for with differently abled children.
- Explain the role of teacher and head master in organizing different guidance programmes.

UNIT 1: CONCEPT OF GUIDANCE

(i) Meaning, nature and scope of guidance
(ii) Philosophical, psychological and sociological bases of guidance
(iii) Need, importance, purpose and scope of educational guidance in schools
(iv)Need, importance, purpose and scope of vocational guidance

UNIT 2: EDUCATIONAL GUIDANCE

(i) Basic data necessary for educational guidance
(ii) Basic principles and main types of pupil personnel records
(iii) Cumulative records in a guidance programme
(iv)Case study procedure in guidance

UNIT 3: CONCEPT OF COUNSELLING

(i) Meaning, nature and scope of counseling

(ii) Relationship between guidance and counselling
(iii) Different types of counseling
(iv)Steps and techniques of counseling
(v) Necessary qualities of a good counselor
(vi)Role of a counselor in secondary schools

UNIT 4: ORGANISATION OF GUIDANCE SERVICE

(i) Placement service
(ii) Follow-up service
(iii) Individual inventory service
(iv)Occupational information service
(v) Launching school guidance programme

PRACTICAL

- Case Study of a Child with Special Needs or a child coming from socially disadvantaged background

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Goswami, Marami (2016). *Essentials of Guidance and Counselling*. New Delhi: Lakshi Publishers And Distributors.
- Kochhar. S.K. (2017). *Educational and Vocational Guidance in Secondary Schools*. New Delhi: Sterling Publishers
- Siddiqui, M.H. (2009). *Guidance And Counselling*. New Delhi: APH Publishing Corporation

Reference Books

- Sharma, R. N., & Sharma, R. (2013). *Guidance and counselling in India*. New Delhi: Atlantic Publishers and Distributors (P) Ltd.
- Bhatnagar, Asha Gupta, Nirmala (Eds) (1999). Guidance and counseling: A theoretical perspective (Vol.I). New Delhi: Vikas
- Bhatnagar, Asha and Gupta, Nirmala (Eds) (1999).Guidance and counseling:A practical approach(Vol.II). New Delhi: Vikas.
- Dave, Indu (1984). The basic essentials of counseling. New Delhi: Sterling Pvt. Ltd.
- Gazda George R.M.(1989). Group counseling: A development approach. London: Allyn and Bacon. Gibson, R.L. & Mitchell, M.H. (1986). Introduction to guidance. New York: McMillan.
- Nugent, Frank A. (1990). An Introduction to the profession of counseling. Columbus: Merrill publishing Co.
- Pietrofesa, J.J., Bernstein, B.,and Stanford,S.(1980). Guidance: An introduction. Chicago: Rand McNally.
- Rao, S.N. (1981). Counseling psychology. New Delhi: Tata McGraw Hill.
- Saraswat, R.K. & Gaur, J.S.(1994). Manual for guidance counselors. New Delhi: NCERT.

Core Paper XI DEVELOPMENT OF EDUCATION IN ODISHA

Learning Objectives

On completion of the course the students will:

- Grasp the structure of educational system of Odisha
- State the function of institutions/units at the state and district levels
- Appreciate the contribution of Utkalmani Gopabandhu Das to the thoughts and
- Practices of Indian education narrate the learning objectives and implementation process of the major education
- Schemes of central as well as state government being implemented in the state of Odisha
- Explain the role of various state and district level institutions in education
- Analyze the scenario of higher and technical education of Odisha
- Establish linkage between higher education and development of the state

UNIT 1: Status of Elementary Education

(i) History of primary education in Odisha
(ii) Efforts to Universalize Elementary Education: DPEP, SSA and Right to Education Act, 2009
(iii) Indicator wise position in terms of provision, enrolment, retention and achievement for elementary level programmes: NPEGEL and KGBV
(iv) Problem and issues in elementary education

UNIT 2: Status of Secondary and Higher Secondary Education

(i) History of secondary education in Odisha
(ii) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and its implementation in Odisha.
(iii) Role of BSE, Odisha- Problems and issues
(iv) Status of Higher Secondary Education and Role of CHSE; Problems and Issues
(v) Status of Higher Secondary Vocational Education-Problems and Issues

UNIT 3: Status of Higher Education

(i) History of collegiate education
(ii) Organization of higher education at the under graduation level and university level-present status
(iii) RUSA and its implementation
(iv) Autonomous colleges and their functioning
(v) Problems and issues relating to higher education

UNIT 4: Status of Teacher Education

(i) History of teacher education in Odisha
(ii) Pre-service and In-service teacher education for elementary schools teachers
(iii) Pre-service and In-service teacher education for secondary school teachers
(iv) Role of DIET, CTE, IASE and SCERT
(v) Problems and issues in teacher education

Practical: 25 Marks

- Seminar Presentation (Each student has to present minimum two papers during this semester related to themes based on Core-11)

NB: It will be evaluated by both the Internal and External Examiners.

Text & Reference Books

- Govt. of Odisha, Department of S & ME (2011). *School Education at a Glance-2011-12*, Bhubaneswar
- Samal, J.K.(1984). History of Education in Odisha: 1905-1936, Sankar Bhattacharya, Punthi Pustak, 136/4B, Bidhan Sarani, Calcutta -700004 ;p-171
- Samal, J.K.(1989). History of Modern Orissa, Firma KLM private limited, 257B,B.B.Ganguly Street, Calcutta;p-188

Websites to be visited:

- www.shodhganga.inflibnet.ac.in/bitstream/10603/.../08_chapter%202.pdf: Education in Odisha- *1850-1900: Retrieved on dt.25.07.2012*
- ***www.en.wikipedia.org/wiki/Odisha:*** *Odisha - Wikipedia, the free encyclopedia/Retrieved on dt.25.07.2012*
- ***www.newkerala.com/states-of-india/Odisha.php:*** Odisha: Info on geography, history, government, districts, business *..: Retrieved on dt.25.07.2012*
- *www.Odisha.gov.in/e-magazine/Odishareview/2011/Jan/engpdf/57-61.pdf:*
- Gopabandhu Das:The National Education Planner of Odisha*: Retrieved ondt.25.07.2012*
- www.dheOdisha.in/ *Higher Education Department - Online Admission - e-Admission for ...*: Retrieved on dt.25.07.2012
- www.Odisha.gov.in/highereducation/index.htm: *Higher Education Department.... - Government of Odisha*: Retrieved on dt.25.07.2012
- *www.Odisha2020.org/home/Odisha-higher-education-task-force:Odisha Higher Education Vision 2020*: Retrieved on dt.25.07.2012
- http://www.scertodisha.nic.in/
- http://www.chseodisha.nic.in/
- http://bseodisha.nic.in/
- http://mhrd.gov.in/rusa
- http://mhrd.gov.in/rmsa

Core Paper XII

INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION

Learning Objectives

On completion of this course, the student will:

- Explain the concept, nature and scope of ICT in education
- Explore ICT resources for Teaching and learning.
- Differentiate between Web1.0 and Web2.0
- Describe the importance of free and open source software in education
- Demonstrate the use of various application software in education.
- Develop the ability to use various tools connect the world
- Explain the content by using various subject tools.
- Explore tools and techniques of ICT for evaluation.

UNIT 1: Educational technology

(i) Meaning , nature and scope

(ii) Approaches to educational Technology: hardware, software and system approach
(iii)Innovations in Educational Technology: Open Educational Resources (OER), Massive Open Online Course (MOOC) Learning Management System (LMS)
(iv)Importance of Educational Technology for the teacher and the student.

UNIT 2: ICT in Education

(i) Conceptual understanding: Information Technology; Communication Technology; and Information and Communication Technology (ICT)
(ii) Relevance of ICT in Education
(iii) Nature and scope of ICT in Education.
(iv) Content, pedagogy and technology integration
(v) Challenges in Integrating ICT in Education
(vi) Use of computers in education- Computer Aided Learning

UNIT 3: Application of software and ICT assessment Tools in Education

(i) Word Processing Application
(ii) Spread sheet Application
(iii) Presentation Application
(iv)Free and Open Source Software (FOSS)
(v) Subject Tools: Digital Storytelling, Concept Map Software (C-Map)
(vi)Assessment Tools: Rubistar, Hot potatoes, E- portfolios

UNIT 4: Connecting with the World

(i) Use of browsers and search engines; choosing appropriate sites; search and retrieval of information and resources; Downloading, uploading and sharing information and resources;
(ii) Use and importance of Web 2.0 Tools: E-mail, Wikis, Social networking (WhatsApp, Twitter, Facebook and Blogging)
(iii) Use and importance of e-library, e-books, e-journals, Inflibnet.

PRACTICAL

- Development of an objective test using any assessment tool or development of a Rubric using Rubistar.

NB: It will be evaluated by both Internal and External examiners.

Text Books

- UNESCO (2002). *Information and communication technology in education: A curriculum for schools and programme of teacher development.* Paris: UNESCO.
- Kanvaria, V.K. (2014). *A Comprehension on Educational Technology and ICT for Education*. New Delhi: GBO.
- Vanaja and Rajasekar, S. (2016). *Information & Communication Technology (ICT) In*

Education. New Delhi: Neelkamal

Reference books

- Senapaty, H.K. (2011). *Pedagogy-Technology Integration for the Professional Development of Teacher Educators.* Bhubaneswar: Regional Institute of Education, NCERT (Monograph).
- NCERT (2006). National Curriculum Framework 2005 Position Paper National Focus Group on Educational Technology. New Delhi: Author.
- Senapaty, H.K. (2009). *ICT Integrated Learning Materials on Basic School Subjects from Constructivist Perspectives*. Bhubaneswar: Regional Institute ofEducation, NCERT (Monograph).
- Singh, L. C. (Ed.) (2010). *Educational Technology for Teachers and Educators.* New Delhi: Vasunandi Publication.
- UNESCO (2008).*ICT Competency Standards for Teachers: Policy Framework.* Retrieved from http://portal.unesco.
- UNESCO (2002). Information and Communication Technologies in Teacher Education A Planning Guide. Paris: Author
- UNESCO (2005). How ICT can create new, open learning environments: Information and communication technologies in schools: A handbook for teachers. Paris: UNESCO.
- Mishra, S. (2008). Developing E-Learning Materials: Some Pedagogical Concerns. *Indian Journal of Open Learning,* 17 (2).

Core Paper XIII

CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

Learning Objectives

On completion of this course the students will:

- Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- Analyze emerging concerns in Indian education.

UNIT 1: Pre-school and Elementary School Education

(i) Meaning, nature and importance of ECCE, problems and issues with regard to ECCE
(ii) Universalisation of Elementary Education: efforts to achieve UEE, SSA
(iii) Problems and issues in implementing Right to Education Act 2009.
(iv)Problems and issues in bringing the community to school, role of SMC
(v) Problems in ensuring equity and quality of elementary education

UNIT 2: Secondary and Higher Secondary Education

(i) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and ensuring secondary education for all.
(ii) Role of School Management and Development Committee (SMDC)
(iii) Shifting the teaching learning process from teacher centered to learner centered and activity based classroom –problems and issues
(iv) Problems and issues with regard to vocationalisation of secondary and higher secondary education
(v) Examination reforms at the secondary level
(vi) Widening the access to secondary education through National Open School

UNIT 3: Higher Education and Teacher Education

(i) Challenges in Higher education- expansion, quality and inclusion
(ii) Role of RUSA and NAAC for quality assurance in Higher education
(iii) Higher education through open and distance learning mode
(iv) Elementary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009
(v) Secondary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009

UNIT 4: Emerging Concerns

(i) Examination system: defects and reforms for making examination system flexible (internal assessment and semester system , grading, open book examination, online examination)
(ii) Choice Based Credits System (CBCS): concept, learning objectives, importance, problems and issues.
(iii) Human Rights Education: concept, learning objectives, importance, problems and issues.
(iv) Life-Skill Education: concept, learning objectives, importance, problems and issues.
(v) Peace Education: concept, learning objectives, importance, problems and issues.

PRACTICAL

- Study of perception of Stakeholder's of Education on any of the current issues and concerns, and reporting.

NB: It will be evaluated both by the Internal and External Examiners.

Text Books

- Kumar, Chanchal & Sachedeva, M.S. (2017). *Vision of Secondary Education In India in the context of 21st century*. Twentyfirst Century Publications; First Edition edition (2015)
- Pathak, K. R. (2007). *Education in the Emerging* India. New Delhi: Atlantic Publishers.
- Saxena, V. (2011). *Contemporary trends in education: A handbook for educators*. New

- Delhi: Pearson.

Reference Books

- Broudy, H.S. (1977) *Types of knowledge and purposes of education*. In R.C. Anderson, R.J., Spiro and W.E. Montanaque (Eds.) Schooling and the acquisition of knowledge (PP. Hillsdale, NJ: Erlbaum.
- Bruner, J.S. (1996). *The culture of education*. Cambridge, M.A.: Harvard University Press.
- Butchvarov, P. (1970). *The concept of knowledge*. Evanston, Illinois, North Western University Press.
- Dearden R. F. (1984). *Theory and practice in Education*. Routledge K Kegan & Paul.
- Delors, Jacques, et al; (1996). *Learning: the Treasure within report of the international commission on education for 21st century*, UNESCO.
- Illich, I. (1996). *Deschooling society*. Marion Boyers, London.
- Matheson, David (2004). *An Introduction to the study of education* (2 Ed.). David Fulton Publish.
- MHRD (2008). *Framework for implementation of Rashtriya Madhyamik Shiksha Abhiyan: A scheme for universalisation of access to and improvement of quality at the secondary stage.* New Delhi: Department of School Education and Literacy.
- MHRD (2011). *Sarva Shiksha Abhiyan: Framework for implementation based on the Right of Children to Free and Compulsory Education Act, 2009*. New Delhi: Department of School Education and Literacy.
- MHRD, (1992). *Programme of action*. Govt. of India, New Delhi.
- MHRD, Gov. of India (1992). *National policy on education* (revised) New Delhi: MHRD.
- Ministry of Law and Justice (2009). *Right to education Act 2009*. New Delhi: Govt of India.
- Naik, J.P. (1975). *Equality, quality and quantity: The elusive triangle of Indian education.* Allied Publications, Bombay.
- NCERT (2005). *National curriculum framework 2005*. New Delhi: NCERT.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- Slatterry, P. and Dana R. (2002). *Ethics and the foundations of education-Teaching Convictions in a postmodern world*. Allyn & Bacon.
- UN (2015). *The sustainable development goals (SDGs) – UNDP*. United Nations
- UNESCO (1998). *Educating for a sustainable future: A transdisciplinary vision for concerted action*. Paris: UNESCO.
- UNICEF (2000). *Defining quality in education*. New York: Programme Division (Education), Unicef.
- Wall, Edmund (2001). *Educational theory: philosophical and political Perspectives*. Prometheus Books.
- WHO (1991). *Comprehensive school health programme*. New Delhi: World Health Organization Regional Office.
- Winch, C. (1996). *Key concepts in the philosophy of education*. Routledge.
- Yadav, M. S. & Lakshmi, T. K. S. (1995). Education: Its disciplinary identity. *Journal of Indian Education,* XXI (*1*), 01-21.

Core Paper XIV

EDUCATIONAL MANAGEMENT AND LEADERSHIP

Learning Objectives

On completion of this course, the students will

- Describe the concept, types and importance of educational management.
- Spell out the structure of educational management at different levels - from national to institution level
- Describe different aspects and importance of educational management.
- Describe the concept, theories and style of leadership in educational management.
- Analyze the concept, principles and structures of total quality management approach in education.

UNIT 1: Educational Management

(i) Concept of educational management- meaning, nature, scope and principles
(ii) Process of educational management- planning, execution, staffing, control, supervision, monitoring, evaluation and feedback
(iii) Types of Management:
(iv) Centralized and decentralized
(v) Authoritarian, democratic, dynamic/creative and laissez-faire
(vi) Educational management in Odisha- structure and function with reference to school and mass education, and higher education

UNIT 2: Aspects of Institutional Management

(i) Human, material and financial resource management
(ii) Management of curricular and co curricular programmes
(iii) Management of students' welfare, auxiliary services including students' health services
(iv) School development plan
(v) Working with SMC and SMDC

UNIT 3: Leadership in Education

(i) Leadership- meaning, nature and importance in education
(ii) Leadership : Functions and skills
(iii) Theories of leadership- Redden's 3-D theory, and Hersey and Blanchard's situational theory
(iv) Styles of leadership-participating style, delegating style, selling style and telling style, Hersey and Blanchard)

UNIT 4: Total Quality Management

(i) Total Quality Management(TQM)- meaning, nature and importance
(ii) Principles of TQM- Demming's and Jurana's
(iii) Planning for TQM in school and higher education
(iv) Quality Assurance in Higher Education

PRACTICAL

- Studying the role of SMC/SMDC in school management and reporting

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kochar, S.K (2011). *School Administration and Management*. New Delhi: Sterling Publishers Private Limited.
- Bhatnagar, R. P. & Aggrawal V (2015). Educational Administration, Supervision, Planning and financing. Meerut: R Lal Book Depot.
- Mukhopadhyay, M. (2005). New Delhi: Sage

Reference Books

- Adolph and Turner Harold, E. *Supervision for change & Innovation*. Houghton Miffin Company.
- Anderson, C.A & Bowman, M.J (1971).*Educational management*, London, U.K: Frankas
- Ashima V, Deshmukh & Naik A.P (2010). *Educational management*. Girgaon, Mumbai: Himalaya Publishing House.
- Bhatnagar, R.P & Verma, I.B (1978). *Educational administration*. Meerut, India: Loyal Book Depot.
- Chau, Ta-Ngoc (2003): *Demographic aspects of educational planning.* Paris: International Institute for Educational Planning.
- Hariss, B. M (1963).*Supervisory behaviour in education*.USA: Englewood Cliffs.
- Kimbrough, S.Ralph, Michall & Nunnery. *Educational administration*. New York: Mc Millan Company.
- Livack, et al (1998).*Rethinking Decentralization in developing countries.* Washington, D.C, USA: World Bank.
- Mukerji, S.N. *Administration of educational planning and financ*e. Baroda, India: Acharya Book Depot.
- Naik, J.P. (1965): *Educational planning in India*. New Delhi, India: Allied.
- Naik, J.P. (1982): *The educational commission & after*. New Delhi, India: Allied.
- Newman and summer. *The process of management: concept, behaviour and practice*. New Delhi, India: Prentice Hall of India Pvt. Ltd.
- Oliva, O (19760. *Supervision for today's school*. New York, USA: Harper & Row.
- Ramani, K.V (2004). *A text book of educational management*. New Delhi, India: Dominant Publisher
- Safya, R & Saida, B.D *(1964). School administration and organisation.* Jalandhar, India: Dhanpat Rai & Sons
- Shukia, P.O (1983). *Administration in India*. New Delhi, India: Vikas Publication.
- Simon, Herbart A. *Administrative behaviour*. New York,USA :McMillan Company.
- Tilak, J.B.G. (1992). *Educational planning at grassroots*. New Delhi: India.
- Waber, Clarence A. *Fundamentals of educational leadership*. New York ,USA: Exposition Press.Buch, T. et al. (1980). Approaches to school management. London: Harper and Row.
- Chalam K.S. (2003): Introduction to Educational Planning and Management: New Delhi, Anmol Publications Pvt. Ltd.
- Chandrasekharan P. (1997): Educational Planning and Management. New Delhi: Sterling Publishers Pvt. Ltd.
- Deshmukh, A.V. & Naik, A.P.(2010). School administration and management. Mumbai.
- Glasser, William(1990). The quality school. New York, NY: Harper Collins Publishers, Inc.
- Government of India (1986/92). National policy on education. New Delhi: MHRD.
- Government of India (1992). Programme of action. New Delhi: MHRD.
- Gupta, S.K. & Gupta, S.91991). Educational administration and management. Indore: Manorama Prakashan.
- Hallak, J.(1990).Investing in the future:Setting educational priorities in the developing world. Paris: UNESCO.
- Kalra, Alka (1977). Efficient school management and role of principals. New Delhi: APH Publishing Corporation.
- Kochar, S.K. (2011). School administration and management. New Delhi: Sterling

Mukhopadhyay, M. (2001). Total quality management in education. New Delhi: NIEPA.
- Shaeffer, S. (1991). Collaborating for educational change: The role of parents and the community in school improvement. Paris: UNESCO.
- Tyagi R.S. and Mahapatra P.C. (2000), Educational Administration in Orissa : New Delhi, National Institute of Educational Planning and Administration (NIEPA)
- Vashist, Savita(ed.) (1998). Encyclopaedia of school education and management. New Delhi: Kamal Publishing House.

Discipline Specific Elective Paper-I

(A student has to choose any one from Pedagogy of English and Odia under DSE-1)

A.PEDAGOGY OF LANGUAGE (ENGLISH)

Learning Objectives

On completion of this course, the student will
- Analyze the issues relating to place of English in school curriculum, acquisition of skills in English, realization of aims and Learning Objectives of learning English and language policy as conceived in NPE, 1986 and NCF – 2005
- Use various methods, approaches and strategies for teaching-learning English and transact various types of lesson plans covering all aspects of English language following different approaches
- Develop test items to assess learning in English and provide feedback as well as prepare enrichment materials
- Use the understanding of phonetics for facilitating students' speaking in English
- Plan appropriate pedagogical treatment of the prescribed contents for effective classroom transaction

UNIT 1: English in School Curriculum

(i) Language policy in India with reference to NPE 1986 and NCF 2005
(ii) Place of English as a compulsory subject in school curriculum (both at elementary and secondary levels)
(iii) Learning Objectives of learning English at elementary and secondary levels
(iv)English language skills –components, their independence and interdependence

UNIT 2: Approaches, Methods and Strategies of Teaching English

(i) Understanding of different methods and strategies: Bi-lingual Method, Translation Method, Direct Method, Structural Approach, Communicative Approach.
(ii) Listening Skill: Tasks for developing Listening Comprehension
(iii) Speaking Skill: Tasks for developing Speaking skills
(iv) Reading skill: Types of Reading, Strategies to develop reading comprehension
(v) Writing Skill: Strategies to improve writing skill, Qualities of good writing (simplicity, logicality and organization in writing)

UNIT 3: Transaction of Contents

(i) Teaching of Prose (detailed and non-detailed), poetry, grammar and composition – Approaches, Methods and Strategies
(ii) Pedagogic analysis :Content analysis- analysis of topics of English text book for identification of language items(new vocabulary, structural words, grammar components),learning learning objectives, methods and strategies, teaching learning materials including ICT materials
(iii) Preparing lesson plan following 5E and Interpretation Construction Design Model(ICON)
(iv) Preparation of lesson plans following Herbartian approach.

UNIT 4: Lesson Delivery Strategies and Assessment

(i) Lesson delivery strategies: lecturing, role play and dramatization, collaborative approach, ability grouping, group work; learning through narratives and discourses; concept mapping and brain storming
(**i**) Techniques of assessment in English : continuous assessment of learners performance in English, preparation of different types of objective-based test items (Extended Response Type, Restrictive

PRACTICAL

- School Internship (Delivery of 5 Lessons following Herbatian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kohli, A.L (2010) *Techniques of teaching english.* New Delhi: Dhanpat Rai publishing Company
- Jain, R.K (1994). *Essentials of English teaching*, Agra: Vinod Pustak Mandir
- Sharma, K.L(1970) .*Methods of teaching English in India*. Agra : Laxmi Narayan Agrawal

Reference Books

- Agnihotri R. K. and Khanna A. L. (1994). *Second language acquisition: socio-cultural and linguistic aspects of English in India.* New Delhi: Sage Publications.
- Allen, H.B. (1965). *Teaching English as a second language: A book of readings*. New York: McGraw-Hill.
- Baruah, T.C (1984). *The English teacher's handbook.* New Delhi: Sterling Publishers Pvt.Ltd,
- Billows, F. L. (1975). *The techniques of language teaching.* London: Longman
- Bista, A.R(1965). *Teaching of English (Sixth Edition)*. Agra: Vinod Pustak Mandir
- Bright, J.A(1976). *Teaching English as second language.* London: Long Man Group
- Catarby, E. V (1986) *Teaching English as a foreign language in school curriculum India*, New Delhi: NCERT
- Hudelson, Sarah. (1995). *English as a second language teacher resource handbook. A practical guide for K-12 ESL programs.* California.: Corwin Press, Inc.
- Joyce , Bruce and Weil, Marsha (2003). *Models of teaching*. New Delhi: Prentice Hall of India Pvt. Ltd.
- Krishna Swamy, N. and Sri Raman, T. (1994). English teaching in India. Madras : T.R. Publication.

Mukalel, Joseph C. (2009). *Approaches to English language teaching.* New Delhi:

Discovery Publishing House Pvt Ltd.
- Pal, H.R and Pal, R(2006). *Curriculum – yesterday, today and tomorrow*, New Delhi: Shipra Publications
- Sachdeva, M.S. (1973). A new approach to teaching of english in India. Ludhiana : Prakash Brothers
- Shrivastava, B.D(1968). *Structural approach to the teaching of English*. Agra: Ramprasad and Sons

Discipline Specific Elective Paper-I

(A student has to choose ANY ONE from Pedagogy of English and Odia under DSE-1)

B. PEDAGOGY OF LANGUAGE (ODIA)

Learning Objectives

On completion of this course, the student will:

- State the importance and place of Odia as mother tongue in school curriculum.
- Develop the strategies to address the problems of Odia language acquisition in multilingual context.
- Use various strategies for facilitating the acquisition of language skills in Odia.
- Decide appropriate pedagogic approaches to transact different types of lessons in Odia.
- Prepare appropriate tools for comprehensive assessment of learning in Odia.
- Explain the fundamentals of Odia linguistics and their relevance in teaching learning Odia.
- Plan appropriate pedagogic treatment of the prescribed textual contents (in Odia) of classes IX and X.

UNIT 1: Odia as Mother Tongue in School Curriculum

(i) Importance of mother tongue in the life and education of an individual
(ii) Place of Odia as mother tongue in school curriculum in Odisha (both at elementary and secondary levels) in the context of language policy recommended by NPE, 1986 (three language formula) and NCF-2005
(iii) Learning objectives of teaching-learning Odia at elementary and secondary levels
(iv) Inter-dependence of language skills in Odia and strategies for facilitating acquisition of four-fold language skills in Odia

UNIT 2: Pedagogic Approaches to Teaching-Learning Odia

(i) Psychology of language learning and acquisition with reference to Odia as mother tongue.
(ii) Problems and issues related to acquisition of Odia language in multi-lingual context
(iii) Traditional versus modern methods of teaching-learning Odia.
(iv) Different approaches and strategies to the teaching-learning of : − Odia prose (detailed and non- detailed) , Odia poetry , Odia composition , Odia grammar .

UNIT 3: Curricular Activities in Odia

(i) Pedagogic analysis :
(ii) Content analysis- analysis of topics of Odia text book for identification of language items(new vocabulary, structural words, grammar components), learning objectives.
(iii) Methods and strategies, teaching learning materials lncluding ICT materials, assessment strategies
(iv) Preparing Lesson Plans following Herbartian, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Assessment

(i) Types of Assessment-self assessment, peer assessment, teacher assessment, internal assessment and external assessment
(i) Techniques of Assessment in Odia : Continuous assessment of learners performance in Odia, preparation of different types of objective-based test items (Extended Response Type, Restrictive Response Type and Objective Type), preparation of check list, rating scale and rubric, Portfolio assessment in Odia

PRACTICAL

- School internship (delivery of 5 Lessons following Herbartian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Barik, N. (2014). Odia shikshyadana paddhati. Cuttack: A.K.Mishra Publishers Pvt. Ltd.
- Kocchar, S.K. (2012). Teaching of Mother Tongue. Sterling Publishers, New Delhi.
- Mohanty, J., Barik, N. & Khandai, U. (1983). Odia sikshadana paddhati. Cuttack : Nalanda.
- Nayak, B.; Mohanty, J.(1999): Odia bhasa O Sahityara Bhitibhumi O Shikshyadan Padhati. Cuttack: Jagannath Process, Toni Road, Cutack-2.

Reference Books

- Daswani, C. J. Language Education in Multilingual India. New/Delhi (UNESCO)
- Dhal, G.B. (1974). Dhwani bijanana. Bhubaneswar : Odisha Rajya Pathya Pustaka Pranayana Sanstha.
- Dhal, G.B. (1972). English uchharana siksha. Cuttack : Friends Publisher.
- Mathur, S.A. Sociological Approach to Indian Education. Vinod Pustak Bhandar, Agra.
- Mohanty, B. (1970). Odia bhasara utpati O 65arma bikasha. Cuttack : Friends Publishers.
- Mohapatra, D. (1976). Odia Dhwani tattwa O sabdha sambhar. Cuttack : Grantha Mandir.
- Mohapatra, N. & Das, S. (1943). Sarbasara vykarana. Cuttack : New Student's Store
- Palmer, H.P. Principles of Language Teaching. George G. Harrep and Co. Ltd.
- Rybum, W.M.(1926). Suggestions for the Teaching of Mother Tongue. OUP.
- Saiyadain, K.G. Education and Social Order. Asia Publishing House, Bombay.

Discipline Specific Elective Paper-II

(A student has to choose ANY ONE from Pedagogy of Social Science and Mathematics under DSE-2)

A. PEDAGOGY OF SOCIAL SCIENCES

Learning Objectives

On completion of this course, the student will:

- State the meaning, scope and importance of Social science
- Specify the skills and competencies to formulate specific LEARNING OBJECTIVES for different History and Political Science lessons
- Identify the different methods and skills of teaching History and Political Science for transacting the contents effectively.
- Explain the importance of time sense and prepare / utilize timelines for effecting teaching of History
- Prepare Unit Plans and Lesson Plans in History and Political science
- Develop diagnostic achievement test, administer them and analyse the results for providing feedback

UNIT 1: Concept, Learning Objectives and Values Of Teaching Social Science

(i) Meaning, nature and scope of Social Science as NCF-2005
(ii) Learning objectives of teaching Social Science at elementary and secondary levels
(iii) Importance of teaching Social Science in school education
(iv) Identification of values/ competencies/ skills to be developed through Social Sciences

UNIT 2: Methods and Approaches to Teaching-Learning Social Science

(i) Story-telling
(ii) Narration-cum-discussion
(iii) Dramatization
(iv) Source method
(v) Project method
(vi) Field trips
(vii) Observation

UNIT 3: Curricular Activities in Social Sciences Pedagogic analysis:

(i) Content analysis- analysis of topics of social science text book .
(ii) Learning objectives,
(iii) Methods and strategies,

(iv) Teaching learning materials including ICT materials
(v) Learning activities including student and teacher activities
(vi) Assessment strategies
(vii) Preparing lesson plan following Herbart, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Development of Resource Materials and Assessment in Social Science

(i) Teaching-learning materials – Maps, Atlas, Globes, Charts, Graphs, Models, Filmstrips, T.V. Video, OHP, and Computer
(ii) Timeline – concept, aspects, type and use
(iii) Types of Assessment-self assessment, peer assessment, teacher assessment, internal assessment and external assessment
(iv) Techniques of Assessment in history and political science: Continuous Assessment of learners performance in history and political science, preparation of different types of objective-based test-
(v) Items (Extended Response Type, Restrictive Response Type and Objective Type

PRACTICAL

- School internship (delivery of 5 Lessons following Herbatian /5E/ ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Kochhar, S.K. (1970). *Methods of Teaching Social Studies.* New Delhi, India: Sterling Publication.
- Mamgal, S.K. & Mangal, U. (2008). *Teaching of Social Studies*. New Delhi: PHI Learning Pvt, Ltd.
- Sharma, R.A. (2014). *Teaching of Sociaal Sceince*. Meerut: R Lal Book Depot.

Reference Books

- Kochhar, S.K. (1970). *Teaching of History*. New Delhi, India: Sterling Publishers Pvt. Ltd.
- Banks James, A. (1997). *Teaching Strategies for the Social Studies Enquiry, Valuing and Decision Making* . Massachusets,USA: Addition- Westely Publishing Co. Reading.
- Bining & Binning.(1952). *Teaching of Social Studies in Secondary Schools*. New York,USA: Mc Graw Hills.
- Burston,W.H.(1963). *Principles of History Teaching.* New Fetter Lance : Methuen & Co. Ltd.II.
- Burton W.H. (1972). Principles of history teaching, London: Methuen.
- Carretero, Mario, & Voss, James F. (Eds.) (1994). Cognitive and instructional processes in history and the social sciences. Hillsdale: Lawrence Erlbaum Associate.
- Choudhury, K.P. (1975).*The effective Teaching of History*. New Delhi,India: NCERT.
- Dhamiaja Neelam.(1993). *Multimedia Approaches in Teaching Social Studies*. New Delhi,India:Harmer Publishing House.
- Drake, Frederick D. & Lynn, R. Nelson (2005). Engagement in teaching history: Theory and practices for middle and secondary teachers. Columbus, OH: Pearson.

- Ghate, V.D. (1956). Teaching of history. Bombay: Oxford University Press.
- Gunnin, Dennis (1978). The teaching of history. Goom Helm Ltd. London.
- James H. (1953). *The Teaching of Social Studies in Secondary Schools*. . London,UK: Longman Green & Co.
- James, T. H., Arthur,J. and Hunt, M. (2001). Learning to teach history in the secondary school: A companion to school experience. London: Routledge Falme.
- Kochhar, S.K.(1970). *Teaching of political science*. New Delhi: Sterling Publishers
- NCERT. (1970). *Teaching of History of Secondary Schools*.New Delhi,India: Author.
- NCERT.(1966). *A Handbook for History Teachers*.Bombay:India: Allied Publishers.
- Taneja,V.R.(1970). *Fundamentals of Teaching Social Studies*. Mahendra Capital Publishers.
- Verma, O.P.(1984). New Delhi, India: Sterling Publishers Pvt. Ltd.
- Verma,O.P. & Vedanayagam E.G. *Geography Teaching.* New Delhi,India: Sterling Publishers Pvt. Ltd .
- Yagnik, K.S.(1966). *The Teaching of Social Studies in India*. Bombay,India: Orient Longman Ltd.

Discipline Specific Elective Paper-II

(A student has to choose ANY ONE from Pedagogy of Social Science and Mathematics under DSE II)

B. Pedagogy of Mathematics

Learning Objectives

On completion of this course, the students will

- Narrate the evolution and nature of Mathematics and its importance in the school curriculum in the context of the recent curricular reforms.
- Use various methods and approaches of teaching and learning mathematics especially suitable for the secondary school classes.
- Plan lessons in Mathematics using traditional and constructivist approaches for effective classroom transactions.
- Develop and collect activities and resource materials for their use in enhancing the quality of learning Mathematics at the secondary level.
- Conduct continuous and comprehensive assessment for enhancing the quality of Mathematics learning.
- Explain the concepts in Mathematics included in the secondary school curriculum and make pedagogical analysis of those concepts

UNIT 1: Foundations of Mathematics Education

(i) Nature and Scope of Mathematics,

(ii) Learning of Mathematics: Importance of Mathematics at elementary and secondary level, Learning Objectives of teaching-learning Mathematics at the two levels,

(iii) Curriculum reforms in school mathematics: rationale, learning objectives, principles, designs and materials in Mathematics, recent curricular reforms at the National and State levels (NCF 2005).

UNIT 2: Methods of Teaching-learning Mathematics

(i) Learning by Discovery: Nature and purpose of learning by discovery; guided discovery strategies in teaching Mathematical concepts.
(ii) Teaching for understanding proof: Proof by induction and deduction; proof by analysis and synthesis.
(iii) Problem Solving in Mathematics: Importance of problem solving in Mathematics, Steps of problem solving in Mathematics.
(iv) Constructivist approaches: Self-learning and peer learning strategies, collaborative strategies; 5E and ICON Models.

UNIT 3: Curricular Activities in Mathematics

(i) Pedagogic analysis :
(ii) Content analysis- analysis of topics of mathematics text book .
(iii) Learning objectives,
(iv) Methods and strategies,
(v) Teaching learning materials including ICT materials
(vi) Learning activities including student and teacher activities
(vii) Assessment strategies
(viii) Process of preparing lesson plan following Herbatian, 5E and Interpretation Construction Design Model(ICON)

UNIT 4: Assessment In Mathematics

(i) Assessment of Mathematics learning: Unit test – Designing blue print, item construction, marking schemes.
(ii) Assessment for Mathematics learning: Assignments, Projects and portfolios in Mathematics, group and collaborative assessment in Mathematics,
(iii) Non-testing methods of assessment of/for Mathematics Learning: Observation of learners in action, rating of participation in various Mathematics tasks and activities,
(iv) Diagnosis of difficulties in learning Mathematics concepts, Remediation of the difficulties, enrichment programmes in Mathematics learning –National Mathematics Talent Search, Mathematics Olympiad.
(v) Planning for continuous assessment of classroom learning in Mathematics.

PRACTICAL

- School internship (Delivery of 5 Lessons following Herbatian/5E/ICON model)

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Sidhu, K.S (1985).*Teaching of mathematics*. New Delhi: Sterling publication.
- James, A. (2003). *Teaching of mathematics*. Neel Kamal Publication: Hyderabad.
NCERT (2011). *Pedagogy of mathematics for two year B.Ed. course*. New Delhi:

Reference Books

- Cooney, Thomas J. et al. (1975). Dynamics of Teaching Secondary School Mathematics. Boston: Houghton Mifflin.
- Cooper, B. (1985). *Renegotiating secondary school mathematics*. The Hamer Press: East Sussex.

- Michel. (1982). *Teaching mathematics*. Nicholos Publication Co: New York.
- NCF (2005). *National curriculum framework*. NCERT: New Delhi
- NCERT (2006). *Position paper: National focus group (NFG) on teaching Mathematics*. NCERT: New Delhi.
- NCERT (2005). *Position paper: national focus group (NFG) on examination reform*. NCERT: New Delhi.

Scopes, P.G. (1973). *Mathematics in secondary schools- a teaching approach*. Cambridge: Cambridge University Press

- Driscoll,M., Egan, M., Nikula, J., & DiMatteo, R. W. (2007). Fostering geometric thinking: A guide for teachers, grades 6-10. Portsmouth, NH: Heinemann.
- Driscoll,M.(1999). Fostering algebraic thinking: A guide for teachers, grades 5-10. Portsmouth, NH: Heinemann.
- Grouws, D.A. (ed) (1992). Handbook of research on mathematics teaching and learning. New York: Macmillan Publishing.
- Malone, J. and Taylor, P. (eds) (1993). Constructivist interpretations of teaching and learning mathematics.
- Perth: Curtin University of Technology.
- Marshall, S.P. (1995). Schemes in problem-solving. New York: Cambridge University Press.
- Moon, B. & Mayes, A.S. (eds.) (1995). Teaching and learning in secondary school. London: Routledge.
- NCERT (1998). A textbook of content-cum-methodology of teaching mathematics. New Delhi: NCERT.
- NCERT (2005). National curriculum framework 2005. New Delhi: NCERT.
- NCERT (2006). Position paper: National focus group on teaching mathematics. New Delhi:NCERT.
- TESS India (2015). Key resources. The Open University U.K.(http//creativecommons.org/licences/ and http//www.tess-india.edu.in/)

Discipline Specific Elective Paper-III

(A student has to choose any one from A & B under DSE-III)

A. POLICY AND PRACTICES IN SCHOOL EDUCATION IN INDIA

Learning Objectives

On completion of this course, the student will:

- Analyse various policies on education for school education in India
- Evaluate progress of schools education
- Examine the problems in implementation of the policies on school education
- Explore status of women education and education for SC, ST and Minorities in Indian

UNIT 1: Policies in School Education

(i) National Education Policy, 1986, revised in 1992 and its corresponding document Programme of Action with reference to Elementary Education and Secondary Education.

(i) Implementation of Elementary Education with reference to RTE Act-2009 and Policy issues.

(ii) Implementation of Secondary Education with reference to Rashtriya Madhyamik

Siksha Abhiyan (RMSA) and policy issues

(iv) Guiding principles of NCF-2005 and curriculum revision at the school level.

UNIT 2: Policies for Vocationalisation of Education

(i) Vocationalisation of education- A policy analysis with reference to the report of Patel Committee (1977), Adisheshia Committee (1978) and National Policy on Education (1986) revised NPE (1992)
(ii) Vocational Education at Higher Secondary level: Policy challenges
(iii) Work education in schools –concept to implementation

UNIT 3: Policies for Inclusive Education

(i) Education of Children with Special Needs (CWSN): Policy perspectives with reference to NPE,1986, 1992, Mental Health Act, 1987, Persons with Disabilities Act, 1995, Rehabilitation Council of India Act, 1992, National Trust Act,1999
(ii) Inclusive education- Policies, Progress and Problems.

UNIT 4: Policy on Access and equity in Education

(i) Women's education and empowerment of women with reference to National Policy on Women Empowerment, , NPE-1986
(ii) Progress of Women Education and Problems.
(iii) Access and Equity in Education with focus to SC, ST and Minorities
(iv) Policy for SC children- Implementation, Progress and Problems.
(v) Policy for ST children- Implementation, Progress and Problems with reference to Mother Tongue based Multilingual Education
(vi) Policy for Minority Children- Implementation, Progress and Problems.

PRACTICAL

- Analysis of any Policy documents being implemented at School Education level

NB: It will be evaluated by both Internal and External examiners

Text Books

- Aggarwal, J.C. (2010). Landmarks in the history of modern Indian education (7th Ed) New Delhi: Vikash Publishing Pvt. Ltd.
- Rawat, P.L. (1989). History of Indian education New Delhi: Ram Prasad & Sons.

Reference Books

- Das, K.K. (1993). *Development of education in India*. New Delhi: Kalyani Publishers
- Dash,B.N. (1991). *Development of education in India*. New Delhi: Ajanta Prakashan
- Keay, F. E. & Mitra, Sukumar (1978). A history of education in India. New Delhi: Oxford University Press
- Mukherjee, R.K. (1988). Ancient Indian education. New Delhi: Motilal Banarsidass
- Mukherjee, R.K. (1989). The Gupta Empire. New Delhi: Motilal Banarsidass
- Naik, J.P. & Narullah, S. (1996). A student's history of education in India.New Delhi: Mc Millan India Ltd
- Ghosh, S.C. (1989). Education policy in India since warren Hastings, Calcutta: N-Prakashan.
- Reference Books
- Altekar, A.S. (1934), Education in ancient India, Banaras: Indian book Shop.
- Das Gupta, S.N. (1988). A history of Indian philosophy. (5 Vols.) Delhi: Motilal Banarasi Dass.
- MHRD, GOI (1986). National policy on education. New Delhi: The Author

- MHRD, GOI (1993). Learning without burden. Yashpal Committee Report (1993). New Delhi: The Author
- Ministry of Education, GOI (1964-66). Education and national development. (Report of education commission (1964-66). New Delhi: The Author
- Sen, Bimal (1989). Development of technical education in India and state policy-a historical perspective. Indian Journal of History of Science, 24 (2): 224-248, Indian National Science Academy.
- Sen, S.N. (1988). Education in ancient and medieval India. Indian Journal of History of Science, 23 (1): 1-32.
- Shanker, Uday (1984). Education of Indian teachers. New Delhi: Sterling Publishers Pvt. Ltd.
- Singh. R.P. (1970). Education in ancient and medieval India. Delhi: Arya Book Depot.Rao, K.Sudha (Ed.) (2002). Educational policies in India: Analysis and review of promise and performance. New Delhi: NUEPA.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- MHRD, Gov. of India (1986). *National policy on education.* New Delhi: GoI.
- MHRD, Gov. of India (1992), *National policy on education (*revised) New Delhi: GoI. MHRD, (1992), *Programme of action*., New Delhi: Govt. of India.
- NCTE (1998b). *Curriculum Framework for Quality Teacher Education.* New Delhi:NCTE.
- NCTE (2009). *National Curriculum Framework for Teacher Education TowardsPreparing Professional and Humane Teacher.* New Delhi:NCTE.
- Ministry of Law Justice (2009). The Right of Children to Free and Compulsory Education Act, 2009. *The Gazette of India*, Ministry of Law Justice, Govt. of India.
- Kurrien, J (1983). *Elementary Education in India*. New Delhi: Vikas. MHRD (). *Report to the People on Education 2011-12.* New Delhi: Author. MHRD (1986): *National Policy on Education*. New Delhi: MHRD.
- MHRD (2000). *Sarva Shiksha Abhiyan: A program for Universal Elementary Education A framework for implementation.* New Delhi: Author.
- Government of India, Ministry of Human Resource Development (2005), Report of the CABE Committee on Autonomy of Higher Education Institutions, Department of Secondary and Higher Education, New Delhi, June.

Websites to be referred:

- http://www.rehabcouncil.nic.in/
- writereaddata/RCI_Amendments_ACT.pdf
- http://socialjustice.nic.in/pwdact1995.php
- http://mhrd.gov.in/rmsa

Discipline Specific Elective Paper-III

(A student has to choose ANY ONE from A & B under DSE-III)

B. POLICY AND PRACTICES IN HIGHER EDUCATION IN INDIA

Learning Objectives

On completion of this course, the student shall:

- Analyse various policies on education for Higher education in India
- Evaluate progress of Higher education
- Examine the problems in implementation of the policies on higher education
- Explore status of higher education.
- Analyse role of various agencies of higher education in India.

UNIT 1: Policies in Higher Education

(i) NPE-1986, revised in 1992 and its corresponding document Programme of Action (POA) with reference to Higher Education.
(ii) Recommendations of National Knowledge Commission-2006.
(iii) Implementation of Policies, progress and problems.

UNIT 2: Future of Higher Education

(i) Rashtriya Uchattar Shiksha Abhiyan (RUSA)- goals, features, strategies and implementation- problems and issues.
(ii) Progress Higher Education in Odisha.
(iii) Autonomy and Accountability in Higher Education

UNIT 3: Curriculum and Assessment

(i) Curriculum issues in higher education
(ii) Choice Based Credits System, Semester system, Grading.
(iii) Role of UGC, NAAC and Accreditation
(iv) Quality Assurance in Higher Education
(v) ICT in Higher Education

UNIT 4: Educational Management System

(i) Funding and management of Higher Education
(ii) Open and Distance Learning System: Policy and Development-Role of IGNOU.
(iii) Research in higher education-problems and issues- Role of ICSSR, UGC, Association of Indian Universities
(iv) Capacity Building of Teachers in Higher Education.

PRACTICAL

- Analysis of any Policy Document being implemented in the field of Higher Education in India

NB: It will be evaluated by both Internal and External examiners

Text Books

- Rao, K.Sudha (Ed.) (2002). Educational policies in India: Analysis and review of promise and performance. New Delhi: NUEPA.

Reference Books

- Government of India, Ministry of Human Resource Development. 2011a. 'Indian Institutes of Development'. Available at http://mhrd.gov. in/itt_higher_english.
- Government of India, Ministry of Statistics and Programme Implementation. No date. NSS Survey Reports. Available at http:// mospi.nic.in/Mospi_New/site/inner. aspx? status=3&menu_id=31.
- Cheney, G. R., with B. B. Ruzzi and K. Muralidharan. 2005. India Education Report. NCEE (National Center on Education and the Economy). Available at http://www.ncee. org/wp-content/uploads/ 2013/10/ IndiaEducation-Report.pdf.
- UCG (University Grants Commission). 2008. Higher Education in India: Issues Related to Expansion, Inclusiveness, Quality and Finance. New Delhi: University Grants Commission. Available at http://www.ugc.ac.in/oldpdf/pub/report/12. pdf.
- Agarwal, P. 2006. 'Higher Education in India: The Need for Change'. ICRIER Working Paper No. 180, June. Delhi: Indian Council for Research on International Economic Relations.

- BhallaVeena& et al (1998), Accountability and Autonomy in Higher Education, AIU.
- Country paper (1998), Higher Education in India: Vision & Action, presented in UNESCO world conference of Higher Education in the Twenty-first century, Paris 5-9th Oct 1998, National Commission for Cooperation with UNESCO.
- UNESCO (1998), report on Higher Education in the Twentieth First Century Vision & Actions held at Paris 5-9th Oct 1998, UNESCO.
- Meek, V Lynn (2000), Diversity and marketisation of higher education: incompatible concepts? Higher Education Policy, 13 (2000), p-25 & 26.
- Government of India, Ministry of Human Resource Development (2005), Report of the CABE Committee on Autonomy of Higher Education Institutions, Department of Secondary and Higher Education, New Delhi, June.
- Tilak, J.B.G. (1996), "Higher Education under Structural Adjustment", Journal of Indian School of Political Economy 8 (2) (April-June): 266-93.
- UGC (2005), University Development in India: Basic Facts and Figures (1995-96 to 2001-02), University Grants Commission, Information & Statistics Bureau, New Delhi, November

Discipline Specific Elective Paper-IV INCLUSIVE EDUCATION

Learning Objectives

On completion of the course the students shall be able to:

- Define meaning and scope of inclusive education.
- identify the assumptions of disability underlying current general and special education practices
- understand the various suggestions given by different recent commissions on education of children with disabilities for realizing the concept of "Universalization of Education";
- explore and utilize pedagogical approaches that can support students with a variety of learning profiles in respectful ways
- explain the meaning and implications of universal design in learning (UDL) for classroom pedagogy
- examine the different support services and collaboration for inclusive education

UNIT 1: Meaning, Genesis and Scope Inclusive Education

(i) Special education and inclusive education: concept and principles
(ii) Historical developments of special and inclusive education in India.
(iii) Medical and social models of disability
(iv) Examining the practice of labeling
(v) Social, psychological and educational contexts of inclusion

UNIT 2: Polices & Frameworks Facilitating Inclusive Education

(i) International Declarations: Universal Declaration of Human Rights (1948), World Declaration for Education for All (1990)
(ii) International Conventions: United Nations Convention of Rights of Persons with Disabilities (UNCRPD) (2006)
(iii) International Frameworks: Salamanca Framework (1994), Biwako Millennium Framework of Action (2002)
(iv) Constitutional Obligations; RCI Act 1992; PwD 1995 and NTA 1999; RTE-SSA and

RPD Act. 2016.

UNIT 3: Understanding and Support Needs of Students with Disability

(i) Understanding and support needs of students with different labels of disability including: autism, learning disabilities, speech & hearing disability, blindness, and intellectual disabilities in inclusive classroom.

UNIT 4: Frameworks, Support and Collaboration for Inclusive Education

(i) Universal Design for Learning: Multiple Means of Access, Expression, Engagement & Assessment
(ii) Principles of Differentiated Instruction and Assessment
(iii) Capacity Building of Teachers for Inclusive Education
(iv) Assistive Technology & Devices for Inclusive Education

PRACTICAL

- Visit to a centre for students with special needs (special school/special institute). Observe the process of teaching learning and write a report.

NB: It will be evaluated by both Internal and External examiners

Text Books

- Panda, K.C. (nd). *Education of Exceptional Children*
- Daniels, H. (1999) . *Inclusive education.* London: Kogan.
- Mangal, S.K. (2013). Exceptional Childred. New Delhi: PHI Learning Pvt. Ltd.

Reference Books

- Bartlett, L. D., & Weisentein, G. R. (2003). *Successful inclusion for educational leaders*. New Jersey: Prentice Hall.
- Deiner, P. L. (1993). *Resource for Teaching Children with Diverse Abilities*. Florida: Harcourt Brace and Company.
- Dessent, T. (1987). *Making Ordinary School Special*. Jessica Kingsley Pub.
- Gargiulo, R.M. *Special Education in Contemporary Society: An Introduction to Exceptionality*. Belmont: Wadsworth.
- Gartner, A., & Lipsky, D.D. (1997). *Inclusion and School Reform Transferring America's Classrooms.* Baltimore: P. H. Brookes Publishers.
- Giuliani, G.A. & Pierangelo, R. (2007). *Understanding, Developing and Writing IEPs*. Corwin press:Sage Publishers.
- Gore, M.C. (2004) . *Successful Inclusion Strategies for Secondary and Middle School Teachers,* Crowin Press, Sage Publications.
- Hegarthy, S. & Alur, M. (2002). *Education of Children with Special Needs: from Segregation to Inclusion*. Corwin Press, Sage Publishers.
- Karant, P., & Rozario, J. ((2003). *Learning Disabilities in India*. Sage Publications.
- Karten, T. J. (2007). *More Inclusion Strategies that Work*. Corwin Press, Sage Publications.
- King-Sears, M. (1994). *Curriculum-Based Assessment in Special Edcuation.* California: Singular Publications.
- Kluth, P. (2009). *The autism checklist: A practical reference for parents and teachers.* San Francisco, CA: Jossey-Bass.
- Lewis, R. B., & Doorlag, D. (1995). *Teaching Special Students in the Mainstream*.

4th Ed. New Jersey: Pearson.
- Rayner, S. (2007). *Managing Special and Inclusive Education*, Sage Publications.
- Rose, D. A., Meyer, A. & Hitchcock, C. (2005). *The Universally Designed Classroom: Accessible Curriculum and Digital Technologies.* Cambridge, MA: Harvard Education Press.
- Ryandak, D. L. & Alper, S. (1996). Curriculum Content for Students with Moderate and Severe Disabilities in Inclusive Setting. Boston, Allyn and Bacon.
- Thousand, J., Villa, R., & Nevin, A. (2007). *Differentiating instruction: Collaborative planning and teaching for universally designed learning*. Thousand Oaks, CA: Corwin Press.
- Turnbull, A., Turnbull, R., Turnbull, M., & Shank, D.L. (1995). *Exceptional Lives: Special Education in Today's Schools*. 2nd Ed. New Jersey: Prentice-Hall.Inc
- Udvari-Solner, A. & Kluth, P. (2008). *Joyful Learning: Active and collaborative learning in inclusive classrooms*. Thousand Oaks, CA: Corwin Press.

DSE Paper – IV

DISSERTATION/ RESEARCH

PROJECT

(College can give this choice only for students with above 60% aggregate marks)

The students will select a research project on any Educational issue or problem or topic and prepare a report. The project will be prepared based on proposal already developed in Semester-III, Core-6.

Distribution of Marks will be as follows:

Item	**Total**
Report	75
Viva-voce	25
Total	**100**

The assessment of students' performance will be made jointly by the external and internal examiners.

Generic Elective Paper I

EDUCATIONAL PHILOSOPHY

Learning Objectives

On completion of this course, the learners shall be able to:

- State and analyse the meaning of education and form own concept on education
- Explain philosophy as the foundation of education
- Analyse aims of education
- Describe the essence of different formal philosophies and draw educational implications
- Compare and contrast Indian and western philosophies of education

UNIT 1: Education in Philosophical Perspective

(i) Etymological meaning of education

(ii) Narrower and broader meaning of education, lifelong education

(iii) Aims of Education- Individual and Social aims of education

(iv) Meaning and nature of philosophy

(v) Branches of Philosophy- Metaphysics, epistemology and axiology, and its educational implications

(vi) Functions of Philosophy in relation to education

UNIT 2: Formal Schools of Philosophy and their Educational Implications

(i) Idealism, Naturalism, Pragmatism with reference to:

Aims of Education, curriculum, methods of teaching, role of teacher, discipline

UNIT 3: Indian Schools of Philosophy and their Educational Implications

(i) Common characteristics of Indian philosophy

(ii) Sankhya, Vedanta, , Buddhism, Jainism with reference to: Philosophical tenets, Aims of education, curriculum, methods of teaching, role of teacher.

UNIT 4: Educational Thought of Western and Indian Thinkers

(i) Plato

(ii) Dewey

(iii) Gopabandhu Das

(iv)Gandhi

(v) Tagore

(vi)Aurobindo

PRACTICAL

- Field visit to a seat of learning in the locality and prepare report.

NB: It will be evaluated by both the internal and External examiners.

Text Books

- Safaya, R.N. & Shaida, B.D. (2010). *Modern Theory and Principles of Education*. New Delhi: Dhanpatrai Publishing Company Pvt. Ltd.
- Ravi, Samuel.S. (2015). *A Comprehensive Study of Education*. Delhi: PHI Learning Pvt. Ltd.
- Nayak, B.K . . *Text Book of Foundation of Education.* Cuttack, Odisha: Kitab Mhal.

Reference Books

- Aggrawal, J.C. (2013). Theory and principle of education. New Delhi: Vikash Publishing House Pvt Ltd.
- Anand, C.L. *et.al*. (1983). Teacher and education in emerging in Indian society, New Delhi: NCERT. Brubacher, John.S.(1969). Modern philosophies of education. New York: McGraw Hill Co.
- Clarke, P. (2001). Teaching and learning: The Culture of pedagogy. New Delhi: Sage Publication.
- Dash, B.N. (2011) Foundation of education, New Delhi; Kalyani Publishers.
- Dewey, John (1956). The Child and the curriculum, school and society. Chicago, Illinois: University of Chicago Press.
- Dewey, John (1997). Experience and education. New York: Touchstone.
- Ganesh, Kamala & Thakkar, Usha (Ed.) (2005). Culture and making of identity in India. New Delhi: Sage Publications.
- Krishnamurthy, J. (1953). Education and significance of life. New Delhi: B.I. Publications
- Kumar Krishna (1996). Learning from conflict. New Delhi: Orient Longman.
- Ministry of Education (1966). Education and national development. New Delhi: Ministry of Education, Government of India.
- Ornstein, Allan C. & Levine, Daniel U. (1989).Foundations of education (4th Edn.). Boston: Houghton Mifflin Co.
- Pathak, R. P. (2012). Philosophical and sociological principles of education. Delhi: Pearson. Pathak, Avijit (2002). Social implications of schooling. New Delhi: Rainbow Publishers.
- Peters, R.S. (1967). The Concept of education. London: Routledge Kegan & Paul. Radhakrishnan, S. Indian philosophy Vol. I and Vol. II
- Ross, James S.(1981). Ground work of educational theory.Delhi: Oxford University Press Rusk, Robert R., Philosophical bases of education, London: Oxford University Press.
- Salamatullah, (1979). Education in social context. New Delhi: NCERT.
- Srinivas, M.N., (1986). Social changes in modern India. Bombay: Allied Publishers.
- Taneja, V.R. (2000). Educational thought and practice, New Delhi: Sterling Publishers Pvt. Limited.
- Wingo, G. Max (1975). Philosophies of education. New Delhi: Sterling Publisher Pvt.

Limited.

Generic Elective Paper II

EDUCATIONAL PSYCHOLOGY

Learning Objectives

On completion of this course, the students will:

- Explain the concept of educational psychology and its relationship with psychology.
- Understand different methods of educational psychology.
- Explain the concepts of growth and development of child and adolescence, and underlined general principles of growth and development.
- Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.
- Explain the theory of cognitive development and its educational implications.
- State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.
- Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

UNIT 1: Educational Psychology in Developmental Perspective

(i) Meaning, nature, scope and relevance of educational psychology
(ii) Methods of educational psychology- observation, experimentation, and case study
(iii) Application of educational psychology in understanding learner
(iv) Growth and Development-Concept, difference between growth and development, and principles of growth and development
(v) Characteristics of development during adolescence in different areas:
(vi) Physical, social, emotional and intellectual (with reference to Piaget)

UNIT 2: Intelligence, Creativity and Individual difference

(i) Individual difference-concept, nature, factors and role of education
(ii) Intelligence- meaning and nature of intelligence, concept of I.Q, theories of intelligence- Two factor theories, Guildford's structure of intelligence (SI) model, Gardner's multiple theory of intelligence.
(iii) Measurement of intelligence- individual and group test, verbal, non-verbal test
(iv) Creativity- meaning, nature and stages of creative thinking, strategies for fostering creativity

UNIT 3: Learning and Motivation

(i) Learning- meaning, nature and factors of learning
(ii) Theories of learning with experiment and educational implications-
(iii) Classical conditioning, operant conditioning, insightful learning and constructivist approach to learning
(iv) Motivation – concepts, types, and techniques of motivation

UNIT 4: Personality and Mental health

(i) Personality- meaning and nature of personality
(ii) Theories- type theory(Jung), trait theory(Allport)
(iii) Assessment of personality- subjective, objective and projective techniques
(iv)Mental health-concept, factors affecting mental health and role of teacher, mental health of teacher.
(v) Adjustment mechanism: concept and types

PRACTICAL

- Case study of an exceptional child and reporting

: It will be evaluated by both the Internal and External examiners**.**

Text Books

- Chauhan, S.S. (1978). *Advanced educational psychology*. New Delhi: Vikas Publishing House Pvt. Ltd.
- Mangal, S.K. (2002). *Advanced educational psychology*. New Delhi: Prentice Hall of India.
- Woolfolk, A. (2015). *Educational psychology (9th Ed.).* New Delhi: Pearson Publication

Reference Books

- Aggarwal, J.C. (2014). Essentials of Educational Psychology. New Delhi: Vikas Publishing House Pvt. Ltd.
- Attri, A.K. (2015). *Psychology of development and learning*. New Delhi: APH Publishing Corporation.
- Bernard, P.H. (1970). *Mental Health in the class room*. New York: McGraw Hill.
- Biehier, R.F. & Snowman, J., (1997). *Psychology applied to teaching*. New York: Houghton MIflin.
- Bigge, M.L., *Psychological foundations of education*, Harper and Row, New York, 1985.
- Chandraiah,K.(2011). *Emotional intelligence*. New Delhi: APH Publishing Corporation.
- Dececco, J.P. & Crawford, W.R. (1997). *Psychology of learning and institution*. New Delhi: Prentice Half of India.
- Good T., (1990). *Educational psychology*. Longman, New York, 1990.
- Lindgren, H.C. (1980). *Educational psychology in the classroom*. New York: Oxford University Press.
- Mouly, G.J. (1982). *Psychology for teaching*. Allyn & Bacon, Boston.
- Rothstein, P.R. (1990). *Educational psychology*. New York: McGraw Hill..
- Salvin, R, (1990). *Educational psychology: theory into practice,* N.J.: Prentice hall, Englewood Cliffs,
- Snowman and Biehler **(---).** *Psychology applied to teaching*……..
- Sprint hall, RC. & Sprint hall, NA, (1990). *Educational psychology, development approach,* New York: McGraw Hill.

Generic Elective Paper III

CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

Learning Objectives

On completion of this course the students will

- Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- Analyze emerging concerns in Indian education.

UNIT 1: Pre-school and Elementary School Education

(i) Meaning, nature and importance of ECCE, problems and issues with regard to ECCE
(ii) Universalization of Elementary Education: efforts to achieve UEE, SSA
(iii) Problems and issues in implementing Right to Education Act 2009.
(iv)Problems and issues in bringing the community to school, role of SMC
(v) Problems in ensuring equity and quality of elementary education

UNIT 2: Secondary and Higher Secondary Education

(i) Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and ensuring secondary education for all.
(ii) Role of School Management and Development Committee (SMDC)
(iii) Shifting the teaching learning process from teacher centered to learner centered and activity based classroom –problems and issues
(iv) Problems and issues with regard to vocationalisation of secondary and higher secondary education
(v) Examination reforms at the secondary level
(vi) Widening the access to secondary education through National Open School

UNIT 3: Higher Education and Teacher Education

(i) Challenges in Higher education- expansion, quality and inclusion
(ii) Role of RUSA and NAAC for quality assurance in Higher education
(iii) Higher education through open and distance learning mode
(iv)Elementary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009
(v) Secondary level pre-service teacher education- problems, issues and reforms with reference to National Curriculum Framework for Teacher Education-2009

UNIT 4: Emerging Concerns

(i) Examination system: defects and reforms for making examination system flexible (internal assessment and semester system , grading, open book examination, online examination)

(ii) Choice Based Credits System (CBCS): Concept, learning objectives, importance, problems and issues.
(iii) Human Rights Education: Concept, learning objectives, importance, problems and issues.
(iv) Life-Skill Education: Concept, learning objectives, importance, problems and issues.
(v) Peace Education: Concept, learning objectives, importance, problems and issues.

PRACTICAL

- Study of Perception of Stakeholder's of Education on any of the current issues and concerns, and reporting.

NB: It will be evaluated both by the Internal and External Examiners.

Text Books

- Kumar, Chanchal & Sachedeva, M.S. (2017). *Vision of Secondary Education In India in the context of 21st century*. Twentyfirst Century Publications; First Edition edition (2015)
- Pathak, K. R. (2007). *Education in the Emerging* India. New Delhi: Atlantic Publishers**.**

Saxena, V. (2011). Contemporary trends in education: A handbook for educators. New Delhi: Pearson.

Reference Books

- Broudy, H.S. (1977) *Types of knowledge and purposes of education*. In R.C. Anderson, R.J., Spiro and W.E. Montanaque (Eds.) Schooling and the acquisition of knowledge (PP. Hillsdale, NJ: Erlbaum.
- Bruner, J.S. (1996). *The culture of education*. Cambridge, M.A.: Harvard University Press.
- Butchvarov, P. (1970). *The concept of knowledge*. Evanston, Illinois, North Western University Press.
- Dearden R. F. (1984). *Theory and practice in Education*. Routledge K Kegan & Paul.
- Delors, Jacques, et al; (1996). *Learning: the Treasure within report of the international commission on education for 21st century,* UNESCO.
- Illich, I. (1996). *Deschooling society*. Marion Boyers, London.
- Matheson, David (2004). *An Introduction to the study of education* (2 Ed.). David Fulton Publish.
- MHRD (2008). *Framework for implementation of Rashtriya Madhyamik Shiksha Abhiyan: A scheme for universalisation of access to and improvement of quality at the secondary stage.* New Delhi: Department of School Education and Literacy.
- MHRD (2011). *Sarva Shiksha Abhiyan: Framework for implementation based on the Right of Children to Free and Compulsory Education Act, 2009*. New Delhi: Department of School Education and Literacy.
- MHRD, (1992). *Programme of action*. Govt. of India, New Delhi.
- MHRD, Gov. of India (1992). *National policy on education* (revised) New Delhi: MHRD.
- Ministry of Law and Justice (2009). *Right to education Act 2009*. New Delhi: Govt of India.
- Naik, J.P. (1975). *Equality, quality and quantity: The elusive triangle of Indian education.* Allied Publications, Bombay.
- NCERT (2005). *National curriculum framework 2005*. New Delhi: NCERT.
- NCERT (2005). *National curriculum framework*, New Delhi: NCERT.
- Slatterry, P. and Dana R. (2002). *Ethics and the foundations of education-Teaching*

Convictions in a postmodern world. Allyn & Bacon.

- UN (2015). *The sustainable development goals (SDGs) – UNDP*. United Nations
- UNESCO (1998). *Educating for a sustainable future: A transdisciplinary vision for concerted action*. Paris: UNESCO.
- UNICEF (2000). *Defining quality in education*. New York: Programme Division (Education), Unicef.
- Wall, Edmund (2001). *Educational theory: philosophical and political Perspectives*. Prometheus Books.
- WHO (1991). *Comprehensive school health programme*. New Delhi: World Health Organization Regional Office.
- Winch, C. (1996). *Key concepts in the philosophy of education*. Routledge.
- Yadav, M. S. & Lakshmi, T. K. S. (1995). Education: Its disciplinary identity. *Journal of Indian Education,* XXI (*1*), 01-21.

Generic Elective Paper IV

EDUCATIONAL ASSESSMENT AND EVALUATION

Learning Objectives

On completion of this course, the students will.

- State the nature, purpose and types of educational assessment and evaluation.
- Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.
- Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.
- Describe the characteristic of a good test.
- Analyze the trends and issues in learning and learner assessment.
- Analyze and interpret results of the assessment using standard score.
- Illustrate the principles of test construction in education.

UNIT 1: Assessment and Evaluation in Education

(i) Understanding the meaning and purpose of test, measurement, assessment and evaluation
(ii) Scales of measurement- nominal, ordinal, interval and ratio
(iii) Types of test- teacher made and standardized
(iv) Approaches to evaluation- placement, formative, diagnostic and summative
(v) Types of evaluation- norm referenced and criterion referenced
(vi) Concept and nature of continuous and compressive evaluation

UNIT 2: Instructional Learning Objectives

(i) Taxonomy of instructional learning objectives with special reference to cognitive domain
(ii) Criteria of selecting appropriate learning objectives, and stating of general and specific instructional learning objectives
(iii) Relationship of evaluation procedure with learning objectives
(iv) Difference between objective based objective type test and objective based essay type test

UNIT 3: Tools and Techniques of Assessment and construction

of Test

(i) Steps of test construction: planning, preparing, trying out and evaluation
(ii) Principles of construction of objective type test items- matching, multiple choice, completion and true – false
(iii) Principles of construction of essay type test
(iv) Non- standardized tools: Observation schedule, interview schedule, rating scale, check list, portfolio and rubrics.

UNIT 4: Characteristics of a good Test

(i) Validity-concept, types and methods of validation
(ii) Reliability- concept and methods of estimating reliability
(iii) Objectivity- concept and methods of estimating objectivity
(iv) Usability- concept and factors ensuring usability

PRACTICAL

- Construction of Unit test on a school subject based on Blueprint and Reporting.

NB: It will be evaluated by both Internal and External examiners.

Text Books

- Aggrawal, J.C. (1997). *Essentials of examination system, evaluation, tests and measurement*. New Delhi: Vikas Publishing House Pvt Ltd.
Gronlund, N.E. (2003). *Assessment of student Achievement*. Boston: Allyn & Bacon
- Singh, A.K. (2016). *Tests, measurements and research methods in behavioural sciences*. New Delhi: Bharati Bhawan Publishers.

Reference Books

- Anastasi, A.(1976). Psychological testing. New York: Macmillan Publishing Co.
- Anderson, L.W. (2003). Classroom assessment: Enhancing the quality of teacher decision making.
- Banks, S.R. (2005). *Classroom assessment: issues and PRACTICES*. Boston: Allyn & Bacon.
- Blooms, B.S.(1956). *Taxonomy of educational Learning Objectives*. New York: Longman Green and Company
- Cohen, R.J., Swerdlik, M.E., & Phillips, S.M. (1996). *Psychological testing and assessment. an introduction to the tests and measurement*. California: Mayfield Publishing Co.
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Course structure of UG English Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AECC-I	04	100
	C-I	British Poetry and Drama: 14th to 17th Centuries	06	100
	C-II	British Poetry and Drama: 17th and 18th Century	06	100
	GE-I	Academic Writing and Composition	06	100
			22	
II	AECC-II	AECC-II	04	100
	C-III	British Prose: 18th Century	06	100
	C-IV	Indian Writing in English	06	100
	GE-II	Gender and Human Rights	06	100
			22	
III	C-V	British Romantic Literature	06	100
	C-VI	British Literature 19th Century	06	100
	C-VII	British Literature: Early 20th Century	06	100
	GE-III	Nation, Culture, India	06	100
	SEC-I	SEC-I	04	100
			28	
IV	C-VIII	American Literature	06	100
	C-IX	European Classical Literature	06	100
	C-X	Women's Writing	06	100
	GE-IV	Language and Linguistics	06	100
	SEC-II	SEC-II	04	100
			28	
Semester	Course	Course Name	Credits	Total marks
V	C-XI	Modern European Drama	06	100
	C-XII	Indian Classical Literature	06	100
	DSE-I	Literary Theory	06	100

	DSE-II	World Literature	06	100
			24	
VI	C-XIII	Postcolonial Literatures	06	100
	C-XIV	Popular Literature	06	100
	DSE-III	Partition Literature	06	100
	DSE-IV	Writing for Mass Media	06	100
	OR			
	DSE-IV	Dissertation	06	100*
			24	

ENGLISH

HONOURS PAPERS:

Core Course -14 papers
Discipline Specific Elective - 4 papers (3+1 Paper or Project)
Generic Elective for Non English students- 4 Papers. In case the University offers 2 subjects with two papers each in GE, then papers 1 and 2 will be the GE paper

Marks per paper – Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Project (Hard Copy-80, Presentation-20)

Core Paper I

BRITISH POETRY AND DRAMA: 14TH TO 17TH CENTURIES

Introduction:

The paper seeks to introduce the students to British poetry and drama from the 14th to the 17th century. It helps students sample and explore certain seminal texts from the early modern period, covering the genesis of modern English poetry and the Renaissance that set British poetry and drama on their glorious course to greatness.

UNIT 1: Historical overview

(i) The period is remarkable in many ways: 14th century poetry evokes an unmistakable sense of "modern" and the spirit of Renaissance is marked in the Elizabethan Drama. The Reformation brings about sweeping changes in religion and politics. A period of expansion of horizons: intellectual and geographical.

UNIT 2: Geoffrey Chaucer

(i) *The Pardoner's Tale*

UNIT 3: Spenser: "Sonnet 34 (Amoretti)"

(i) Shakespeare: 'That time of the year…" (Sonnet 73)
(ii) Ben Jonson: "Song to Celia"
(iii) John Donne: "Sunne Rising"

UNIT 4: Shakespeare

(i) *Macbeth*

Text Books

- Texts as prescribed in Units 2,3,4

Reference Books

- *The Pelican Guide to English Literature*. Ed. Boris Ford. Vol 1
- *The Age of Chaucer English Literature in Context*. Paul Poplawski. Cambridge UP, 2008
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- *Shakespeare for Beginners* by Brandon Toropov
- *English Literature* by Jonathan Bate (Ch. 7 "Shakespeare and the Dramatic Literature")

Core Paper II

BRITISH POETRY AND DRAMA: 17TH AND 18TH CENTURY

Introduction:

The Introduction of this paper is to acquaint students with the Jacobean and the 18th century British poetry and drama, the first a period of the acid satire and the comedy of humours, and the second a period of supreme satiric poetry and the comedy of manners.

UNIT 1: Historical overview

(i) 17th C: Period of the English Revolution (1640–60); the Jacobean period; metaphysical poetry; cavalier poetry; comedy of humors; masques and beast fables
(ii) 18th C: Puritanism; Restoration; Neoclassicism; Heroic poetry; Restoration comedy; Comedy of manners

UNIT 2: Milton: "Lycidas"

(i) Andrew Marvell: 'To His Coy Mistress"
(ii) Alexander Pope: "Ode On Solitude"
(iii) Aphra Behn: "I Led my Silvia to a Grove"

(iv)Robert Herrick: “His Return to London”

UNIT 3: Ben Jonson

(i) *Volpone*

UNIT 4: Dryden

(i) *All For Love*

Text Books

- Texts prescribed in units 2, 3, 4 (All the texts are freely available on the sites such as www.poetryfoundation.org, www.bartleby.com, http://www.poemhunter.com etc. In addition, the following anthologies may be consulted.)

Reference Books

- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Black, Joseph (Ed). : *The Broadview Anthology of British Literature* Concise Edition, Vol. A. Broadview Press, London, 2007.
- Corns, T N(ed.) *The Cambridge Companion to English Poetry*. Cambridge: University Press, 1973
- Ford, Boris ed. *The Pelican Guide to English* Literature. Vol 3. From *Donne to Marvell* in. Harmondsworth: Penguin Books, 1976.
- Parry, G.: *The Seventeenth Century: The Intellectual and Cultural Context of English Literature*. Harlow: Longman, 1989.
- Sherwood, T. G: *Fulfilling the Circle: A Study of John Donne's Thought*, Toronto, Toronto Press, 1984.

Core Paper III

BRITISH PROSE: 18TH CENTURY

Introduction:

The Introduction of the paper is to acquaint the students with a remarkable, newly evolved form of literature: the essay. The period is also known for its shift of emphasis from reason to emotion

UNIT 1: Historical overview: Restoration, Glorious Revolution, Neo-classicism, And Enlightenment.

UNIT 2: Mary Wollstonecraft

(i) "The Rights and Involved Duties of Mankind Considered" (Chapter 1, *A Vindication of the Rights of Women*)

UNIT 3: Joseph Addison: Essays

(i) "Friendship," "Good Nature," "Six Papers on Wit"

(From *Joseph Addison: Essays and Tales*, <http://www.biblioteca.org.ar/libros/167707.pdf>)

UNIT 4: Samuel Johnson

(i) "Narratives of Travellers Considered," and "Obstructions of Learning" from *Samuel Johnson's Essays* < http://www.johnsonessays.com/>

Text Books

- Texts prescribed in Units 2, 3, 4. Web sources are indicated against the texts in brackets.

Reference Books

- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *English Literature* by Jonathan Bate (Ch. 4 "The Study of English")
- *Pelican Guide to English Literature*. Ed. Boris Ford. Vol 4. *From Dryden to Johnson*

O.M. Myres, "Introduction" to *The Coverley Papers*

Core Paper IV

INDIAN WRITING IN ENGLISH

Introduction:

Indian writing in English has been the fastest growing branch of Indian literature in the last one hundred years. It has produced a rich and vibrant body of writing spanning all genres. As a 'twice born' form of writing, it partakes of both the indigenous and the foreign perspectives and has an inherent tendency to be postcolonial. This paper seeks to introduce the students to the field through a selection of representative poems, novel and play.

UNIT 1: Historical overview

(i) Indian writing in English, the key points of which are East India Company's arrival in India, Macaulay's 1835 Minutes of Education, India's first war of independence and the establishment of colleges to promote Western education and the evolution of Indian writing in English in 20th century.

UNIT 2:

(i) Sarojini Naidu "The Bangle Sellers",

(ii) A.K.Ramanujan "Obituary",

(iii) Jayanta Mahapatra "Grandfather",

(iv)Nissim Ezekiel "Night of the Scorpion"

UNIT 3: R.K Narayan

(i) *The Guide*

UNIT 4: Mahesh Dattani

(i) *Final Solutions*

Text Books

- Texts prescribed in Units 2, 3, 4.

Reference Books

- Mehrotra, Arvind Krishna. *Concise History of Indian Literature in English*, Permanent Black, 2010.
- K. Srinivas Ayenger. *A History of Indian Writing in English*
- M.K. Naik. *History of Indian Writing in English*
- Vinay Dharwadker. "The Historical Formation of Indian English Literatrue" in Sheldon Pollock (ed) *Literary Cultures in History*
- *Modern Indian Drama: Issues and Interventions* (ed) Lakshmi Subramanyam

Core Paper V

BRITISH ROMANTIC LITERATURE

Introduction:

The paper aims at acquainting the students with the Romantic period and some of its representative writers. The students will be able to sample some seminal works of the Romantic age which gave expression to the key ideas of the period such as return to nature, subjectivity, desire for personal freedom and the defiance of classicism-imposed restrictions on poetic form.

UNIT 1: Historical overview

(i) The period otherwise known as The Romantic Revival; The Age of Revolution as it owes its origin to the epoch making French Revolution of 1789. The emphasis on the organic relationship between man and Nature, individual liberty and unbridled desire free from the shackles of classicism made this period unique—Romanticism vs Classicism

UNIT 2:

(i) Thomas Gray: "Elegy Written in a Country Churchyard,"
(ii) William Blake: "A Poison Tree" and "Chimney Sweeper"

UNIT 3:

(i) William Wordsworth's "Tintern Abbey"
(ii) S. T. Coleridge: "Kubla Khan,"
(iii) John Keats: "Ode to a Nightingale,"

(iv)P. B. Shelley: “Ode to the West Wind,”

UNIT 4:

(i) William Wordsworth's *Preface* to the 2nd edition of *Lyrical Ballads*

Text Books

- Texts prescribed in Units 2, 3, 4

Reference Books

- Paul Poplawski, *English Literature in Context*, "The Romantic Period"
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *Pelican Guide to English Literature*. *Vol 5*. *From Blake to Byron*. Ed. Boris Ford
- Maurice Bowra, *The Romantic Imagination*
- *English Literature*. Jonathan Bate (Ch. 5 "Periods and Movements")

Core Paper VI

BRITISH LITERATURE 19TH CENTURY

Introduction:

This paper seeks to introduce the students to the exploits of the 19th century British Literature in prose, especially fiction and cultural criticism. It also includes samples of Victorian poetry.

UNIT 1: Historical overview

(i) The 19th century British literature though mainly famous for the Romantic Movement, was also a witness to major socio-political developments like industrialization, technological advancements and large scale mobilization of people from the rural to the urban centers.

UNIT 2: Poetry

(i) Tennyson; "Break, Break, Break", Robert Browning, "My Last Duchess"
(ii) Criticism: Matthew Arnold: "The Study of Poetry"

UNIT 3: Jane Austen

(i) *Pride and Prejudice*

UNIT 4: Charles Dickens

(i) *Hard Times*

Text Books:

- Texts prescribed in Units 2, 3, 4

Reference Books:

- *English Literature in Context*. Paul Poplawski. Cambridge UP, 2008
- *Routledge History of Literature in English.* Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *English Literature*. Jonathan Bate (Ch. 4 "The Study of English", Ch. 5 "Periods and Movements")
- Terry Eagleton, *The English Novel*

Core Paper VII

BRITISH LITERATURE: EARLY 20TH CENTURY

Introduction:

The paper aims at acquainting the students with the literature of Britain in the early 20th century, focusing on the modernist canon in poetry, novel, and literary criticism.

UNIT 1: Historical overview

(i) Developments in society and economy, leading to a crisis in western society known as the First World War and the resultant change in the ways of knowing and perceiving. Marx's concept of class struggle, Freud's theory of the unconscious are to be discussed.

UNIT 2: Poetry

(i) T.S. Eliot "Love Song of J. Alfred Prufrock",
(ii) Yeats: "Second Coming",
(iii) Wilfred Owen: "Strange Meeting",
(iv)Siegfried Sassoon, "Suicide in the Trenches"
(v) Criticism: T.S. Eliot: "Tradition and the Individual Talent"

UNIT 3:

(i) Virginia Woolf: *Mrs. Dalloway*

UNIT 4:

(i) J M Synge *Ryders to the Sea*

Text Books

- Texts prescribed in Units 2, 3, 4

Reference Books:

Pelican Guide to English Literature: *Vol. 7*. *The Modern Age* (ed.) Boris Ford

Routledge History of Literature in English. Ronald Carter & John Mc Rae. London:

Routledge, 1997

- *English Literature*. Jonathan Bate (Ch. 5 "Periods and Movements")
- *Modernism*. Critical Idiom. By Peter Faulkner
- *Modernism*. New Critical Idiom. By Peter Childs

Core Paper VIII

AMERICAN LITERATURE

Introduction:
This is a survey paper providing an overview of canonical authors from American Literature in the established genres.

UNIT 1: Historical overview

(i) Genesis and evolution, and the defining myths of American Literature—city on a hill, the frontier spirit, the American Dream, manifest destiny, *epluribusunum*

UNIT 2:

(i) Walt Whitman: "Out of the Cradle Endlessly Rocking",
(ii) Robert Frost: "Stopping by the Woods in a Snowy Evening",
(iii) Emily Dickinson: "Because I could not stop for death"
(iv) Maya Angelou: "I Know Why the Caged Birds Sing"

UNIT 3:

(i) Arthur Miller: *The Death of a Salesman*

UNIT 4:

(i) Ernest Hemingway: *A Farewell to Arms*

Text Books

- Texts prescribed in Units 2, 3, 4 (All texts are available on the Internet.)

Reference Books:

- *Pelican Guide to English Literature*. Vol. 9. *American Literature*. Ed. Boris Ford
- *Highlights of American Literature*. Dr. Carl Bode (USIS)
- *A Short History of American Literature*, Krishna Sen and Ashok Sengupta. Orient BlackSwan, 2017
- *The Story of American Literature*. By Ludwig Lewisohn

Norton Anthology of American Literature. (Head notes on authors and periods to be read)

Core Paper IX

EUROPEAN CLASSICAL LITERATURE

Introduction:

This paper seeks to introduce the students to European Classical literature, commonly considered to have begun in the 8th century BC in ancient Greece and continued until the decline of the Roman Empire in the 5th century AD. The paper seeks to acquaint the students with the founding texts of the European canon.

UNIT 1: Historical Review

(i) Classical Antiquity: ancient Greece, the rise and decline of the Roman Empire; Geographical space: cultural history of the Greco-Roman world centered on the Mediterranean Sea

UNIT 2: Epic poetry

(i) Homer: *Odyssey* (Book I)

UNIT 3: Tragedy:

(i) Sophocles: *Oedipus the King*

UNIT 4: Criticism:

(i) Aristotle: *Poetics* (Chapters: 6,7,8)

Text Books

- Texts prescribed in Units 2, 3, 4(All texts are available for free access on Project Gutenberg https://www.gutenberg.org/)

Reference Books:

- H.D.F. Kitto, *Form and Meaning in Greek Drama*
- H.D.F. Kitto, *The Greeks*
- Eric Auerbach, *Mimesis*: *The Representation of Reality in Western Literature*
- Gilbert Murray, *A History of Ancient Greek Literature*, Andesite Press, 2017.
- *Classicism*: *A Very Short Introduction* OUP

Core Paper X

WOMEN'S WRITING

Introduction:

The paper seeks to acquaint the students with the works of women writers from different cultures and nations in various genres. Further, it seeks to make them critically aware of the

issues relating to the workings of patriarchy, issues of gender, and relations of desire and power.

UNIT 1: Virginia Woolf

(i) "Chapter 1" from *A Room of One's Own*

UNIT 2: Charlotte Bronte

(i) *Jane Eyre*

UNIT 3:

(i) Kamala Das, 'An Introduction', 'The Sunshine Cat'
(ii) Sylvia Plath, 'Mirror', 'Barren Woman'
(iii) Eunice de Souza, 'Women in Dutch Painting', 'Remember Medusa'
(iv) Shanta Acharya, 'Homecoming', 'Shringara'

UNIT 4:

(i) Ashapurna Devi, *The Distant Window*

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- Toril Moi, *Sexual/Textual Politics*
- Elaine Showalter, *A Literature of Their Own*
- Sandra Gilbert and Susan Guber, *The Mad Woman in the Attic*
- *The Distant Window,* Prachi Prakashan, Tr. Anima Bose, 1997
- Helen Carr, 'A History of Women's Writing' in *A History of Feminist Literary Criticism* by Gill Plain and Susan Sellers
- Mary Eagleton, 'Literary Representations of Women' in *A History of Feminist Literary Criticism* by Gill Plain and Susan Sellers

Core Paper XI

MODERN EUROPEAN DRAMA

Introduction:
The aim of this paper is to introduce the students to the best of experimental and innovative dramatic literature of modern Europe.

UNIT 1: Historical Review

(i) Politics, social change and the stage; text and performance; European Drama: Realism and Beyond; Tragedy and Heroism in Modern European Drama; The Theatre of the Absurd

UNIT 2: Henrik Ibsen

(i) *Ghosts*

UNIT 3: Eugene Ionesco

(i) *Chairs*

UNIT 4: Bertolt Brecht

(i) *Life of Galileo*

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Web Resources

- Ionesco: http://www.kkoworld.com/kitablar/ejen-ionesko-kergedan-eng.pdf
- Ibsen: http://www.gutenberg.org/files/8121/8121-h/8121-h.htm

Reference Books:

- Constantin Stanislavski, *An Actor Prepares*, Chap. 8,
- 'Faith and the Sense of Truth', tr. Elizabeth Reynolds Hapgood (Harmondsworth: Penguin, 1967) sections 1,2, 7,8,9, pp. 121-5, 137-46.
- Bertolt Brecht, 'The Street Scene', 'Theatre for Pleasure or Theatre for Instruction', and 'Dramatic Theatre vs Epic Theatre', in *Brecht on Theatre:The Development of an Aesthetic*, ed. And tr. John Willet (London: Methuen, 1992) pp.68-76, 121-8.
- George Steiner, 'On Modern Tragedy', in *The Death of Tragedy* (London: Faber, 1995) pp. 303-24.
- Raymond Williams, *Drama from Ibsen to Brecht*
- Jean Genet, Reflections on Theatre (London:Faber & Faber) Chapter 2: "The Strange World Urb…" pp. 63-74.
- *Theatre of Absurd*. Martin Esslin

Core Paper XII

INDIAN CLASSICAL LITERATURE
(Training of teachers essential for teaching this course)

Introduction:

This paper seeks to create awareness among the students of the rich and diverse literary and aesthetic culture of ancient India.

UNIT 1: Introduction to the history and genesis of Indian

Classical Literature UNIT 2: Sanskrit Drama –1

(i) Kalidasa, *Abhijnanasakuntalam*, Act IV, tr. M.R Kale, Motilal Banarasi Dass, New Delhi

UNIT 3: Sanskrit Drama-2

(i) *Mrcchakatika* by Sudraka, Act I, tr. M.M. Ramachandra Kale (New Delhi: Motilal Banarasidass, 1962)

UNIT 4: Aesthetics and Maxims

(i) Bharata's *Natyasastra*, Chapter VI on Rasa theory

Text Books

- Texts prescribed in units II,III, IV

Reference Books:

- Kalidasa. Critical Edition. Sahitya Akademi
- Bharata's Natyashastra. English Translation by M.M. Ghosh. Vol 1. 2nd edition. Asiatic Society, Kolkata, 1950. Ch. 6 "Sentiments". Pp. 158-95
- J.A.B. Van Buitenen, "Dharma and Moksa" in Roy W. Perrett. Ed. *Indian Philosophy*. Vol 5, *Theory of Value*: *A Collection of Readings*. New York: Garland, 2000. Pp. 33-40
- Vinay Dharwadkar, "Orientalism and the Study of Indian Literature", Orientalism and the Postcolonial Predicament: Perspectives on South Asia. Ed. Carol A. Breckenridge and Peter Van der Veer. New Delhi: OUP, 1994. Pp. 158-95
- Haldhar Panda, *Universals of Poetics*

Core Paper XIII

POSTCOLONIAL LITERATURES

Introduction:

This paper seeks to introduce the students to postcolonial literature —a body of literature that responds to European colonialism and empire in Asia, Africa, Middle East, the Pacific and elsewhere. The paper aims to provide the students with the opportunity to think through the layered response – compliance, resistance, mimicry, subversion – that is involved in the production of post-independence literature

UNIT 1:

(i) Postcolonialism: Elleke Boehmer (From *Literary Theory and Criticism* Ed. Patricia Waugh)
(a) The post in Postcolonial,
(b) Movements and theories against Empire
(c) Leading Postcolonial Thinkers (Frantz Fanon, Edward Said, Gayatri Spivak, Homi Bhabha)

UNIT 2: Raja Rao

(i) *Kanthapura*

UNIT 3: Jean Rhys

(i) *Wide Sargasso Sea*

UNIT 4: Athol Fugard

(i) Blood Knot

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- Chinua Achebe: "English and the African Writer" (Available online)
- Ngugi wa Thiong'o: "The Quest for Relevance" from *Decolonizing the Mind: The Politics of Language in African Literature*
- Leela Gandhi, *Postcolonial Theory: An Introduction*. OUP, 1998.
- Bill Ashcroft, Gareth Griffin, Helen Tiffin, *The Empire Writes Back*: *Theory and Practice of Post-Colonial Literature*.
- Edward Said. *Orientalism*.

Core Paper XIV

POPULAR LITERATURE

Introduction:

This paper seeks to introduce the students to genres such as children's literature, detective fiction and campus fiction, which have a "mass" appeal, and can help us gain a better understanding of the popular and folk roots of literature.

UNIT 1: Introduction to the concept

(i) What is popular literature?
(ii) Debate between popular and high cultures ('high brow' v/s 'low brow')
(iii) What is Genre fiction?
(iv) Debate between genre fiction and literary fiction

Essays for discussion:

- Lev Grossman: "Literary Revolution in the Supermarket Aisle: Genre Fiction is Disruptive Technology" http://entertainment.time.com/2012/05/23/genre-fiction-is-disruptive-technology/
- Arthur Krystal: "Easy Writers: Guilty pleasures without guilt"

http://www.newyorker.com/magazine/2012/05/28/easy-writers

- Joshua Rothman: “A Better Way to Think About the Genre Debate”

http://www.newyorker.com/books/joshua-rothman/better-way-think-genre-debate

- Stephen Marche: How Genre Fiction Became More Important than Literary Fiction" http://www.esquire.com/entertainment/books/a33599/genre-fiction-vs-literary-fiction/

UNIT 2: Children's Literature

(i) Lewis Caroll: *Alice in Wonderland*

UNIT 3: Detective Fiction

(i) Arthur Conan Doyle: *The Hound of the Baskervilles*

UNIT 4: Campus Fiction

(i) Chetan Bhagat: *Five Point Someone*

Text Books

- Essays given for discussion under unit I and Texts prescribed in Units 2, 3, 4

Reference Books

- Leslie Fiedler, "*Towards a Definition of Popular Literature"* in *Super Culture:American Popular Culture and Europe.* Ed. C.W.E. Bigsby. pp. 29-38
- Leo Lowenthal, *Literature, Popular Culture and Society*
- Felicity Hughes, "Children's Literature: Theory and Practice" in *English Literary History*. Vol. 45, 1978. pp. 542-61.
- Raymond Chandler, "The Simple Art of Murder", Atlantic Monthly. Dec. 1944 (available at <http://www.en.utexas.edu/amlitprivate/scans/chandlerart.html>
- *Popular Fiction: Essays in Literature and History* by Peter Humm, Paul Stigant, Peter Widdowson
- Sumathi Ramaswamy, "Introduction", in Beyond Appearances?: Visual Practices and Ideologies in Modern India. Pp.xiii-xxix

Discipline Specific Elective

Paper-I LITERARY THEORY

Introduction:
This paper seeks to expose the students to the basic premises and issues of major theoretical approaches to literary texts.

UNIT 1:

(i) New Criticism ("Language of Paradox" by Cleanth Brooks)

UNIT 2:

(i) Marxist Criticism (Terry Eagleton: "Literature and Ideology" from *Marxism and Literary Criticism*

UNIT 3:

(i) Feminist Criticism (*Second Sex*, Vol 1 Introduction "Facts and Myths")

UNIT 4:

(i) Structuralism ("The Nature of Linguistic Sign" by Saussure)

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books

- Peter Barry, *Beginning Theory*
- Terry Eagleton, *Literary Theory*
- David Lodge, ed. *Twentieth Century Criticism*
- David Lodge, ed. *Modern Criticism and Theory*: *A Reader*
- Jonathan Culler, "In Pursuit of Signs"
- Tony Bennett, *Formalism and Marxism* (New Accents)

Discipline Specific Elective

Paper- II WORLD LITERATURE

Introduction:

This paper proposes to introduce the students to the study of world literature through a representative selection of texts from around the world. The idea is to read beyond the classic European canon by including defining literary texts from other major regions/countries—except the United States of America—written in languages other than English, but made available to the readers in English translation.

UNIT 1: European

(i) Albert Camus: *The Outsider*

UNIT 2: Caribbean

(i) V S Naipaul: *A Bend in the River*

UNIT 3: Canadian Short Fiction

(i) Alice Munroe: “The Bear Came Over the Mountain”, “Face”

UNIT 4: Latin American Poetry

(i) Pablo Neruda :"Tonight I can Write" and "Every day you play"

(ii) Octavio Paz: "Between going and staying the day wavers" and "Motion"

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Web Resources:

- Alice Munro's short Stories http://www.newyorker.com/magazine/2013/10/21/the-bear-came-over-the-mountain-2, http://www.newyorker.com/magazine/2008/09/08/face
- Poems of Octavio Paz http://www.poetrysoup.com/famous/poems/best/octavio_paz

Reference Books:

- *Weltliteratur*: John Wolfgang von Goethe in *Essays on Art and Literature* Goethe : The Collected Works Vol.3
- Rabindranath Tagore "World Literature": *Selected Writings On Literature and Language: Rabindranath Tagore* Ed. Sisir Kumar Das and Sukanta Chaudhuri
- Goethe's "World Literature Paradigm and Contemporary Cultural Globalization" by John Pizer

  "Something Will Happen to You Who Read": Adrienne Rich, Eavan Boland' by Victor Luftig .JSTOR iv. *Comparative Literature* University of Oregon.
- "WLT and the Essay" *World Literature Today* Vol. 74, No. 3, 2000. JSTOR Irish University Review, Vol.23 Spring 1, Spring-Summer.
- What is world Literature? (Introduction) David Damrosch http://press.princeton.edu/chapters/i7545.html
- Tagore's comparative world literature

  https://www.academia.edu/4630860/

  Rabindranath_Tagores_Comparative_World_Literature

Discipline Specific Elective Paper- III

PARTITION LITERATURE

Introduction:

This paper seeks to expose the students to some significant writings on Indian partition, which brought untold miseries to those who lost lives and homes. The issues of loss, trauma, communalism etc. are explored by the texts.

UNIT 1: Defining partition literature

(i) Ritu Menon and Kamla Bhasin, 'Introduction' from *Borders and Boundaries* (New Delhi: Kali for Women, 1998)

UNIT 2:

(i) W.H. Auden "Partition", Agha Shahid Ali, "Learning Urdu", "The Dawn of Freedom" Faiz Ahmad Faiz

UNIT 3: Bapsi Sidhwa

(i) *Ice-candy-man*

UNIT 4:

(i) Sadat Hassan Manto, 'Toba Tek Singh" (from *Mottled Dawn*, Penguin India)
(ii) Rajinder Singh Bedi, "Lajwanti"(Trans. Khushwant Singh)
(iii) Lalithambika Antharajanam, "A Leaf in the Storm"

Text Books

- Texts prescribed in Units 1, 2, 3, 4
- (*Mottled Dawn* for Manto and Bedi in Unit 4, Penguin India)
- *Borders and Boundaries*. New Delhi: Kali for Women, 1998

Reference Books:

- Sukrita P. Kumar, "Narrating Partition" (Delhi: Indialog, 2004)
- Urvashi Butalia, "The Other Side of Silence: Voices from the Partition of India" (Delhi: Kali for Women, 2000)
- Sigmund Freud, "Mourning and Melancholia" in *The Complete Psychological Works of Sigmund Freud*, tr. James Strachey (London: Hogarth Press, 1953) pp. 3041-53.

Discipline Specific Elective

Paper- IV WRITING FOR MASS MEDIA

UNIT 1:

(i) History of English in India, Brief history of Journalism in English in India , Status of English in India, Indian writers of English and their treatment of the English language a non-native variety

UNIT 2:

(i) Writing for the Print Media: News Stories, Features, Editorials

(The teacher is required to cite examples and use material from mass media)

UNIT 3:

(i) Writing for the Electronic Media

(ii) Advertisement caption writing and tag lines (print and electronic)

UNIT 4:

(i) Email, Blogs, Social networking

(ii) Internet Journalism

Reference Books

- Rangaswamy Parthasarathy, *Journalism in India: From the earliest times to the present day*, Sterling.
- S V Parasher, *Indian English: Functions and Form*, Bahri Publications.
- Stepehen McLaren, *Easy Writer*
- A R Parhi*, Indian English through Newspapers,* Concept Publications.
- G L Labru, Indian Newspaper English, B R Publishing House.
- Vinod Dubey, Newspaper English in India, Bahri Publications.
- Kachru, Braj: *from* Indianization of English
- Dutta and Parhi, 'Prospect of Electronic Media as Curriculum in Non-Native Contexts', I-Manager's *Journal on English Language Teaching.* (2014)
- Aijaz Ahmed: 'Disciplinary English: Third-Worldism and Literature'.
- Narasimhaih; C.D. (ed.):*Awakened Consciousness: Studies in Commonwealth Literature,* New Delhi: Sterling.
- Omkar N. Koul: *English in India: Theoretical and Applied Issues.* New Delhi: Creative Publishers.

DSE Paper – IV: Dissertation/ Research Project (College can give this choice only for students with above 60% aggregate marks)

DISSERTATION/ RESEARCH PROJECT

Introduction and Outcome

A project is an individual or collaborative activity that is carefully planned to achieve a particular aim.

An undergraduate project is individual research by students to i. understand in-depth a particular topic or fact in their field of study, and ii. Strengthen their understanding of research processes

and methods.

Undergraduate research is inquiry-based learning that involves practical work, and not just

listening to classroom teaching and personal reading. Students learn to apply what they study in their courses to appreciate different aspects of their field better by working independently on the projects. At the same time, they contribute something original to the courses they study.

An undergraduate research project is expected to explore specific topics within the field of study of the students. The project should make an original contribution to the discipline in some manner. The results of quality undergraduate research can be presented in seminars and conferences, and published in research journals dedicated specifically to such work or in traditional academic journals with the student as a co-author.

There are many benefits of undergraduate research including, but not limited to, real world applications, research and professional experience, and better relationships between faculty and students. Relating coursework to out-of-class experiences, students train to work and think independently, take responsibility for their own learning, and take initiative to solve problems on their own rather than relying on experts for answers. They also learn to work in collaboration in interdisciplinary research. Most of all, projects help students learn a variety of skill sets to make them confident and competent in their future career.

The research process

Typically, all research answer three questions: *what, why* and *how*.

The *what* states the research question to be investigated in a project.

The *why* explains the purpose of the research and also every step undertaken to conduct the research.

The *how* describes the stages of the research procedure.

To understand the process of research and to practically conduct any requires a good background in research methodology. Students may study research methodology before undertaking their projects.

Pattern of examination

MID-SEMESTER ASSESSMENT

Presentation of the project synopsis

Synopsis to include:

i. Research statement/question and its rationale
ii. Review of literature stating the validity of the project
iii. Discussion of the research steps
iv. Possible conclusion/s
v. Contribution of the project to the existing body of research
vi. References

Semester final examination

A project of at least 3000 words to be submitted in the following structure:

- Research question - a short statement
- Rationale of the research
- Introductions of the research
- Review of literature relating the reviews to the research question and the research Introductions
- Data collection and interpretation
- Discussion of the findings; conclusions drawn
- Contribution of the project to the existing body of research
- Directions for future research
- Works cited section

Reference Books

- John Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications. 2009
- K Samantray, *Academic and Research Writing*. Orient Blackswan. 2015
- Sword, H. *Stylish Academic Writing*. Harvard University Press. 2012
- Norman Denzin, *Sage Handbook of Qualitative Research.* Sage Publications. 2005
- Kothari & Garg, *Research Methodology.* New Age Publishers

Deepak Chawla & Neena Sondhi. *Research methodology: Concepts & Cases.* Vikas Publishing

Generic Elective Paper I

ACADEMIC WRITING AND COMPOSITION

Introduction:

This paper seeks to train the students in the basic writing skills required for writing competently in the academic context.

UNIT 1:

(i) Introduction to the Writing Process: with a focus on Academic Writing

UNIT 2:

(i) Writing in one's own words: Summarizing and Paraphrasing

UNIT 3:

(i) Critical Thinking: Synthesis, Analysis, And Evaluation

UNIT 4:

(i) Citing Resources: Editing, Book and Media Review

Reference Books:

- Liz Hamp-Lyons and Ben Heasley, Study Writing: *A Course in Writing Skills for Academic Purposes* (Cambridge UP, 2006)
- Ilona Leki, *Academic Writing: Exploring Processes and Strategies*. New York: CUP, 2nd edn, 1998
- Stanley Fish, *How to Write a Sentence and How to Read One*. Harpar Perennial. 2011.
- *Literature and the art of Communication*, Cambridge University Press
- Gerald Graff and Cathy Birkenstein, *They Say/I Say: The Moves That Matter in Academic Writing*. New York: Norton, 2009

Generic Elective Paper II GENDER AND HUMAN RIGHTS

(Faculty training needed)

Introduction:

This paper seeks to familiarize the students with issues of inequality, and oppression of caste, race and gender.

UNIT 1:

(i) Unit I and II of *Gender Sensitivity* (UNESCO Module 5)

UNIT 2:

(i) " Castes in India": Dr Babasaheb Ambedkar

UNIT 3:

(i) *We Should All Be Feminists* by Chimamanda Ngozi Adichie,

UNIT 4:

(i) *Sultana's Dream* (a novella): Rokeya Sakhawat Hossain

Text Books

- Texts prescribed in Unit I,II,III, IV

Reference Books:

- Babasaheb Ambedkar, *Writings and Speeches,* Vol 1, Complied by Vasant Moon. Ambedkar Foundation, 2014.
- Chimamanda Ngozi Adichi- *We Should All Be Feminists*. London: Fourth Estate, 2014.
- Rokeya Sakhawat Hossain - *Sultana's Dream*. Penguin Modern Classics, 2005.
- UNESCO- Gender Sensitivity, Zambia, 2000. http://www.unesco.org/education/mebam/module_5.pdf

Generic Elective Paper III NATION, CULTURE, INDIA

Introduction:
This paper seeks to introduce students across disciplines to basic ideas about Indian cultural ethos mediated through literature.

UNIT 1:

(i) *An Autobiography* (*My Experiments With Truth*) - M.K. Gandhi. Part V, 'The First Experience' (Chapters I) to 'Face to Face with Ahimsa'(Chap XIV)

UNIT 2:

(i) "Secularism and Its Discontents"- Amartya Sen (from *The Argumentative Indian*)

UNIT 3:

(i) "Nationalism in India"- Rabindranath Tagore (from *Nationalism*)

UNIT 4:

(i) " The Renaissance in India"- Sri Aurobindo (from The Renaissance in India and Other Essays)

Text Books

- Texts prescribed in Units 1, 2, 3, 4

Reference Books:

- A.L. Basham, *Wonder that was India*
- D.D. Kosambi, *Culture and Civilization of Ancient India in Historical Outline*
- Romila Thapar, *Time as a Metaphor in Human History*
- Pawan K. Verma, *The Great Indian Middleclass*

Generic Elective Paper IV LANGUAGE AND LINGUISTICS

Introduction:
This paper aims to offer the students some fundamental knowledge in Linguistics and English Language Teaching ELT). It also seeks to acquaint the students with the variety of English that people come in contact with in contemporary times with a special emphasis on Asia and in particular, India.

UNIT 1:

(i) Language : What is Language, Linguistics, Branches and Scope, Applied Linguistics

Global Englishes: Who Speaks English today? Standard Language and Language Standards, Language Variation, Postcolonial English, Pidgin and Creole, English in Asia and Europe

UNIT 2:

(i) Phonology and Morphology

UNIT 3:

(i) Syntax

UNIT 4:

(i) Semantics

Reference Books

- *Introductory book on Linguistics and Phonetics* by R L Varshney
- *Global Englishes: A Resource Book for Students*, Jennifer Jenkins, 3rd Edn, Special Indian Edition, Routledge, 2016
- *An Introduction to Language and Communication*,
- A R Parhi,'Localising the Alien: Newspaper English and the Indian Classroom', *English Studies in India*, Springer, 2018.
- Adrian Akmajian, R. A. Demers, Ann K Farmer and R, M. Harnish, Prentice Hall of India, 2012
- David Crystal, *Linguistics*
- Braj B Kachru, The Indianization of English (OUP)
- David Crystal, *English as a World Language*

GE Tutorial - 4 (20 marks: 1 credit)

Introduction: This paper seeks to reinforce learning of the theory paper by way of engaging the students in remedial teaching and doubt clearing classes.
Scheme of Examination- Internal Assessment will be done by tutors through 10 multiple choice questions (10 x 1 = 10) and very short answer-type questions (5 x 2 = 10)

UG Course Sructure for History

Semester	Course	Course Name	Credit	Total marks
Semester-I	AECC-I	AECC-I	4	100
	C 1	History of India-I	6	100
	C 2	Social Formations and Cultural Patterns of the Ancient World	6	100
	GE-I	History of India-I (Early Times to 1750)	6	100
Semester-II	AECC-II	AECC-II	4	100
	C 3	History of India-II	6	100
	C 4	Social Formations and Cultural Patterns of the Medieval World	6	100
	GE-II	History of India – II (1750-1950)	6	100
Semester-III	C 5	History of India-III (c.750-1206)	6	100
	C 6	Rise of Modern West-I	6	100
	C 7	History of India-IV (c.1206-1526)	6	100
	GE-III	Rise of the Modern West – I	6	100
	SEC-I	SEC-I	4	100
Semester-IV	C 8	Rise of Modern West-II	6	100
	C 9	History of India-V (c.1526-1750)	6	100
	C 10	Historical Theories and Methods	6	100
	SEC-II	SEC-II	4	100
	GE-IV	Rise of the Modern West – II	6	100
Semester-V	C 11	History of Modern Europe-I(c.1780-1880)	6	100
	C 12	History of India-VII (1750-1857)	6	100
	DSE-I	History and Culture of Odisha - I	6	100
	DSE-II	History and Culture of Odisha - II	6	100

Semester-VI	C 13	History of India-VIII (C.1857-1950)	6	100
	C 14	History of Modern Europe-II(1880-1939)	6	100
	DSE-III	History and Culture of Odisha- III	6	100
	DSE-IV	Project Report	6	100
		Total	**148**	**2600**

HISTORY

HONOURS PAPERS:

Core course – 14 papers

Discipline Specific Elective – 4 papers
Generic Elective for non History students – 4 papers. In case University offers 2 subjects as GE, then paper 1 and 2 will be the GE papers.

Marks per paper – Mid term: 20 Marks, End term: 80 Marks Total – 100 marks
Credit per paper – 6

Teaching hours per paper – 50 hours (Theory) + 10 hours (Tutorial)

Core Paper I

HISTORY OF

INDIA- I

Unit-I: Reconstructing Ancient Indian History

1. Early Indian notions of History
2. Sources of Historical Writings
3. Historical Geography (Major Harappan Sites and Sixteen Mahajanapadas).

Unit-II: Pre-historic Hunter-Gatherers and Food Production

1. Paleolithic Culture: Upper, Middle and Lower; Tool making habit
2. Mesolithic Culture: New developments in Technology and Economy
3. Neolithic and Chalcolithic Settlements
4. Food Production : Beginning of Agriculture

Unit-III: The Harappan Civilization

1. Origins; Settlement Patterns and Town Planning
2. Economic Life: Agriculture, Craft Productions and Trade
3. Social and Political Organization; Religious Beliefs and Practices; Art

Unit-IV: Cultures in Transition

1. Early Vedic Age: Society, Polity, Religion and Literature

2. Later Vedic Age: Social Stratification (Varna and Gender), Polity, Religion, and Culture

Suggested Text Books:

1. R. S. Sharma, Material Culture and Social Formations in Ancient India, 1983.
2. Upinder Singh, A History of Ancient and Early Medieval India.

Reference Reading:

1. Romila Thapar, Early India: From Beginning to 1300 CE, Penguin.
2. A.L. Basham, The Wonder that was India, Vol.1
3. B. Fagan, Digging from the Earth
4. H.D. Sankhalia, Prehistory of India.
5. B.R. Alchin, The Birth of Indian Civilization.

Core Paper II

SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT WORLD

Unit I

1. Evolution of Man
2. Paleolithic Cultures
3. Mesolithic Cultures

Unit-II: Neolithic Culture:

1. Food Production
2. Development of Agriculture
3. Animal Husbandry

Unit-III: Bronze Age Civilizations

1. Egypt
2. Mesopotamia (Sumeria & Babylonia)
3. China (Shang)

Unit-IV: Ancient Greece:

1. Athens and Sparta
2. Politics, Economic
3. Culture

Suggested Text Books:

1. Burns and Ralph. World Civilizations, Vol. A.
2. V. Gordon Childe, What Happened in History?

Reference Reading:

1. G. Clark, World Prehistory: A New Perspective.
2. Bisman Basu, The Story of Man
3. H.Neil & M.C.Willam, A World of History, Oxford, New York, 1907.
4. H.R. Hall, Ancient History of the Near East, 1932.

5. H.S. Baghela, World of Civilization

Core Paper III

HISTORY OF INDIA-II (300BCE-750CE)

Unit-I: Economy and Society (circa 300 BCE to circa CE 300):

1. Expansion of Agrarian Economy: Production relations.
2. Urban growth: Trade & Commerce
3. Social stratification: Class, Varna, Jati, Gender

Unit-II: Changing Political Formations (circa 300 BCE to circa CE 300):

1. The Mauryan Empire: Chandragupta Maurya and Asoka-Conquest and Administration
2. Post-Mauryan Polities: Kushanas, and Satavahanas
3. The Cholas

Unit-III: Towards Early Medieval India [circa CE fourth century to CE 750]:

1. Gupta Age: Agrarian Expansion, Land Grants, Graded Land Rights and Peasantry.
2. Varna, Proliferation of Jatis: changing norms of marriage and property.
3. The Nature of Polities: The Gupta Empire
4. Post- Gupta Polities - Pallavas, Chalukyas, and Vardhanas

Unit-IV: Religion, Culture, Philosophy and Society

1. Consolidation of the Brahmanical Tradition: Dharma, Varnashram, Purusharthas,
2. Buddhism: Hinayan and Mahayana
3. Jainism: It's major Priniples
4. Development of Art and Architecture: Mauryan, and Gupta

Suggested Text Books:

1. D. D. Kosambi, An Introduction to the Study of Indian History, 1975.
2. A. L. Basham, Wonder That Was India, Rupa.

Reference Reading:

1. Romila Thapar, Early India: From the Origins to 1300, 2002.
2. Dharma Kumar and Irfan Habib, Cambridge Economic History of India, vol-I.
3. Romila Thapar, Ancient India.
4. K.M. Ashraf, Life and Condition of the People of Hindustan.
5. D.N. Jha (ed.), Feudal Social Formation in Early India.

Core Paper IV

SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE MEDIEVAL WORLD

Unit-I: Polity and Economy in Ancient Rome

1. Polity and Empire in Ancient Rome
2. Crises of the Roman Empire-Rise and fall of Julius Caesar
3. Agrarian Economy
4. Urbanization and Trade

Unit-II: Economic Developments in Europe from 7th to 14th Centuries:

1. Agricultural Production
2. Towns and Trade,
3. Feudalism- Origin, Growth and Decline

Unit-III: Religion and Culture in Medieval Europe:

1. Medieval Church,
2. Monastic Communities
3. Papacy

Unit-IV: Societies in Central Islamic Lands:

1. The Tribal background, Rise of Islam; Rise of Sultanates
2. Religious Developments: the Origins of Shariah,

Suggested Text Books:

1. Perry Anderson, Passages from Antiquity to Feudalism.
2. Marc Bloch, Feudal Society, 2 Vols.

Reference Reading:

1. J. Barrawclough, The Medieval Papacy.
2. Cambridge History of Islam, 2 Vol.
3. Will Durant, The Story of Civilization (vols. I & II).
4. T.W. Wallbank & N.M. Bailey, Civilization –Past and Present.
5. R. Coulborne, Feudalism in History.

Core Paper V
HISTORY OF INDIA-III (c. 750 -1206)

Unit –I: Studying Early Medieval India: Political Structures

1. Sources: Literary and Archaeology
2. Evolution of Political structures: Rajputs and Cholas
3. Legitimization of Kingship; Brahmanas and Temples
4. Arab conquest of Sindh: Causes and Impact

Unit-II: Agrarian Structure and Social Change:

1. Agricultural Expansion; Crops
2. Landlords and Peasants
3. Proliferation of Castes
4. Peasantization of Tribes

Unit-III: Trade and Commerce:

1. Inter-regional Trade

2. Maritime Trade and Forms of Exchange
3. Process of Urbanization
4. Merchant Guilds of South India

Unit-IV: Religious and Cultural Developments:

1. Puranic Traditions; Buddhism and Jainism
2. Islamic Intellectual Traditions: Al-Biruni
3. Regional Languages and Literature
4. Art and Architecture: Evolution of Regional styles: Kalingan and Dravidian style of Temple Architecture

Suggested Text Books:

1. B.D. Chattopadhyaya, The Making of Early Medieval India.
2. R.S. Sharma and K.M. Shrimali, (eds), Comprehensive History of India, Vol. IV (A & B).

Reference Reading:

1. Satish Chandra, Medieval India, Vol. I, Har Anand.
2. D. D. Koasambi, The Culture and Civilization of Ancient India: In Historical outline New Delhi; Vikas 1971.5th Print.
3. K. A. Nilakantha Sastri, The Colas, South Indian History.
4. Mittal, Socio-Cultural History of India.
5. R.C.Majumdar (ed) History and Culture of Indian people. Bombay; Bharatiya Vidya Bhavan 1960.Relevant Vol.

Core Paper VI

RISE OF THE MODERN WEST - I

Unit-I: Transition from Feudalism to Capitalism:

1. The problems of Transition: Economic Expansion, Industrial production
2. Trade and Commerce
3. Urban Development, Town Life

Unit-II: Early Colonial Expansion:

1. Motives, Voyages and Explorations.
2. The Conquests of America
3. Mining and Plantation, The African Slaves.

Unit-III: Renaissance and Reformation:

1. Its Social Roots Spread of Humanism in Europe.
2. The Renaissance: Art, Architecture, Sculpture, Painting and Literature
3. Origins and Spread of Reformation Movements.
4. Emergence of European State system: Spain, France, England, Russia

Unit-IV: Economic Developments of the Sixteenth Century:

1. Shift of economic balance from the Mediterranean to the Atlantic.
2. Commercial Revolution- Causes and Nature
3. Growth of Industries and its Impact

Suggested Text Books:

1. Charles A. Nauert, Humanism and the Culture of the Renaissance (1996).
2. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 û1600.

Reference Reading:

1. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.
2. F. Rice, The Foundation of Early Modern Europe.
3. Toynbee, A.J, A Study of History (12 volumes).
4. Maurice Dobb, Transition from Feudalism to Capitalism.
5. Wallbank, T.W. & Bailey, N.M. Civilization: Past and Present.

Core Paper VII

HISTORY OF INDIA IV

(c.1206 - 1526)

Unit-I: Sultanate: Political Structures

1. Survey of Sources: (a) Persian Tarikh Tradition, (b) Vernacular Histories; (c) Epigraphy.
2. Consolidation of the Sultanate of Delhi: Balban, Alauddin Khaljis and Mahammad-bin Tughluqs.
3. Theories of kingship: The Ruling Elites: Ulema, Sufis and the Imperial Monuments

Unit-II: Emergence of Regional Identities

1. Bahamanis, Vijayanagar and Odisha.
2. Regional Art, Architecture and Literature in Vijayanagar and Odisha

Unit-III: Society and Economy:

1. Iqta and the Revenue-free Grants.
2. Agricultural production, Technology.
3. Market Regulations, Growth of Urban Centers.
4. Trade and Commerce, Indian Overseas Trade.

Unit-IV: Religion, Society and Culture:

1. Sufi Silsilas: Chishtis and Suhrawardis; doctrines and practices, Social roles
2. Bhakti Movements and Monotheistic Traditions: Kabir, Nanak, Ravidas and Sri Chaitanya.
3. Social Impact of the Bhakti Tradition: Rise of Liberal Thought, Ideology of Equality and Gender Relations

Suggested Text Books:

1. Satish Chandra, Medieval India, Vol. I, Har Anand Publications, New Delhi.
2. J.L. Mehta, An Advanced Study of the History of Mevieval India, Vol.I.

Reference Reading:

1. Irfan Habib, Medieval India: The Study of a Civilization, NBT, New Delhi.
2. ABM Habibullah, The Foundation of Muslim Rule in India.
3. SBP Nigam, Nobility under the Sultans of Delhi.
4. R.P. Tripathy, Some Aspects of Muslim Administration in India.
5. R.S.Sharma, Early Medieval Indian Society: Orient Blackswan 2001.

Core Paper VIII

RISE OF THE MODERN WEST - II

Unit-I: The English Revolution and European Politics in the 18th century:

1. Background: Socio-Economic and Political Crisis in 17th Century Europe.
2. Major Issues-Political and Intellectual Currents;
3. Parliamentary Monarchy;
4. Patterns of Absolutism in Europe

Unit-II: Rise of Modern Science

1. Development of Science from Renaissance to the 17th century
2. Impact of Modern Science on European society

Unit-III: Mercantilism and European Economy

1. Origin and spread of Mercantilism
2. Impact of Mercantilism on European economy
3. Agricultural and Scientific Background to the Industrial Revolution

Unit-IV: The American Revolution

1. Political currents
2. Socio-Economic Issues
3. Significance of the American Revolution

Suggested Text Books:

1. H. Butterfield, The Origins of Modern Science.
2. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.

Reference Reading:

1. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 - 1600.
2. C.A Fisher, History of Modern Europe.
3. F. Rice, The Foundation of Early Modern Europe
4. David Thomson, Europe since Napoleon, Pelican Books, 1985
5. Swain, J.E., A History of World Civilization, Eurasia Publishing House Pvt. Ltd., New Delhi, 1994

Core Paper IX
HISTORY OF INDIA V (c. 1526 - 1750)

Unit-I: Establishment of Mughal Rule:

1. India on the eve of advent of the Mughals

2. Military Technology: Fire Arms,
3. Sher Shah: Administrative and Revenue Reforms

Unit-II: Consolidation of Mughal Rule:

1. Incorporation of Rajputs and other Indigenous Groups in Mughal Nobility
2. Evolution of Administrative Institutions: zabti, mansab, jagir,madad-i-maash
3. Emergence of the Marathas; Shivaji; Expansion under the Peshwas

Unit-III: Society and Economy:

1. Land rights and Revenue system: Zamindars and Peasants
2. Trade Routes and patterns of Internal Commerce; overseas trade
3. Urban Centres, Craft and Technology

Unit-IV: Cultural Ideals:

1. Religious tolerance and sulh-i-kul; Sufi mystical and Intellectual Interventions
2. Art and Architecture
3. Mughal and Rajput Paintings: Themes and Perspectives

Suggested Text Books:

1. J.L. Mehta, An Advanced Study of the History of Mevieval India, Vol.II.
2. Satish Chandra, Medieval India, vol.2, Har Anand Publications, New Delhi.

Reference Reading:

1. Irfan Habib, Agrarian System of Mughal India, 1526-1707.
2. A.B.Pandey, Later Medieval Period.
3. R.P.Tripathi, Rise and Fall of the Mughal Empire
4. S.Nurul Hassan, Thoughts on Agrarian Relations in Mughal India.
5. Ishwari Prasad, Life and Times of Humayun.

Core Paper X
HISTORICAL THEORIES & METHODS

Unit-I: Meaning and Scope of History

1. Definition, Nature and Scope of History.
2. Object and Value of History.
3. History, Science and Morality.

Unit-II: Traditions of Historical Writing

1. Ancient Greek Traditions – Herodotus, Thucydides
2. Ancient Roman Traditions - Polybius, Livy and Tacitus
3. Medieval Understanding: Western – St. Augustine, Arabic – Ibn Khaldun.

Unit-III: History as Interdisciplinary Practice

1. History and Archaeology, History and Anthropology.

2. History and Psychology, History and Literature.
3. History and Political Science

Unit-IV: Historical Methods

1. Sources of History: Written, Oral. Visual & Archaeological.
2. Historical facts.
3. Historical Causation.
4. Historical Objectivity

Suggested Text Books:

1. B. Sheik Ali, History: Its Theory and Method, Macmillan, Reprinted, 1996.
2. E. H. Carr, What is History? , Penguine Books, Reprinted, 1983.

Reference Reading:

1. E. Sreedharan, A Text Book of Historiography, Orient Longman, Reprinted, 2004.
2. Marc Bloch, The Historians Craft.
3. R.G. Collingwood, The Idea of History
4. G.T.Reiner, History: Its Purpose and Method.
5. K.Rajayyan, History: it's Theory & Method

Core Paper XI

History of Modern Europe- I (c. 1780-1880)

Unit-I: The French Revolution (1789):

1. Socio, Religious, Economic and Political Conditions
2. Intellectual Currents.
3. Role of the Middle Classes

Unit-II: Revolution and its European Repercussions:

1. National Constituent Assembly
2. National Legislative Assembly
3. Napoleonic Consolidation- Reform and Empire

Unit-III: Restoration and Revolution: c. 1815 - 1848

1. Congress of Vienna Restoration of old Hierarchies
2. Revolutionary and Radical Movements-

   A) July Revolution (1830) and
   B) February Revolution (1848)

Unit-IV: Socio-Economic Transformation and Remaking of States (Late 18th Century to Late 19th Century)

1. Process of Capitalist Development: Agrarian and Industrial Revolutions in England and German States.
2. Evolution of Social Classes: Land Owners, Peasantry: Bourgeoisie and Proletariat
3. Popular Movements and the Formation of National Identities in Germany and Italy,

Ireland

Suggested Text Books:

1. T.S. Hamerow, Restoration, Revolution and Reaction: Economics and Politics in Germany [1815 - 1871].
2. Anthony Wood, History of Europe, 1815 to 1960 (1983).

Reference Reading:

1. E.J. Hobsbawm, Nations and Nationalism.
2. A .Wesley Rohem, The Record of Mankind, Health and Company, Boston, 1952.
3. CMD Ketelbey, History of Modern Times since 1789, OUP, 2009.
4. David Thomson, Europe since Napoleon, Pelican Books, 1985.
5. Edward Mac Nall Burns et al, World Civilizations, vols. A,B,C,Goyal Saab, New Delhi.

Core Paper XII HISTORY OF INDIA VII (c. 1750 - 1857)

Unit-I: Expansion and Consolidation of Colonial Power:

1. Foreign Trade and Early forms of Economic Exploitations in Bengal
2. Dynamics of Expansion, with special reference to Bengal, Mysore and Odisha

Unit-II: Colonial State and Ideology:

1. Arms of the Colonial state: army, Police, Law.
2. Imperial Ideology: Orientalism and Utilitarianism
3. Education: Indigenous and Modern.

Unit-III: Economy and Society:

1. Land revenue systems- Permanet, Ryotwari and Mahalwari.
2. Commercialization of Agriculture- Consequences
3. Drain of Wealth- Causes and Consequences
4. Growth of Modern Industry

Unit-IV: Popular Resistance:

1. Santhal Uprising (1856-57)
2. Indigo Rebellion (1860)
3. Movement of 1857- Causes and Consequences

Suggested Text Books:

1. Dharma Kumar and Tapan Raychaudhuri, (ed.)., The Cambridge Economic History of India, Vol. II.
2. Bipan Chandra, K.N. Panikkar, Mridula Mukherjee, Sucheta Mahajan and Aditya Mukherjee, India’s Struggle for Independence.

Reference Reading:

1. Sumit Sarkar, Modern India (1885-1947), Mac Milan.
2. A.R.Desai, Social Background of Indian Nationalism
3. R. Vlyanovsky, Agrarian India between the World Wars.
4. Sekhar Bondhapadhaya, From Plessey to Partition.
5. G.Kaushal, Economic History of India, 1757-1956

Core Paper XIII

C.C. XIII: HISTORY OF INDIA VIII (c. 1857 - 1950)

Unit-I: Cultural Changes, Socio and Religious Reform Movements:

1. The advent of Printing and its Implications
2. Reform and Revival: Brahmo Samaj, Arya Samaj, Aligarh Movement.
3. Emancipation of Women, Sanskritization and Anti-Caste Movements

Unit-II: Nationalism: Trends up to 1919:

1. Political Ideology and Organizations, Formation of INC
2. Moderates and Extremists.
3. Swedish Movement
4. Revolutionaries

Unit-III: Gandhian Nationalism after 1919: Ideas and Movements:

1. Mahatma Gandhi: His Perspectives and Methods
2. Non- Cooperation, Civil Disobedience, Quit India,
3. Subhas Chandra Bose and INA
4. Nationalism and Social Groups: Peasants, Tribes, Dalits and Women

Unit-IV: Communalism and Partition:

1. Ideologies and Practices, Muslim League
2. Hindu Maha Sabha
3. Partition and Independence
4. Making of the Constitution

Suggested Text Books:

1. Sumit Sarkar, Modern India, 1885-1947.
2. Bipan Chandra, K.N. Panikkar, Mridula Mukherjee, Sucheta Mahajan and Aditya Mukherjee, India's, Struggle for Independence, Penguin

Reference Reading:

1. Sekhar Bandopadhyaya, From Plessey to Partition
2. N.S. Bose, Indian Awakening and Bengal

3.A. R. Desai, Social Background of Indian Nationalism, Popular, Bombay.

4.S.Gopal, British Policy in India, 1858-1905.

5.Bipan Chandra, Indian National Movement.

Core Paper XIV

HISTORY OF MODERN EUROPE II (c. 1880 - 1939)Unit-I: Liberal Democracy, Working Class Movements and Socialism in the 19th and 20th Centuries:

1. The Struggle for Parliamentary Democracy and Civil Liberties in Britain.
2. Forms of Protest during early Capitalism: Food Riots in France and England: Luddites and Chartism.
3. Early Socialist Thought; Marxian Socialism

Unit-II: The Crisis of Feudalism in Russia and Experiments in Socialism:

1. Emancipation of Serfs
2. Revolutions of 1905; the Bolshevik Revolution of 1917.
3. Programme of Socialist Construction.

Unit-III: Imperialism, War, and Crisis: c. 1880-1939:

1. Growth of Militarism; Power Blocks and Alliances: Expansion of European Empires –First World War (1914 – 1918)
2. Fascism and Nazism.
3. The Spanish Civil War.
4. Origins of the Second World War.

Unit-IV: Intellectual Developments since circa 1850: Major Intellectual Trends:

1. Mass Education and Extension of Literacy.
2. Institutionalization of Disciplines: History, Sociology and Anthropology.
3. Darwin and Freud.

Suggested Text Books:

1. C.M. Cipolla, Fontana Economic History of Europe, Volume II the Present (1981). I : The Industrial Revolution.
2. T.S. Hamerow, Restoration, Revolution and Reaction: Economics and Politics in Germany [1815 - 1871].

Reference Reading:

1. George Lichtheim, A Short History of Socialism.
2. K.B. Keswani, International Relations in Modern World (1990-1995).
3. C.D.M. Ketelby, A History of Modern Times.
4. Carr.E.H., International Relations between the Two World Wars, 1919-1939, New York, 1966.
5. Garden Green Wood, The Modern World –A History of Our Times.

Discipline Specific Elective Paper-1

History and Culture of Odisha - I

Unit-I

1.Historical Geography: Kalinga, Utkal, Kosal
2.Kalinga War (261 B.C.) and its Significance.
3.Kharavela –Career and Achievements

Unit: II

1.Matharas and Eastern Gangas and Sailodbhavas
2.Bhaumakaras
3.Somavamsis

Unit: III

1.Imperial Gangas
2.Suryavamsi Gajapatis
3.Post- Gajapati Political developments upto 1568.

Unit: IV

1.Social and Cultural Life in Early and Medieval Odisha
2.Growth and Decay of Urban Centres
3.Trade and Commerce
4.Taxation and Land Revenue

Suggested Text Books:

1.K.C. Panigrahi, History of Odisha, Kitab Mahal.

2. Sahu, Mishra & Sahu, History of Odisha.

Reference Reading:

1.S.K. Panda, Political and Cultural History of Odisha.
C Pradhan, A Study of History of Orissa
3.B.K. Mallik, etal (eds) Odia Identity, Page Maker Publications, Bhubaneswar, 2019.
4.R. D Banarjee, History of Orissa, 2 vols.
5.M.N. Das(ed), Sidelights on History and Culture of Orissa, Vidyapuri, Cuttack, 1977

Discipline Specific Elective Paper-II History and Culture of Odisha -II

Unit I Afghan Conquest and Mughal Rule in Odisha- Administration

1. Maratha rule in Odisha – Administration
2. British Occupation and Early Colonial Administration: Land Revenue, Salt Policy, Jail and Police Administration.

Unit: II

1. Resistance Movements: Ghumsar Rebellion, Paik rebellion, Revolt of 1857 and Surendra Sai, Keonjhar Uprisings.
2. Famine of 1866 – Causes and Consequences
3. Growth of Education and Language Movement

Unit: III

1. Growth of Nationalism

2. Formation of Separate Province of Orissa.
3. Prajamandal Movement

Unit: IV

1. Nationalist Politics in Odisha
2. Quit India Movement
3. Merger of Princely States

Suggested Text Books:

1. P.K. Mishra & J.K. Samal, A Comprehensive History and Culture of Orissa- Vol. I & II.
2. A. C. Pradhan, Sidelights on Freedom Struggle in Orissa.

Reference Reading:

1. K.M. Patra, Freedom Struggle in Odisha.
2. J.K.Samal, Orissa under the British Crown.
3. K.M.Patra, Orissa State Legislature & Freedom Struggle.
4. B.C. Ray, Orissa under the Mughals, Punthi Pustak.
5. B.C. Ray, Orissa under the Marathas, Punthi Pustak.

Discipline Specific Elective

Paper-III History and

Culture of Odisha - III

Unit: I

1. Buddhism in Odisha
2. Jainism in Odisha
3. Saivism in Odisha

Unit: II

1. Saktism and Tantricism in Odisha
2. Growth of Vaishnavism in Odisha and Cult of Jagannath
3. Growth of Odia Literature : Sarala Mahabharata
4. Pancha-Sakha Literature

Unit: III

1. Buddhist Art and Architecture
2. Jaina Art
3. Evolution of Temple Architecture -Parsurameswar, Mukteswar, Lingaraja, Jagannath and Konarka

Unit: IV

1. Christian Missionaries – Education and Health
2. Mahima Movement and its Impact
3. Neo-Hindu Movements – Brahmo, Arya Samaj.

Suggested Text Books:

1.A.C. Pradhan, A Study of the History of Odisha, Panchasheel.

2. B.K. Mallik, Paradigm of Dissent and Protest :- Social Movements in Eastern India (1400-1700 AD)

Reference Reading:

1.K.S. Behera, Temples of Orissa.
2.P.K. Mishra(ed), Comprehensive History and Culture of Orissa, Vol-I Pt. II.
3.N.K. Bose, Canons of Orissan Architecture
4.M.N. Das (ed), Sidelights on History and Culture of Orissa.
5. N.K. Sahu, Buddhism in Orissa.

Discipline Specific Elective Paper-IV

(Optional/Project) History of

Contemporary Odisha (1947-1980)

Unit I: Political Developments

1. Second Congress Ministry (1946-1950):
a) Integration of Princely States with Odisha
b) New Capital
c) Hirakud Dam Project

2. Years of Uncertainties (1950-1980)
a) Third Congress Ministry and Abolition of Zamindary System
b) Biju Patnaik's First Ministry Achievements

Unit II: United Political Initiatives

1. Coalition Politics-Achievements and Challenges
a) R.N. Singdeo,
b) Sadasiba Tripathy

2. Panchayati Raj Institutions-Its Working and Impacts.
a) Rural Stages
b) Urban Stages

Unit III: Economic Development

a) Growth of Industries- Roulkela Steel Plant and Odisha Sponge Iron Ltd.
b) Irrigation and Agricultural Infrastructure
c) Development in Transport and State communication- National and State High Ways in Odisha

Unit IV: Social Developments and Problems

a) Government Community Development Programmes- Its Impact
b) Peasant Movements: Causes and Effects
c) Growth of Art and Craft: Raghunathpur, Pipli and Bargarh

Suggested Text Books:

1. Hemant K. Mohapatra, Odisara Etihasha (Odia), Friends Publishers, Cuttack,

2019.
2. Sukadeva Nanda, Coalition Politics in Odisha, Sterling Publishers, Delhi.

Reference Reading:

1. Sunit Ghosh, Orissa in Turmoil: A Study in Political Developments, Bookland International, Bhubaneswar, 1991.
2. Basant Das, Odisha Rajanitira Gopan Katha (Odia), Anusandhan Publication, Bhubaneswar, 2001.
3. B.B. Jena & J.K. Baral (eds), Government and Politics in Orissa, Print House (India), Lucknow, 1988.
4. Chittaranjan Das, Nabakrushna Chaudhury, NBT, New Delhi.
5. Dasarathi Bhuyan, Orissa Politics: From 1936 to Contemporary Politics, Mangalam Publishers, New Delhi, 2010.

OR

Project Report

The Students may be allotted topics of their interest in the beginning of 5th Semester Classes. They may write the Project Reports on local History and Culture, local personalities with their significant contribution to change the Society and economy with historical perspective containing up to 50 double spaced typed pages. The students may consult the sources like local archaeology, manuscripts, community documents, oral traditions, oral narratives, local biographies and family sources for writing the project dissertation. The Teachers will guide the students to complete their Project assignments. The students may be allowed to fill up their forms after their submission of the projects assigned to them. The student has to secure fifty percent of marks from the evaluation of the project and fifty percent of the marks in the viva voce test which are compulsory.

Generic Elective Paper
I History of India - I (Early Times to 1750)

Unit – I : Reconstructing Ancient Indian History

1. Sources of Historical Writings.
2. Vedic Age : Society, Polity and Culture
3. Buddhism and Jainism : Principles and Impact

Unit – II : Polity and Administration

1. The Mauryan Empire : Conquest and Administration
2. Gupta Society : Land Grants, Peasantry and beginning of Feudal Society
3. Gupta Polity : Conquests and Administration
4. Harshavardhan : Achievements

Unit – III: Early Medieval Society, Economy and Culture

1. Post Gupta Trade and Commerce
2. Delhi Sultanate : Conquests and Administration
3. Bhakti and Sufi Movements in India
4. Development of Regional Language and Literature

Unit – IV: India on the Eve of the Advent of the Mughals

1. Sher Shah : Administration and Reforms
2. Mughal Administrative Institutions : Zabti, Mansab and Jagir
3. Religious Tolerance Sulh-i- Kul
4. Mughal Art and Architecture

Suggested Text Books:

1. Upinder Singh, History of Ancient & Early Medieval India.
2. Romila Thappar, The Early India

Reference Reading:

1. Irfan Habib, Medieval India, NBT, New Delhi
2. R.S. Sharma, India's Ancient Past
3. S.A.A. Rizri, Wonder that was India, Vol.II, Rupa
4. Cultural Heritage of India, Bharatiya Vidyabhaban Series, Vol-1-IV
5. A.L. Basheon (ed), Cultural History of India, OUP, New Delhi, 2011

Generic Elective

Paper II History of

India - II (1750-1950)

Unit – I Foundation and Expansion of British Rule_

1. Battle of Plessey (1757) and Conquest of Bengal
2. Conquest of Mysore and Maharashtra
3. Expansion through Diplomacy : Subsidiary Alliance and Doctrine of Lapse

Unit – II Consolidation of British Rule and Indian Responses

1. Peasant & Tribal Resistance against British Rule: Sanyasi Reballion (1763); Kondh Rebellion in Ghumusar, Santal Rebellion
2. Revolt of 1857 : Nature and Significance
3. Land Revenue Settlements : Permanent Settlement, Ryotwari and Mahalwari Settlement

Unit – III – Social and Cultural Policies

1. Socio-Religious Reform Movements: Brahmo Samaj, Arya Samaj, Theosophical Society, Aligarh Movement.
2. Growth of Press and Education
3. Issues of Caste and Gender : Jyotiba Phule- Women Question and Issues, Depressed Class.

Unit – IV – Indian National Movement

1. Politics of Moderates and Extremists (1885-1920)

2. Gandhian Mass Movements (Non-Cooperation, Civil Disobedience and Quit India

Movements), (1920-1940)

3. Communal Politics and Partition
4. Making of the Democratic Constitution

Suggested Text Books:

1.A.R. Desai, Social Background of Indian Nationalism, Popular, Mumbai

2. Priyadarshi Kar, Comprehensive History of Modern India.

Reference Reading:

1. Sumit Sarkar, Modern India : 1885-1947, Mac Millon.
2. B.R.Mani, Debrahminising History: Dominance and Resistance in Indian Society, Manohar, New Delhi, First Published 2005.
3. Chandra Bharil, Social and Political Ideas of B.R. Ambedkar, Aalekh Publishers, Jaipur, 1977.
4. Sumit Sarkar, Modern India (1885-1947), Mac Millan, Delhi, First Published 1983.
5. Hirendra N.Mukherjee, Gandhi, Ambedkar and the Extirpation of Untouchablility, PPT, New Delhi.

Generic Elective

Paper III RISE OF THE

MODERN WEST - I

Unit-I: Transition from Feudalism to Capitalism

1. The problems of Transition: Economic Expansion, Industrial production
2. Trade and Commerce
3. Urban Development, Town Life

Unit-II: Early Colonial Expansion

1. Motives, Voyages and Explorations.
2. The Conquests of America
3. Mining and Plantation, The African Slaves.

Unit-III: Renaissance and Reformation

1. Its Social Roots Spread of Humanism in Europe.
2. The Renaissance: Art, Architecture, Sculpture, Painting and Literature
3. Origins and Spread of Reformation Movements.
4. Emergence of European State system: Spain, France, England, Russia

Unit-IV: Economic Developments of the Sixteenth Century

1. Shift of economic balance from the Mediterranean to the Atlantic.
2. Commercial Revolution- Causes and Nature
3. Growth of Industries and its Impact

Suggested Text Books:

1. Charles A. Nauert, Humanism and the Culture of the Renaissance (1996).
2. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 û1600.

Reference Reading:

1. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.
2. F. Rice, The Foundation of Early Modern Europe.
3. Toynbee, A.J, A Study of History (12 volumes).
4. Maurice Dobb, Transition from Feudalism to Capitalism.
5. Wallbank, T.W. & Bailey, N.M. Civilization: Past and Present.

Generic Elective Paper IV

G.E. IV: RISE OF THE MODERN WEST - II

Unit-I: The English Revolution and European Politics in the 18th century

1. Background: Socio-Economic and Political Crisis in 17th Century Europe.
2. Major Issues-Political and Intellectual Currents;
3. Parliamentary Monarchy;
4. Patterns of Absolutism in Europe

Unit-II: Rise of Modern Science

1. Development of Science from Renaissance to the 17th century
2. Impact of Modern Science on European society

Unit-III: Mercantilism and European Economics

1. Origin and spread of Mercantilism
2. Impact of Mercantilism on European economy
3. Agricultural and Scientific Background to the Industrial Revolution

Unit-IV: The American Revolution

1. Political currents
2. Socio-Economic Issues
3. Significance of the American Revolution

Suggested Text Books:

1. H. Butterfield, The Origins of Modern Science.
2. Meenaxi Phukan, Rise of the Modern West: Social and Economic History of Early Modern Europe.

Reference Reading:

1. Harry Miskimin, The Economy of Later Renaissance Europe: 1460 - 1600.
2. C.A Fisher, History of Modern Europe.
3. F. Rice, The Foundation of Early Modern Europe
4. David Thomson, Europe since Napoleon, Pelican Books, 1985
5. Swain, J.E., A History of World Civilization, Eurasia Publishing House Pvt. Ltd., New Delhi, 1994

୨୦୧୯-୨୦

CBCS : BA (Hons.) 2019-20

Core Course – ପ୍ରଧାନ ପାଠ୍ୟାଂଶ

ମୋଟ ପତ୍ର ସଂଖ୍ୟା – ୧୪

ପ୍ରତ୍ୟେକ ପତ୍ର – ୧୦୦ ମୂଲ୍ୟାଙ୍କ ବିଶିଷ୍ଟ (୨୦ ନମ୍ବର ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା + ୮୦ ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମାନକ ଅନ୍ତିମ ପରୀକ୍ଷା)

ସମ୍ମାନ: ଜଣେ ସ୍ନାତକ – ସମ୍ମାନର (ଅନର୍ସ) ବିଦ୍ୟାର୍ଥୀ – ମୋଟ ୧୪୦୦ ନମ୍ବରର ପରୀକ୍ଷା ଦେବେ।

କ) ଅତି କମ୍‌ରେ (ମୋଟ୍) ୫୦ଟି କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (ପରିୟଡ୍)ରେ ଗୋଟିଏ ପତ୍ରର ପାଠଦାନ ଶେଷ ହେବ । ଗୋଟିଏ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ ବା ପରିୟଡ୍ -୪୫ ମିନିଟ)

ଖ) ପ୍ରତ୍ୟେକ ପତ୍ର ୪ ଗୋଟି ୟୁନିଟ୍ /ଏକକ / ଉପଶରେ ବିଭକ୍ତ ହୋଇଛି ।

ଗ) ପ୍ରତ୍ୟେକ ପତ୍ର ୬ ଆସୁଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (୪ + ୨ କ୍ରେଡିଟ୍) ପାଇବେ । ଗୋଟିଏ ଅଷ୍ଟାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟର ମହତ୍ତ୍ୱ ହେଉଛି - ୧୦ ପିରିୟଡ୍ ସହିତ ସମାନ

ମୋଟ ୧୪ ଗୋଟି ସମ୍ମାନ ପତ୍ରର ଆଷ୍ଟମୁଲ୍ୟାଙ୍କ (କ୍ରେଡିଟ) ହେଉଛି - ୧୪ × ୬ (୪ + ୨} = ୮୪ ।

ଏଥୁମଧ୍ୟରୁ ୧୪x ୪= ୫୬ ତାତ୍ତ୍ୱିକ ପାଠ (Theory) ରହିବ।

ଘ) ପରୀକ୍ଷା ପର୍ଯ୍ୟାୟକ୍ରମ (Semester) ଓ ପ୍ରସ୍ତାବିତ ପାଠ ଯୋଜନା :

ପ୍ରଥମ ଶିକ୍ଷାବର୍ଷ

୧ମ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧ମ ଓ ୨ୟ ପତ୍ର -100 + 0୧ = ୧୦୦ ନମ୍ବ

(୧ମ ଓ ୨ୟ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୨ ୟ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୩ୟ/୪ର୍ଥ ପତ୍ର ୧୦୦+ ୧୦୦ = ୨୦୦ ନମ୍ବର

(୩ୟ ଓ ୪ର୍ଥ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

ଦ୍ୱିତୀୟ ଶିକ୍ଷାବର୍ଷ

୩ୟ ପର୍ଯ୍ୟାୟ

ତିନୋଟି ପତ୍ର ୫ମ, ୬ଷ୍ଠ ଓ ୭ମ ପତ୍ର (୫ମ, ୬ଷ୍ଠ, ୭ମ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦+୧୦୦+ ୧୦୦= ୩୦୦ ନମ୍ବର

୪ର୍ଥ ପର୍ଯ୍ୟାୟ

ତିନୋଟି ପତ୍ର ୮ମ, ୯ମ ଓ ୧୦ମ ପତ୍ର- (୮ମ, ୯ମ, ୧୦ମ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦+୧୦୦+୧୦୦= ୩୦୦ ନମ୍ବର

ତୃତୀୟ ଶିକ୍ଷାବର୍ଷ

୫ମ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧୧ଶ ଓ ୧୨ଶ ପତ୍ର (୧୧ଶ/୧୨ଶ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)

୧୦୦ + ୧୦୦ = ୨୦୦ ନମ୍ବର

୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ

ଦୁଇଟି ପତ୍ର ୧୩ଶ ଓ୧୪ଶ ପତ୍ର (୧୩ଶ, ୧୪ଶ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ)
୧୦୦+ ୧୦୦ = ୨୦୦ ନମ୍ବର

ଶିକ୍ଷା ଅବଧି ୬ଟି ପରୀକ୍ଷା ୧୪ଗୋଟି ମୋଟ = ୧୪୦୦ ନମ୍ବର

୩ ବର୍ଷ ୬ଟି ପର୍ଯ୍ୟାୟ ପତ୍ର

3 years Course/ସେମିଷ୍ଟାର-୬ Total Total paper 1400 Total credits: 14 x 6 (4+2) = 84

ବିଦ୍ୟାର୍ଥୀମାନଙ୍କ ମୁକ୍ତ ମେଧାବୃତ୍ତି ପରୀକ୍ଷା ପାଇଁ ସେମାନଙ୍କ ପସନ୍ଦ ଓ ବୋଧଜ୍ଞାନମୂଳକ ଦୀର୍ଘ ଓ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପରୀକ୍ଷା ନିମନ୍ତେ ଉପସ୍ଥାପନା କରାଯିବ ।

ନମ୍ବର / ମୂଲ୍ୟାଙ୍କ ବିଭାଜନ ପଦ୍ଧତି:

୧. ପ୍ରତ୍ୟେକ ପ୍ରଧାନ ପାଠ୍ୟାଂଶ ବା ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ

୨. ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତରୀକ୍ଷା – ୨୦ ନମ୍ବର
ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା - ୮୦ ନମ୍ବର

୩. ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା ନିମନ୍ତେ ନିମ୍ନମତେ ପ୍ରଶ୍ନ ହେବ:

କ. ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ୨ଟି କରି ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ସେଥିରୁ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । ପ୍ରତ୍ୟକ ଏକକରୁ ଗୋଟିଏ ଲେଖାଏଁ ପ୍ରଶ୍ନର ଉତ୍ତରଦେବା ବାଧତାମୂଳକ (୪X୧୫ = ୬୦ ନମ୍ବର)

ଖ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତି ଏକକରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ: ବିଦ୍ୟାର୍ଥୀ ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ (୨ X ୧୦ = ୨୦)

ବିଶେଷ ଦ୍ରଷ୍ଟବ୍ୟ –

ଓଡ଼ିଆ ସମ୍ମାନ ୧୧ଶ ପତ୍ର, ୧୨ଶ ପତ୍ର, ୧୩ଶ ପତ୍ର ଓ ୧୪ଶ ପତ୍ର ଥିବା ପ୍ରତ୍ୟେକ ପତ୍ରର ପଞ୍ଚମ ଏକକର ପ୍ରକଳ୍ପ ପାଇଁ ୨୦ ନମ୍ବର ଓ ଅନ୍ତଃ ପରୀକ୍ଷା ପାଇଁ ୧୦ ନମ୍ବର ରହିବ ।

କ) ମୋଟ ନମ୍ବର - ୧୦୦

ଖ) ଅନ୍ତଃ ପରୀକ୍ଷା - ୨୦ ଓ ମୁଖ୍ୟ ପରୀକ୍ଷା – ୬୦

ଗ) ପ୍ରକଳ୍ପ ପ୍ରଭୃତି – ୨୦

ଘ) ମୁଖ୍ୟ ପରୀକ୍ଷାରେ ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରଥମ ଚାରୋଟି ଏକକରୁ ଦୁଇଟି ଲେଖାଏଁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୮ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡିବ; ସେଥିରୁ ପ୍ରତ୍ୟେକ ଏକକରୁ ଗୋଟିଏ ଲେଖାଏଁ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବା ବାଧତାମୂଳକ । (୧୫ x ୪ = ୬୦)

ଙ) ପ୍ରଥମ ୪ଟି ଏକକରୁ ୨ନମ୍ବର ବିଶିଷ୍ଟ ୧୫ଟି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡିବ। ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର

ଉତ୍ତର ଦେବାକୁ ହେବ । (୧୦X ୨ = ୨୦)

ପ୍ରକଳ୍ପଗୁଡିକ ସାହିତ୍ୟଭିତ୍ତିକ ହେବା ଆବଶ୍ୟକ ବିଭାଗମୁଖ୍ୟଙ୍କ ଅନୁମୋଦନକ୍ରମେ ବିଭାଗର ସମସ୍ତ ଅଧ୍ୟାପକ ଓ ଅଧ୍ୟାପିକାଙ୍କ ମଧ୍ୟରେ ଦିଗ୍‌ଦର୍ଶନ ନିମନ୍ତେ ସମାନ ଭାବରେ ବାଣ୍ଟିଦିଆଯିବ ।

ଭୂମିକା

ସ୍ନାତକ ଶ୍ରେଣୀରେ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ସମ୍ବନ୍ଧୀୟ ପାଠ୍ୟଦାନ ନିମନ୍ତେ ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ପ୍ରସ୍ତୁତ ହୋଇଛି । ଏହାର ପ୍ରସ୍ତୁତି କ୍ଷେତ୍ରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଆୟୋଗଙ୍କ ପ୍ରାୟୋଜିତ “ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ ନୂତନ ପାଠ୍ୟବିନ୍ୟାସ ପଦ୍ଧତିକୁ ଗ୍ରହଣ କରାଯାଇଛି । ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ସଦ୍ୟତମ ଭାଷା-ସାହିତ୍ୟ ସମ୍ବନ୍ଧୀୟ ଜ୍ଞାନ ବ୍ୟବସ୍ଥା ଓ ଚଳନ୍ତି ସମୟର ଉପଯୋଗିତାକୁ ଚାହିଁ ପ୍ରସ୍ତୁତ ହୋଇଛି । ଏହା ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟର ଉନ୍ମେଷ ବିକାଶ ସହିତ ଏହାର ସାଂପ୍ରତିକ ସ୍ଥିତି, ବ୍ୟାକରଣ ଓ ଭାଷାତତ୍ତ୍ୱିକ ବୈଶିଷ୍ଟ୍ୟ ସଂପର୍କରେ ସବିଶେଷ ଧାରଣା ପ୍ରଦାନ କରିବ । ଓଡ଼ିଆ ସାହିତ୍ୟର ବ୍ୟାବହାରିକ ଦିଗ ଓ ମହତ୍ୱ ପ୍ରତି ଏଥିରେ ଧ୍ୟାନ ଦିଆଯାଇଛି । ଓଡ଼ିଆ ସାହିତ୍ୟର ବିବିଧ ରୂପ, ସାହିତ୍ୟ-ଧାରା ଓ ବିଶିଷ୍ଟ ସାହିତ୍ୟ-ଲେଖକକ ବହି ସହିତ ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ଅବଗତ କରିବାରେ ପାଠ୍ୟଖସଡ଼ାଟି ସହାୟକ । ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟକୁ ସର୍ବଭାରତୀୟ ଭାଷା ଓ ସାହିତ୍ୟ

ତଥା ଅନ୍ତର୍ଜାତୀୟ ସାହିତ୍ୟ ବିଦ୍ୟା ସହିତ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ପରିଚିତ କରାଇବାରେ ଏହା ବିଦ୍ୟାର୍ଥୀଙ୍କ ଉପଯୋଗୀ ହୋଇପାରିବ ।

ପାଠ୍ୟକ୍ରମର ସାରାଂଶ – ସଂରଚନା
Structure of B.A. (Honours) Odia Under CBCS

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ (Core Course) : 14

ପ୍ରତ୍ୟେକ ପତ୍ରର କ୍ରେଡ଼ିଟସ୍ /ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬ (୬୦ ପରିଅଡ଼ସ୍)

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧ (Core Course – 1) ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ:
(ଚର୍ଯ୍ୟାପଦଠାରୁ ପଞ୍ଚସଖା ପର୍ଯ୍ୟନ୍ତ)
୧ମ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬ (୬୦ ପରିଅଡ଼ସ୍)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୨ (Core Course – 2) ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ:
(ପାକରିତି, ରୀତି ଓ ଗୀତି ସାହିତ୍ୟ)
୨ୟ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୩ (Core Course – 3) ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ (ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ)
ତୃୟ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ= ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୪ (Core Course - 4) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ
୪ର୍ଥ ପତ୍ର - ମୂଲ୍ୟାଙ୍କ = ୪ + ୨ = ୬

ତୃତୀୟ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୫ (Core Course - 5) ଭାଷାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ
୫ମ ପତ୍ର- ସମୟ ନିର୍ଘଣ୍ଟ ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୬ (Core Course – 6) ଓଡ଼ିଆ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ଓ ବିବିଧତା
ଷଷ୍ଠ ପତ୍ର- ସମୟ ନିର୍ଘଣ୍ଟ ୪ + ୨ =୬

ପ୍ରଧାନ ପାଠ୍ୟଶ – ୭ (Core Course=7) ଓଡ଼ିଆ ବ୍ୟାବହାରିକ ବ୍ୟାକରଣ
ସପ୍ତମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୮ (Core Course – 8) ଓଡ଼ିଆ ଲୋକ ସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ

୮ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୯ (Coro Course – 9) ପ୍ରାଚ୍ୟ ଓ ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ
୯ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୧O (Core Course-10। ଓଡ଼ିଆ ପଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରାଚୀନରୁ ସ୍ୱାଧୀନତା ପର୍ଯ୍ୟନ୍ତ) ୧୦ମ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ-୧୧ (Core Course-11) ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୧୧ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪+ ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -୧୨ (Core Course-12) ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ (ଗଳ୍ପ ଓ ଉପନ୍ୟାସ)
୧୨ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ :

ପ୍ରଧାନ ପାଠ୍ୟଶ-୧୩ (Cure Course-13) ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରବନ୍ଧ, ଆତ୍ମଜୀବନୀ, ଭ୍ରମଣକାହାଣୀ) ୧୩ଶ ପତ୍ର – ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ- ୧୪ (Core Course- 14) ଓଡ଼ିଆ ଭାଷାର ବ୍ୟବହାରିକ ପ୍ରୟୋଗ
୧୪ଶ ପତ୍ର - ସମୟ ନିର୍ଘଣ୍ଟ = ୪ + ୨ = ୬

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ (Detail Syllabus)
ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester – 1)

ମୂଳ ପାଠ : ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ
ପାଠ୍ୟାଂଶ -୧ (Core Course - 1) : ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ
ପ୍ରଥମ ପତ୍ର
୧ମ ଏକକ | ୟୁନିଟ୍ - ୧ . ପ୍ରାକ୍-ସାରଳା ସାହିତ୍ୟ (ଚର୍ଯ୍ୟାଗୀତିକା ଓ ନାଥ ସାହିତ୍ୟ) ସାମାଜିକ, ଧାର୍ମିକ, ସାହିତ୍ୟିକ ଓ ଭାଷାତାତ୍ତ୍ୱିକ ମୂଲ୍ୟାୟନ
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : ସାରଳା ସାହିତ୍ୟର ସାମାଜିକ, ସାଂସ୍କୃତିକ ଓ ସାହିତ୍ୟିକ ମୂଲ୍ୟ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ : ବଳରାମ ଦାସ ଓ ଜଗନ୍ନାଥ ଦାସ (ବିଶେଷ ଅଧ୍ୟୟନ)

୪ର୍ଥ ଏକକ | ୟୁନିଟ – ୪ ଅନନ୍ତ ଦାସ, ଯଶୋବନ୍ତ ଦାସ ଓ ଅଚ୍ୟୁତାନନ୍ଦ ଦାସ (ବିଶେଷ ଅଧ୍ୟୟନ)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ - ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୧ମ ଓ ୨ୟ ଭାଗ) – ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ଓଡିଆ ସାହିତ୍ୟର ଆଦିପର୍ବ – ସୁରେନ୍ଦ୍ର ମହାନ୍ତି – କଟକ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ
୩. ବର୍ଯ୍ୟା ଗୀତିକା - ଖଗେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡ଼ିଶାର ନାଥ ସାହିତ୍ୟ - ବଂଶୀଧର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଓଡ଼ିଆ ସାହିତ୍ୟର ସଂକ୍ଷିପ୍ତ ପରିଚୟ - ବୃନ୍ଦାବନ ଚନ୍ଦ୍ର ଆଚାର୍ଯ୍ୟ,ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୬. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ, ପ୍ରଥମ ଭାଗ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ,ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୭. ଓଡିଆ ସାହିତ୍ୟର ମଧ୍ୟପର୍ବ – ସୁରେନ୍ଦ୍ର ମହାନ୍ତି – କଟକ ଷ୍ଟୁଡେଣ୍ଟସ ଷ୍ଟୋର, କଟକ
୮. ପଞ୍ଚସଖା ଓଡ଼ିଆ ସାହିତ୍ୟ – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୯. ଓଡ଼ିଆ ସାହିତ୍ୟର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି, ଫେସ ପବ୍ଲିଶର୍ସ, କଟକ
୧୦. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ, ବଂଶୀଧର ମହାନ୍ତି (୧ମ ଓ ୨ୟ ଭାଗ), ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟଂଶ - ୨ (Core Course - 2) : ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ
ଦ୍ୱିତୀୟ ପତ୍ର

୧ମ ଏକକ । ୟୁନିଟ୍ – ୧ ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି (ସାମାଜିକ, ସାଂସ୍କୃତିକ, ରାଜନୀତିକ ଓ ଧର୍ମୀୟ ପୃଷ୍ଠଭୂମି)

୨ୟ ଏକକ | ୟୁନିଟ୍ - ୨ ; ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟର ଆଙ୍ଗିକ ବୈଚିତ୍ର୍ୟ (ବିଷୟ ବିନ୍ୟାସ, ଭାଷା, ଛନ୍ଦ ବୈଚିତ୍ର୍ୟ, ବର୍ଣ୍ଣନା ବୈଚିତ୍ୟ ଓ ଆଳଙ୍କାରିକତା)

୩ୟ ଏକକ | ୟୁନିଟ – ୩ = ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟର ଆତ୍ମିକ ବିଭବ (ରସ, ସୌନ୍ଦର୍ଯ୍ୟଚେତନା ଓ ଭାବାଦର୍ଶ)

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ - ୪ ମଧ୍ୟଯୁଗୀୟ ଓଡିଆ ଗୀତି ପରମ୍ପରା (ଚଉପଦୀ, ବଘଦୀ, ଚଉତିଶା, ଭଜନ ଓ ଜଣାଣ/ଚମ୍ପୁ)

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୧. ଓଡିଆ ସାହିତ୍ୟର ଇତିହାସ - ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୪ର୍ଥ ଭାଗ) – ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ,

୨. ଭଞ୍ଜୀୟ କାବ୍ୟ ଭାବନା – ବେଣୀ ମାଧବ ପାଢୀ, ବ୍ରହ୍ମପୁର

୩. ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ସାହିତ୍ୟ ଏକ ଅଧ୍ୟୟନ – ଜୟକୃଷ୍ଣ ମିଶ୍ର, ଓଡ଼ିଶା ରାଜ୍ୟ ପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୪. ମଧ୍ୟକାଳୀନ ଓଡ଼ିଆ ସାହିତ୍ୟ – କୃଷ୍ଣ ଚରଣ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶସ, କଟକ

୫. ଭଞ୍ଜ ସାହିତ୍ୟର ବିଭା ଓ ବିଭବ – ସଚ୍ଚିଦାନନ୍ଦ ମିଶ୍ର, ଓଡ଼ିଶା ବୁକ ହୋଇ

୬. ଓଡିଆ ଗୀତିକାବ୍ୟ- ଜାନକୀବଲ୍ଲଭ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୭. କାବ୍ୟକୌଶଳ-ସୁଦର୍ଶନ ଆଚାର୍ଯ୍ୟ ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester –II)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୩ (Core Course - 3) : ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ

ତୃତୀୟ ପତ୍ର

୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧: ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି ଓ ନବଜାଗରଣ (ଇଂରାଜୀ ଶିକ୍ଷା ବିସ୍ତାର, ପତ୍ରପତ୍ରିକା ପ୍ରକାଶନ, ମୁଦ୍ରଣଯନ୍ତ୍ର ପ୍ରତିଷ୍ଠା ଓ ଭାଷା ସୁରକ୍ଷା ଆନ୍ଦୋଳନ)

୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨ : ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ପ୍ରମୁଖ ସ୍ରଷ୍ଟା (ରାଧାନାଥଙ୍କ କାବ୍ୟ, ଗଙ୍ଗାଧରଙ୍କ କାବ୍ୟ, ମଧୁସୂଦନ ରାଓଙ୍କ କବିତା ଓ ଫକୀରମୋହନଙ୍କ ଉପନ୍ୟାସ ଓ ଗଳ୍ପ)

୩ୟ ଏକକ ୟୁନିଟ୍ – ୩ - ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସତ୍ୟବାଦୀଧାରା

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪: ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସବୁଜଧାରା ଓ ପ୍ରଗତିବାଦୀ ଧାରା

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (୧୮୦୩-୧୯୨୦) ନଟବର ସାମନ୍ତରାୟ, ବାଣୀ ଭବନ, ଭୁବନେଶ୍ୱର

୨. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ପ୍ରେମାନନ୍ଦ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ

୩. ମେହେର ସାହିତ୍ୟରେ ମାନବୀୟ ମହନୀୟତା - ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ
୪. କାବ୍ୟଶିଳ୍ପୀ ଗଙ୍ଗାଧର - ଗୋବିନ୍ଦଚନ୍ଦ୍ର ଉଦ୍‌ଗାତା
୫. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ରାଧାନାଥ ଓ ସତ୍ୟବାଦୀ ଯୁଗ, ପ୍ର. ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୬. ସବୁଜରୁ ସାଂପ୍ରତିକ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୭. ଓଡ଼ିଆ ସାହିତ୍ୟର ପ୍ରଗତିବାଦୀ ଧାରା – ବିଜୟ କୁମାର ଶତପଥୀ, ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୪ (Core Course - 4) : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ

ଚତୁର୍ଥ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧: ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତା
୨ୟ ଏକକ । ୟୁନିଟ – ୨ ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ
୩ୟ ଏକକ | ୟୁନିଟ – ୩ : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ (ପ୍ରବନ୍ଧ, ଜୀବନୀ, ଆତ୍ମ ଜୀବନୀ ଓ ସମାଲୋଚନା)

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୧. ସବୁଜିରୁ ସାଂପ୍ରତିକ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ସତୁରୀକୁ ସହସ୍ରାବ୍ଦୀ - ନିତ୍ୟାନନ୍ଦ ଶତପଥୀ
୩. ଶହେ ବର୍ଷର ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପ ଏକ ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ – କବିତା ବାରିକ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ - ସଂକଳନ - ପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ (୧ମ ଓ ୨ୟଭାଗ) ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୫. ଓଡ଼ିଆ କ୍ଷୁଦ୍ର ଗଳ୍ପର ଇତିବୃତ୍ତ - ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ବୁକ୍ସ ଆଣ୍ଡ ବୁକ୍ସ, କଟକ
୬. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡିଆ ସାହିତ୍ୟର ଭୂମି ଓ ଭୂମିକା- ସଂବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଓଡିଶା ବୁକ୍ ଷ୍ଟୋର,କଟକ
୭. ଓଡ଼ିଆ ନାଟକର ଉତ୍ତର ଆଧୁନିକ ପର୍ବ – ହେମନ୍ତ କୁମାର ଦାସ, ବିଦ୍ୟାପୁରୀ, କଟକ
୮. ସ୍ୱାଧୀନ ଓଡ଼ିଆ ନାଟକ ନାରାୟଣ ସାହୁ, ଓ. ରା, ପା. ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୯. ଓଡିଆ ନାଟ୍ୟସାହିତ୍ୟ - ସର୍ବେଶ୍ୱର ଦାସ, ଓ. ରା, ପା. ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୧୦. ଓଡିଆ ନାଟକର ଉତ୍ସବ ଓ ବିକାଶ - ରତ୍ନାକର ଚଇନି,
୧୧. ଓଡିଆ ଐତିହାସିକ ନାଟକର ମୂଳସୂତ୍ର - ନୀଳାଦ୍ରି ଭୂଷଣ ହରିଚନ୍ଦନ
୧୨. ନାଟକର ବ୍ୟାପ୍ତି ଓ ଦୀପ୍ତି - ସଂଘମିତ୍ରା ମିଶ୍ର, ଅଗ୍ରଦୂତ, କଟକ
୧୩. ନାଟ୍ୟସୃଷ୍ଟି ଓ ନାଟ୍ୟଦୃଷ୍ଟି –ବିଷ୍ଣୁପ୍ରିୟା ଓତା, ଶିଶୁକଲମ, ଭୁବନେଶ୍ୱର
୧୪. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ବାଉରୀ ବନ୍ଧୁ କର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୧୫. ଓଡ଼ିଆ ଚରିତ ସାହିତ୍ୟ – ଲାବଣ୍ୟ ନାୟକ
୧୬. ଓଡ଼ିଆ ସମାଲୋଚନା ସାହିତ୍ୟ - ଅସିତ କବି

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester – III)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୫ (Core Course - 5) : ଓଡ଼ିଆ ଭାଷା ଓ ଲିପିର ଐତିହାସିକ ବିକାଶକ୍ରମ
ପଞ୍ଚମ ପତ୍ର :
୧ମ ଏକକ | ୟୁନିଟ୍ – ୧. ଓଡ଼ିଆ ଭାଷାର ଉଦ୍ଭବ ଓ ବିକାଶକ୍ରମ
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨' : ଓଡ଼ିଆ ଲିପିର ଐତିହାସିକ ବିବର୍ତ୍ତନ
୩ୟ ଏକକ | ୟୁନିଟ୍ - ୩ ଓଡ଼ିଆ ଅଭିଲେଖର ଭାଷା (ଶିଳାଲେଖ, ତାମ୍ରଲେଖ ଓ ପ୍ରାଚୀନ ସନନ୍ଦ)

୪ର୍ଥ ଏକକ । ୟୁନିଟ - ୪: ଚର୍ଯ୍ୟାପଦ ଓ ସାରଳା ସାହିତ୍ୟର ଭାଷା

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ,
୨. ଓଡ଼ିଆ ଧ୍ୱନିତତ୍ତ୍ୱ ଓ ଶବ୍ଦ ସଂଭାଗ - ଧନେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଓଡ଼ିଆ ଭାଷା ଓ ଲିପିର କ୍ରମବିକାଶ – କୁଞ୍ଜ ବିହାରୀ ତ୍ରିପାଠୀ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ଓଡ଼ିଆ ଭାଷାତତ୍ତ୍ୱ ରୂପଚିତ୍ର, ନଟବର ଶତପଥୀ, ବିଜୟିନୀ ପବ୍ଲିକେଶନ, କଟକ
୫. ଧ୍ୱନିବିଜ୍ଞାନ, ଗୋଲୋକ ବିହରୀ ଧଳ, ଓ. ରା, ପା, ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ **- ୬ (Core Course - 6) : ଭାଷାର ସଂଜ୍ଞା ସ୍ୱରୂପ, ଓଡ଼ିଆ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ଓ ବିବିଧତା**
ଷଷ୍ଠ ପତ୍ର
୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଭାଷାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨: ଭାଷା ଉତ୍ପତ୍ତି ସମ୍ପର୍କୀୟ ବିଭିନ୍ନ ସିଦ୍ଧାନ୍ତ
୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଓଡ଼ିଆ ଭାଷାର ଆଞ୍ଚଳିକ ରୂପ
୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪ : ଓଡ଼ିଆ ଭାଷା ଉପରେ ବିଭିନ୍ନ ଭାଷାର ପ୍ରଭାବ (ଦ୍ରାବିଡ଼, ଅଷ୍ଟ୍ରିକ ଯାବନିକ ଓ ଇଂରାଜୀ)

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୧. ଭାଷାବିଜ୍ଞାନର ରୂପରେଖ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଭାଷାଶାସ୍ତ୍ର ପରିଚୟ – ଗୋଲୋକ ବିହାରୀ ଧଳ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୩. ଓଡିଆ ଭାଷାର ସୃଷ୍ଟି ଓ ବିକାଶ – ଉପେନ୍ଦ୍ର ପ୍ରସାଦ ଦଳାଇ, ଏ.କେ.ମିଶ୍ର ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଭାଷା ଭାବନା, ସଂ. ବିଜୟଲକ୍ଷ୍ମୀ ମହାନ୍ତି, ବିଦ୍ୟାପ୍ରକାଶନୀ, ଭୁବନେଶ୍ୱର
୬. ଓଡ଼ିଆ ଭାଷା ଓ ଭାଷା ବିଜ୍ଞାନ - ଦେବୀ ପ୍ରସନ୍ନ ପଟ୍ଟନାୟକ, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୭ (Core Course - 7) : ଓଡ଼ିଆ ବ୍ୟାବହାରିକ ବ୍ୟାକରଣ

୭ମ ପତ୍ର

୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ ବର୍ଣ୍ଣ ବିଚାର, ବାକ୍ୟର ଗଠନ ଗୀତି ଓ ପ୍ରକାରଭେଦ ।

୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ : କାରକ, ବିଭକ୍ତି, କୃଦନ୍ତ ଓ ତଦ୍ଧିତ

୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଉପସର୍ଗ, ସନ୍ଧି ଓ ସମାସ

୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ -୪ : ଓଡିଆ ଶବ୍ଦସମ୍ଭାର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସର୍ବସାର ବ୍ୟାକରଣ – ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ

୨. ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ – ଧନେଶ୍ୱର ମହାପାତ୍ର, କିତାବ ମହଲ, କଟକ

୩. ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ, ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ

୪. ଓଡ଼ିଆ ଭାଷା ଚର୍ଚ୍ଚାର ପରଂପରା, ପ୍ରଫେସର ଗଗନେନ୍ଦ୍ର ନାଥ ଦାସ, ଓଡିଆ ଗବେଷଣା ପରିଷଦ, କଟକ

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – ଆଇV)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୮ (Core Course - 8) : (ଓଡ଼ିଆ ଲୋକସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ)

ଅଷ୍ଟମ ପତ୍ର

୧ମ ଏକକ/ୟୁନିଟ୍ – ୧ : ଲୋକ ସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)

୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ ଓଡ଼ିଆ ଲୋକଗୀତର ସ୍ୱରୂପ, ପ୍ରକାରଭେଦ ଓ ବିଭିନ୍ନ ଦିଗ

୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : ଓଡ଼ିଆ ଲୋକକାହାଣୀର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ

୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪: ଓଡ଼ିଆ ଲୋକନାଟକର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ (ପାଲା, ଦାସକାଠିଆ, ଦଣ୍ଡନାଚ, ଛଉନାଚ, ଲୀଳା, ଦଧି, ଡାଲଖାଇ ଓ କରମା)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଲୋକଧାରା, ଲୋକସଂସ୍କୃତି ଓ ଲୋକସାହିତ୍ୟ – କୁମୁଦ ରଞ୍ଜନ ପାଣିଗ୍ରାହୀ, ସୁଖଦୁଖ ପବ୍ଲିକେଶନ, ସମ୍ବଲପୁର

୨. ଲୋକସଂସ୍କୃତି ଓ ଲୋକ ସାହିତ୍ୟ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ବିଦ୍ୟାପୁରୀ, କଟକ

୩. ଲୋକସାହିତ୍ୟ ତତ୍ତ୍ୱ- ଶ୍ୟାମ ସୁନ୍ଦର ମହାପାତ୍ର, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

୪. ଓଡ଼ିଆ ଲୋକଗୀତି ସଂଚୟନ - କୁଞ୍ଜବିହାରୀ ଦାଶ, ବିଶ୍ୱ ଭାରତୀ ପ୍ରକାଶନ

୫. ପଲ୍ଲୀଗୀତି ସଞ୍ଚୟନ - କୁଞ୍ଜବିହାରୀ ଦାଶ, (୧ମ- ୨ୟ ଓ ୩ୟ ଭାଗ)

୬. ଲୋକସଂସ୍କୃତି- ଲୋକସାହିତ୍ୟ - ନାରାୟଣ ସାହୁ, ଚିନ୍ମୟ ପ୍ରକାଶନ, କଟକ

୭. ଓଡ଼ିଶାର ଦଣ୍ଡ ନାଟ - ସନ୍ତୋଷ କୁମାର ଶତପଥୀ, କେଦାର ପ୍ରିଣ୍ଟିଙ୍ଗ୍ ପ୍ରେସ୍, ଭୁବନେଶ୍ୱର

୮. ଓଡ଼ିଆ ଲୋକନାଟ୍ୟ - କଲଚରାଲ ଏକାଡେମୀ, ରାଉରକେଲା

୯. ପଶ୍ଚିମ ଓଡିଶାର ଲୋକସଂସ୍କୃତି, ଡ. ସୁଶୀଳ କୁମାର ବାଗ୍

୧୦.ପଶ୍ଚିମ ଓଡିଶାର ଲୋକଗୀତ, ଦ୍ୱାରିକାନାଥ ନାୟକ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

୧୧. ଲୋକବିଶ୍ୱାସ ଲୋକାଚାର, ଡ. ସଦାନନ୍ଦ ନାୟକ, ବିଜୟ ବୁକ୍ ଷ୍ଟୋର, ବ୍ରହ୍ମପୁର
୧୨. ଉତ୍କଳ ଗାଉଁଲି ଗୀତ, ଚକ୍ରଧର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୧୩. ଉତ୍କଳ ଗ୍ରାମ୍ୟ ଗୀତି – ଚଳୁଧର ମହାପାତ୍ର, ଓଡିଆ ସାହିତ୍ୟ ଏକାଡେମୀ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୯ (Core Course - 9) : ସାହିତ୍ୟ ତତ୍ତ୍ୱ (ପ୍ରାଚ୍ୟ ଓ ପାଶ୍ଚାତ୍ୟ)

୯ମ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧. ରସ ଓ ଧ୍ୱନି
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨; ରୀତି, ବକ୍ରୋକ୍ତି (ଓ ଅଳଂକାର
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ ; କ୍ଲାସିସିଜିମ୍, ରୋମାଣ୍ଟିସିଜିମ୍
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ ପ୍ରତୀକବାଦ, ଚିତ୍ରକଳ୍ପ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଅଳଙ୍କାର ପ୍ରସଙ୍ଗ - ଗୋବିନ୍ଦ ଚନ୍ଦ୍ର ଉଦ୍‌ଗାତା, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ- ବନମାଳୀ ରଥ.ଓ.ରା,ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୩. ଓଡ଼ିଆ କାବ୍ୟ କୌଶଳ – ସୁଦର୍ଶନ ଆଚାର୍ଯ୍ୟ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ଓ ସମୀକ୍ଷା ତତ୍ତ୍ୱ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ପ୍ରାଚୀ ସାହିତ୍ୟ ପ୍ରତିଷ୍ଠାନ, କଟକ
୫. ସାହିତ୍ୟର ସୂଚୀପତ୍ର, ବିଭୂତି ପଟ୍ଟନାୟକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -୧୦ (Core Course - 10) : ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

୧୦ମ ପତ୍ର

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ : ସାରଳା ମହାଭାରତ (ଦୁର୍ଯ୍ୟୋଧନଙ୍କ ରକ୍ତନଦୀ ସନ୍ତରଣ)
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨: ଭାଗବତ (୨୪ ଗୁରୁ ପ୍ରସଙ୍ଗ) - ଜଗନ୍ନାଥ ଦାସ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ : ଦୀନକୃଷ୍ଣ ଦାସଙ୍କ ରସକଲ୍ଲୋଳ(୧ମ ଛାନ୍ଦ) ଓ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୋଟିବ୍ରହ୍ମାଣ୍ଡ ସୁନ୍ଦରୀ (୧ମ ଛାନ୍ଦ)
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଆଧୁନିକ କବିତା
ମହାଯାତ୍ରା (ସପ୍ତମ ସର୍ଗ)- ଅମର୍ଷୀଙ୍କ ଉଦ୍‌ବୋଧନ (ରାଧାନାଥ ରାୟ)
ମଙ୍ଗଳେ ଅଇଲା ଉଷା – ଗଙ୍ଗାଧର ମେହେର
ବନ୍ଦୀର ସାନ୍ଧ୍ୟ ଅନୁଚିନ୍ତା - ଗୋପବନ୍ଧୁ ଦାସ
ପ୍ରତିମା ନାୟକ - ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସାରଳା ମହାଭାରତ (ଗଦା ପର୍ବ-ସାରଳା ଦାସ)

୨. ଅବଧୂତ ଓ ଯଦୁରାଜା ସମ୍ବାଦ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ ପବ୍ଲିଶର୍ସ, କଟକ
୩. କହେ କୃଷ୍ଣଦାସ କବି – କୃଷ୍ଣଚରଣ ସାହୁ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ରସକଲ୍ଲୋଳ, ସଂପାଦନା – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି
୫. ଦୁର୍ଲଭ ଦାନୀକୃଷ୍ଣ - ଡ. ଜ୍ୟୋତିରଞ୍ଜନ ସାମଲ, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍, କଟକ
୬. ତପସ୍ୱିନୀ ଓ ମେହେର ସାହିତ୍ୟ - ଗୌରୀ କୁମାର ବ୍ରହ୍ମା

ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ (Semester – V)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୧ (Core Course - 11) : ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା
୧୧ଶ ପତ୍ର
୧ମ ଏକକ/ୟୁନିଟ୍ – ୧: ରକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ୨ ନନ୍ଦିକା କେଶରୀ - ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଞ୍ଜନା – ବିଜୟ ମିଶ୍ର
୩ୟ ଏକକ/ୟୁନିଟ୍ – ୩ : କୋଳୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ଭୁଖା- ମଙ୍ଗଳୁଚରଣ ବିଶ୍ୱାଳ
୪ର୍ଥ ଏକକ/ୟୁନିଟ୍ – ୪ ଏକାଙ୍କିକା- ସ୍ମୃତି ବିଭ୍ରାଟ - ପ୍ରାଣବନ୍ଧୁ କର ଓ ଛଦ୍ମବେଶୀ - ବିଶ୍ୱଜିତ ଦାସ
୫ମ ଏକକ/ୟୁନିଟ୍ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ରକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨. ନନ୍ଦିକା କେଶରୀ-ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଞ୍ଜନା – ବିଜୟ ମିଶ୍ର
୩. କୋଳୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ଭୁଖା- ମଙ୍ଗଳୁଚରଣ ବିଶ୍ୱାଳ
୪. ଅଶ୍ରୁ ନୁହେଁ ଅନଳ, ହେମନ୍ତ କୁମାର ଦାସ
୫. ସ୍ୱାଧୀନତାର ଓଡିଆ ନାଟକର ମନସ୍ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ, ରଶ୍ମିତା ରାଉତରାୟ, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୬. ସାହିତ୍ୟ ସାଧକ ମଙ୍ଗଳୁବରଣ ବିଶ୍ୱାଳ – ଗୌରିଦାସ ପ୍ରଧାନ

(ଚତୁର୍ଥ ପତ୍ର ନିମନ୍ତେ ପ୍ରଦର ସହାୟକ ପୁସ୍ତକଗୁଡିକ ଅନୁସରଣୀୟ।)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୨ (Core Course - 12) : (ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ)
୧୨ଶ ପତ୍ର
୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ କଥାସାହିତ୍ୟର ବିକାଶକ୍ରମ
୨ୟ ଏକକ/ୟୁନିଟ୍ – ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୩ୟ ଏକକ ୟୁନିଟ – ୩ ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା - ଦୟାନିଧି ମିଶ୍ର
୪ର୍ଥ ଏକକ । ୟୁନିଟ୍ -୪ ଗଳ୍ପ ସାହିତ୍ୟ
ପାଠ୍ୟ ଗଳ୍ପ: ଦେବତାର ବିଧାତା – ଗୋଦାବରୀଶ ମହାପାତ୍ର

ମାଂସର ବିଳାପ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ
ମଧୁବନର ମେୟର – ମନୋଜ ଦାସ

୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ,ସଂପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ, ଓଡ଼ିଶା ବୁକଷ୍ଟୋର କଟକ
୨. ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୪. ଛ ମାଣ ଆଠଗୁଣ୍ଠ ଭିନ୍ନ ଦୃଷ୍ଟି ଭିନ୍ନ ବ୍ୟାଖ୍ୟା, ପଞ୍ଚାନନ ମିଶ୍ର, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୧. ଦାନାପାଣି – ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା – ଦୟାନିଧି ମିଶ୍ର
୨. କଥାଶିଳ୍ପୀ ମନୋଜ ଦାସ - ଶତ୍ରୁଘ୍ନ ପାଣ୍ଡବ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ମନସ୍ୱି ମନୋଜ - ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୪. ଓଡିଆ ଉପନ୍ୟାସର ସମାଜତାତ୍ତ୍ୱିକ ଆଲୋଚନା – କଇଳାଶ ପଟ୍ଟନାୟକ, ବିଦ୍ୟାପୁରୀ, କଟକ

ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester – VI)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୩ (Core Course - 13) : ଓଡ଼ିଆ ଗଦ୍ୟ ସାହିତ୍ୟ

୧୩ଶ ପତ୍ର

୧ମ ଏକକ/ ୟୁନିଟ୍ – ୧: ଆତ୍ମ ଜୀବନୀ, ଭ୍ରମଣ କାହାଣୀ ଓ ସମାଲୋଚନା ତତ୍ତ୍ୱ (ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ)
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨: ମୋ ଫୁଟା ଡଙ୍ଗାର କାହାଣୀ - ଫତୁରାନନ୍ଦ
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩: ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି - ଭୁବନେଶ୍ୱର ବେହେରା
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪: ପ୍ରବନ୍ଧ - ଭାଷା ଓ ଜାତୀୟତା - ଗୋପବନ୍ଧୁ ଦାସ
ମୁଁ ସତ୍ୟଧର୍ମା କହୁଛି – ଚନ୍ଦ୍ରଶେଖର ରଥ
ବିବେକାନନ୍ଦ ଏକ ଗୁହାମୁକ୍ତିର ପ୍ରୟାସ –ଚିତ୍ତରଞ୍ଜନ ଦାସ
୫ମ ଏକକ | ୟୁନିଟ୍ – ୫: ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ମୋ ଫୁଟା ଡଙ୍ଗାର କାହାଣୀ – ଫତୁରାନନ୍ଦ
୨. ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି – ଭୁବନେଶ୍ୱର ବେହେରା
୩. ଜୀବନୀ ସାହିତ୍ୟ ଏକ ଅଧ୍ୟୟନ - ପଠାଣି ପଟ୍ଟନାୟକ, ଓଡ଼ିଶା ପା.ପୁ.ପ୍ର.ଓ.ପ୍ର.ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ସମାଲୋଚନାର ଦିଗଦିଗନ୍ତ ଖଗେଶ୍ୱର ମହାପାତ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ସାହିତ୍ୟ ଓ ସମାଲୋଚନା - କୁଞ୍ଜବିହାରୀ ଦାଶ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୧୪ (Core Course - 14) : ଓଡ଼ିଆ ଭାଷାର ବ୍ୟାବହାରିକ ପ୍ରୟୋଗ

୧୪ଶ ପତ୍ର ୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ ଭାଷଣ କଳା, ଦଳଗତ ଆଲୋଚନା ଓ ସାକ୍ଷାତକାର
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : ସମ୍ବାଦ ପ୍ରସ୍ତୁତି, ଫିଚର ରଚନା ଓ ବିଜ୍ଞାପନ ପ୍ରସ୍ତୁତି
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ କାର୍ଯ୍ୟାଳୟରେ ଓଡ଼ିଆ ଲିଖନ ବିଧ
(ନଥି ପ୍ରସ୍ତୁତି, ଅନୁବିଧି, ଟିପ୍ପଣୀ, ପ୍ରସ୍ତାବ, ଅନୁମୋଦନ, ଚିଠା ପ୍ରସ୍ତୁତି, ଅଧିସୂଚନା, ବିଜ୍ଞପ୍ତି, ଘୋଷଣା ଲିଖନ, ପତ୍ରଲିଖନ (ବ୍ୟକ୍ତିଗତ, ବ୍ୟାବସାୟିକ ଓ ସମ୍ପାଦକଙ୍କୁ ପତ୍ର)
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ -୪ ଓଡ଼ିଆ ଭାଷାର କମ୍ପ୍ୟୁଟରୀକରଣ, ସଫ୍ଟୱେୟାର ଏବଂ ହାର୍ଡୱେୟାର, ଓଡ଼ିଆ ଫଣ୍ଟସ୍.କୀ-ବୋର୍ଡ, ୱାର୍ଡ ପ୍ରୋସେସିଂ, ବନାନ ଓ ବ୍ୟାକରଣଯାଞ୍ଚକ ପ୍ରକ୍ରିୟା, ଓଡ଼ିଆରେ ଇଣ୍ଟରନେଟ୍‌ର ବ୍ୟବହାର, ଓଡ଼ିଆ ସାମାଜିକ ୱେବ୍‌ସାଇଟ୍
୫ମ ଏକକ | ୟୁନିଟ୍ -- ୫. ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ବିରଞ୍ଚି ନାରାୟଣ ସାମଲ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୨. ଭାଷଣ କଳା ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସଙ୍ଗ - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୩. ସମ୍ବାଦପତ୍ର ଓ ଗଣମାଧ୍ୟମ - ମୃଣାଳ ଚାଟାର୍ଜୀ, ଶେଫାଳୀ କମ୍ୟୁନିକେଶନ, ସଞ୍ଚାରମାର୍ଗ, ଢେଙ୍କାନାଳ
୪. ପ୍ରାୟୋଗିକ ଭାଷା ଓ ବିଜ୍ଞାପନର ଦିଗବିଦିଗ – କେ.ବି. ପଟ୍ଟନାୟକ, ଓ.ରା.ପା.ପ୍ର.ଓ.ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୫. ସଂଯୋଗ ଅନୁବିଧି-ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ
୬. କାର୍ଯ୍ୟାଳୟ ନଥି – ଓଡ଼ିଆ ଭାଷା ପ୍ରତିଷ୍ଠାନ, ଭୁବନେଶ୍ୱର

୭. ଓଡ଼ିଆରେ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ରୁଦ୍ରନାରାୟଣ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର, କଟକ
୮. ଓଡ଼ିଆ ଭାଷାରେ କମ୍ପ୍ୟୁଟରର ପ୍ରୟୋଗ - ସୁଧିର ଚନ୍ଦ୍ର ମହାନ୍ତି, ଏ.କେ. ମିଶ୍ର ପବ୍ଲିକେଶନ, ଭୁବନେଶ୍ୱର
୯. କମ୍ପ୍ୟୁଟରରେ ଓଡିଆ ଭାଷାର ବ୍ୟବହାର ଓ ପ୍ରୟୋଗ, ରୁଦ୍ରପ୍ରସାଦ ମିଶ୍ର, ଆଜିଅନ୍ତା ପବ୍ଲିଶର୍ସ, ଜଗତସିଂହପୁର

ଶୃଙ୍ଖଳାକୈନ୍ଦ୍ରିକ ଇଚ୍ଛାଧୀନ ପାଠ – ଓଡ଼ିଆ

Discipline Specific Elective - Odia DSE

ସାଧାରଣ **(Pass)** ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester–V, II)

୫ମ ପର୍ଯ୍ୟାୟ (Semester – Vi- ପ୍ରଥମ ଓ ଦ୍ୱିତୀୟ ପତ୍ର

୧୦୦+ ୧୦୦= ୨୦୦ ନମ୍ବର

୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (Semester-VI) ତୃତୀୟ ପତ୍ର ଓ ଚତୁର୍ଥ ପତ୍ର

୧୦୦+୧୦୦ = ୨୦୦ ନମ୍ବର

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା ଓ ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ଚତୁର୍ଥ ପତ୍ର – ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି ୧୦୦ ନମ୍ବର

(ଅନୁବାଦ ବା ସଂପାଦନା ବା ଓଡିଆ ସଂସ୍କୃତି ଉପରେ ଅନ୍ୟୂନ ୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ ନିବନ୍ଧଟି ଲେଖିବାକୁ ହେବ ।)
(୮୦ ନମ୍ବର ପ୍ରକଳ୍ପ ଲେଖା । ୨୦ ନମ୍ବର ସାକ୍ଷାତକାର ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ମୋଟ୍ – ୪୦୦ ନମ୍ବର

ମୂଲ୍ୟାଙ୍କନ ବିଭାଜନ ପଦ୍ଧତି

(କ) ପ୍ରତ୍ୟେକ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ) ରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ଅତି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ସେଥିରୁ ଯେକୌଣସି ୧୦ ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (୨x୧୦=୨୦)

(ଖ) ପ୍ରତ୍ୟେକ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ୍)ରୁ ଅନ୍ତତଃ ୨ଟି ଲେଖାଏଁ ମୋଟ ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ସେଥିରୁ ଯେକୌଣସି ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ପଡ଼ିବ । (୧୫ x ୪=୬୦)

(ଗ) ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା – (୨୦ ନମ୍ବର)

ମୋଟ ମୂଲ୍ୟାଙ୍କ – ୧୦୦ ନମ୍ବର

ଭୂମିକା :

ଏହି ପାଠ୍ୟକ୍ରମଟି ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଓଡ଼ିଶାର ସାମାଜିକ, ସାଂସ୍କୃତିକ ଓ ଐତିହାସିକ ବିବର୍ତ୍ତନ ବିଷୟରେ ଜ୍ଞାନ ଆହରଣ ପାଇଁ ସୁଯୋଗ ସୃଷ୍ଟିକରିବ । ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସମାଜ ଓ ସଂସ୍କୃତିର ପ୍ରତିଫଳନ, ସାହିତ୍ୟର ବିବିଧତା ଏବଂ କମ୍ପ୍ୟୁଟର ଭିତ୍ତିକ ବିଦ୍ୟା ଶିକ୍ଷଣ ଦିଗକୁ ଧ୍ୟାନ ଦିଆଯାଇ ଏହା ପ୍ରସ୍ତୁତ ହୋଇଛି।

ଏହି ପାଠ୍ୟକ୍ରମରେ ମୋଟ ୪ ଗୋଟି ପାଠ୍ୟ ବାଧତାମୂଳକ । ସମ୍ମାନ (Hons) ଶ୍ରେଣୀର ଛାତ୍ରଛାତ୍ରୀମାନେ ଏହି ଚାରୋଟିଯାକ ପାଠ୍ୟ ପଢ଼ିବେ । ଏଥିମଧ୍ୟରୁ ଗୋଟିଏ ପାଠ୍ୟକୁ ଆଧାର କରି ତା' ସହିତ ଅନ୍ୟ ବିଦ୍ୟାକୁ ସଂଯୋଗ କରି ଷଷ୍ଠ ପର୍ଯ୍ୟାୟ (ସେମିଷ୍ଟର-୬) ପରୀକ୍ଷା ବେଳକୁ ପ୍ରକଳ୍ପ (୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ) ପ୍ରସ୍ତୁତ କରିବେ । ପ୍ରକଳ୍ପଟି ୪ର୍ଥ ପତ୍ର ଭାବରେ ବିବେଚିତ ହେବ

ବିଶେଷ୍ୟ ଦ୍ରଷ୍ଟବ୍ୟ: ସାଧାରଣ (Pass) ଶ୍ରେଣୀର ଛାତ୍ରଛାତ୍ରୀମାନେ ପାଠ୍ୟ-୧ ରୁ ୫ ପର୍ଯ୍ୟାୟରେ DSE-IA କିମ୍ବା DSE-IIA ଭାବେ ଏବଂ ପାଠ୍ୟ-୨କୁ ଏ ପର୍ଯ୍ୟାୟରେ DSE-IB କିମ୍ବା DSE-JIB ଭାବେ ପଢିବେ ।

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ

ମୋଟ ୪ ଗୋଟି ପାଠ୍ୟ
ପତ୍ର ସଂଖ୍ୟା ୧୪
ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର (୬୦ ନମ୍ବର ଅନ୍ତଃପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା)
ସମୟ ନିର୍ଘଣ୍ଟ = ୬× ୪ = ୨୪
ପ୍ରତ୍ୟେକ ପତ୍ର ପାଇଁ ୪୦ଟି ପରିୟଡ଼, ପ୍ରତି ପିରିୟଡ଼ – ୪୫ ମିନିଟ

୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟ (ସେମିଷ୍ଟର – ୦୫ ଓ ୦୬)

ପାଠ୍ୟ-୧ / **Course-1** : ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ ଓ ଓଡ଼ିଆ ସାହିତ୍ୟ (Pass)
(ସମୟ ନିର୍ଘଣ୍ଟ ୪+୨=୬)

୧ମ ଏକକ : ଓଡ଼ିଶାର ସଂକ୍ଷିପ୍ତ ଇତିହାସ ।

୨ୟ ଏକକ ଓଡ଼ିଶାରେ ବୌଦ୍ଧ ସଂସ୍କୃତି, ଶୈବ ସଂସ୍କୃତି ଓ ବୈଷ୍ଣବ ସଂସ୍କୃତି ।
୩ୟ ଏକକ : ଶ୍ରୀଜଗନ୍ନାଥ ସଂସ୍କୃତି ଓ ଆଦିବାସୀ ସଂସ୍କୃତି ।
୪ର୍ଥ ଏକକ ଓଡ଼ିଆ ଓଷା ବ୍ରତ ଓ ପର୍ବପର୍ବାଣି ।

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧. ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ – ସଂସ୍କୃତି ବିଭାଗ, ଓଡ଼ିଶା
୨. ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ଇତିହାସ - ପ୍ରବୋଧ କୁମାର ମିଶ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ
୩. ଓଡ଼ିଆ ସାହିତ୍ୟର ସାମାଜିକ ଓ ସାଂସ୍କୃତିକ ଇତିହାସ – ଚିତ୍ତରଞ୍ଜନ ଦାସ, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ଓଡ଼ିଶାର ଧର୍ମଧାରା - କାହ୍ନୁଚରଣ ମିଶ୍ର, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୫. ବୈଷ୍ଣବ ସାହିତ୍ୟ ତତ୍ତ୍ୱ - ଆଶୁତୋଷ ପଟ୍ଟନାୟକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୬. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଶୈବଧର୍ମ – କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ଫ୍ରେଣ୍ଡସ୍ କଟକ
୭. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଶ୍ରୀଜଗନ୍ନାଥ - ବାସୁଦେବ ସାହୁ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୮. ଲୀଳାମୟ ନୀଳାଦ୍ରୀଶ – ସଂପାଦନା, ଭୁବନେଶ୍ୱର ଭଞ୍ଜ ଭାରତୀ (୧ମ ଭାଗ ଓ ୨ୟ ଭାଗ)
୯. ଓଡ଼ିଆ ବ୍ରତ ସାହିତ୍ୟ - ଅରବିନ୍ଦ ପଟ୍ଟନାୟକ, ଓଡ଼ିଶା ସାହିତ୍ୟ ଏକାଡେମୀ

୧୦. ଓଡ଼ିଶାର ଧର୍ମଧାରା, ଡ. ପ୍ରଦୀପ୍ତ କୁମାର ପଣ୍ଡା
୧୧. ଲୋକଧର୍ମ ଓ ଲୋକସାହିତ୍ୟ, ଡ. ସଦାନନ୍ଦ ନାୟକ, ବିଜୟ ବୁକ୍ ଷ୍ଟୋର୍, ବ୍ରହ୍ମପୁର

ପାଠ୍ୟ-୨ | Course – 2 ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟ ଓ ବିଜ୍ଞାନଭିରିକ ସାହିତ୍ୟ (Pass)

୧ମ ଏକକ ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨ୟ ଏକକ ଓଡ଼ିଆ ବିଜ୍ଞାନଭିତ୍ତିକ ସାହିତ୍ୟର ସ୍ୱରୂପ ଓ ବିକାଶଧାରା
୩ୟ ଏକଳ: ପୃଥିବୀ ବାହାରେ ମଣିଷ - ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର
୪ର୍ଥ ଏକକ ବିଚିତ୍ର ବିଶ୍ୱ - ଦେବକାନ୍ତ ମିଶ୍ର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧. ଓଡ଼ିଆ ଶିଶୁ ସାହିତ୍ୟର ଇତିବୃତ୍ତ - ମନୀନ୍ଦ୍ର ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ପୃଥିବୀ ବାହାରେ ମଣିଷ - ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର
୩. ବିଚିତ୍ର ବିଶ୍ୱ - ଦେବକାନ୍ତ ମିଶ୍ର
୪. ଓଡିଆ ସାହିତ୍ୟ, ମହେଶ୍ୱର ମହାନ୍ତି
୫. ଆଧୁନିକ ଶିଶୁ ଓଡିଆ ସାହିତ୍ୟ –ଜାନକୀ ବଲ୍ଲଭ ମହାନ୍ତି, ଗନ୍ଥମନ୍ଦିର, କଟକ

ପାଠ୍ୟ-୩ | Course – 3 : ଓଡ଼ିଆ ପଦ୍ୟ ସାହିତ୍ୟ (Pass)

୧ମ ଏକକ : ଜଗନ୍ନାଥ ଜଣାଣ - କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ
ଆକାଶ ପ୍ରତି - ମଧୁସୂଦନ ରାଓ
ଯାତ୍ରା ସଂଗୀତ - ବୈକୁଣ୍ଠନାଥ ପଟ୍ଟନାୟକ
ମୌସୁମୀ - ରାଧାମୋହନ ଗଡ଼ନାୟକ
୨ୟ ଏକକ କ୍ଷୁଦ୍ରଗଳ୍ପ
ଡିମିରି ଫୁଲ – ଅଖିଳ ମୋହନ ପଟ୍ଟନାୟକ
ଭଙ୍ଗା ଖେଳନା - କିଶୋରୀ ଚରଣ ଦାଶ
ଅନ୍ଧ ରାତିର ସୂର୍ଯ୍ୟ - ମହାପାତ୍ର ନୀଳମଣି ସାହୁ
ବାସି ମଡ଼ା - ସୁରେନ୍ଦ୍ର ମହାନ୍ତି
୩ୟ ଏକକ : ପ୍ରବନ୍ଧ ଓ ସମାଲୋଚନା
ମହାସ୍ରୋତ - ବିଶ୍ୱନାଥ କର
ଚିତ୍ରଗ୍ରୀବର ଉଚିତ ଅଭିମାନ – ଗୋଲୋକ ବିହାରୀ ଧଳ

ତିନୋଟି ସମାଲୋଚନା – ବାଉରୀବନ୍ଧୁ କର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
ଉପନ୍ୟାସ – ମାଟିର ମଣିଷ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ, ସ ପଠାଣୀ ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୨. କାଳିନ୍ଦୀ ଚରଣଙ୍କ କଥାସାହିତ୍ୟ – ବିଷ୍ଣୁପ୍ରିୟା ଓତା, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଓଡ଼ିଆ ପ୍ରବନ୍ଧ ସାହିତ୍ୟ – ବାଉରୀବନ୍ଧୁ କର
୪. ଓଡିଆ ସମାଲୋଚନା ସାହିତ୍ୟ - ଓଡିଶା ସାହିତ୍ୟ ଏକାଡେମୀ
୫. ମାଟିର ମଣିଷ - କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ପାଠ୍ୟ–୪ | Course – 4 : ପ୍ରବନ୍ଧ ପ୍ରସ୍ତୁତି ଓ ଉପସ୍ଥାପନା (Pass)

ସନ୍ଦର୍ଭ ଲିଖନ - ୮୦ + ମୌଖିକ - ୨୦ = ୧୦୦

ଅନୁବାଦ ବା ସଂପାଦନା ବା ଓଡ଼ିଆ ସଂସ୍କୃତି ଉପରେ ଅନ୍ୟୂନ ୫୦ ପୃଷ୍ଠା ମଧ୍ୟରେ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି କିମ୍ବା

(ସମାଲୋଚନା, ଅନୁବାଦ, ସମ୍ପାଦନା, ଗବେଷଣା)

୧. ପ୍ରଥମ ଏକକ ; ସମାଲୋଚନାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୨. ଦ୍ୱିତୀୟ ଏକକ ଅନୁବାଦର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ
୩. ତୃତୀୟ ଏକକ : ସମ୍ପାଦନା ବିଧି

୪. ଚତୁର୍ଥ ଏକକ : ଗବେଷଣା ପ୍ରବିଧି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଗବେଷଣା ଅନୁବାଦ ସମ୍ପାଦନା କଳା – ସଁ ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର, କଟକ
୨. ଗବେଷଣା ପ୍ରବିଧି - ଡ. ସୁବୋଧ ଚାଟାର୍ଜୀ, ବିଦ୍ୟାପୁରୀ, କଟକ
୩. ଗବେଷଣା ପ୍ରକରଣ; ସଂପାଦନା ଓ ଅନୁବାଦ ପ୍ରବିଧି - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ ଓ ନିର୍ମଳା କୁମାରୀ ରାଉତ

ଅନ୍ତର୍ବିଷୟ ଇଚ୍ଛାଧୀନ ପାଠ - ଓଡ଼ିଆ

Generic Electives (GE) - Course - Odia

ସୂଚନା : ଅନ୍ୟ ସମ୍ମାନର ବିଦ୍ୟାର୍ଥୀ ଏଥିମଧ୍ୟରୁ ୨ଗୋଟି କିମ୍ବା ୪ଗୋଟି ପତ୍ର ଅଧ୍ୟୟନ କରିପାରିବେ ; କିନ୍ତୁ ପାସ୍ ବିଦ୍ୟାର୍ଥୀ ଏଥିମଧ୍ୟରୁ ୧ମ ଓ ୨ୟ ପତ୍ରକୁ ଯଥାକ୍ରମେ ୫ମ ଓ ୬ଷ୍ଠ ପର୍ଯ୍ୟାୟରେ ପଢିବେ ।

୧. ପତ୍ର ସଂଖ୍ୟା ୪
୨. ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ ମୋଟ ୪୦୦ ନମ୍ବର ୨.
୩. ପ୍ରତ୍ୟେକ ପତ୍ରରେ ୪ଗୋଟି ଏକକ ରହିବ।

ନମ୍ବର ବିଭାଜନ ବିଧି :

କ) ପ୍ରତ୍ୟେକ ପତ୍ରର ମୋଟ ନମ୍ବର – ୧୦୦
ଖ) ଅନ୍ତଃପରୀକ୍ଷା – ୨୦ ଓ ମୁଖ୍ୟ ପରୀକ୍ଷା – ୮୦
ଗ) ମୁଖ୍ୟ ପରୀକ୍ଷାରେ ପ୍ରତ୍ୟେକ ଏକକରୁ ଦୁଇଟି ଲେଖାଏଁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ପସନ୍ଦମୂଳକ ବୋଧଜ୍ଞାନମାପକ ୮ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ ୮ ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନରୁ ୪ଟିର ଉତ୍ତର ଦେବାକୁ ହେବ ।
(୧୫x୪=୬୦)
ଘ) ସମସ୍ତ ଏକକରୁ ୨ ନମ୍ବର ବିଶିଷ୍ଟ ଲବ୍ଧଜ୍ଞାନମୂଳକ ୧୫ଟି ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ମୋଟ ୧୫ ଗୋଟି ପ୍ରଶ୍ନରୁ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (୨ x ୧୦ = ୨୦)

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester –1)

ପାଠ୍ୟ – ୧ | ପତ୍ର - ୧ (Core Course - 1): ଗଣମାଧ୍ୟମ, ବେତାର କଳା ଓ ବିଜ୍ଞାପନ କଳା

୧ମ ଏକକ : ଗଣମାଧ୍ୟମ ଓ ତା'ର ପ୍ରକାରଭେଦ
୨ୟ ଏକକ : ବିଜ୍ଞାପନର ପରିଭାଷା, ପରିସର ଓ ଉଦ୍ଦେଶ୍ୟ
୩ୟ ଏକକ ସ୍ତମ୍ଭ ଲିଖନ ଓ ଫିଚର ଲିଖନ
୪ର୍ଥ ଏକକ : ପତ୍ରଲିଖନ (ବାଣିଜ୍ୟିକ, କାର୍ଯ୍ୟାଳୟ ଭିତ୍ତିକ, ବ୍ୟକ୍ତିଗତ ଓ ସମ୍ପାଦକଙ୍କୁ ପତ୍ର)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟକୁ ଆକାଶବାଣୀର ଦାନ - ବ୍ରଜମୋହନ ମହାନ୍ତି, ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର
୨. ସମ୍ବାଦପତ୍ର ଓ ଗଣମାଧ୍ୟମ -ମୃଣାଳ ଚାଟାର୍ଜୀ, ଶେଫାଳୀ କମ୍ୟୁନିକେଶନ, ଢେଙ୍କାନାଳ
୩. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓ.ରା.ପା.ପ୍ର. ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର
୪. ସଂଯୋଗ ଅନୁବିଧି,-ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ
୫. ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା - ବିରଞ୍ଚି ନାରାୟଣ ସାମଲ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର୍
୬. ଯୋଗାଯୋଗର ଭାଷା – ସୁଧୀର ଚନ୍ଦ୍ର ମହାନ୍ତି, ପ୍ରାଚୀ ପ୍ରକାଶନ, କଟକ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester –II)

ପାଠ୍ୟ – ୨ | ପତ୍ର - ୨ (Core Course -2) : ସାହିତ୍ୟ ଅଧ୍ୟୟନ

୧ମ ଏକକ : ଗଳ୍ପ ସାହିତ୍ୟ
ବୁଢ଼ା ଶଙ୍ଖାରି - ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର
ମାଗୁଣୀର ଶଗଡ଼ - ଗୋଦାବରୀଶ ମହାପାତ୍ର
ଶିକାର - ଭଗବତୀ ଚରଣ ପାଣିଗ୍ରାହୀ
୨ୟ ଏକକ : ଉପନ୍ୟାସ ସାହିତ୍ୟ
ଶାସ୍ତି – କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩ୟ ଏକକ : ନାଟକ
ଶେଷ କଥା – ଡକ୍ଟର ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୪ର୍ଥ ଏକକ- ରମ୍ୟ ରଚନା
ବାଇ ମହାରି ପାଞ୍ଜି (ପ୍ରଥମ ବିଡ଼ା) - ଗୋପାଳ ଚନ୍ଦ୍ର ପ୍ରହରାଜ
ବଟୁଆ - ଗୋବିନ୍ଦ ତ୍ରିପାଠୀ
ସାଧୁ ସଙ୍ଗ – ଚୌଧୁରୀ ନେମକାନ୍ତ ମିଶ୍ର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. କାହ୍ନୁଚରଣ ବିଶେଷଜ୍ଞ, କୋଣାର୍କ, ଓଡିଶା ସାହିତ୍ୟ ଏକାଡେମୀ
୨. ଓଡିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଇତିହାସ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

୩. ଓଡ଼ିଆ କଥାସାହିତ୍ୟର କଥା ଓ ରମ୍ୟରଚନା, ମହାପାତ୍ର ନୀଳମଣି ସାହୁ, ଓଡ଼ିଶା ବୁକ୍ ଷ୍ଟୋର, କଟକ
୪. ଶାସ୍ତି – କାହ୍ନୁଚରଣ ମହାନ୍ତି, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫. ଉତ୍ତର ସତୁରୀ ଓଡ଼ିଆ ନାଟକ, ହେମନ୍ତ କୁମାର ଦାସ, ଗ୍ରନ୍ଥମନ୍ଦିର, କଟକ
୬. ଶେଷ କଥା - ନାରାୟଣ ସାହୁ, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester –III)

ପାଠ୍ୟ – ୩/ପତ୍ର - ୩ (Core Course -3); ପ୍ରାଚୀନ, ମଧ୍ୟଯୁଗ ଓ ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ
୧ମ ଏକକ ସାରଳା ମହାଭାରତରେ କାହାଣୀ
ସତ୍ୟଆତ୍ମ
ତୁଳସୀବଣ ବାଘ
ଗଙ୍ଗା ବୋଇଲେ ଥିବି ଗଙ୍ଗୀ ବୋଇଲେ ଯିବି
୨ୟ ଏକକ: ବଳରାମ ଦାସ ଓ ଜଗନ୍ନାଥ ଦାସଙ୍କ କାହାଣୀ
ବଳରାମ ଦାସଙ୍କ ବଉଳା ଅଧ୍ୟାୟ ଓ ମୃଗୁଣା ସ୍ମୃତି
ଜଗନ୍ନାଥ ଦାସଙ୍କ କପୋତ ଉପାଖ୍ୟାନ ଓ ପିଙ୍ଗଳା ଉପାଖ୍ୟାନ
୩ୟ ଏକକ: ମଧ୍ୟକାଳୀନ ସାହିତ୍ୟ ସ୍ରଷ୍ଟାଙ୍କ ସଂକ୍ଷିପ୍ତ ପରିଚୟ
ଦୀନକୃଷ୍ଣ ଦାସ, ଅଭିମନ୍ୟୁ ସାମନ୍ତସିଂହାର, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ
କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ
୪ର୍ଥ ଏକକ :ଆଧୁନିକ ଯୁଗର ସାହିତ୍ୟ ସ୍ରଷ୍ଟା ସଂକ୍ଷିପ୍ତ ପରିଚୟ
ରାଧାନାଥ ରାୟ, ଫକୀର ମୋହନ ସେନାପତି, ଗଙ୍ଗାଧର ମେହେର, ମାୟାଧର ମାନସିଂହ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ - ମାୟାଧର ମାନସିଂହ, ଗ୍ରନ୍ଥ ମନ୍ଦିର, କଟକ
୨. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ – ସୂର୍ଯ୍ୟନାରାୟଣ ଦାଶ (୨ୟ ଓ ୩ୟ ଭାଗ) – ଗୁନ୍ଥ ମନ୍ଦିର, କଟକ
୩. ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ (୧୮୦୩-୧୯୨୦) ନଟବର ସାମନ୍ତରାୟ, ବାଣୀ ଭବନ,
ଭୁବନେଶ୍ୱର
୪. ଆଲୋକ ଓ ଅମୃତର କବି ଗଙ୍ଗାଧର ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ପଢାପଢି, ଭୁବନେଶ୍ୱର

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – IV)

ପାଠ୍ୟ – ୪ | ପତ୍ର - ୪ (Core Course - 4) : ଓଡ଼ିଆ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା

୧ମ ଏକକ | ୟୁନିଟ୍-୧ କମ୍ପ୍ୟୁଟର କ'ଣ ଓ କାହିଁକି
କମ୍ପ୍ୟୁଟର ର ବିଭିନ୍ନ ଅଂଶବିଶେଷ ଓ କାର୍ଯ୍ୟ
୨ୟ ଏକକ। ୟୁନିଟ୍-୨: ୟୁନିକୋଡ ମାଧମରେ ଓଡ଼ିଆ ଡିଟିପି ଶିକ୍ଷା
୩ୟ ଏକକ। ୟୁନିଟ୍-୩: ଇଣ୍ଟରନେଟ୍‌ରେ ଓଡ଼ିଆ ଚିଠି
ଇଣ୍ଟରନେଟରେ ସାମାଜିକ ଗଣମାଧମର ବ୍ୟବହାର

୪ର୍ଥ ଏକକ/ୟୁନିଟ୍-୪: ପାୱାର ପଏଣ୍ଟ ମାଇତ୍ର ପ୍ରସ୍ତୁତି, ଟେବୁଲ, ଫିଗର୍ସ ଏବଂ ପିକଚର୍ସ/ସ୍ଲାଇଡ ଏକସେଲ୍‌ର ବ୍ୟବହାର ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ମୌଳିକ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ଦେବକାନ୍ତ ମିଶ୍ର, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୨. ଓଡ଼ିଆରେ କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା – ରୁଦ୍ରନାରାୟଣ ମହାପାତ୍ର, ସତ୍ୟନାରାୟଣ ବୁକ୍ ଷ୍ଟୋର, କଟକ
୩. ଓଡ଼ିଆ ଭାଷାରେ କମ୍ପ୍ୟୁଟର୍‌ର ପ୍ରୟୋଗ - ସୁଧୀର ଚନ୍ଦ୍ର ମହାନ୍ତି, ଏ.କେ. ମିଶ୍ର ପବ୍ଲିକେଶନ, ଭୁବନେଶ୍ୱର
୪. କମ୍ପ୍ୟୁଟରରେ ଓଡିଆ ଭାଷାର ବ୍ୟବହାର ଓ ପ୍ରୟୋଗ – ରୁଦ୍ରପ୍ରସାଦ ମିଶ୍ର, ଆଜିଅନ୍ତା ପବ୍ଲିଶର୍ସ, ଜଗତସିଂହପୁର
୫. କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା –ରାନୁ ବନିକ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ

ପାଠ୍ୟକ୍ରମର ସାରାଂଶ – ସଂରଚନା

Structure of B.A. Pass (DSC-Odia) Under CBCS

ପ୍ରଧାନ ପାଠ୍ୟ (Core Course): ୪

ପ୍ରତ୍ୟେକ ପତ୍ରର କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ : **(1st Semester)**

ପ୍ରଧାନ ପାଠ୍ୟ - ୧ (Core Course – 1) ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

ପ୍ରଥମ ପତ୍ର – କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (2nd Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୨ (Core Course –2) ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା

୨ୟ ପତ୍ର - କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ତୃତୀୟ ପର୍ଯ୍ୟାୟ : (3rd Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ – ୩ (Core Course - 3) ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ

୩ୟ ପତ୍ର- କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ : (4th Semester)

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ -4 (Core Course-4) ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ

୪ର୍ଥ ପତ୍ର - କ୍ରେଡ଼ିଟିସ୍ = ୪ + ୨ = ୬

ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ ପାଠ୍ୟଖସଡ଼ା : ସ୍ନାତକ (ଓଡ଼ିଆ ଇଚ୍ଛାଧୀନ)
2019-20

Core Course -- ପ୍ରଧାନ ପାଠ୍ୟ
ମୋଟ ପତ୍ର ସଂଖ୍ୟା - ୦୪ (Four Paper – Discipline-I/ Four Paper – Discipling-2) ପ୍ରତ୍ୟେକ ପତ୍ର - ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ (୨୦ ନମ୍ବର ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃ ପର୍ଯ୍ୟାୟ ପରୀକ୍ଷା + ୮୦ ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମାନକ ପରୀକ୍ଷା)
ଇଚ୍ଛାଧୀନ ଓଡ଼ିଆ : ଜଣେ ସ୍ନାତକ – (ଇଚ୍ଛାଧୀନ)– ମୋଟ ୪୦୦ ନମ୍ବରର ପରୀକ୍ଷା ଦେବେ
କ) ଅତି କମ୍‌ରେ (ମୋଟ) ୫୦ଟି କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (ପିରିୟଡ୍)ରେ ଗୋଟିଏ ପତ୍ରର ପାଠଦାନ ଶେଷ ହେବ । ଗୋଟିଏ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ ବା ପିରିୟଡ୍-୪୫ ମିନିଟ)
ଖ) ପ୍ରତ୍ୟେକ ପତ୍ର ୪ ଗୋଟି ୟୁନିଟ୍ (ଏକକ) ଉପାଂଶରେ ବିଭକ୍ତ

ଗ) ପ୍ରତ୍ୟେକ ପତ୍ର ୬ ଆସ୍ଥାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟ (୪ + ୨ କ୍ରେଡିଟ୍) ବିଶିଷ୍ଟ । ଗୋଟିଏ ଆସ୍ଥାଭିତ୍ତିକ କାର୍ଯ୍ୟ ନିର୍ଘଣ୍ଟର ମହତ୍ତ୍ୱ ହେଉଛି - ୧୦ ପିରିୟତ୍ର ସହିତ ସମାନ
ମୋଟ ୪ ଗୋଟି ଇଚ୍ଛାଧୀନ ପତ୍ରର କ୍ରେଡିଟ ହେଉଛି - ୪x୬ (୪ + ୨) = ୨୪
ଘ) ପର୍ଯ୍ୟାୟ (Semester) ଓ ପ୍ରସ୍ତାବିତ ପାଠ ଯୋଜନା;
ପ୍ରଥମ ଶିକ୍ଷାବର୍ଷ
୧ମ ପର୍ଯ୍ୟାୟ ୧ମ –ପତ୍ର -୧୦୦ ନମ୍ବର
୨ୟ ପର୍ଯ୍ୟାୟ ୨ୟ –ପତ୍ର -୧୦୦ ନମ୍ବର

ତୃତୀୟ ଶିକ୍ଷାବର୍ଷ
୩ୟ ପର୍ଯ୍ୟାୟ ୩ୟ –ପତ୍ର -୧୦୦ ନମ୍ବର
୪ର୍ଥ ପର୍ଯ୍ୟାୟ ୪ର୍ଥ – ପତ୍ର -୧୦୦ ନମ୍ବର

ଙ) ନମ୍ବର । ମୂଲ୍ୟାଙ୍କ ବିଭାଜନ ପଦ୍ଧତି:

ମହାବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ଅନ୍ତଃପରୀକ୍ଷା -୨୦ ନମ୍ବର

ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ମୁଖ୍ୟ ପରୀକ୍ଷା -୮୦ ନମ୍ବର

ବିଶ୍ୱବିଦ୍ୟାଳୟ ସ୍ତରୀୟ ପରୀକ୍ଷାରେ ନିମ୍ନମତେ ପ୍ରଶ୍ନ ପଡ଼ିବ -
କ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ବିକଳ୍ପ ସହ ୮ଟି ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ଦୀର୍ଘ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (୧୫ × ୪ = ୬୦ ନମ୍ବର)
ଖ) ପ୍ରତ୍ୟେକ ପତ୍ରର ପ୍ରତ୍ୟେକ ଏକକରୁ ୧୫ଟି ୨ ନମ୍ବର ବିଶିଷ୍ଟ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ବିଦ୍ୟାର୍ଥୀ ୧୦ଟି

ପ୍ରଶ୍ନର ତରଳ ଦେବେ । (୨x ୧୦ = ୨୦) ଉତ୍ତର

ସବିଶେଷ ପାଠ୍ୟକ୍ରମ (Detail Syllabus)

(କ) ପ୍ରଥମ ପର୍ଯ୍ୟାୟ (Semester – 1) DSC 1/2 A
ପ୍ରଥମ ପତ୍ର ଓଡ଼ିଆ କବିତା ପ୍ରାଚୀନରୁ ଆଧୁନିକ

ପ୍ରଧାନ ପାଠ **(Core Course -1):** ଓଡ଼ିଆ ସାହିତ୍ୟ ପ୍ରାଚୀନକୁ ଆଧୁନିକ
୧ମ ଏକକ / ୟୁନିଟ୍ – ୧ ସାରଳା ମହାଭାରତ (ଦୁର୍ଯ୍ୟୋଧନଙ୍କ ରକ୍ତନଦୀ ସନ୍ତରଣ)
୨ୟ ଏକକ / ୟୁନିଟ୍ – ୨ : ଭାଗବତ (୨୪ ଗୁରୁ ପ୍ରସଙ୍ଗ) - ଜଗନ୍ନାଥ ଦାସ
୩ୟ ଏକକ / ୟୁନିଟ – ୩ - ଦୀନକୃଷ୍ଣ ଦାସଙ୍କ କସକଲ୍ଲୋଳ(୧ମ ଛାନ୍ଦ) ଓ ଉପେନ୍ଦ୍ରଭଞ୍ଜ କୋଟିବ୍ରହ୍ମାଣ୍ଡ ସୁନ୍ଦରୀ(୧ମ ଛାନ୍ଦ)
୪ର୍ଥ ଏକକ । ୟୁନିଟ୍ – ୪ ଆଧୁନିକ କବିତା
ମହାଯାତ୍ରା (ସପ୍ତମ ସର୍ଗ)- ଅମର୍ଷୀଙ୍କ ଉଦ୍‌ବୋଧନ, ରାଧାନାଥ ରାୟ
ମଙ୍ଗଳେ ଅଇଲା ଉଷା – ଗଙ୍ଗାଧର ମେହେର
ବନ୍ଦୀର ସାନ୍ଧ୍ୟ ଅନୁଚିନ୍ତା - ଗୋପବନ୍ଧୁ ଦାସ
ପ୍ରତିମା ନାୟକ - ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ
୧. ସାରଳା ମହାଭାରତ (ସାରଳା ଦାସ)
୨. ଅବଧୂତ ଓ ଯଦୁରାଜା ସମ୍ବାଦ, ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. କହେ କୃଷ୍ଣଦାସ କବି – କୃଷ୍ଣଚରଣ ସାହୁ, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ରସକଲ୍ଲୋଳ, ସଂପାଦନା – ଦେବେନ୍ଦ୍ର ମହାନ୍ତି
୫. ଦୁର୍ଲଭ ଦୀନକୃଷ୍ଣ, ଜ୍ୟୋତିରଞ୍ଜନ ସାମଲ, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍, କଟକ

(ଖ) ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (Semester – II) DSC 1/2 B

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୨ (Core Course - 2) : ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକା

ଦ୍ୱିତୀୟ ପତ୍ର
୧ମ ଏକକ । ୟୁନିଟ – ୧ : ଭକ୍ତମାଟି - କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨ୟ ଏକକ । ୟୁନିଟ୍ – ୨ : ନନ୍ଦିକା କେଶରୀ ମନୋରଞ୍ଜନ ଦାସ

୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ କୋକୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଏକାଙ୍କିକା- ସ୍ମୃତି ବିଭ୍ରାଟ – ପ୍ରାଣବନ୍ଧୁ କର ଓ ଛଦ୍ମବେଶୀ - ବିଶ୍ୱଜିତ ଦାସ
୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ
୧ ଅଭିଯାନ – କାଳୀଚରଣ ପଟ୍ଟନାୟକ
୨. ନନ୍ଦିକା କେଶରୀ-ମନୋରଞ୍ଜନ ଦାସ କିମ୍ବା ତଟନିରଂଜନା – ବିଜୟ ମିଶ୍ର
୩. କୋକୁଆ – ବିଜୟ କୁମାର ଶତପଥୀ, ଅଗ୍ରଦୂତ, କଟକ କିମ୍ବା ମୁଖା - ମଙ୍ଗୁଲୁ ଚରଣ ବିଶ୍ୱାଳ
୪. ଅଶ୍ରୁ ନୁହେଁ ଅନଳ, ହେମନ୍ତ କୁମାର ଦାସ
୫. ସ୍ୱାଧୀନୋତ୍ତର ଓଡ଼ିଆ ନାଟକର ମନସ୍ତାତ୍ତ୍ୱିକ ବିଶ୍ଳେଷଣ, ରଶ୍ମିତା ରାଉତରାୟ, ବିଜୟିନୀ ପବ୍ଲିକେସନ, କଟକ
୬. ସାହିତ୍ୟସାଧକ ମଙ୍ଗଳବରଣ – ଗୌରିଦାସ ପ୍ରଧାନ (ଚତୁର୍ଥ ପତ୍ର ନିମନ୍ତେ ପ୍ରଦତ୍ତ ସହାୟକ ପୁସ୍ତକଗୁଡିକ ଅନୁସରଣୀୟ।

ତୃତୀୟ ପର୍ଯ୍ୟାୟ (Semester – III) DSC 1/2 C

ପ୍ରଧାନ ପାଠ୍ୟାଂଶ - ୩ (Core Course - 3): ଓଡ଼ିଆ କଥା ସାହିତ୍ୟ

ତୃତୀୟ ପତ୍ର :

୧ମ ଏକକ | ୟୁନିଟ୍ – ୧ : ଓଡ଼ିଆ କଥାସାହିତ୍ୟର ବିକାଶକ୍ରମ
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ - ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୩ୟ ଏକକ | ୟୁନିଟ୍ – ୩ ; ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି କିମ୍ବା ନୟନତାରା -ଦୟାନିଧି ମିଶ୍ର
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ – ୪ : ଗଳ୍ପ ସାହିତ୍ୟ
ପାଠ୍ୟ ଗଳ୍ପ:ଦେବତାର ବିଧାତା – ଗୋଦାବରୀଶ ମହାପାତ୍ର
ମାଂସର ବିଳାପ – କାଳିନ୍ଦୀ ଚରଣ ପାଣିଗ୍ରାହୀ

ମଧୁବନର ମେୟର - ମନୋଜ ଦାସ

୫ମ ଏକକ | ୟୁନିଟ – ୫ ପ୍ରକଳ୍ପ ପ୍ରସ୍ତୁତି

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ଓଡ଼ିଆ ଉପନ୍ୟାସ ସାହିତ୍ୟର ପରିଚୟ ସଂ ପଠାଣି ପଟ୍ଟନାୟକ ଓ ଭୋଳାନାଥ ରାଉତ ଓଡ଼ିଶା ବୁକ ଷ୍ଟୋର, କଟକ
୨. ଓଡ଼ିଆ କ୍ଷୁଦ୍ରଗଳ୍ପର ଉନ୍ମେଷ ଓ ଉତ୍ତରଣ – ବୈଷ୍ଣବ ଚରଣ ସାମଲ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୩. ଛ ମାଣ ଆଠଗୁଣ୍ଠ - ଫକୀର ମୋହନ ସେନାପତି
୪. ଛ ମାଣ ଆଠଗୁଣ୍ଠ ଭିନ୍ନ ଦୃଷ୍ଟି ଭିନ୍ନ ବ୍ୟାଖ୍ୟା, ପଞ୍ଚାନନ ମିଶ୍ର, ବିଜୟିନୀ ପବ୍ଲିକେସନ୍ସ, କଟକ

୫. ଦାନାପାଣି - ଗୋପୀନାଥ ମହାନ୍ତି
୬. ନୟନତାରା - ଦୟାନିଧି ମିଶ୍ର
୭. କଥାଶିଳ୍ପୀ ମନୋଜ ଦାସ, ଶତ୍ରୁଘ୍ନ ପାଣ୍ଡବ, ଫ୍ରେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୮. ମନସ୍ୱୀ ମନୋଜ, ମଣୀନ୍ଦ୍ର କୁମାର ମେହେର, ଫେଣ୍ଡସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୯. ଓଡିଆ ଉପନ୍ୟାସର ସମାଜତାତ୍ତ୍ୱିକ ଆଲୋଚନା, କଇଳାଶ ପଟ୍ଟନାୟକ, ବିଦ୍ୟାପୁରୀ, କଟକ

ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ (Semester – 1V)

ପ୍ରଧାନ ପାଠ୍ୟଂଶ - ୪ **(Core Course -4)** :ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ (DSC 1/2 D}
୪ର୍ଥ ପତ୍ର
୧ମ ଏକକ } ୟୁନିଟ୍ – ୧ ଓଡ଼ିଆ ବର୍ଣ୍ଣ ବିଚାର, ବାକ୍ୟର ଗଠନ ରୀତି ଓ ପ୍ରକାରଭେଦ ।
୨ୟ ଏକକ | ୟୁନିଟ୍ – ୨ : କାରକ, ବିଭକ୍ତି,କୃଦନ୍ତ ଓ ତଦ୍ଧିତ
୩ୟ ଏକକ | ୟୁନିଟ – ୩ : ଉପସର୍ଗ, ସନ୍ଧି ଓ ସମାସ
୪ର୍ଥ ଏକକ | ୟୁନିଟ୍ - ୪ ଓଡ଼ିଆ ଶବ୍ଦସମ୍ଭାର

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ

୧. ସର୍ବସାର ବ୍ୟାକରଣ – ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟ ଷ୍ଟୋର, କଟକ
୨. ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ - ଧନେଶ୍ୱର ମହାପାତ୍ର, କିତାବ ମହଲ, କଟକ
୩. ବ୍ୟାବହାରିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ, ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର, ବିଦ୍ୟାପୁରୀ, କଟକ
୪. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ମେଷ ଓ ବିକାଶ – ବାସୁଦେବ ସାହୁ, ଫେସ୍ ପବ୍ଲିଶର୍ସ, କଟକ
୫। ଓଡ଼ିଆ ଭାଷା ଚର୍ଚ୍ଚାର ପରଂପରା, ଗଗନେନ୍ଦ୍ର ନାଥ ଦାସ, ଓଡିଆ ଗବେଷଣା ପରିଷଦ, କଟକ

ଦକ୍ଷତାବର୍ଷକ ବାଧତାମୂଳକ ପାଠ୍ୟକ୍ରମ

Ability Enhancement Compulsory Course (AECC)

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା – ଓଡ଼ିଆ

(2019-20)

MIL (Communications) - Odia

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ **(2nd Semester)** କଳା, ବିଜ୍ଞାନ ଓ ବାଣିଜ୍ୟ ସାଧାରଣ (Pass) | ସମ୍ମାନ (Hons)
ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ
ମୋଟ କ୍ରେଡିଟ୍-୪, ମୋଟ ଶ୍ରେଣୀ ପାଠଦାନ ନିର୍ଘଣ୍ଟ - ୪୦, ଗୋଟିଏ ଶ୍ରେଣୀ ପାଠଦାନର {ପିରିୟଡ ସମୟ ଅବଧି-୪୫ ମିନିଟ୍ ପାଠ୍ୟକ୍ରମ – ୨, ପୂର୍ବସଂଖ୍ୟା – ୧୦୦

(Credits - 4) Total Classes - 40, One Period - 45 Minutes, Course - ll, Full Marks - 100

ପାଠ୍ୟକ୍ରମର ଭୂମିକା:

ଏହି ପାଠ୍ୟଖସଡ଼ାଟି ପସନ୍ଦ ଓ ଆସ୍ଥାଭିତ୍ତିକ (CBCS / ସିବିସିଏସ୍) ପାଠ୍ୟ ପ୍ରଣାଳୀ ଅନୁସାରେ ପ୍ରସ୍ତୁତ ହୋଇଛି । ବିଭିନ୍ନ ସ୍ତରରେ ଆବଶ୍ୟକ ଅନୁସାରେ ସମସାମୟିକ ପରିସ୍ଥିତିକୁ ନେଇ ଭାବବିନିମୟ ଓ ପାରସ୍ପରିକ ଯୋଗାଯୋଗ ସ୍ଥାପନ କିପରି ଓଡ଼ିଆ ଭାଷାରେ ସହଜରେ, ସରଳରେ ହୋଇପାରିବ – ଏ ଦିଗ ପ୍ରତି ଏଥିରେ ପାନ ଦିଆଯାଇଛି । ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟିକ ପ୍ରାୟୋଗିକ ଜ୍ଞାନର ବିକାଶ ନିମିତ୍ତ +୩ ସ୍ତରୀୟ ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ଏହି ପାଠ୍ୟକ୍ରମର ଖସଡ଼ାଟି ସାହାଯ୍ୟ କରିବ । ସେଥିପାଇଁ ପ୍ରଚଳିତ ଭାଷାର ବୈୟାକରଣିକ, ବ୍ୟାବହାରିକ ଓ ପ୍ରାୟୋଗିକ ଦିଗ ପ୍ରତି ଏଥିରେ ସ୍ଥାନ ଦିଆଯାଇଛି । ଏଥିରେ ସଂଯୋଗ ପ୍ରକ୍ରିୟାର ଅନୁବିଧ, ଯୋଗାଯୋଗର ତଥ୍ୟ ଓ ଗୁତତ୍ତ୍ୱ ପ୍ରତି ଗୁରୁତ୍ୱ ଦିଆଯାଇଛି । ସରକାରୀ କାର୍ଯ୍ୟାଳୟରେ ଓଡ଼ିଆ ଭାଷାର ବ୍ୟବହାରରେ ଏହା ଦକ୍ଷତା ବୃଦ୍ଧି କରିବ । ଓଡ଼ିଆ ଭାଷାର ପ୍ରୟୋଗରେ ସେମାନେ ଶୁଦ୍ଧ ଓ ପରିଚ୍ଛନ୍ନ ଭାବରେ ଯେକୌଣସି ପ୍ରକାର ଜ୍ଞାନର ସୂଚନା ତଥ୍ୟ ଓ ସିଦ୍ଧାନ୍ତକୁ ମୌଖିକ ଓ ଲିଖିତ ସ୍ତରରେ ସହଜରେ ପ୍ରକାଶ କରିପାରିବେ ଏବଂ ସେମାନଙ୍କ ମାତୃଭାଷା ପ୍ରୟୋଗର ବିକାଶ ଘଟିପାରିବ ।

ମୂଲ୍ୟ ବିଭାଜନ ପଦ୍ଧତି : (ସବୁଥିରୁ ବିକଳ୍ପ ପଡ଼ିବ)

କ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକ (ୟୁନିଟ୍) ରୁ ବିକଳ୍ପସହ ଦୁଇଟି ଲେଖାଏଁ ମୋଟ ୮ଟି ୧୫ନମ୍ବର ବିଶିଷ୍ଟଦୀର୍ଘପ୍ରଶ୍ନ ପଡିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ୪ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ ।(୧୫ x ୪ = ୬୦)

ଖ) ନିର୍ଦ୍ଧାରିତ ପାଠ୍ୟର ସବୁ ଏକକରୁ ୧୨ଟି ଅତିସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ପଡ଼ିବ । ସେଥିରୁ ୧୦ଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ (୧୦x୨ = ୨୦)

ଗ) ମହାବିଦ୍ୟାଳୟସ୍ତରୀୟ ଅନ୍ତଃ ପରୀକ୍ଷା (୨୦)

ମୋଟ ମୂଲ୍ୟାଙ୍କ – ୧୦୦

ସବିଶେଷ ପାଠ୍ୟ

ଯୋଗାଯୋଗମୂଳକ ମାତୃଭାଷା - ଓଡ଼ିଆ

ପାଠ୍ୟ–୧| **Course – 1 ଯୋଗାଯୋଗ ଅନୁବିଧ, ରୀତି ଓ ମାଧ୍ୟମ**

୧ମ ଏକକ : ଯୋଗାଯୋଗର ପରିଭାଷା, ଅନୁବିଧି, ପରିସମ ଓ ପ୍ରକାରଭେଦ

୨ୟ ଏକକ : ସାକ୍ଷାତକାର, ଭାଷଣ କଳା

୩ୟ ଏକକ : ସମ୍ବାଦର ପରିଭାଷା, ପରିସର ଓ ସମ୍ବାଦ ପ୍ରସ୍ତୁତି

୪ର୍ଥ ଏକକ : ଓଡ଼ିଆ ଭାଷାର ବର୍ଣ୍ଣମାଳା, ବର୍ଣ୍ଣାଶୁଦ୍ଧିର ନିରାକରଣ । (ବନାନ ତ୍ରୁଟି - ସାଦୃଶ୍ୟଜନିତ ଅଶୁଦ୍ଧି , ଲିଙ୍ଗ ଗତ ଅଶୁଦ୍ଧି, ସନ୍ଧିଗତ ଅଶୁଦ୍ଧି, ସମାସଗତ ଅଶୁଦ୍ଧି, ବଚନ ଓ ବିଭକ୍ତିଗତ ଅଶୁଦ୍ଧି, ବାକ୍ୟ ବିଧିଜନିତ ଅଶୁଦ୍ଧି ସମାର୍ଥବୋଧକ ଶବ୍ଦୀଶୁଦ୍ଧି ପ୍ରତ୍ୟୟ ଜନିତ ଅଶୁଦ୍ଧି, ଶବ୍ଦ ସଂଯୋଗାତ୍ମକ ଓ ସ୍ୱରସଙ୍ଗତି ଜନିତ ଅଶୁଦ୍ଧି)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ (ପାଠ୍ୟ-୧ | Course – 1)

୧. ଯୋଗାଯୋଗ ମୂଳକ ମାତୃଭାଷା (ଓଡ଼ିଆ) ସାମଲ ବିରଞ୍ଚି ନାରାୟଣ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର,

କଟକ ।

୨. ସଂଯୋଗ ଅନୁବିଧି, ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ, ନାଳନ୍ଦା, କଟକ

୩. ଭାଷଣ କଳା ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସଙ୍ଗ - କୃଷ୍ଣଚନ୍ଦ୍ର ପ୍ରଧାନ, ସତ୍ୟନାରାୟଣ ବୁକ ଷ୍ଟୋର,କଟକ

୪. ପ୍ରାୟୋଗିକ ଓଡ଼ିଆ ଭାଷା – ଓଡ଼ିଶା ରାଜ୍ୟପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ସମ୍ବାଦ ଓ ସାମ୍ବାଦିକତା – ଚନ୍ଦ୍ରଶେଖର ମହାପାତ୍ର, ଓଡ଼ିଶା ରାଜ୍ୟ ପାଠ୍ୟପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

୧. ନିର୍ଭୁଲ ଲେଖାର ମୂଳସୂତ୍ର, ନୀଳାଦ୍ରି ଭୂଷଣ ହରିଚନ୍ଦନ, ପି.ସି.ଆର ପବ୍ଲିକେସନ, ଭୁବନେଶ୍ୱର

୨. ସର୍ବସାର ବ୍ୟାକରଣ - ନାରାୟଣ ମହାପାତ୍ର ଓ ଶ୍ରୀଧର ଦାସ, ନିୟୁ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ

COMPULSORY LANGUAGE/LITERATURE COURSE MIL

(ODIA)- ARTS

ବାଧତାମୂଳକ ଭାଷା ଓ ସାହିତ୍ୟ – ଆଧୁନିକ ଭାରତୀୟ ଭାଷା (ଓଡ଼ିଆ)

+୩, ପ୍ରଥମ ବର୍ଷ କଳା ସାଧାରଣ (PASS) ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

ପତ୍ର ସଂଖ୍ୟା – ପ୍ରଥମ

ପ୍ରଥମ ପର୍ଯ୍ୟାୟ **(1st SEMESTER)**

ପ୍ରତ୍ୟେକ ପତ୍ରର ମୂଲ୍ୟ - ୧୦୦ ନମ୍ବର

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା)

ମୂଲ୍ୟ ବିଭାଜନ

(କ) ପ୍ରଥମ ଏକକ (ଗଦ୍ୟ ସାହିତ୍ୟ)ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ।
ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ - ୧୫)

(ଖ) ଦ୍ୱିତୀୟ ଏକକ (ପଦ୍ୟ ସାହିତ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧୫)

(ଗ) ତୃତୀୟ ଏକକ (ଅତିରିକ୍ତ ପାଠ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ -୧୫)

(ଘ) ଚତୁର୍ଥ ଏକକରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ପ୍ରଶ୍ନରୁ ଗୋଟିକର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ୍ ମୂଲ୍ୟ - ୧୫)

(ଙ) ପ୍ରତ୍ୟେକ ଏକକରୁ ତିନୋଟି କରି ୧୨ଟି ପ୍ରଶ୍ନ ଆସିବ, ସେଥିରୁ ବିଦ୍ୟାର୍ଥୀ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (ମୋଟ ୨ x ୧୦ = ୨୦)

ସବିଶେଷ ଅଧ୍ୟୟନ

ଅନୁମୋଦିତ ପାଠ୍ୟ

ପ୍ରଥମ ଏକକ- ଗଦ୍ୟ ସାହିତ୍ୟ

୧- ଜାତୀୟ ଜୀବନ - ମଧୁସୂଦନ ଦାସ

୨- ସୌନ୍ଦର୍ଯ୍ୟ ଓ ପ୍ରେମ – ଶଶିଭୂଷଣ ରାୟ
୩- ସାହିତ୍ୟ ଓ ଗଣମାଧ୍ୟମ – ଶରତ କୁମାର ମହାନ୍ତି

ଦ୍ୱିତୀୟ ଏକକ – ପଦ୍ୟ ସାହିତ୍ୟ

୧- କେଶବ କୋଇଲି – ମାର୍କଣ୍ଡ ଦାସ
୨- ମନବୋଧ ଚଉତିଶା - ଭକ୍ତଚରଣ ଦାସ
୩- କାକ ବାରତା - ନନ୍ଦକିଶୋର ବଳ
୪- ଝିଅ ପାଇଁ ଗୋଟିଏ କବିତା - ରାଜେନ୍ଦ୍ର କିଶୋର ପଣ୍ଡା

ତୃତୀୟ ଏକକ - ଅତିରିକ୍ତ ପାଠ୍ୟ (ଗଳ୍ପ ସାହିତ୍ୟ)

୧- ଅଶୁଭ ପୁତ୍ରର କାହାଣୀ - ଅଚ୍ୟୁତାନନ୍ଦ ପତି
୨- ସୁଲତାନ - ରାଜକିଶୋର ପଟ୍ଟନାୟକ
୩- ପାଟଦେଈ – ବୀଣାପାଣି ମହାନ୍ତି

ଚତୁର୍ଥ ଏକକ - ବ୍ୟାକରଣ

ପାଠ : ପଦ ପ୍ରକରଣ - (ବିଶେଷ୍ୟ, ବିଶେଷଣ, ସର୍ବନାମ, ଅବ୍ୟୟ ଓ କ୍ରିୟା)

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧) ସର୍ବସାର ବ୍ୟାକରଣ - ପଣ୍ଡିତ ନାରାୟଣ ମହାପାତ୍ର ଏବଂ ଶ୍ରୀଧର ଦାଶ - ନିଉ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ ।

୨) ପ୍ରଚଳିତ ଓଡ଼ିଆ ଭାଷାର ବ୍ୟାକଗଣ – ବିଜୟ ପ୍ରସାଦ ମହାପାତ୍ର - ବିଦ୍ୟାପୁରୀ, କଟକ
୩) ଆଧୁନିକ ଓଡ଼ିଆ ବ୍ୟାକରଣ – ଧନେଶ୍ୱର ମହାପାତ୍ର - କିତାବ ମହଲି, କଟକ
୪) ଶେଷ ଦଶକର ରଚନା – ଶରତ କୁମାର ମହାନ୍ତି ।

COMPULSORY LANGUAGE / LITERATURE COURSE

MIL (ODIA)- ARTS

ବାଧତାମୂଳକ ଭାଷା ଓ ସାହିତ୍ୟ - ଆଧୁନିକ ଭାରତୀୟ ଭାଷା (ଓଡ଼ିଆ)

+୩, ପ୍ରଥମ ବର୍ଷ କଳା ସାଧାରଣ (PASS)ଶ୍ରେଣୀ ପାଇଁ ଉଦ୍ଦିଷ୍ଟ

2019-20

ପତ୍ର ସଂଖ୍ୟା – ଦ୍ୱିତୀୟ

ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ (3RD SEMESTER)

(୨୦ ନମ୍ବର ଅନ୍ତଃ ପରୀକ୍ଷା + ୮୦ ନମ୍ବର ମୁଖ୍ୟ ପରୀକ୍ଷା = ୧୦୦ ନମ୍ବର)

ମୂଲ୍ୟ ବିଭାଜନ

(କ) ପ୍ରଥମ ଏକକ (ଗଦ୍ୟ ସାହିତ୍ୟ)ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦାର୍ଘ ପ୍ରଶ୍ନ ଆସିବ ।
ବିଦ୍ୟାର୍ଥୀଙ୍କୁ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧:୫)

(ଖ) ଦ୍ୱିତୀୟ ଏକକ (ପଦ୍ୟ ସାହିତ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘ ପ୍ରଶ୍ନ ଆସିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ। (ମୋଟ ମୂଲ୍ୟ – ୧୫)

(ଗ) ତୃତୀୟ ଏକକ (ଅତିରିକ୍ତ ପାଠ୍ୟ) ରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ଦୀର୍ଘଧର୍ମୀ ପ୍ରଶ୍ନ ଆସିବ । ବିଦ୍ୟାର୍ଥୀଙ୍କ ପସନ୍ଦ ଅନୁସାରେ ଗୋଟିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ । (ମୋଟ ମୂଲ୍ୟ -୧୫)

(ଘ) ଚତୁର୍ଥ ଏକକରୁ ୧୫ ନମ୍ବର ବିଶିଷ୍ଟ ୨ଟି ପ୍ରଶ୍ନରୁ ଗୋଟିକର ଉତ୍ତର ଦେବାକୁ ହେବ ।
(ମୋଟ ମୂଲ୍ୟ – ୧୫)

(ଙ) ପ୍ରତ୍ୟେକ ଏକଳରୁ ତିନୋଟି କରି ୧୨ଟି ପ୍ରଶ୍ନ ଆସିବ, ସେଥିରୁ ବିଦ୍ୟାର୍ଥୀ ୧୦ ଗୋଟି ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବେ । (ମୋଟ୍ ୨ x ୧୦ = ୨୦)

ଅନୁମୋଦିତ ପାଠ୍ୟ

ପ୍ରଥମ ଏକକ- ଗଦ୍ୟ ସାହିତ୍ୟ
୧- ଅଛୁ ଓ ହେବୁ - ନୀଳକଣ୍ଠ ଦାସ
୨- ସ୍ତ୍ରୀ ଶିକ୍ଷା – ରେବା ରାୟ
୩- ଇଚ୍ଛନ୍ତି ଦାମିକେ - ବୈଷ୍ଣବ ଚରଣ ସାମଲ

ଦ୍ୱିତୀୟ ଏକକ – ପଦ୍ୟ ସାହିତ୍ୟ
୧- ସବୁଠୁରୁ ବଞ୍ଚିତ କରି - କାନ୍ତକବି ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର
୨- ଅକ୍ରୂର ଉବାଚ – ଗୁରୁ ପ୍ରସାଦ ମହାନ୍ତି
୩- ଓଡିଶା – ସୀତାକାନ୍ତ ମହାପାତ୍ର
୪– ହେ ମୋ ଦେଶ – ବଜନାଥ ରଥ
ତୃତୀୟ ଏକକ - ଅତିରିକ୍ତ ପାଠ୍ୟ (ଜୀବନୀ)
୧-ପିତୃ ପ୍ରସଙ୍ଗ (ସଭାବ କବି ଗଙ୍ଗାଧର ମେହେରଙ୍କ ଜୀବନୀ -କେବଳ ଜୀବନୀ ଅଂଶ)- ଭଗବାନ ମେହେର
ଚତୁର୍ଥ ଏକକ - ବ୍ୟାକରଣ- ବାକ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ, ଲକ୍ଷଣ ଓ ରୂପାନ୍ତର, ଲୋକୋକ୍ତିର ଅର୍ଥ ଓ ପ୍ରୟୋଗ

ସହାୟକ ଗ୍ରନ୍ଥସୂଚୀ :

୧) ସର୍ବସାର ବ୍ୟାକରଣ - ପଣ୍ଡିତ ନାରାୟଣ ମହାପାତ୍ର ଏବଂ ଶ୍ରୀଧର ଦାଶ - ନିଉ ଷ୍ଟୁଡେଣ୍ଟସ୍ ଷ୍ଟୋର, କଟକ
୨) ପ୍ରାୟୋଗିକ ଓଡିଆ ଭାଷା, ଓଡ଼ିଶା ରାଜ୍ୟପାଠ୍ୟ ପୁସ୍ତକ ପ୍ରଣୟନ ଓ ପ୍ରକାଶନ ସଂସ୍ଥା, ଭୁବନେଶ୍ୱର

ପାଠ୍ୟକ୍ରମ ସଂପର୍କରେ ଶିକ୍ଷକଙ୍କ ପ୍ରଶିକ୍ଷଣ ଯୋଜନା (୨୧ ଦିନ)

୨-ବୌଦ୍ଧ, ଶୈବ, ବୈଷ୍ଣବ, ଜଗନ୍ନାଥ ତତ୍ତ୍ୱ
୩-ଗବେଷଣା ପ୍ରବିଧ
୪ – ସାହିତ୍ୟତତ୍ତ୍ୱ (ପ୍ରାଚ୍ୟ-ପଶ୍ଚ୍ୟାତ୍ୟ)
୫- ଭାଷାବିଜ୍ଞାନ ଓ ଭାଷାତତ୍ତ୍ୱ
୬- ଲୋକସାହିତ୍ୟ ଓ ସଂସ୍କୃତି
୭-କଥା ସାହିତ୍ୟ (ଗଳ୍ପ ଉପନ୍ୟାସ)
୮ -ଅନୁବାଦ ଓ ସଂପାଦନା
୯-କମ୍ପ୍ୟୁଟର ଶିକ୍ଷା

U.G. Course Structure Philosophy

Semester		CORE COURSE (14)	Ability Enhancement Compulsory Course (AECC) (2)	Skill Enhancement Compulsory Course (SECC)(2)	Elective: Discipline Specific DSE (4)	Elective: Generic (GE) (4)
I	CC I	General Philosophy	Environmental Science or English/MIL Communication			**GE-I** Symbolic Logic
	CCII	Logic and Scientific Method				
II	CCIII	Systems of Indian Philosophy –I	Environmental Science or			**GE-II** Indian
	CCIV	Symbolic Logic				
III	CCV	Ethics		**SECC -I**		**GE-III** History of Modern European Philosophy
	CCVI	History of Greek Philosophy				
	CCVII	Systems of Indian Philosophy (II)				
IV	CCVIII	Contemporary Indian Philosophy		**SECC-II**		**GE- IV** Ethics: Theory and Practice
	CCIX	History of Modern European Philosophy				
	CCX	Philosophy of Language				
V	CCXI	Western Classics: Meditations of Rene Descartes			**DSE-I** PHILOSOPHY OF BHAGAVAD GITA	
	CCXII	Indian Text: Isa Upanishad			**DSE-II** PHILOSOPHY OF RELIGION	
VI	CCXIII	Social & Political Philosophy			**DSE-III** GANDHIAN STUDIES	
	CC XIV	Applied Ethics			**DSE- IV** RECENT WESTERN PHILOSOPHY/ PROJECT	

PHILOSOPHY

PHILOSOPHY-HONOURS

Core course – 14 papers
Discipline Specific Elective – 4 papers
Skill Enhancement Compulsory Course-2 papers Generic Elective for non Philosophy students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm : 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6,Teaching hours per paper – 50 hours + 10 hours tutorial

CC I:GENERAL PHILOSOPHY

Unit-I: Definition, Nature & Function of Philosophy, and Philosophy in relation to other modes of thinking like Science & Religion.

Unit-II: Metaphysics: Monism, Pluralism, Realism, Idealism, Metaphysical issues: Substance, Universal, Mind & Body.

Unit-III: Problem of knowledge: What is knowledge? Sources of knowledge: Empiricism, Rationalism, Theories of Truth: Correspondence, coherence and pragmatic theory

Unit-IV: Problems of Ethics**:** (1) Theories of Goodness: The good and the evil (2) Theories of conduct: Egoism & Altruism.

Prescribed Books:

1. John Hospers: An Introduction to Philosophical Analysis(relevant portions)
2. J.N. Sinha : Introduction to Philosophy

Reference books:

(1) G.T.W. Patrick: Introduction to Philosophy
(2) A.C. Ewing: The Fundamental Questions of Philosophy
(3) G.W. Cunningham: Problems of Philosophy
(4) Richard Taylor: Metaphysics
(5) D.W. Hamlyn: Metaphysics

CC II: LOGIC AND SCIENTIFIC METHOD

Unit-I: Definition of Logic, Laws of Thought, Deductive and Inductive Arguments, Validity&Soundness of Arguments.

Unit-II: Classification of Propositions (from stand-point of Quality & Quantity), Distribution of Terms, Square of oppositions, Existential Import of Propositions, Interpretation of categorical proposition.

Unit-III: Inference- Immediate Inference (Conversion and Obversion), Mediate Inference(Syllogism): Figure & Moods, Testing of Validity of Arguments by syllogistic Rules.

Unit-4: Inductive Reasoning & Scientific Enquiry: Causation & Mills Experimental Methods.

Prescribed Book:

1. Cohen& Nagel- Introduction to Logic & Scientific Method.

Reference Book:

1. Copi, Cohen & Mac Mahan- Introduction to Logic (14th Edition)
2. Alex Rosenberg- Philosophy of Science: A Contemporary Introduction
3. John Hospers: An Introduction to Philosophical Analysis.

CC III:SYSTEMS OF INDIAN PHILOSOPHY–I

Unit-I: Salient Features of Indian Philosophy, Basic concepts like Rta, Rna, Carvakas- Epistemology and Metaphysics (Lokayatamata)

Unit-II- Jainism - Syadvada, Anekantavada, Jaina ethics (concept of Triratna)

Unit-III: Buddhism: Four Noble Truths, Doctrine of Momentariness, Dependant Origination, No Soul Theory, Nirvana

Unit-IV: Samkhya-Dualistic System: Purusa, Prakriti, Theory of Causation, Theory of Evolution, Astanga Yoga of Patanjali

Prescribed Books:

(1) Dutta&Chatterjee - An Introduction to Indian Philosophy
(2) C. D. Sharma - A Critical Survey of Indian Philosophy

Reference Books:

(1) R. K. Puligandla- Fundamentals of Indian Philosophy.
(2) M. Hiriyana- Outlines of Indian Philosophy
(3) J. N. Sinha- Indian Philosophy
(4) S. Radhakrishnan- Indian Philosophy(Vol.1& 2)

CC IV:SYMBOLIC LOGIC

Unit-I: Chapter- I Introduction

Chapter- II-The Calculus of Propositions

Unit- II: Chapter-IlI Calculus of Propositions (Sec 1 to 6)

Unit-Ill: Chapter-IV Calculus of Propositions (Sec 7 to 9)
The Elements of Predicate Calculus (Section 1 to 9 of chapter V)

Unit-IV: Appendix (Sec-I to Sec-IV)

Prescribed Books: -Basson & O' Corner: Introduction to Symbolic Logic

CC V:ETHICS

Unit-I: Definition, Nature & Scope of Ethics, Ethics in relation to Politics, Sociology and Religion

Unit-II: Distinction between moral and non-moral action, Moral and factual Judgement. Object of Moral Judgement.

Unit-III: Theories of Morality: Hedonism, Utilitarianism, Rigorism, Perfectionism **Unit-IV:** Theories of punishment; Retributive, Reformative and Preventive theory**. Prescribed Book:**

(1)J. N. Sinha- A Manual of Ethics

Reference Books:

(1) W. Frankena– Ethics
(2) William Lily- An Introduction to Ethics

CC VI:HIISTORY OF GREEK PHILOSOPHY

Unit-I: Nature of Greek Philosophy: What is Philosophy? Origin, development andSalient features of early Greek Thought

Unit-II: Pre-Socratic Thought: The Being of Parmenides, Becoming of Heraclitus andAtomism of Democritus

Unit-III: Socrates: Problem before Socrates, Dialectical method, epistemology And ethics of Socrates.

Unit-IV: Plato: Theory of Knowledge, Theory of Idea, and Theory of Soul Aristotle: Theory of Form and Matter, Theory of Causation.

Prescribed Book:

(1) W. T. Stace - Greek Philosophy

Reference books:

(1) Burnet - Greek Philosophy
(2) B. A. G. Fuller - A History of Greek Philosophy
(3) B. Russell - A History of Western Philosophy
(4) Y. Masih - A Critical History of Philosophy

CC VII:SYSTEMS OF INDIAN PHILOSOPHY (II)

Unit-I: UPANISHADic view of Atman and Brahman, Vidya and Avidya, Para vidyaand Aparavidya

Unit-II: Nyaya theory of Inference, Prama and Aprama, Concept of God

Unit-III: Vaishesika: Categories (Padarthas),Nyaya: Pramanas

Unit-IV: Sankara and Ramanuja's view on Maya, Jiva, Isvara, Brahman and Liberation

Prescribed Books: -

1. Dutta and Chatterjee: An Introduction to Indian Philosophy
2. C.D. Sharma: A Critical Survey of Indian Philosophy
3. M. Hiriyana: Outlines of Indian Philosophy

Books for Reference: -

1. J.N Sinha: Indian Philosophy
2. R.K Puligandla: Fundamentals of Indian Philosophy
3. S. Radhakrishnan: Indian Philosophy (Vol-I and II)

CC VIII:CONTEMPORARY INDIAN PHILOSOPHY

UNIT-I: Tagore: Nature of man God, Reality and Religion, Vivekananda: The concept of man, Universal Religion and PracticalVedanta

Unit-II: Sri Aurobindo: World, Maya, Evolution and Reality (Sacchidananda),Integral yoga

Unit- III: Gandhi: Truth, God and Non-violence, Ideal social order Dr B.R. Ambedkar: Vision of a just society

Unit- IV:S. Radhakrishnan: Man, Reality and Religion
J Krishna Murty: Man and Nature, Human Crisis

Prescribed Book: -

1. B.K Lal: Contemporary Indian Philosophy

Books forReference: -

1. H. Sahoo (Ed): Contemporary Indian Philosophy
2. T.M.P Mahadevan and V. Saroja: Contemporary Indian Philosophy

CC IX:HISTORY OF MODERN EUROPEAN

PHILOSOPHY

Unit- I Bacon: Theory of Idola, Inductive Method

Descartes: Universal Doubt, Cogito-Ergo-Sum, Existence of God

Unit-II Spinoza: Substance, Attribute and Modes

Leibnitz: Theory of Monads, Pre-established harmony

Unit- III Locke: Refutation of Innate ideas, Sources of knowledge

Berkeley: Subjective idealism, Ese-est-percipii Hume: Impression and Idea, Skepticism and Causality

Unit- IV Kant: Reconciliation between empiricism and Rationalism

Possibility of Synthetic-a priorijudgment

Prescribed Book: -

1. R.K. Pati: History of Modern European Philosophy

Books for Reference: -

1. Y Masih: History of Western Philosophy
2. Ira Sen Gupta: A History of Western Philosophy
3. Frank Thilly: History of Western Philosophy

CC X:PHILOSOPHY OF LANGUAGE

Unit-I Word Meaning: Meaning of the word "meaning", Ambiguity and Vagueness

Unit- II Definitions: Denotative, Connotative and Ostensive

Defining and Accompanying Characteristics

Stipulative, Reportive and Persuasive definition

Unit- III Sentence Meaning: Proposition and sentence

Word Meaning and sentence meaning, Criteria of sentence meaning

Unit-IV Concept: Nature and source

Truth: Correspondence, Coherence and Truth as it works

Prescribed book: -

1. John Hospers: An Introduction to Philosophical Analysis

Books for Reference: -

1. Alston: Philosophy of Language
2. Das P: Life Language & Reality: An Introduction to Philosophy of Language

CCXI:WESTERN CLASSICS: MEDITATIONS OF RENE DESCARTES

Unit- I Meditation I: Sceptical Doubts

Meditation II: Cogito-ergo-sum, Sum- res-cogitans,The Wax argument

Unit- II Meditation III: Clear and Distinct perceptions

Theory of Ideas, Existence of God

Unit- III Meditation IV: God is no deceiver, will, intellect and possibility of Error

Meditation V: Essence of Material things, Existence of God

Unit- IV Meditation- VI Mind- body Dualism,Primary and Secondary Quality

Prescribed Book: -

1. Rene Descartes: Meditations on first Philosophy

Books for Reference: -

1. Rae Langton: A Study Guide to Descartes Meditations
2. Amelie Rorty: Essays on Descartes Meditations

CCXII:INDIAN TEXT: ISA UPANISHAD

Unit-I What are Upanishads? Place of Upanishad in Indian Philosophy and Isa Upanishad

Unit-II Mantra 1 to 9

Unit- III Mantra 10 to 14

Unit- IV Mantra 15 to 18

Prescribed Book: -

1. Swami Gambhirananda, Eight Upanishads (Vol-I) God and Reality, Advaita Ashrama, Calcutta

Books for Reference: -

1. S. Radhakrishnan: The Principal Upanishads
2. Satyabadi Mishra: Central Philosophy of the Upanishads
3. Aditya Ku. Mohanty: Upanishads Rediscovered

CCXIII:SOCIAL & POLITICAL PHILOSOPHY

Unit-I: Sociality, Social science & Social laws, Philosophy of Social Science-Relation Between Individual&Society (Mechanical,Organic &Idealistic view)

Unit- II: Political Ideals- Justice, Liberty, Equality
Political Doctrines- Humanism, Secularism, Feminism, Philosophy of Ecology.

Unit- III: Democratic Ideals- Democratic Government, Conditions for Successful Functioning of Democracy,Human Rights

Unit-IV: Political Ideologies- (a) Anarchism (b) Marxism (c) Sarvodaya

Prescribed Book-

1. O.P. Gauba - An Introduction to Political Philosophy.

Reference Books-

1. Mackenzie: Social & Political Philosophy
2. Sukhvir Singh- Social and Political Philosophy
3. Sushila Ramaswamy- Political Theories: Ideas &Concepts
4. D.D. Raphel- Problems of Political Philosophy
5. Patitapaban Das- Social and Political Philosophy

CCXIV:APPLIED ETHICS

Unit- I: What is Applied Ethics: Nature &Scope of Applied Ethics- Ethical Theories- Deontology, Utilitarianism, Relativism &Subjectivism

Unit-II: Taking Life: Animals- Animals rights, Reverence for life
Taking Life: Humans- Types of Euthanasia, Abortion

Unit-III: Environmental Ethics: Anthropocentricism, Non-anthropocentricism, Deep Ecology

Unit-IV: Professional Ethics: (a) Business Ethics- Rights and Obligations,Justice& Honesty in Ethics.(b) Bio-medical Ethics- Hippocratic Oath, Rights and Obligations of Health Care Professionals, Doctor- Patient-Relationship

Prescribed Book-

1. Peter Singer- Practical Ethics

Reference Books-

1. J. Jagadeb- Bio-medical Ethics
2. Tom Regan - Animal Rights
3. J. P. Theroux- Ethics: Theory & Practice
4. P.K Mohapatra :Ethics and Society

DESCIPLINE SPECIFIC ELECTIVE

DSE I: PHILOSOPHY OF BHAGAVAD GITA

Unit-I: Dharma:-Varnadharma, Swabhava, Swadharma- Paradharma

Unit-II: Karma:-Classification of Karma; Agency Niskama Karma, Lokasamgraha, Relation between Karma Yoga and Jnana yoga

Unit-III: Jnana:- Distinction between Jnana and Vijnana. Criteria of True Knowledge (Buddhi Yoga & JnanaYoga), Kshetra, Kshetrajna, Purusottama.Sattvika, Rajasika and TamasikaJnana

Unit-IV: Bhakti Yoga:- Four kinds of devotee, Characteristics of Ideal Bhakti- Saranagati & Prapattikrupa (grace); Relation between Bhakti Yoga & Jnana Yoga

Prescribed Books-

1. The Bhagavad Gita- S. Radhakrishnan (Trs&Ed)

Reference Books-

1. Concept of Yoga in the Gita- S. C. Panigrahi
2. Bhagavad Gita & Modern Life- K. M. Munshi& R. R. Diwakar
3. The Lord Speaks (2016)- B. K. Tripathy
4. Srimad Bhagavad Gita Bhasya of Sri Sankaracharya- A. G. K. Warrier(Trs)
5. The Ethical Philosophy of Gita- P. N. Srinivasachari

DSE-II: PHILOSOPHY OF RELIGION

Unit-I: Judaic- Christian Concept of God (Chapter-1) Introduction to Philosophy of Religion Grounds for belief in existence of God (Chapter- 2)

Unit-II: Grounds for belief against existence of God (Chapter-3)

Unit-III: The Problem of Evil (Chapter- 4)

Unit-IV: Problems of Religious Language

Prescribed Book-

1. John Hick- Philosophy of Religion

Reference Books-

1. Y. Masih-Introduction to Religious Philosophy
2. Arvind Sharma- Philosophy of Religion

DSE –III:GANDHIAN STUDIES

Unit-I : Gandhi's concept of a Just society. Basic Ideals- Truth, Non-violence, Equality and Human Freedom.

Unit-II: Gandhi's idea of Social Engineering, Constructive Programme. Fight against social Evils (Injustice, Caste system, Untouchability) upliftment of Women.

Unit-III: Social Ideals of Gandhi Sarvodaya, Criticism of industrial civilization, Gramaswaraj, Anarchism, Trusteeship.

Unit –IV: Method of Social Action, Satyagraha- Kinds of Satyagraha,Methods of Satyagraha. Mercy- Killing, Ideals of Basic Education. Basic Norms & Method of Education, Education for a Happier & Peaceful Society. World Peace.

Prescribed Book-

1. The Philosophy of Mahatma Gandhi, by D.M Datta

Reference Books-

1. Social & Political Thought of M.K. Gandhi- Jaya Tanuja Bandopadhyay
2. Mahatma Gandhi- R.R. Diwakar

DSE-IV: RECENT WESTERN PHILOSOPHY

Unit-1: Arther, Schopenhauer: The world as representation. The world as will, theory of perception, Ethics

Unit-2: Nietzsche: Critique of enlightenment Perspectivism, Appollonian and Dyonysian will to power, concept of superman

Unit-3: Sartre, J.P.: Concept of Freedom, Bad-faith, Humanism

Unit-4: William James: Meaning & Truth, Varieties of Religious experience

Recommended Text

1. B.A.G Fuller & McMurrin , A History of Philosophy
2. D.M.Dutta Chief Currents of Contemporary Philosophy
3. Frank Thilly, History of Western Philosophy

Reference Book

1. M.K. Bhadra, A critical Survey of Phenomenology & Existentialism
2. H.J. Blackham, Six Existential Thinkers
3. W.Mc. Neil& K.S. Feldman, Continental Philosophy: An Anthology

Project (Optional)

Eligibility: Students who have scored more than 60% marks in Semester –I, II, III &IV are eligible to opt for project paper. The student has to prepare a project of his own selecting a topic from philosophical perspective (For example-some broad themes are given below). The dissertation carries 60 marks which will be evaluated by an external examiner and he / she will face a viva-voice test of 40 marks by an external examiner along with his / her supervisor of the concerned project.

1. Philosophy, value and culture
2. Existentialism and Phenomenology
3. Philosophy of religion
4. Philosophy of Language
5. Socio-Political Philosophy
6. Indian Philosophy/Contemporary Indian Philosophy
7. Ethics/Applied ethics
8. Philosophy of Mind

GE I General Philosophy

Unit 1: Chapter I- Introductory

Chapter II- The Calculus of Propositions

Unit II: Chapter III- The Calculus of Propositions (Sec 1 to 6)

Unit III: Chapter IV- The Calculus of Propositions (Sec 7 to 9) Chapter V- The Elements of Predicate Calculus

Unit IV: Appendix Sec 1 to Sec 4

Prescribed Book: -

1. Basson and O. Conner: Introduction to symbolic Logic

GEII: INDIAN PHILOSOPHY

Unit I: Salient features of Indian philosophy and key concepts, Carvaka epistemology and metaphysic, Jainism Syadvada and Anekantavada

Unit II: Buddhism- The Four Nobel Truth, Doctrine of Dependent origination, No Soul Theory, Nirvana

Unit III: Samkhya- Purusa, Prakrti, Theory of Evolution Yoga- Patanjali's CittaVrtti Nirodha, Astanga Yoga

Unit IV: Nyaya- Theory of Inference, Vaishesika- Padarthas (Categories)

Prescribed Books:-

1. Dutta and Chatterjee: An Introduction to Indian Philosophy

Reference Books:-

1. C.D Sharma: A critical Survey of Indian Philosophy
2. G.C Nayak: Bharatiya Darshana (Odia)
3. B.B. Choudhury: Bharatiya Darshana Ruparekha (Odia Translated book)

GE III:HISTORY OF MODERN EUROPEAN PHILOSOPHY

Unit I : Bacon: Theory of Idolas, Inductive Method Descartes: Methods of Doubt, Cogito ergo Sum

Unit II: Spinoza: Substance, Attributes and Model Leibnitz: Theory of Monads, Pre-Established Harmony

Unit III: Locke: Refutation of Innate Ideas, Theory of Knowledge Berkeley: Esseest percipi, Subjective Idealism

Unit IV: Hume: Ideas and Impressions Skepticism Kant: Reconciliation of Empiricism and Rationalism

Prescribed Book: -

1. R.K Pati- A History of Modern European Philosophy

Reference Books: -

1. Ira Sengupta- A History of Western Philosophy
2. Barlingay and Kulkarni- A History of Western Philosophy
3. Ray and Das- Paschatya Darshanra Itihasa
4. Y. Masih- A Critical History of Western Philosophy
5. Falkenberg- A History of Philosophy

GE IV: ETHICS: THEORY AND PRACTICE

Unit I: Definition, Nature and Scope of Ethics, Distinction between moral and Non-moral action.

Unit II: Distinction between factual and moral judgement, objects of moral judgement.

Unit III: Moral Standards: Hedonism, Mill's Utilitarianism, And Kant's Rigorism and Perfectionism.

Unit IV: Environmental Ethics: Anthropocentrism and Non-Anthropocentrism Bio-centric Egalitarianism, Deep Ecology, Responsibility for future Generation

Prescribed Book: -

1. J.N. Sinha- A Manual of Ethics
2. Peter Singer- Practical Ethics

Reference Book:

1. H. Sahoo(ed) Ethics theory and practice

Course structure of UG Political Science Honours

Semester	Course	Course Name	Credits	Total marks
I	AECC-I	AEC-I	04	100
	C-I	Understanding Political Theory	06	100
	C-II	Constitutional Government and Democracy in India	06	100
	GE-I	Feminism: Theory and Practice	06	100
			22	
II	AECC-II	AEC-II	4	100
	C-III	Political Theory-Concepts and Debates	06	100
	C-IV	Political Process in India	06	100
	GE-II	Governance: Issues and Challenges	06	100
			22	
III	C-V	Introduction to Comparative Government and Politics	06	100
	C-VI	Introduction to Public Administration	06	100
	C-VII	Perspectives on International Relations	06	100
	GE-III	Gandhi and the Contemporary World	06	100
	SEC-I	SEC-I(to be selected by the University/College from the Repertoire of SEC courses)	04	100
			28	
IV	C-VIII	Political Processes and Institutions in Comparative Perspective	06	100
	C-IX	Public Policy and Administration in India	06	100
	C-X	Global Politics	06	100
	GE-IV	United Nations and Global Conflicts	06	100

	SEC-II	SEC-II (to be selected by the University/College from the Repertoire of SEC courses)	04	100
			28	

Semester	Course	Course Name	Credits	Total marks
V	C-XI	Western Political Philosophy	06	100
	C-XII	Indian Political Thought(Ancient & Medieval)	06	100
	DSE-I	Introduction to Human Rights	06	100
	DSE-II	Development Process and Social Movements in Contemporary India	06	100
			24	
VI	C-XIII	Contemporary Political Philosophy	06	100
	C-XIV	Modern Indian Political Thought	06	100
	DSE-III	India's Foreign Policy in a Changing world	06	100
	DSE-IV	Women, Power and Politics	06	100
	OR			
	DSE-IV	Dissertation	06	100*
			24	

Discipline Specific Elective Papers: (Credit: 06 each) (4 papers to be selected by students of Political Science Honours): DSE 1-IV

1. Human Rights in a Comparative Perspective
2. Development Process and Social Movements in Contemporary India (PROJECT)
3. India's Foreign Policy in a Globalizing world
4. Women, Power and Politics
5. Project *Dissertation (can be opted as alternative of DSE-IV only and of 6 credits.

Dissertation content: 50, Seminar: 30, Viva: 20) as per regulation

POLITICAL SCIENCE

HONOURS PAPERS:

Core course – Designated as CI to C XIV i.e. 14 papers
Discipline Specific Elective (DSE) – 4 papers
Generic Elective (GE) for non Public Administration students– 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

Core Paper I (C- I) UNDERSTANDING POLITICAL THEORY

Introduction: This course is divided into two sections. Section 'A' introduces the students to the idea of political theory, its history and approaches and an assessment of its critical and contemporary trends. Section 'B' is designed to reconcile political theory and practices through reflections on the ideas and practices related to democracy.

UNIT-1: Introducing Political Theory

(i) What is Politics: Theorizing the 'Political'
(ii) Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative
(iii)Approaches to Political Theory: Normative, Historical, Behavioural and Post-behavioural

UNIT-II: Critical and Contemporary Perspectives in Political Theory

(i) Theories of Feminism: Feminist and Postmodern
(ii) Modernism and Post -modernism

UNIT-III: Political theory and Practice

(i) Democracy: Liberal and Marxist.
(ii) Procedural Democracy and its critique

UNIT-IV: The Grammar of Democracy

(i) Deliberative Democracy
(ii) Participation and Representation

Text Books

- Bhargava, R. and Ashok Acharya (2008) '*Political Theory: An Introduction.* New Delhi:Pearson Longman.
- Vinod, M.J and Deshpande, Meena (2013) 'Contemporary Political Theory', PHI, New Delhi
- Verma, S. P. (1996) 'Modern Political Theory', Vikash Publishing, 3rd Reprint, New Delhi.
- Ramaswamy, Sushila (2010), 'Political Theory: Ideas and Concepts', PHI Learning, New Delhi
- Bellamy, R. (1993), (ed.) 'Theories and Concepts of Politics'. New York: Manchester University Press.
- Marsh, D. and Stoker, G. (eds.) 'Theory and Methods in Political Science'. London: Macmillan.
- Heywood, Andrew (2016) (Reprint) 'Political Theory: An Introduction', Palgrave, UK.

Further Reading

- Kukathas, Ch. and Gaus, G. F. (2004) (eds.) 'Handbook of Political Theory'. New Delhi, Sage.
- Vincent, A. (2004) 'The Nature of Political Theory'. New York: Oxford University Press.
- Mckinnon, C. (ed.) (2008) 'Issues in Political Theory', New York: Oxford University Press.
- Arblaster, A. (1994) 'Democracy', (2nd Edition), Buckingham: Open University Press.
- Parekh, B. (2000), 'Rethinking Multiculturalism: Cultural Diversity and Political Theory', Macmillan Press, London.

Core Paper II(C-II)

CONSTITUTIONAL GOVERNMENT AND DEMOCRACY IN INDIA

Introduction: This course acquaints students with the Constitutional design of state structures and institutions, and their actual working over time. The Indian Constitution accommodates conflicting impulses (of liberty and justice, territorial decentralization and a strong union, for instance) within itself. The course traces the embodiment of some of these conflicts in constitutional provisions, and shows how these have played out in political practice. It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extra-constitutional environment.

UNIT-I: The Constituent Assembly and the Constitution

i) Formation and working of the Constituent Assembly
ii) The Philosophy of the constitution: The Preamble and its Features.
iii) Fundamental Rights, Directive Principles of State Policy, Fundamental Duties

UNIT-II: Organs of Government

i) The Legislature and the Executive
ii) The Judiciary: Supreme Court and High Courts

UNIT-III: Federalism

i) Federalism: Centre-State relations
ii) Recent trends in federalism

UNIT-IV: Decentralization

i) Panchayati Raj Institutions: Composition, Powers and functions of Gram Panchayat, Panchayat Samiti and Zilla Parishad.

ii) Municipalities: Composition Powers and function of Municipal Corporation, Municipal Council and Notified Area Council

Text Books

- G. Austin, (2010) 'The Indian Constitution: Cornerstone of a Nation', New Delhi, Oxford University Press, 15th print.
- R. Bhargava (ed.) 'Politics and Ethics of the Indian Constitution', New Delhi, Oxford University Press.
- D. Basu, (2012) 'Introduction to the Constitution of India', New Delhi, Lexis Nexis.
- S. Chaube, (2009) 'The Making and Working of the Indian Constitution', New Delhi, National Book Trust.
- G. Austin, (2000) 'Working a Democratic Constitution', New Delhi, Oxford University Press.
- B. Shankar and V. Rodrigues, (2011), 'The Indian Parliament: A Democracy at Work', New Delhi: Oxford University Press.
- P. Mehta and N. Jayal (2010) (eds.) 'The Oxford Companion to Politics in India', New Delhi, Oxford University Press.

Reference Books

- Mehra and G. Kueck (eds.) 'The Indian Parliament: A Comparative Perspective', New Delhi, Konark.
- B. Kirpal et.al (eds.) 'Supreme but not Infallible: Essays in Honour of the Supreme Court of India', New Delhi, Oxford University Press.
- L. Rudolph and S. Rudolph, (2008) 'Explaining Indian Institutions: A Fifty Year Perspective, 1956-2006', Volume 2, New Delhi, Oxford University Press.
- M. Singh, and R. Saxena (2011) (eds.), 'Indian Politics: Constitutional Foundations and Institutional Functioning', Delhi: PHI Learning Private Ltd.
- K. Roy, C. Saunders and J. Kincaid (2006) (eds.) 'A Global Dialogue on Federalism', Volume 3Montreal, Queen's University Press

Core Paper III (C - III)

POLITICAL THEORY-CONCEPTS AND DEBATES

Introduction: This course is divided into two sections. Section A helps the student familiarize with the basic normative concepts of political theory. Each concept is related to a crucial political issue that requires analysis with the aid of our conceptual understanding. This exercise is designed to encourage critical and reflective analysis and interpretation of social practices through the relevant conceptual tool kit. Section B introduces the students to the important debates in the subject. These debates prompt us to consider that there is no settled way of understanding concepts and that in the light of new insights and challenges, besides newer ways of perceiving and interpreting the world around us, we inaugurate new modes of Political debates.

UNIT-I: Importance of Freedom

(i) Negative Freedom and Positive Freedom, Freedom of belief, expression and dissent
(ii) Equality: Meaning and Types, Egalitarianism: Social Exclusion & Affirmative action

UNIT-II: Indispensability of Justice

(i) Justice: Meaning and Types
(ii) Procedural, Distributive and Global Justice.

UNIT-III: The Universality of Rights

(i) Rights: Natural, Moral and Legal
(ii) Three Generations of Rights

UNIT-IV: Major debates

(i) Political obligation: Grounds
(ii) Cultural Relativism and Multiculturalism.

Text Book

- Verma, S. P. (1996) 'Modern Political Theory', Vikash Publishing, 3rd Reprint, New Delhi.
- Vinod, M.J and Deshpande, Meena (2013) Contemporary Political Theory, PHI, New Delhi
- Ramaswamy, Sushila (2010), 'Political Theory: Ideas and Concepts', PHI Learning, New Delhi
- Bellamy, R. (1993), (ed.) *Theories and Concepts of Politics*. New York: Manchester University Press.
- Marsh, D. and Stoker, G. (eds.) 'Theory and Methods in Political Science'. London, Macmillan.
- Heywood, Andrew (2016) (Reprint), 'Political Theory: An Introduction', Palgrave, UK.

Reference Books

- Bellamy, Richard and Mason, Andrew (1993) (eds.) 'Political Concepts' Manchester, Manchester University Press.
- Knowles, Dudley. (2001) 'Political Philosophy', London, Routledge.
- Mckinnon, Catriona (2008) (ed.) 'Issues in Political Theory', New York: Oxford University Press.
- Swift, Adam. (2001) 'Political Philosophy: A Beginners Guide for Student's and Politicians', Cambridge, Polity Press.
- La Follett, Hugh (2003) (ed.) 'The Oxford Handbook of Practical Ethic'. New York, Oxford University Press.
- Knowles, Dudley. (2001) 'Political Philosophy', London, Routledge.

Core Paper IV (C-IV) POLITICAL PROCESS IN INDIA

Introduction: Actual politics in India diverges quite significantly from constitutional legal rules. An understanding of the political process thus calls for a different mode of analysis - that offered by political sociology. This course maps the working of 'modern' institutions, premised on the existence of an individuated society, in a context marked by communitarian solidarities, and their mutual transformation thereby. It also familiarizes students with the working of the Indian state, paying attention to the contradictory dynamics of modern state power.

Political Parties, the Party system and Determinants

of Voting Behaviour UNIT-I: Indian party system

(i) Party System in India: Features and Trends
(ii) Voting Behaviour and Its determinants: Caste, Class, Gender and Religion.
(iii) Election Commission: Constitution and Functions, Electoral Reforms

UNIT-II: Regionalism, Religion and Politics

(i) Regionalism: Causes and its trends,
(ii) Secularism and Communalism: Debates

UNIT-III: Caste and Politics

i) Caste and Politics: Politicisation of Caste
ii) Affirmative Action: Policies, Women, Caste and Marginalized Class

UNIT-IV: The Changing Nature of the India State

(i) Developmental and Welfare Dimensions
(ii) Coercive Dimension

Text books

- Kaviraj, Sudipta(2009) 'Politics in India', Oxford University Press, New Delhi
- Kohli, Atul (2004) (ed.) 'The Success of India's Democracy', New Delhi, Cambridge University Press.
- Kothari,R (1970) 'Caste in Indian Politics', Delhi, Orient Longman.
- M. John, (ed) (2008) 'Women in India: A Reader, Penguin , India
- P. Brass, (1999) 'The Politics of India since Independence, New Delhi, Cambridge University Press and Foundation Books.
- P. Mehta and N. Jayal (2010) (eds.) 'The Oxford Companion to Politics in India', New Delhi, Oxford University Press.
- Z. Hasan (2002) (ed.) 'Parties and Party Politics in India', New Delhi: Oxford University Press.
- Z. Hasan, E. Sridharan and R. Sudarshan (2002) (eds.) 'India's Living Constitution: Ideas, Practices, Controversies', New Delhi, Permanent Black.

Reference Books

- N. Menon and A. Nigam, (2007) 'Power and Contestation: India since 1989', London, Fernwood Publishing, Halifax and Zed Books.

- R. Vora and S. Palshikar (eds.) 'Indian Democracy: Meanings and Practices', New Delhi, Sage.
- Shah, G (ed.) 'Social Movements and the State', New Delhi, Sage Publications.
- P. deSouza and E. Sridharan (eds.) 'India's Political Parties', New Delhi, Sage Publications.
- A S. Ganguly, L. Diamond and M. Plattner (eds.) 'The State of India's Democracy', Baltimore, John Hopkins University Press.

Core Paper V (C - V)

INTRODUCTION TO COMPARATIVE GOVERNMENT AND POLITICS

Introduction: This is a foundational course in comparative politics. The purpose is to familiarize students with the basic concepts and approaches to the study of comparative politics. More specifically the course will focus on examining politics in a historical framework while engaging with various themes of comparative analysis in developed and developing countries.

UNIT-1: Understanding Comparative Politics

(i) Meaning, Nature, scope and Evolution
(ii) Approaches to the study of Comparative Politics

UNIT-II: Historical context of modern government

(i) Capitalism: meaning and development
(ii) Globalization: Features & impact

UNIT-III: Historical context of Modern Government- II

(i) Socialism: Meaning, Types and its growth
(ii) Rise and Decline of Communism as a Ruling Ideology
(iv) Colonialism and decolonization: meaning, context, forms of colonialism

UNIT-IV: Themes of Comparative Politics

(i) A comparative study of Governments of USA & China
(ii) US: President, Congress, Supreme Court
(iii) China: People's Congress, National Assembly, Role of Communist Party of China

Text books:

- Bhagwan, Vishnoo et al (2012) 'World Constitutions', Sterling Publishers , New Delhi
- Chilcote, Ronald (1994) 'Theories of Comparative Politics: The Search for a Paradigm Reconsidered', Westview Press, Boulder.
- G. Ritzer, (2002) 'Globalization: A Basic Text'. London, Wiley-Blackwell.
- Huntington, Samuel, (1968) 'Political Order in Changing Societies', Yale University Press, New Haven.
- Kapur, A.C and K.K. Mishra (2010) 'Select Constitutions', S. Chand, New Delhi

- Suresh. R(2010), 'Economy and Society : Evolution of Capitalism', Sage , New Delhi

Reference Books

- P. Burnell, et. al, 'Politics in the Developing World'. New Delhi: Oxford University Press,
- J. McCormick, (2007) 'Comparative Politics in Transition', UK, Wadsworth.
- L. Barrington et. al (2010) 'Comparative Politics - Structures and Choices', Boston, Wadsworth,
- M. Kesselman, J. Krieger and William (2010), 'Introduction to Comparative Politics: Political Challenges and Changing Agendas', UK, Wadsworth.
- J. Kopstein and M. Lichbach. (eds.) 'Comparative Politics: Interest, Identities and Institutions in a Changing Global Order'. Cambridge: Cambridge University Press.

Core Paper VI (C-VI)

INTRODUCTION TO PUBLIC ADMINISTRATION

Introduction: The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the recent trends, including feminism and ecological conservation and how the call for greater democratization is restructuring public administration. The course will also attempt to provide the students a comprehensive understanding on contemporary administrative developments.

UNIT-1 : Public Administration as a Discipline

(i) Meaning, Scope and Significance of the Discipline,Public and Private Administration
(ii) Evolution of Public Administration

UNIT-II: Theoretical Perspectives

Classical Theories

(i) Scientific management (F. W. Taylor), Ideal-type bureaucracy (Max Weber)
(ii) Administrative Management (Gullick, Urwick and Fayol)

UNIT-III: Neo-Classical and Contemporary Theories

(i) Human Relations theory (Elton Mayo), Rational decision-making (Herbert Simon)
(ii) Ecological approach (Fred Riggs), Innovation and Entrepreneurship (Peter Drucker)

UNIT-IV: Public Policy and Major Approaches in Public Administration

(i) Public Policy-Concept and approaches, Formulation, implementation and evaluation
(ii) New Public Administration, New Public Management, New Public Service Approach

(iii) Good Governance, Feminist Perspectives in Governance

Text Books

- B. Chakrabarty and M. Bhattacharya (eds), 'Administrative Change and Innovation: A Reader', New Delhi, Oxford University Press.
- Basu, Rumki, (2014) 'Public Administration: Concepts and Theories', Sterling Publishers, New Delhi
- D. Ravindra Prasad, Y. Pardhasaradhi, V. S. Prasad and P. Satyrnarayana, (2010) (eds.) 'Administrative Thinkers', Sterling Publishers.
- J. Shafritz, and A. Hyde, (2004) (eds.) 'Classics of Public Administration', 5th Edition. Belmont, Wadsworth.
- M. Bhattacharya, (2008) 'New Horizons of Public Administration', 5th Revised Edition. New Delhi, Jawahar Publishers.
- M. Bhattacharya, (2011) 'New Horizons of Public Administration', New Delhi: Jawahar Publishers.
- M. Bhattacharya, (2012) 'Restructuring Public Administration: A New Look', New Delhi, Jawahar Publishers,
- N. Henry, (2013) 'Public Administration and Public Affairs', 12th edition. New Jersey, Pearson,
- Shafritz, J. and Hyde, A. , (1997) (eds.) 'Classics of Public Administration', 4th Edition. Forth Worth, Hartcourt Brace, TX.

Reference Books

- B. Chakrabarty and M. Bhattacharya (2003) (eds.), 'Public Administration: A Reader', New Delhi, Oxford University Press.
- B. Chakrabarty, (2007) 'Reinventing Public Administration: The India Experience'. New Delhi, Orient Longman,
- B. Miner, (2006) 'Organisational Behaviour: Historical Origins and the Future'. New York,
- F. Riggs, (1964) 'Administration in Developing Countries: The Theory of Prismatic Society'. Boston, Houghton Miffin.
- F. Riggs, (1961) 'The Ecology of Public Administration', Part 3, New Delhi, Asia Publishing House.
- M. Bhattacharya, (2006) 'Social Theory, Development Administration and Development Ethics', New Delhi, Jawahar Publishers.
- Nivedita Menon (1999), (ed.) 'Gender and Politics', New Delhi, Oxford University Press.
- Peter F. Ducker, (2006) 'The Practice of Management', Harper Collins.
- S. Maheshwari,(2009) 'Administrative Thinkers', New Delhi: Macmillan

Core Paper VII (C-VII)

PERSPECTIVES ON INTERNATIONAL RELATIONS

Introduction: This paper seeks to equip students with the basic intellectual tools for understanding International Relations. It introduces students to some of the most important theoretical approaches for studying international relations. The course begins by historically contextualizing the evolution of the international state system before discussing the agency-structure problem through the levels-of-analysis approach. After having set the parameters of the debate, students are introduced to different theories in International Relations. It provides a fairly comprehensive overview of the major political developments and events starting from the twentieth century. Students are expected to learn about the

key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives. A key objective of the course is to make students aware of the implicitEuro-centricism of International Relations by highlighting certain specific perspectives from the Global South.

UNIT-I: Studying International Relations

(i) International Relations: Meaning, Scope and Evolution**,** Emergence of International State System
(ii) National Interest-Key Determinants of International Relations

(iii) Power-Cornerstone of International Relations

UNIT-II: Theoretical Perspectives

(i) Classical Realism & Neo-Realism, Liberalism & Neo-liberalism
(ii) Marxist Approaches, Feminist Perspectives, Euro- centricism & Perspective from the Global South

UNIT-III: An Overview of Twentieth Century IR History-I

(i) World War I: Causes & Consequences, significance of Bolshevik Revolution
(ii) Rise of Fascism / Nazism, World war II-Causes &Consequences

UNIT-IV: An Overview of Twentieth Century IR -II

(i) Cold War Evolution& Different Phases (4 Lectures) Disintegration of USSR
(ii) Emergence of the Third World, End of the Cold War

Text Books

- Basu, Rumki (2012) (ed.) 'International Politics: Concepts, Theories and Issues', New Delhi.
- Baylis & S. Smith (2002) (eds.), 'The Globalization of World Politics', Oxford University Press, UK, 4th edition, 2007 W.Bello, Deglobalization, Zed Books, London.
- M. Nicholson, (2002) 'International Relations: A Concise Introduction', New York, Palgrave.
- P. Viotti and M. Kauppi, (2007) 'International Relations and World Politics: Security, Economy, Identity', Pearson Education.
- R. Jackson and G. Sorensen, (2007) 'Introduction to International Relations: Theories and Approaches', 3rd Edition, Oxford, Oxford University Press.
- S. Joshua. Goldstein and J. Pevehouse, (2007) 'International Relations', New York, Pearson Longman.

Reference Books

1. Calvocoressi, P. (2001) 'World Politics: 1945—2000'. Essex, Pearson.
1. Dey, Dipankar (2007)(ed.), 'Sustainable Development: Perspectives and Initiatives', ICFAI University Press, Hyderabad,
2. K. Booth and S. Smith, (eds), 'International Relations Theory Today', Pennsylvania, The Pennsylvania State University Press.
3. M. Smith and R. Little (2000) (eds.), 'Perspectives on World Politics', New York, Routledge

Core Paper VIII(C-VIII)

POLITICAL PROCESSES AND INSTITUTIONS IN COMPARATIVE PERSPECTIVE

Introduction: In this course students will be trained in the application of comparative methods to the study of politics. The course is comparative in both what we study and how we study. In the process the course aims to introduce undergraduate students to some of the range of issues, literature, and methods that cover comparative political.

UNIT-I: Approaches to Studying Comparative Politics

(i) Political Culture –Meaning, Types &relevance.
(ii) New Institutionalism –Meaning, Background, Significance

UNIT-II: Election& Party System

(i) Definition and procedures: Types of election system (First Past the Post, Proportional Representation, Mixed Representation)
(ii) Party System -Evolution, Theories and types

UNIT-III: Nation-state

(i) Nation-state; Meaning and Evolution in West Europe
(ii) Nation and State; Debates in Post-colonial contexts

UNIT-IV: Democratization in Post- colonial societies

(i) Democratization in Post-authoritarian countries and in Post-communist countries
(ii) Federalism: Meaning and Features, Federation& Confederation: Debates around territorial division of power.

Text Books

- A. Heywood, (2002) 'Politics', New York, Palgrave.
- J. Bara and M. Pennington, (eds.) *Comparative politics.* New Delhi: Sage Publications.
- J. Bara and Pennington. (2009) (eds.) 'Comparative Politics: Explaining Democratic System', Sage Publications, New Delhi.
- J. Ishiyama, and M. Breuning, (2011) (eds) '21st Century Political Science: A Reference Book', Los Angeles, Sage Publications.
- M. Lichback and A. Zuckerman, (eds.) 'Comparative Political: Rationality, Culture, and Structure'. Cambridge, Cambridge University Press.

Reference Books

- R. Watts, (2008) 'Comparing Federal Systems'. Montreal and Kingston, McGill

Queen'sUniversity Press.

- Saxena, R (2011) (eds.) 'Varieties of Federal Governance: Major Contemporary Models', New Delhi, Cambridge University Press.
- T. Landman, (2003) 'Issues and Methods of Comparative Methods: An Introduction'. London, Routledge.

Core Paper IX (C-IX)

PUBLIC POLICY AND ADMINISTRATION IN INDIA

Introduction: The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programs and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non-western perspective.

UNIT-I: Public Policy

i) Definition, characteristics and models
ii) Public Policy Process in India

UNIT-II: Decentralization

(i) Meaning, significance, types and approaches to decentralization.
(ii) Local Self Governance: Rural and Urban

UNIT-III: Budget and Social Welfare Administration

(i) Concept and Significance of Budget, Budget cycle in India, Types of Budgeting
(ii) Concept and Approaches of Social Welfare.
(iii) Social Welfare Policies:
(a) **Education:** Right to Education,
(b) **Health:** National Health Mission,
(c) **Food:** Right to Food Security,
(d) **Employment:** MNREGA

UNIT-I V: Citizen and Administration Interface

(i) Public Service Delivery System;
(ii) Redressal of Public Grievances: RTI, Lokpal, Citizens' Charter and e-Governance

Text Books

- Basu Rumki (2015) 'Public Administration in India Mandates, Performance and Future Perspectives', New Delhi, Sterling Publishers

- Bidyut Chakrabarty, (2007) 'Reinventing Public Administration: The Indian Experience', Orient Longman,
- Henry, N. (1999) 'Public Administration and Public Affairs', New Jersey, Prentice Hall
- Jean Drèze and Amartya Sen, (1995) 'India, Economic Development and Social Opportunity', Oxford, Oxford University Press.
- R.B. Denhardt and J.V. Denhardt, (2009) 'Public Administration', New Delhi, Brooks/Cole
- Satyajit Singh and Pradeep K. Sharma (2007) (eds.) 'Decentralization: Institutions and Politics in Rural India', Oxford University Press, New Delhi.
- Singh, S. and Sharma, P. (2007) (eds.) 'Decentralization: Institutions and Politics in Rural India'. New Delhi, Oxford University Press.
- Vasu Deva, (2005) 'E-Governance In India: A Reality', Commonwealth Publishers.
- Vijaya Kumar, (2012) 'Right to Education Act 2009: Its Implementation as to Social Development in India', Delhi: Akansha Publishers.

Reference Books

- 'World Development Report', (1992) World Bank, Oxford University Press,.
- Anderson, (1975) 'Public Policy Making', New York, Thomas Nelson and sons Ltd.
- Gabriel Almond and Sidney Verba, (1965) 'The Civic Culture', Boston, Little Brown.
- J.Dreze and Amartya Sen, (1997) 'Indian Development: Selected Regional Perspectives', Oxford, Clareland Press
- Jayal, N.G (1999) 'Democracy and The State: Welfare, Secular and Development in Contemporary India', Oxford, Oxford University Press.
- Jugal Kishore, (2005) National Health Programs of India: National Policies and Legislations, Century Publications.
- Lee and Mills, (1983) 'The Economic of Health In Developing Countries', Oxford, Oxford University Press.
- M. Howlett, M. Ramesh, and A. Perl, (2009), 'Studying Public Policy: Policy Cycles and Policy subsystems', 3rd edition, Oxford University Press, New Delhi
- Marma Mukhopadhyay and Madhu Parhar (2007) (ed.) 'Education in India: Dynamics of Development' New Delhi, Shipra Publications.
- Noorjahan Bava, (2001) 'Development Policies and Administration in India', Delhi, Uppal Publishers.
- R. Putnam, (1993) 'Making Democracy Work', Princeton University Press.
- T. Dye, (2002) 'Understanding Public Policy', New Delhi, Pearson
- United Nation Development Programme, (1997)'Reconceptualising Governance', New York
- Y. Dror, (1989) 'Public Policy Making Reexamined'. Oxford, Transaction Publication.

Core Paper X (C-X)

GLOBAL POLITICS

Introduction: This course introduces students to the key debates on the meaning and nature of globalization by addressing its political, economic, social, cultural and technological dimensions. In keeping with the most important debates within the globalization discourse, it imparts an understanding of the working of the world economy, its anchors and resistances offered by global social movements while analyzing the changing nature of relationship between the state and trans- national actors and networks. The course also offers insights into key contemporary global issues such as the proliferation of nuclear weapons, ecological issues, international terrorism, and human security before concluding with a debate on the phenomenon of global governance.UNIT-I: Globalization: Conceptions

(i) Understanding Globalization and its Alternative Perspectives, Non-Proliferation Regimes
(ii) Global Economy: Its significance & anchors of Global Political Economy: IMF, World Bank, WTO, TNCs

UNIT-II: Globalization: Perspectives

(i) Political Debates on Sovereignty and Territoriality
(ii) Cultural and Technological Dimensions
(iii) Global Resistances (Global Social Movements and NGOs)
(iv) Ecological Issues: International Environmental Agreements, Climate Change

UNIT-III: Contemporary Global Issues-I

(i) Proliferation of Nuclear Weapons
(ii) International Terrorism: Non-State Actors and State Terrorism; Post 9/11 developments

UNIT-IV: Contemporary Global Issues-II

(i) Migration & Human Security
(ii) Global Shifts: Power and Governance

Text Books

- G. Ritzer, (2010) 'Globalization: A Basic Text', Sussex: Wiley-Blackwell.
- M. Strager, (2009) 'Globalization: A Very Short Introduction', London, Oxford University Press.
- Heywood, (2011) 'Global Politics', New York, Palgrave-McMillan.
- J. Baylis, S. Smith and P. Owens (2011) (eds.) 'Globalization of World Politics: An Introduction to International Relations', New York, Oxford University Press.
- W. Ellwood, (2005) 'The No-nonsense Guide to Globalization', Jaipur, Rawat Publications.
- D. Held and A. McGrew (2000) (eds.) 'The Global Trans-Formations Reader', Cambridge, Polity Press.

Reference Books

- A. Narlikar, (2005) 'The World Trade Organization: A Very Short Introduction', New York, Oxford University Press.
- Goldstein, (2006) 'International Relations', New Delhi, Pearson.
- P. Hirst, G. Thompson and S. Bromley, (2009) 'Globalization in Question', Cambridge, Polity Press.
- D. Held et al, (1999) 'Global Transformations: Politics, Economics and Culture', California, Stanford University Press.
- F. Lechner and J. Boli (ed.), (2004) 'The Globalization Reader', London, Blackwell.(WTO).
- G. Ritzer, (2010) 'Globalization: A Basic Text', Sussex, Wiley-Blackwell.
- T. Cohn, (2009) 'Global Political Economy', New Delhi, Pearson.
- D. Held and A. McGrew (eds.), (2002) 'Global Transformations Reader: Politics, Economics and Culture', Cambridge, Polity Press.
- A. Vanaik, (ed.), (2004) 'Globalization and South Asia: Multidimensional Perspectives', New Delhi, Manohar Publications.

Core Paper XI (C-XI)

WESTERN POLITICAL PHILOSOPHY

Introduction: This course goes back to Greek antiquity and familiarizes students with the manner in which the political questions were first posed. Machiavelli comes as an interlude inaugurating modern politics followed by Hobbes and Locke, Rousseau, Marx. This is a basic foundation course for students.

UNIT-I : Text and Interpretation: Antiquity

(i) Plato
(ii) Aristotle

UNIT-II

(i) Machiavelli
(ii) Hobbes

UNIT-III

(i) Locke
(ii) Rousseau

UNIT-IV

(i) J. S. Mill
(ii) Karl Marx

Text Books

- C. Kukathas and G. Gaus, (eds.) 'Handbook of Political Theory', London, Sage Publications Ltd.
- D. Boucher and P. Kelly (2009), (eds) 'Political Thinkers: From Socrates to the Present', Oxford, Oxford University Press.
- J. Coleman, (2000) 'A History of Political Thought: From Ancient Greece to Early Christianity, Oxford, Blackwell Publishers.
- Mukherjee, Subrato and Susheela Ramaswamy(2011*)* 'History of political Thought: Plato to Marx', PHI Publishers , New Delhi
- Okin, S. (1992), 'Women in Western Political Thought', Princeton, Princeton University Press.
- R. Kraut (1996) (ed.) 'The Cambridge Companion to Plato', Cambridge, Cambridge University Press.

Reference Books

1. A. Skoble and T. Machan, (2007) 'Political Philosophy: Essential Selections', New Delhi, Pearson Education.
2. J. Barnes (1995) (ed.), 'The Cambridge Companion to Aristotle'. Cambridge, Cambridge University Press.

Core Paper XII (C-XII)

INDIAN POLITICAL THOUGHT (ANCIENT AND MEDIEVAL)

Introduction: This course introduces the specific elements of Indian Political Thought spanning over two millennia. The basic focus of study is on individual thinkers whose ideas are however framed by specific themes. The course as a whole is meant to provide a sense of the broad streams of Indian thought while encouraging a specific knowledge of individual thinkers and texts. Selected extracts from some original texts are also given to discuss in class. The list of Reference books is meant for teachers as well as the more interested students.

UNIT-I: Traditions of Pre-colonial Indian Political Thought

i) Brahmanic and Shramanic
ii) Islamic and Syncretic.

UNIT-II : Ved Vyasa (Shantiparva) and Manu

(i) Ved Vyasa : Rajadharma
(ii) Manu : Social Laws

UNIT-III: Kautilya, Barani and Aggannasutta

(i) Kautilya: Theory of State, Foreign Policy, Role of King
(ii) Aggannasutta- Theory of Kingship
(iii) Barani: Ideal Polity

UNIT-IV :Kabir and Abul Faza

(i) AbulFazal-Monarchy
(ii) Kabir: Syncretism

Text Books

- A. Appodoroy, (2002) 'Political Thought in India, Delhi, Khama Publication.
- A. B. M, (1976), 'The Foundation of Muslim Rule in India', Allahabad, Central Book Depot.
- Brown, (2003) 'The Verses of Vemana', Asian Educational Services, Delhi.
- Habib, Irfan.(1995) 'Essays in Indian History', New Delhi, Tulika Publications.
- Roy, Himanshu and Singh, M. (2017), 'Indian Political Thought: Themes and Thinker', Second Edition, New Delhi, Pearson.
- S. Saberwal, (2008) 'Spirals of Contention', New Delhi, Routledge,
- Sharma, R. S (1991) 'Aspects of Political Ideas Institutions in Ancient India, Delhi, Motilal Banarsidas.
- T. Pantham, and K. Deutsch (1986) (eds.), Political Thought in Modern India, New Delhi, Sage Publications.
- Thapar, Romila, (1997) 'Ashok and the Decline of the Mauryas, ' New York, Oxford University Press.
- V. Mehta, (1992) 'Foundations of Indian Political Thought, New Delhi, Manohar Publications.
- V.P. Varma, (1974) 'Studies in Hindu Political Thought and Its Metaphysical Foundations', New Delhi, Motilal Banarsidass.

Reference Books

- A. Fazl, (1873) 'The Ain-i Akbari ' (translated by H. Blochmann), Calcutta: G. H. Rouse.
- J. Spellman, (1964) 'Political Theory of Ancient India: A Study of Kingship from the Earliest time to Ceirca AD 300, Oxford, Clarendon Press.
- L. Hess and S. Singh, (2002) 'The Bijak of Kabir', New Delhi, Oxford University Press.
- R. Kangle (ed. and trns.), 'Arthasastra of Kautilya', New Delhi, Motilal Publishers.
- S. Collins, (2001) 'Agganna Sutta: The Discussion on What is Primary (An Annotated Translation from Pali), Delhi, Sahitya Akademi.

Core Paper XIII (C-XIII)

CONTEMPORARY POLITICAL PHILOSOPHY

Introduction: Philosophy and politics are closely intertwined. Students will be exposed to the manner in which the questions of politics have been posed in terms that have implications for larger questions of thought and existence. Contemporary political philosophy and debates are introduced to the students here.

UNIT-I

i) Lenin

UNIT-II

i) Mao Zedong (Mao Tse Tung)

UNIT-III

(i) Antonio Gramsci

UNIT-IV

(i) John Rawls

Text Books

- B. Nelson, (2008) 'Western Political Thought'. New York, Pearson Longman.
- D. Boucher, and P. Kelly, (2003) (eds.) 'Political Thinkers: From Socrates to the Present'. New York, Oxford University Press.
- Gramsci, Antonio(1996), 'Selections from the Prison Notebooks', Orient Longman, Hyderabad
- Hacker, A. (1961), 'Political Theory: Philosophy, Ideology, Science', Macmillan, New York.
- Mukherjee, Subrato and Susheela Ramaswamy(2011) 'History of political Thought: Plato to Marx', PHI Publishers , New Delhi
- Rawls, John (2011), 'A Theory of Justice', Universal Law Publishing Co., New Delhi.

- Sabine, George, H. (1973). 'A History of Political Theory', Oxford and I.B.H. Publishing, New Delhi.
- Wayper. C.L (1989), 'Political Thought', B.I. Publications, Bombay.

Reference Books

- D. Germino (1972). Modern Western Political Thought: Machiavelli to Marx, Chicago University Press, Chicago.
- F.W. Coker (1971). Recent Political Thought, The World Press Pvt. Ltd., Calcutta.
- J.H. Hallowell (1960). Main Currents in Modern Political Thought, Holt, New York.

Core Paper XIV (C-XIV)

MODERN INDIAN POLITICAL THOUGHT

Introduction: Based on the study of individual thinkers, the course introduces a wide span of thinkers and themes that defines the modernity of Indian political thought. The objective is to study general themes that have been produced by thinkers from varied social and temporal contexts. Selected extracts from original texts are also given to discuss in the class. The list of Reference books is meant for teachers as well as the more interested students.

UNIT-I: Introduction

(i) Rammohan Roy: Rights, Reform Movement, Liberalism
(ii) Pandita Ramabai: Gender, critique of orthodoxy
(iii)Vivekananda: Ideal Society, Humanism, Nationalism

UNIT-II: Gandhi & Ambedkar

(i) Gandhi: Swaraj, Swadeshi(8 lectures)
(ii) Ambedkar: Social Justice

UNIT-III : Tagore&Savarkar

(i) Tagore Critiqueof Nationalism (8 lectures)
(ii) Savarkar: Hindutwa-A critical Assessment

UNIT-IV: Nehru,Lohia and J.P. Narayan

(i) Nehru: Secularism, Socialism
(ii) Lohia: Socialism,
(iii) J.P.Narayan: Total Revolution

Text books:

- A. Sen, (2003) 'Swami Vivekananda', Delhi, Oxford University Press.

- D. Dalton, (1982) 'Indian Idea of Freedom: Political Thought of Swami Vivekananda, Aurobindo Ghose, Rabindranath Tagore and Mahatma Gandhi', Academic Press, Gurgaon.
- G. Omvedt, (2008) 'Ramabai: Women in the Kingdom of God', in *Seeking Begumpura*: *The Social Vision of Anti Caste Intellectuals,* New Delhi, Navayana.
- M. Kosambi (2000) (ed.), 'Pandita Ramabai Through her Own Words: Selected Works', New Delhi, Oxford University Press.
- Raghuramaraju, (2007) 'Debates in Indian Philosophy: Classical, Colonial, and Contemporary', Delhi, Oxford University Press.
- S. Sarkar, (1985) 'A Critique on Colonial India', Calcutta, Papyrus.
- Sh. Kapila (2010) (ed.), 'An intellectual History for India', New Delhi: Cambridge University Press.
- T. Pantham and K. Deutsch (1986), (eds.) 'Political Thought in Modern India', New Delhi, Sage.
- V. Mehta and T. Pantham (eds.), (2006) 'A Thematic Introduction to Political Ideas in Modern India: Thematic Explorations, History of Science, Philosophy and Culture in Indian civilization' Vol. 10, Part: 7, New Delhi, Sage Publication.

Reference Books

- P. Chatterjee, (1986) 'Nationalist Thought and the Colonial World: A Derivative Discourse? London, Zed Books.
- S. Hay (1991) (ed.), 'Sources of Indian Tradition', Vol. 2.Second Edition, New Delhi, Penguin.
- S. Thorat and Aryama (2007) (eds.), 'Ambedkar in Retrospect - Essays on Economics, Politics and Society', Jaipur, IIDS and Rawat Publications.

Discipline Specific Elective Paper-I

INTRODUCTION TO HUMAN RIGHTS

Introduction: This course attempts to build an understanding of human rights among students through a study of specific issues in a comparative perspective. It is important for students to see how debates on human rights have taken distinct forms historically and in the contemporary world. The course seeks to anchor all issues in the Indian context, and pulls out another country to form a broader comparative frame.

Human Rights: Theory and Institutionalization UNIT-I:

i) Understanding Human Right
ii) Three Generations of Rights

UNIT-II

i) Universal Declaration of Human Rights

UNIT-III

i) Rights in National Constitutions: South Africa and India

UNIT-IV

i) International Refugee Law, International Humanitarian Law

Text Books

- Alston Philip (1995), 'The United Nations and Human Rights-A Critical Appraisal', Oxford, Clarendon.
- Baxi, Upendra (1995) (ed.), 'The Right to be Human', Delhi, Lancer,
- Beetham, David (1987) (ed.), 'Politics and Human Rights', Oxford, Blackwell.
- Desai, A R. (1986)(ed), 'Violations of Democratic Rights in India', Bombay, Popular Prakashan.
- Evans, Tony (2001), 'The Politics of Human Rights: A Global Perspective', London, Pluto Press.
- Hargopal. G.(1999) 'Political Economy of Human Rights', Hyderabad, Himalaya.
- J. Hoffman and P. Graham, (2006) 'Introduction to Political Theory', Delhi, Pearson.

Reference Books

- Kothari, Smitu and Sethi, Harsh (1991)(eds.), 'Rethinking Human Rights', Delhi, Lokayan.
- Saksena, K.P. (1999) (ed.), 'Human Rights: Fifty Years of India's Independence', Delhi, Gyan.
- Subramanian, S.(1997), 'Human Rights: International Challenges', Delhi, Manas Publications.
- Vistaar Iyer, V.R. Krishna (1999), 'The Dialectics and Dynamics of Human Rights in India', Delhi, Eastern Law House.

Discipline Specific Elective Paper II

DEVELOPMENT PROCESS AND SOCIAL MOVEMENTS IN CONTEMPORARY INDIA
(Project)

Introduction: Under the influence of globalization, development processes in India have undergone transformation to produce spaces of advantage and disadvantage and new geographies of power. The high social reproduction costs and dispossession of vulnerable social groups involved in such a development strategy condition new theories of contestation and struggles. A variety of protest movements emerged to interrogate and challenge this development paradigm that evidently also weakens the democratic space so very vital to the formulation of critical consensus. This course proposes to introduce students to the conditions, contexts and forms of political contestation over development paradigms and their bearing on the retrieval of democratic voice of citizens.

UNIT-I: Development Process since Independence

(i) Welfare State, Development and the role of Planning commission
(ii) Development in the era of Liberalization and Reforms

UNIT-II: Development Strategy and its Impact on the Social Structure

(i) Industrial Development and its impact on organized and unorganized labour

(ii) Agricultural Development and Agrarian Crisis, Land Reforms and Green Revolution,

UNIT-III: Social Movements

i) Social Movements: Meaning and Approaches, New Social Movements
ii) Women's Movement, Environmental Movements

UNIT-IV: Social Movements

i) Dalit Movement, Tribal Movement,
ii) Left wing Extremism: Issues and Challenges

Text Books

- A. Desai, (1986) (ed.), 'Agrarian Struggles in India After Independence', Delhi, Oxford University Press
- A. F. Frankel, (2005) 'India's Political Economy (1947-2004): The Gradual Revolution', Delhi, Oxford University Press.
- B. Nayar, (2007) (ed.), 'Globalization and Politics in India', Delhi, Oxford University Press.
- G. Omvedt, (1983) 'Reinventing Revolution, New Social Movements and the Socialist Tradition in India', New York, Sharpe.
- G. Rath, (2006) (ed.), 'Tribal development in India: The Contemporary Debate', New Delhi, Sage Publications.
- G. Shah, (2004) 'Social Movements in India: A Review of Literature', New Delhi, Sage Publications.
- G. Shah, (ed.), (2002) 'Social Movements and the State'. New Delhi, Sage Publications.
- R. Mukherji (2010) (ed.) 'India's Economic Transition: The Politics of Reforms', Delhi, Oxford University Press.
- S. Roy and K. Debal, (2004) 'Peasant Movements in Post-Colonial India: Dynamics of Mobilization and Identity', Delhi, Sage.

Reference Books

- J. Harris, (2009) 'Power Matters: Essays on Institutions, Politics, and Society in India', Delhi, Oxford University press.
- J. Harriss, (2006) (ed*)* 'Power Matters: Essays on Institutions, Politics, and Society in India,' Delhi. Oxford University Press.
- K. Suresh, (ed.), (1982) 'Tribal Movements in India', Vol I and II, New Delhi, Manohar (emphasis on the introductory chapter).
- L. Fernandes, (2007) 'India's New Middle Class: Democratic Politics in an Era of Economic Reform', Delhi, Oxford University Press.
- M. Jayal, and P. Mehta, (2010) (eds.), 'The Oxford Companion to Politics in India', Delhi, Oxford University Press.
- M. Mohanty, P. Mukherji and O. Tornquist, (1998)(eds.) 'People's Rights: Social Movements and the State in the Third World', New Delhi, Sage.
- N. Jayal (2012)(ed.) 'Democracy in India', New Delhi, Oxford India Paperbacks, Sixth impression.

Discipline Specific Elective Paper III

INDIA'S FOREIGN POLICY IN A CHANGING WORLD

Introduction: This course's objective is to teach students the domestic sources and the structural constraints on the genesis, evolution and practice of India's foreign policy. The endeavour is to highlight integral linkages between the 'domestic' and the 'international' aspects of India's foreign policy by stressing on the shifts in its domestic identity and the corresponding changes at the international level. Students will be instructed on India's shifting identity as a postcolonial state to the contemporary dynamics of India attempting to carve its identity as an 'aspiring power'. India's evolving relations with the superpowers during the Cold War and after, bargaining strategy and positioning in international politics facilitate an understanding of the changing positions and development of India's role as a global player since independence.

UNIT-I : India's Foreign Policy in a changing world

i) India's Foreign Policy: Major bases and determinants
ii) India's Foreign Policy: Postcolonial Perspective

UNIT-II : India's Relation with USA& Russia

i) India's Relations with the USA
ii) India's Relation with USSR/Russia,

UNIT-III : India-China Relations, India and South Asia

(i) India-China Relations
(ii) India and South Asia: SAARC, Look East Policy, Act East Policy

UNIT-IV : India and Contemporary World

(i) India as an emerging Global Power, Myth and Reality
(ii) India in the Contemporary World

Text Books :

- Appadorai, A. and M.S. Rajan(1988), 'India's Foreign Policy and Relations', New Delhi, South Asian Publishers Pvt. Ltd.
- Bahadur, Kalim (ed.)(1986), 'South Asia in transition: Conflicts and Tensions', New Delhi, Patriots.
- Bandyopadhyaya, J.(2006), 'The making of India's Foreign Policy', New Delhi, Allied Publishers Pvt. Ltd.
- Banerjee, A.K. (ed.)(1998), 'Security issues in South Asia: Domestic and External Sources of Threats to Security', Calcutta, Minerva.
- Bidwai, Praful and Achin Vanaik (eds.)(1999), 'South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament', New Delhi, Oxford University Press.
- D. Scott (2011)(ed.), 'Handbook of India's International Relations', London, Routeledge.
- Dutt, V.P.(2007), 'India's Foreign Policy Since Independence', New Delhi, National Book Trust.
- Tellis and S. Mirski (2013) (eds.), 'Crux of Asia: China, India, and the Emerging Global Order', Carnegie Endowment for International Peace, Washington.

Reference Books

- A. Ganguly, S. and Rahul Mukherji(2011), India since 1980, New Delhi: Cambridge University Press.
- Ghosh, Partha S.(1989), Cooperation and conflict in South Asia, New Delhi: Manohar.
- Gould, H.A. and Sumit Ganguly (eds.)(1993), The Hope and the Reality: U.S.-Indian Relations from Roosevelt to Reagan, New Delhi: Oxford & IBH.
- Gujral, I.K.(1998), A foreign policy for India, Delhi: External publicity division, MEA, Government of India.
- Mansingh, Surjeet(1984), India's search for power: Indira Gandhi's foreign policy, 1966-1982 New Delhi: Sage.
- Muni, S.D.(2010), India's Foreign Policy the democracy dimension, New Delhi: Foundation Books.
- Nayar, B.R. and T.V. Paul(2004), India in the world order searching for major power status, New Delhi: Cambridge University Press.
- S. Cohen, (2002) *India: Emerging Power*, Brookings Institution Press.
- S. Mehrotra, (1990) 'Indo-Soviet Economic Relations: Geopolitical and Ideological Factors', in *India and the Soviet Union: Trade and Technology Transfer*, Cambridge University Press: Cambridge.
- Sengupta, Bhabani(1998), Fulcrum of Asia relations among China, India, Pakistan and the USSR, New Delhi: Konark Publishers.
- W. Anderson, (2011) 'Domestic Roots of Indian Foreign Policy', in W. Anderson, *Trysts with Democracy: Political Practice in South Asia*, Anthem Press: University Publishing Online.

Discipline Specific Elective Paper IV

WOMEN, POWER AND POLITICS

Introduction: This course opens up the question of women's agency, taking it beyond 'women's empowerment' and focusing on women as radical social agents. It attempts to question the complicity of social structures and relations in gender inequality. This is extended to cover new forms of precarious work and labour under the new economy. Special attention will be paid to feminism as an approach and outlook.

UNIT-I: Feminism

(i) Meaning and Development

(ii) Liberal, Socialist and Radical Feminism

UNIT-II: Issues

i) Patriarchy
ii) Sex and Gender
iii) Gender, Power and Politics

UNIT-III: Issues

(i) Women Movement in India

(ii) Women Empowerment: Policies and Practices
(iii) Violence against Women

UNIT-IV: Women and Development

i) WID (Women in Development), WAD (Women and Development), GAD (Gender and Development
ii) Women and Work (Visible and Invisible)

Text Books

.

B. Hooks, (2010) 'Feminism: A Movement to End Sexism', in C. Mc Cann and S. Kim (eds),

M. John.(2008) (ed) *Women's Studies in India,* New Delhi: Penguin.

M. Kosambi, (2007) *Crossing the Threshold,* New Delhi, Permanent Black. Menon, (2008) 'Power', in R. Bhargava and A. Acharya (eds), *Political Theory: An Introduction,* Delhi: Pearson.

Naarivaadi Rajneeti: Sangharsh evam Muddey, University of Delhi: Hindi Medium Implementation Board.

T. Shinde, (1993) 'Stree Purusha Tulna', in K. Lalitha and Susie Tharu (eds), *Women Writing in India*, New Delhi, Oxford University Press.

The Feminist Reader: Local and Global Perspectives, New York: Routledge.

U. Chakravarti, (2001) 'Pitrasatta Par ek Note', in S. Arya, N. Menon & J. Lokneeta (eds.)

V Geetha, (2002) *Gender*, Kolkata, Stree Publications.

Reference Books

N. Gandhi and N. Shah, (1992) *Issues at Stake – Theory and Practice in the Women's Movement,* New Delhi: Kali for Women.

N. Menon, (2004) 'Sexual Violence: Escaping the Body', in *Recovering Subversion,* New Delhi: Permanent Black.

P. Swaminathan, (2012) 'Introduction', in *Women and Work*, Hyderabad: Orient Blackswan.

R. Kapur, (2012) 'Hecklers to Power? The Waning of Liberal Rights and Challenges to Feminism in India', in A. Loomba *South Asian Feminisms*, Durham and London: Duke University Press.

U. Chakravarti, (2003) *Gendering Caste through a Feminist Len,* Kolkata, Stree pubications.

V. Bryson, (1992) *Feminist Political Theory,* London: Palgrave-MacMillan.

DSE Paper – IV DISSERTATION / RESEARCH PROJECT

(College can give this choice only for students with above 60% aggregate marks)

Project Paper- Development Process and Social Movements in Contemporary India (DSE- II)

Introduction:

The research experience of students is greatly enriched by early exposure to conducting research. There are numerous benefits of undergraduate students who get involved in research. They are better off in understanding published works, determine an area of interest, can discover their

passion for research and may start their career as a researcher. Further students will be able to develop ability for scientific inquiry and critical thinking, ability in the knowledge base and communication. This course is included to promote above mentioned abilities among the students.

Learning Objectives:

- To help students to learn how to develop scientific research designs in the study of public administration.
- To guide students to understand the previous research in their field of interest and review them to arrive at a research problem
- To encourage the students to learn ways to describe and evaluate public policy implementation.
- To help students understand the logic of hypothesis testing in both quantitative and qualitative research.
- To make students to learn the methods of writing a research report.

Expected outcomes: Students will be able to

- Independently prepare a research design to carry out a research project
- Review the related research papers to find out a research problem and relevant hypotheses
- Understand the dynamics of citizen – administrative interface and administrative behaviours.
- Learn the use of statistical techniques for interpretation of data.
- Learn the APA style of reporting a research project.

A student is required to carry out a project on an issue of interest to him / her under the guidance and supervision of a teacher. In order to do so s/he must have the knowledge in research methodology and of steps in planning and conducting a research. The supervisorsmay help the students to go on field study / study tour relevant to their work. Thirty hours of class may be arranged in the routine to help students understand research methodology, and planning, conduction and reporting on the research. An external examiner with the supervisor as the internal examiner will evaluate the research project on the basis of scientific methodology in writing the report, and presentation skill and performance in the viva.

Format

- **Abstract –** 150 words including problem, method and results.
- **Introduction** – Theoretical considerations leading to the logic and rationale for the present research
- **Review**- Explaining current knowledge including substantive findings and theoretical and methodological contributions to the topic, objectives and hypotheses of the present research
- **Method** – Design, Sample, Methods of data collection, Procedure
- **Results**- Quantitative analysis of group data-- (Raw data should not be attached in Appendix) Graphical representation of data wherever required. Qualitative analysis wherever done should indicate the method of qualitative analysis.
- **Discussion**
- **References (APA Style) & Appendices**

- Project should be in Soft binding. It should be typed in Times New Roman 14 letter size with 1.5 spacing on one sides of the paper. Total text should not exceed 50 pages (References & Appendices extra).
- Two copies of the project should be submitted to the College.
- ***Project - American Psychological Association (APA) – Publication Manual 2006 to* be followed for project writing**

Mark distribution for dissertation / Research project

Identification of problem	Review of Literature	Methodology	Analysis	Findings	Viva-voce	Total
10	10	10	25	20	25	100

Broad areas identified for Project: Social Movements: Environment, Women, Dalit, Peasant, Social Development, Political Development in Odisha, Political Socialization, Political Participation, Political Modernization and Communication, Decentralized democracy: Rural and Urban Local Self Governance, Functionary of Gram Sabha, Empowerment of Women and other marginals in PRIs, Development, Displacement, Rehabilitation, Resettlement in Odisha, Role of NGOs in Development, Regional Development and Regional Imbalances, Implementation of ORTPS- 2012, RTE-2009, Food Security Act, 2013, FRA, 2007.

Generic Elective Paper I

FEMINISM: THEORY AND PRACTICE

Introduction: The aim of the course is to introduce students to contemporary debates on feminism and the history of feminist struggles. The course begins with a discussion on construction of gender and an understanding of complexity of patriarchy and goes on to analyze theoretical debates within feminism. It offers a gendered analysis of Indian society, economy and polity with a view to understanding the structures of gender inequalities. And the last section aims to understand the issues with which contemporary Indian women's movements are engaged with.

UNIT-I: Understanding Feminism

(i) Feminist theorizing of the sex/gender distinction; Public Man and Private Woman

(ii) Understanding Patriarchy and Feminism

UNIT-II: Theories of Feminism

(i) Liberal and Socialist,

(ii) Radical feminism and Eco-feminism

UNIT-III: Feminist issues and women's participation: The Indian Experience

(i) Women's participation in anti-colonial and national liberation movements with special focus on India

(ii) Traditional Historiography and Feminist critiques; Social Reforms Movement and position of women in India, History of Women's struggle in Post- Independent India

UNIT-IV: Family in contemporary India and Understanding Woman's Work and Labour

(i) Family in contemporary India - patrilineal and matrilineal practices. Gender Relations in the Family, Patterns of Consumption: Intra Household Divisions, entitlements and bargaining, Property Rights

(ii) Understanding Woman's Work and Labour – Sexual Division of Labour, Productive and Reproductive labour, Visible - invisible work – Unpaid (reproductive and care), Underpaid and Paid work,- Methods of computing women's work , Female headed households

Text Books

- Bina Agarwal, (2013) 'Gender And Green Governance', Oxford University Press, Oxford,
- Forbes, Geraldine (1998) 'Women in Modern India'. Cambridge, Cambridge University Press
- Geetha, V. (2002) 'Gender'. Calcutta, Stree Publications.
- Geetha, V. (2007) 'Patriarchy'. Calcutta, Stree Publications.
- Jagger, Alison. (1983) 'Feminist Politics and Human Nature'. U.K, Harvester Press.
- John, Mary (
- John, Mary(2008) 'Women studies in India: A Reader', Peguin, New Delhi
- Lerner, Gerda. (1986) 'Creation of Patriarchy'. New York. Oxford University Press.

Reference Books

- Banarjee, Sikata. (2007) 'Ghadially, Rehana. (ed.) 'Urban Women in Contemporary India: A Reader'. New Delhi, Sage.
- Chakravarti, Uma. (1988) 'Beyond the Altekarian Paradigm: Towards a New Understanding of Gender Relations in Early Indian History', Social Scientist, Volume 16, No. 8.
- Desai, Neera & Thakkar, Usha. (2001) 'Women in Indian Society'. New Delhi: National Book Trust.
- Gandhi, Nandita & Shah, Nandita. (1991) 'Contemporary Women's Movement in India'. Delhi, Zubaan.
- Gupta, A and Sinha Smita, (2005) 'Empowerment of women: Language and Other Facets', Mangal Deep, New Delhi.
- Jayawardene, Kumari. (1986) 'Feminism and Nationalism in the Third World'. London, Zed Books and Conclusion.
- Nayak, Smita (2016) (eds.) ' Combating Violence Against Women: A Reality in the Making', Kalpaz, Gyan Books Pvt, Ltd, New Delhi
- Nayak, Smita (2016) (eds.) 'Gender Dynamics: The Emerging Frontiers', Research India Publications, New Delhi.
- Nayak, Smita, (2016), 'Whither Women: A Shift from Endowment toEmpowerment', Edupedia, New Delhi.
- Rege, Sharmila. (2003) (ed.) 'The Sociology of Gender: The Challenge of Feminist Sociological Knowledge'. New Delhi, Sage.
- Rowbotham, Shiela. (1993) 'Women in Movements', New York and London, Routledge.
- Sangari, Kumkum & Chakravarty, Uma.(1999) (eds.) 'From Myths to Markets: Essays on Gender'. Delhi, Manohar.
- Sarkar, Tanika & Butalia, Urvashi. (1995) (eds.) 'Women and the Hindu Right'. Delhi, Kali for Women.

Generic Elective Paper II

GOVERNANCE: ISSUES AND CHALLENGES

Objectives: This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalizing world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

UNIT-I: Government and governance: concepts

(i) Governance: Meaning, Nature and Types
(ii) Role of State in the Era of Globalisation: State, Market and Civil Society

UNIT-II : Good Governance

i) Good Governance
ii) Sustainable Development and Governance

UNIT-III: Local Governance

(i) Democratic Decentralization: Institutions of Local Governance (PRIs),
(ii) People' Participation in Local Governance & Deepening Democracy

UNIT-IV : Good Governance Initiatives In India

i) Public Service Guarantee Acts & Electronic Governance
ii) Citizens Charter & Right to Information, Corporate Social Responsibility iii)

Text Books

- A Baviskar, ((1995) The Belly of the River: Tribal Conflict Over Development in the Narmada Valley', Delhi, Oxford University Press.
- A. Parel (2000) (ed) 'Gandhi, Freedom and Self-Rule', New Delhi, Lexington Books.
- B. Parekh, (1997) 'Gandhi: A Brief Insight', Delhi, Sterling Publishing Company.
- B. Parekh, (1999) 'Colonialism, Tradition and Reform: An Analysis of Gandhi's Political Discourse', New Delhi, Sage Publication.
- D. Hardiman, (2003) 'Gandhi in his Time and Ours'. Delhi, Oxford University Press.

Reference Books

- R Iyer, (ed) (1993) 'The Essential Writings of Mahatma Gandhi', New Delhi, Oxford University Press.
- R. Ramashray, (1984) 'Self and Society: A Study in Gandhian Thought', New Delhi, Sage Publication.

Generic Elective Paper III

GANDHI AND THE CONTEMPORARY WORLD

Introduction: Locating Gandhi in a global frame, the course seeks to elaborate Gandhian thought and examine its practical implications. It will introduce students to key instances of Gandhi's continuing influence right up to the contemporary period and enable them to critically evaluate his legacy.

UNIT-I-

i) Theories: Satyagraha, Ahimsa

UNIT-II-

i) Swaraj, Swadeshi

UNIT-III-

i) Relevance Gandhi: Gandhi & Environment, Gandhi & Women, Gandhi & Social Harmony

UNIT-IV-

- Gandhi & Global Peace: Gandhian Philosophy in Contemporary World

Text Books

- B. C. Smith (2007), 'Good Governance and Development', Palgrave.
- B. Chakrabarty and M. Bhattacharya, (1998) (eds.) 'The Governance Discourse'. New Delhi, Oxford University Press.
- B. Nayar (1995) (ed.), 'Globalization and Politics in India', Delhi, Oxford University Press.
- Neera Chandhoke, (1995) 'State and Civil Society Explorations In Political Theory', Sage Publishers.
- Panda, Smita Mishra (2008), 'Engendering Governance Institutions: State, Market and Civil Society', Sage Publications.
- Surendra Munshi and Biju Paul Abraham (2004) (eds.), 'Good Governance, Democratic Societies and Globalisation', Sage.
- United Nation Development Programme, (1997) 'Reconceptualising Governance', New York.
- World Bank Report, (1992) 'Governance and Development'.

Reference Books

- Burns H Weston and David Bollier (2013), 'Green Governance: Ecological Survival, Human Rights, and the Law of the Commons', Cambridge University Press.
- Emilio F. Moran, (2010) 'Environmental Social Science: Human - Environment interactions and Sustainability', Wiley-Blackwell.
- Pardeep. Sachdeva, (2011) 'Local Government in India', Pearson Publishers, New Delhi.
- Pranab Bardhan and Dilip Mookherjee (2006), 'Decentralization And Local Governance In Developing Countries: A Comparative Perspective', MIT Press.
- T.R. Raghunandan (2013), 'Decentralization and Local Governments: The Indian Experience, Readings on The Economy, Polity and Society', Orient Blackswan.
- D. Crowther (2008), 'Corporate Social Responsibility', Deep and Deep Publishers, New

Delhi.

Generic Elective Paper IV

UNITED NATIONS AND GLOBAL CONFLICTS

Introduction: This course provides a comprehensive introduction to the most important multilateral political organization in international relations. It provides a detailed account of the organizational structure and the political processes of the UN, and how it has evolved since 1945, especially in terms of dealing with the major global conflicts. The course imparts a critical understanding of the UN's performance until now and the imperatives as well as processes of reforming the organization in the context of the contemporary global system.

UNIT-I : The United Nations

i) An Historical Overview of the United Nations.
ii) Principles and Objectives

UNIT-II

i) Structures and Functions**:** General Assembly, Security Council, Economic and Social Council,.

ii) The International Court of Justice, The Specialized Agencies (International Labour Organisation (IOL), United Nations Educational, Scientific and Cultural Organisation (UNESCO), World Health Organisation (WHO), UN Programmes Funds: United Nations Children's Fund (UNICEF), United Nations Development Programme (UNDP), United Nations High Commissioner for Refugees (UNHCR)
iii) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
iv) Millennium Development Goals.

UNIT-III Major Global Conflicts since the Second World war

i) Korean war
ii) Vietnam War
iii) Afghanistan War
iv) Balkans Serbia and Bosnia

UNIT-IV

Assessment of the United Nations as an International Organisation: Imperatives of Reforms and the Process of Reforms

Text Books

- Basu, Rumki (2014) 'United Nations: Structure and Functions of an international

organization', New Delhi, Sterling Publishers
- Baylis, J. and Smith, S. (2008) (eds.) 'The Globalization of World Politics: An Introduction to International Relations'. 4th edn. Oxford, Oxford University Press.
- Gareis, S.B. and Varwick, J. (2005) 'The United Nations: an introduction'. Basingstoke, Palgrave.
- Goldstein, J. and Pevehouse, J.C. (2006) 'International Relations'. 6th edn. New Delhi, Pearson.
- Saxena, J.N. (1986) et.al. 'United Nations for a Better Worl', New Delhi, Lancers.
- White, B. et al. (eds.) (2005) 'Issues in World Politics', 3rd edn. New York, Macmillan.
- Whittaker, D.J. (1997) 'United Nations in the Contemporary World', London, Routledge.

Reference Books

- Armstrong, D., Lloyd, L. and Redmond, J. (2004) 'International Organisations in World Politics'. 3rd edn. New York, Palgrave, Macmillan.
- Calvocoressi, P. (2001) 'World Politics: 1945-2000', 3rd edn. Harlow, Pearson Education.
- Moore, J.A. Jr. and Pubantz, J. (2008) 'The new United Nations', Delhi, Pearson Education.
- United Nations Department of Public Information. (2008) 'The United Nations Today'. New York, UN.

PSYCHOLOGY

Framework of CBCS Syllabus for PSYCHOLOGY (Honours) from 2019-20					
Full Forms of Course Codes Used: CC = Core Course, AECC = Ability Enhancement Compulsory Course, SEC = Skill Enhancement Course, DSE = Discipline Specific Elective (Related to Core Subject), GE = Generic Elective (Not related to Core Subject; 2 different subjects of 2 papers each). **Total Marks:** CC (1400) + AECC (200) + SEC (200) + DSE (400) + GE (400) = 2600					
Semester	CC 14 papers 100 X 14 = 1400; Credits=14x6=84	AECC 2 Papers 100 X 2 = 200 Credits=4x2=8	SEC 2 Papers 100 X 2 = 200 Credits=4x2=8	DSE 4 Papers 100 X 4 = 400 4x6=24 credits	GE 4 Papers 100 X 4 = 400 4x6=24 credits
I	CC-I: Introductory Psychology CC-II: Basic Developmental Processes	AECC-I: MIL Communication (Odia/English)			GE Paper-I: Introductory Psychology
II	CC-III: Basic Psychological Processes CC – IV: Processes of Human Empowerment	AECC-II: Environmental Science			GE Paper-II: Basic Developmental Processes
III	CC – V: Statistics CC – VI: Social Psychology CC – VII: Environmental Psychology		SEC-I:		GE Paper-III: Basic Psychological Processes
IV	CC – VIII: Psychopathology CC – IX: Educational Psychology CC – X: Psychological Assessment		SEC-II:		GE Paper-IV: Processes of Human Empowerment
V	CC – XI: Organizational Behavior CC – XII: Health Psychology			DSE-I: Psychological Research and Measurement DSC-II: Ethics, Integrity and Aptitude	
VI	CC – XIII: Counseling Psychology CC – XIV: Positive Psychology			DSC-III: Psychology of the Disability DSC-IV: Project & Field work/ Psychology of Crime	

PSYCHOLOGY Papers for HONOURS Students

Core course – 14 papers, Discipline Specific Elective – 4 papers, Generic Elective for non-psychology honours students – 4 papers. In case University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Scoring System for Papers with Practical:

Marks per paper - Midterm: 15 marks, Practical: 25 marks, End term: 60 marks, Total: 100 marks, Credit per paper – 6, Teaching hours per paper – 40 hours theory + 20 hours practical

Scoring System for Papers without Practical:

Marks per paper - Midterm: 20 marks, End term: 80 marks, Total: 100 marks, Credit per paper – 6, Teaching hours per paper – 50 hours + 10 hours tutorial

Core Paper- I INTRODUCTORY PSYCHOLOGY

Introduction: The course is designed to provide the student a basic understanding of the psychology of human behavior. The students will be given exposure to concepts, terminology, principles, and theories that comprise an introductory course in psychology.

Learning Objectives:

- To help the students know the sources and processes of development of modern scientific psychology.
- To help the students develop a scientific temperament in studying and understanding human behavior.

Expected outcomes: Students will be able to

- Define the term psychology and demonstrate command of the basic terminology, concepts, and principles of the discipline.
- Gain knowledge of scientific methodology–the variety of ways in which psychological data are gathered and evaluated / interpreted.
- Identify and compare the major perspectives in psychology: Recognize how each approach views human thought and behavior.
- Understand the physiological and biochemical links of human behavior.

UNIT-I: Introducing Psychology

(i) Concept and definition of psychology, Roots of psychology, Psychology as a scientific discipline.

(ii) Key Perspectives in Psychology- Behavioral, Cognitive, Humanistic, Psychodynamic, and Socio-cultural.

UNIT- II: Methods in Psychology

(i) Natural Observation, Survey and Case Study - Nature, advantages and limitations.

(ii) Experimental and Correlational methods -Nature, advantages and limitations.

UNIT –III: Biological Bases of Behavior

(i) Structure and functions of the neurons, Communication within and between neurons, Chemical regulation of the endocrine glands.

(ii) Structure and functions of the Central nervous system and Autonomic nervous system

UNIT-IV: States of Mind

(i) Nature of consciousness; changes in consciousness- sleep-wake schedules

(ii) Extended states of Consciousness - Hypnosis, Meditation and Hallucinations

Practical:

(i) **R.L. by Method of Limits:** To find out the R. L. of volar surface of the right arm of a subject by method of limits

(ii) **D.L. by Method of Constant Stimuli:** To find out the D.L. for lifted weight of your subject by method of constant stimuli.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi: Pearson Education.
- Hilgard & Atkinson- Introduction to Psychology (2003) 14th Edition, Thomson Learning Inc.

- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata-McGraw Hill.

Core Paper-II BASIC DEVELOPMENTAL PROCESSES

Introduction: The course is designed to expose students to a basic understanding about the fundamental concerns of developmental psychology and provide examples of the following three dimensions of development: growth, differentiation, and orderly progression.

Learning Objectives:

- To help students gain some key ideas about human development and the perspectives to understand and explain such developments.
- To help the students understand the significance of prenatal period for human development.
- To help the students understand the developmental preparations of the childhood and the implications of developmental milestones for the normal human development.

Expected outcomes: Students will be able to

- Understand the nature, types, and principle of development.
- Understand the processes of formation of life and development during pre- and post-natal periods.
- Understand about the different aspects of preparation for future life.

UNIT-I: Basics of development

(i) Meaning, nature, and types of development; Principles of development; Factors influencing development

(ii) Perspectives of development- Psychoanalytic; Mechanistic; Organismic; Humanistic

UNIT- II: Life in formation

(i) Fertilization, determination of sex, multiple birth; Prenatal development- germinal stage, embryonic stage, fetal stage; Factors influencing prenatal development. Impact of perinatal processes on development

(ii) Physical and motor developments, Social and emotional developments during childhood.

UNIT –III: Life in preparation

(i) Physical and motor developments, Social and emotional developments during adolescence.

(ii) Piaget's stage of cognitive development; Kohlberg's stages of moral development

Unit- IV: Self and identity

(i) Emergence of self; Structure of the self; Development of personal identity

(ii) Development of self-control; Development of gender differences and gender roles

Practical:

(i) **Locus of Control:** To assess the Locus of Control of four college students by using Rotter's

Locus of Control Scale.

(ii) **Emotional Intelligence:** To measure the emotional intelligence of four college students by using the Schutte's Emotional Intelligence Scale.

Text Books:

- Sigelman, G.K. & Schaffer, D.R. (1995). Life-span Human Development, Brooks / Cole Publishing Co. Pacific Grove, California
- Berk, L. E. (2010). Child Development (8th Ed.). New Delhi: Prentice Hall.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Papalia, Diane E., Sally Wendos Olds (2006). Human Development. 9th Edition. New Delhi: Tata McGraw Hill
- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

Core Paper III BASIC PSYCHOLOGICAL PROCESSES

Introduction: The course is designed to provide the student a basic understanding of the psychological processes from sensation to thought and communication. The student will be given exposure to the concepts, terminology, principles, and theories relating to each of the mental processes that constitute human psychology.

Learning Objectives:

- To help the students to understand the mental processes to begin with sensation and perception up to how it results in thoughts and communication.
- To help the students gather knowledge about the structural and functional dynamics of each of the mental processes and their interconnectedness.

Expected outcomes: Students will be able to

- Understand the basic sensory actions and the processes of integration of sensory actions in creating and interpreting perceptual events.
- Gain knowledge of the important processes and principles of human learning as well as the structural functional attributes of human memory to help conserve the learning outcomes.
- Understand the structural and functional properties of language and the way it helps thought, communication, problem solving and decision making through development of concepts, ideas, images, and so on.

UNIT-I: Sensation and Perception

(i) Basics of sensation- Sensory receptors (eye and ear), transduction, sensory thresholds, and sensory adaptation

(ii) Nature of perceptual process- Figure and ground, Grouping (Gestalt laws), Perceptual constancies, and illusions, Perception of distance and depth.

UNIT- II: Learning and Memory

(i) Nature and principles of Classical conditioning, Operant conditioning, and Observational learning

(ii) The Atkinson and Shiffrin Model of Memory; Types of Memory- episodic, semantic and procedural; Causes of Forgetting- interference, repression, and amnesia

UNIT –III: Language and Communication

(i) Properties and structure of language, Linguistic hierarchy, Language acquisition-predisposition, Nature of effective communication
(ii) Stages of language development; critical period controversy; speech error and its implications

UNIT- IV: Thinking and Reasoning

(i) Thinking process; concepts, categories and prototypes, Decision making and factors of influencing decision making.
(ii) Inductive and deductive reasoning; Problem solving approaches; Steps in problem solving

Practical:

(i) **Learning Curve:** To demonstrate the Learning Curve as a function of Learning trials using Non-sense Syllables.
(ii) **Serial Position Effect:** To demonstrate the serial position effect on memory in learning a list of nonsense syllables.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata Mc. Graw Hill.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.

Core Paper-IV PROCESSES OF HUMAN EMPOWERMENT

Introduction: Human empowerment is ultimately an individual condition of gaining the power to control and modulate changes in one's own life those are considered important to one's identity and adjustment. The purpose of the course is to introduce to the students the basics of human empowerment and how the empowerment processes are strengthened and improved.

Learning Objectives:

- To help students gain ideas about intelligence and personality as foundations of human empowerment.
- To make students understand how motivation and emotion are empowering processes to human development.
- To help students gain insight into human behavior as products of empowerment.

Expected outcomes: Students will be able to

- Know the structural components and functional dynamics of both intelligence and personality.
- Understand the significance of emotion and motivation in behavior management.
- Understand significant aspects of social behavior as resulting in happiness, well-being

and personal growth.

UNIT-I: Basics of empowerment

(i) Intelligence- Heredity, environment, and intelligence, Theories of Gardner, Stenberg, & PASS
(ii) Measuring Intelligence: intelligence tests; Interpretation of test score, Cross-cultural issues in testing intelligence

UNIT- II: Sources of Power (1)

(i) Personality- Freud's theory, and Social cognitive theory
(ii) Personality-Trait and type approach, Biological and sociocultural determinants, Psychometric and projective assessment.

UNIT –III: Sources of Power(2)

(i) Motivation-Drive theory, Arousal theory, Expectancy theory, Maslow's need hierarchy
(ii) Emotion-Theories of James-Lange, Cannon-Bard, & Schachter-Singer

UNIT –IV: Proving empowered

(i) Social behavior- Meaning of attribution and errors in attribution, Meaning of social cognition and processing of social information
(ii) Positive Psychology-Scope and aims, Nature and characteristics of happiness, Subjective well-being and personal growth

Practical:

(i) **Intelligence test-** To test the non-verbal intelligence of Two college students using Raven's Standard Progressive Matrices
(ii) **Personality Type-** To assess the personality type of a student obtaining responses from the student and two other significant persons in his /her life by using Glazer's test of Personality Type

Text Books:

- Baron, R.A. (1995).Psychology- The Essential Science, Pearson Education Company of India Pvt. Ltd.
- Gerrig, R.J. &Zimbardo, P.G. (2010). Psychology and Life (19th Ed.). Delhi: Allyn& Bacon
- Snyder, C.R. & Shane, J.L. (2005) Handbook of Positive Psychology: Oxford University Press.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Baron, R. A. & Byrne, D. (2003). Social Psychology, 10th Edition, Prentice Hall
- Misra, G. (2009). Psychology in India, Vol 1: Basic Psychological Processes and Human Development. India: Pearson
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

Core Paper- V PSYCHOLOGICAL STATISTICS

Introduction: The course is designed to equip students with knowledge in the fundamentals of statistics and research methods so that they understand the application of statistics to different research problems in psychology.

Learning Objectives:

- To help students develop knowledge and understanding of the application of Statistics within Psychology
- To help students develop critical thinking for application of appropriate statistical analysis in Psychological research

Expected outcomes: Students will be able to understand

- The nature of psychological variables and how to measure them using appropriate scale.
- The processes of describing and reporting statistical data.
- The methods of drawing inferences and conclusions for hypothesis testing by using appropriate statistical analysis.

UNIT-I: Fundamentals of statistics

(i) Meaning and scope of statistics, Nature of variables- Categorical and Continuous, Levels of Measurement- Nominal, Ordinal, Interval, and Ratio
(ii) Drawing frequency distribution; Graphical representation of grouped data-Polygon, Histogram, Ogive.

UNIT- II: Measures of Statistics

(i) Measures of Central Tendency- Characteristics of mean, median and mode; Computation of mean, median, and mode
(ii) Measures of Variability- Concept of variability, computation of semi-inter quartile range, Standard deviation and variance, Co-efficient of variation

UNIT- III: Sources and Applications

(i) Concept of Probability; Characteristics of Normal Probability curve, Applications of NPC, Deviation from NPC- Skewness and Kurtosis
(i) Concept of correlation, Product-moment correlation (ungrouped data), Rank order correlation, Chi-square test (Contingency Table)

UNIT –IV: Hypothesis Testing

(i) Level of significance; Type I and Type II error; Computation of 't' for independent and dependent samples
(ii) Purpose and assumptions of ANOVA; One-way and two-way ANOVA

Practical:

(i) **Reporting of Statistical Results:** To collect data of 60 (30 boys and 30 girls) High School students about their Annual examination marks in four subjects and to report by descriptive statistical analyses.
(ii) **Computer Awareness:** To be familiar with software packages of statistics and their applications.

Text Books:

- Aron, A., Aron, E.N., & Coups, E.J. (2007).Statistics for Psychology. (4thEd.) India: Pearson Education, Prentice Hall.
- Ferguson, G.A. &Takane, Y. (1989). Statistical Analysis in Psychology & Education, Tata McGraw Hill Publishing Company, New Delhi
- Garrett, H. E. & Woodworth, R.S. (1985). Psychology in Statistics and Education, Vakils, Feffer& Simons Ltd. Mumbai
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Mishra, G.C. (2018). Applications of Statistics in Psychology and Education, Kalyani Publisher, New Delhi
- Mohanty, B. and Misra, S. (2017). A text book of Basic Statistics. LaxmiPrakashans, Bhubaneswar, Odisha
- Siegal, S. (1994). Nonparametric Statistics. McGraw Hill, New Delhi

Core Paper-VI SOCIAL PSYCHOLOGY

Introduction: Social psychology is the scientific study of the nature and causes of human behavior in a social context. This course is designed to introduce the students to the field of social psychology, to explain how social psychologists think about and study human behavior; to introduce the body of knowledge and underlying principles that currently exist in the field and to encourage reflection about the implications of social psychology for the situations we encounter in everyday life.

Learning Objectives:

- To help students develop awareness of the concepts, problems and issues in the discipline of social psychology
- To make students understand the individuals and groups in respect to patterns of social behavior and attitudes
- To help students gain insight into the dynamics of intergroup relationships, conflict, prejudice and cooperation.

Expected outcomes: Students will be able to

- Know the scope of studying social psychology and the methods to gather data in the social context to explain them.
- Understand the significance of social cognition, attitudes, stereotypes and prejudices in explaining human behavior in the social contexts.
- Understand the significant aspects group behavior and social influence that constitute the core of human relationships.

UNIT-I: Introduction

(i) Nature, goal, and scope of Social Psychology; Methods of Social Psychology- Observation; Questionnaire, Interview, and Experiment

(ii) Social Cognition- Perceiving ourselves: self-concept, self-esteem, self-presentation and self-expression; Perceiving others and forming impressions

UNIT- II: Attitude, Prejudice and Stereotypes

(i) Attitudes- Nature, characteristics and functions of attitude; Attitude formation and change; Attitude measurement

(ii) Prejudice and Stereotypes- Nature and components of prejudice, Acquisition of prejudice, Reduction of prejudice

UNIT –III: Group and Leadership

(i) Group - Group structure and function, Task performance: Social facilitation, Social loafing; Conformity, Obedience and social modeling; Group cohesiveness.

(ii) Leadership- Definitions and functions, Trait, situational, interactional and contingency approaches to leadership; Leadership effectiveness, The charismatic leadership.

UNIT- IV: Social Behavior

(i) Pro-social behavior- Cooperation and helping, personal, situational and socio-cultural determinants, Theoretical explanations of pro-social behavior

(ii) Aggression- Theoretical perspectives, Trait, situational and social learning approaches, social and personal determinants of aggression, prevention and control of aggression.

Practical:

(i) **Ethical Values:** To assess the ethical values of five adolescents by using Donelson's Ethical Position Questionnaire (EPQ)

(ii) **Attitude towards Women**: To measure the attitude of three boys and three girls towards Women by using Spence, Helmrich & Stapps' Attitude towards Women scale.

Text Books:

- Baron R. A & Byrne. D. (2003). Social Psychology. 10th Edition, Prentice Hall
- Baron. R.A., Byrne, D. &Bhardwaj. G (2010).Social Psychology (12th Ed).New Delhi: Pearson
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

Reference Books:

- Developments (ICSSR survey of advances in research). New Delhi: Pearson.
- Misra, G. (1990).Applied Social Psychology. New Delhi: Sage.
- Misra, G. (2009). Psychology in India, Volume 4: Theoretical and Methodological Implications

Core Paper- VII ENVIRONMENTAL PSYCHOLOGY

Introduction: Environmental psychology is an interdisciplinary field focussed on the interplay between individuals and their surroundings. The field defines the term environment broadly, encompassing natural environments, social settings, built environments, learning environments, and informational environments. The course is designed to introduce to the students about all these aspects of environment.

Learning Objectives:

- To highlight the simultaneous mutual interaction of environment and behavior.
- To delineate psychological approaches to the study of environment.
- To discuss the impact of ecological degradation and the need for enhanced awareness programs

Expected outcomes: Students will be able to

- understand the interactional relationships between environment and behavior
- understand the problems occurring to ecology and environment at the present time
- understand different psychological approaches to the study of man-environment relationship.

UNIT -I: Environment and Behavior

(i) Earth as a living system: The Gaia hypothesis, Deep ecology; Man-environment relationship-physical, social, cultural, orientation and product.
(ii) Effects of Environment on behavior: Noise pollution, Air pollution, Crowding and Population explosion.

UNIT- II: Ecology and Development

(i) Human behavior and Environmental Problems: Global warming, Greenhouse effect, Energy depletion; Pro-environmental behaviors.
(ii) Ecosystem and their components; Sustainable development; Resource use: Common property resources. Ecology: Acculturation and psychological adaptation

UNIT –III: Psychological Approaches to environment

(i) Field theory approach; Eco-cultural Psychology (Berry); Biosocial Psychology (Dawson);
(ii) Ecological Psychology (Barker); Ecological system approach (Bronfenbrenner)

UNIT- IV: Environmental Assessment

(i) Socio-psychological dimensions of environmental impact; Environmental deprivation-nature and consequences.
(ii) Creating environmental awareness; Social movements- Chipko, Tehri, Narmada.

Practical:

(i) To assess the environmental literacy of 4 college students using Bob Simpson's Environment literacy and awareness survey questionnaire.
(ii) To assess the environmental attitude, concern and sensitivity of 4 college students using Bob Simpson's Environment literacy and awareness survey questionnaire.

Text Books:

- Dreze, J. and Sen, A. (1992). Indian Development. Delhi: Oxford University Press.
- Gadgil, M. and Guha. R. (1995). Ecology and Equity. New Delhi, Penguine Books
- Mohanty, B. and Misra, S. (2017). A text book on Environmental Psychology. Krupajala Books, Bhubaneswar, Odisha
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Goldsmith, E. (1991). The way: The ecological World View. Boston: Shambhala

Core Paper VIII PSYCHOPATHOLOGY

Introduction: Psychopathology refers to the study of mental illness. This course is designed to expose students to the key concepts in psychopathology as well as the major theories associated with the etiology and treatment of psychological disorders and disabilities. Students will be able

to understand the distinction between normal and abnormal and the qualities that are used to differentiate what is typical versus atypical through citations of different disorders.

Learning Objectives:

- To help students define and understand the basic concepts underlying psychopathology and the perspectives which contributed to the development of modern psychopathology.
- To help students understand the assessment techniques for identifying and classifying maladaptive behavior and mental disorders.
- To guide students to gain specific knowledge about different types of mental disorders.

Expected outcomes: Students will be able to

- Understand the differences between normality and abnormality along with the perspectives explaining them.
- Know the importance and the use of assessment techniques in identifying different forms of maladaptive behaviour.
- Learn the symptoms, causes and treatment of anxiety disorders, mood disorders and schizophrenia.

UNIT-I: Basics of Pathology

(i) Concept of abnormality; Perspectives of abnormal behavior- Psychodynamic, Behavioral, Cognitive, Humanistic-Existential, and Sociocultural

(ii) Classification of maladaptive behavior-DSM-IV; Assessment techniques- Diagnostic tests, Rating scales, History taking interview, Projective tests

UNIT- II: Anxiety and Mood disorder

(i) Symptoms, causes and treatment of Generalized anxiety disorder, Phobic disorder, Obsessive-Compulsive disorder

(ii) Depressive disorder –Symptoms, causes and treatment of Bipolar affective disorder, and Dysthymia

UNIT- III: Personality Disorders

(i) Paranoid, Schizoid, Dissociative, Impulsive

(ii) Borderline, Anxious, Avoidance, Dependent personality

UNIT –IV: Schizophrenia and Therapies

(i) Characteristics, Major subtypes, Causes and treatment of Schizophrenia

(ii) Psychodynamic, and Cognitive Behaviour therapy.

Practical:

(i) **Anxiety:** Assessment of Anxiety of a subject by Hamilton Anxiety Rating Scale (HARS)

(ii) **Depression:** Assessment of Depression Profile of a subject by Beck's Depression Inventory (BDI)

Text Books:

- Carson R.C., Butcher J.N., Mineka, S., & Hooley J.M. (2007). Abnormal Psychology (13th Ed.).ND: Pearson Education.
- Irwin G. Sarason, Barbara Sarason (2005). Abnormal Psychology. New Delhi: Prentice Hall Publication
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Kring,A.M.,Johnson,S.L.,Davison G.C. & Neale J.M. (2010). Abnormal Psychology (11th Ed.).NY: John Wiley

Core Paper IX EDUCATIONAL PSYCHOLOGY

Introduction: This course provides an introduction to concepts, theories, and research in educational psychology. The topics covered include cognitive development during the school years, classroom management, instructional approaches, motivation, assessment, and individual differences.

Learning Objectives:

- To provide students with an overview of the purposes and uses of educational psychology.
- To help students understand human development focusing mainly on the years of formal education including those with ability differences
- To make students understand the ways that educators motivate their students to learn and strive for excellence
- To make students explore the ways that educators manage learning environments to maximize learning and social cohesion

Expected outcomes: Students will be able to

- Define educational psychology and give examples of the different topics educational psychologists study.
- Describe the developmental issues faced by school age children.
- Describe the challenges presented by children with ability differences.
- Explain the role of motivation on learning and classroom behavior.
- Describe classroom management techniques.
- Identify commonly used standardized tests, their strengths and limitations, and use in school settings.

UNIT-I: Foundations of Educational Psychology

(i) Concepts and principles of educational psychology, The teaching-learning process, Goals of teaching and objectives for learning, transfer of training, reinforcements in learning process
(ii) Theories of cognitive development-Piaget, Bruner, and Vygotsky.

UNIT- II: Motivation and Classroom Management

(i) Meaning of motivation, Intrinsic and extrinsic motivation, Approaches to understand classroom motivation, Motivational techniques in classroom teaching
(i) The goals of classroom management, Creating a positive learning environment, Characteristics of an effective teacher, Teacher expectation and students' performance

UNIT- III: Creativity and Aptitude

(i) Nature and characteristics of creativity; Theories of creativity; Fostering creativity among children
(ii) Nature and characteristics of aptitude; Types of aptitude; Measurement of aptitude; Utility of aptitude tests

UNIT –IV: Dealing with ability differences and Testing

(i) Teaching children with mental retardation, learning disability, social class differences and

educational difficulties, and attention deficit Hyperactive disorder.
(ii) Types of standardized tests- Achievement test, and aptitude tests, Advantages and limitations of standardized test.

Practical:

(i) **Academic Behaviour:** To assess the academic attitude and behavior of college students by using Sia's Academic Behavior Scale
(ii) **Academic Stress:** To assess the academic stress of two higher Secondary students using Rao's Academic Stress Scale.

Text Books:

- Gage, N. L., & Berliner, D. C. (2009) *Educational psychology* (5th ed.). Boston, MA: Houghton Mifflin.
- Woolfolk, A.E. (2004). Educational Psychology (9th Ed.), Allyn& Bacon, London / Boston
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Chauhan, S. S. (2010). Advanced Educational Psychology, Vikash Publishing.

Core Paper-X PSYCHOLOGICAL ASSESSMENT

Introduction: The course is designed to expose students to a basic understanding about approaches to psychological assessment and develop skill in the administration and interpretation of psychological tests.

Learning Objectives:

- To train students in various psychological assessment techniques
- To impart skills necessary for selecting and applying different tests for different purposes such as evaluation, training, rehabilitation etc.

Expected outcomes: Students will be able to

- Understand the basic facts about psychological assessment.
- Understand the processes of test construction and standardization.
- Understand about the assessment of different types of skills and abilities.

UNIT-I: Introduction

(i) Nature and Scope of human assessment; Parameters of assessment
(ii) Psychological scaling, Methods of scaling

UNIT- II: Psychological Tests

(i) Principles of test construction and standardization- Item analysis, reliability, validity and development of norms
(ii) Types of psychological tests- Individual, group, performance, verbal, nonverbal

UNIT –III: Assessment of Ability

(i) Assessment of general abilities- Intelligence, interest, interpersonal interaction
(ii) Assessment of personality- Use of self-report inventories, interview, projective and non-

projective tests

UNIT- IV: Classroom Assessment

(i) Classroom as assessment context, Traditional tests, Alternative assessment
((ii) Grading and reporting of performance, Computer and assessment

Practical:

(i) **Empathy:** To assess the empathy behavior of Five college students using Spreng's Empathy questionnaire.
(i) **Sense of Humor:** To assess the Sense of Humor of 4 College Students Using McGhee's Scale of Sense of Humor (MSSH)

Text Books:

- Anastasi, A. (1988). Psychological Testing. New York: MacMillan
- Mishra, G.C. & Others (2018). Psychological Assessment. Kalyani Publisher, New Delhi

Reference Books:

- Kerlinger, F.N. (1983). Foundations of Behavioral Research. New York: Surjeet Publications
- Minium, E.W., King, B.M. & Bear, G. (1993). Statistical Reasoning in Psychology and Education. New York: John Willey

Core Paper XI ORGANIZATIONAL BEHAVIOR

Introduction: The course provides an overview of the main fields of organizational and personnel psychology. It focuses on topics such as organizational system; work behavior, attitudes and motivation as related to organizational set up; management of power and politics in the organizations; and finally development and evaluation of human resources for sustainable growth of an organizations.

Learning Objectives:

- To help students understand the structure, functions, and designs of different organizations.
- To make students understand the processes of group decision making and leadership functions in different organizations.
- To make students understand the theories of work motivation and related issues of power and politics in the organizational set up.
- To help students demonstrate professional skills in the evaluation, management, and development of human resources in the organizations.

Expected outcomes: Students will be able to

- Understand different concepts and dynamics related to organizational system, behavior, and management.
- Identify steps managers can take to motivate employees in the perspectives of the theories of work motivation.
- Understand the tricks of power and politics management in the organizations.
- Understand significance of human resource development, evaluation and management for the interest and benefit of the organization.

UNIT I: Historical context of organizational behavior

(i) Contributions of Taylor, Weber and Fayoll; Challenges, Scope and opportunities for OB
(ii) OB perspectives-Open system approach, Human relations perspective, Socio-technical

approach, OB model responsive to Indian realities

UNIT-II: Organization System

(i) Structure and functions of organization, Common organizational designs, Management roles, functions and skills
(ii) Group decision making processes in organizations, Organizational leadership and types of leadership in organizations

UNIT- III: Work, Power and Politics

(i) Contemporary theories of work motivation- ERG theory, McClelland's theory of needs, Cognitive evaluation theory, Goal-setting theory, Reinforcement theory
(ii) Defining power in organization, Bases of power, Power tactics, Nature of organizational politics, Impression management, and defensive behavior

UNIT –IV: Human resource development and Evaluation

Human Skills and Abilities, Selection Practices for Optimal Use of Human Resources; Training Programs for the Development of Human Resources
(i) Performance Evaluation- Purpose, Methods, Potential Problems and methods to overcome them

Practical:

(i) Leadership Style: To measure his basic leadership style of 4 college students by using Greenberg Basic Leadership Style scale
(ii) Conflict-Handling: To measure the conflict-handling style of 4 college students by using Rahim's scale to identify their conflict handling style.

Text Books*:*

- Robbins, S.P.; Timothy, A.J. &Vohra, N. (2012). Organizational Behavior, 15th Edn. Pearson Education: New Delhi
- Luthans, F. (2009). Organizational behavior. New Delhi: McGraw Hill.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books*:*

- Greenberg, J. & Baron, R.A. (2007). Behaviour in Organizations (9th Ed.). India: Dorling Kindersley.

Core Paper XII HEALTH PSYCHOLOGY

Introduction: Health psychology is a specialty area that focuses on how biology, psychology, behavior and social factors influence health and illness. This course is designed to provide an introduction to the area of health psychology to help students understand how Health Psychology as a specialty within psychology addresses the role of behavioral factors in health and illness. Basic theories, models and applications are also included.

Learning Objectives:

- To help the students understand the issues of Health Psychology and how to address them by the bio-psychosocial model of health and illness.
- To help the students to describe behavioral factors that influence health and illness.

- To guide the students understand about health enhancing behaviors including coping with illness.

Expected outcomes: Students will be able to

- Know the basics of health and illness from the Bio-psychosocial perspectives.
- Understand the significance of behavioral and psychological correlates of health and illness.
- Understand the significant aspects of coping and importance of health enhancing behavior.

UNIT-I: Introduction

(i) Goals of Health Psychology, , Biopsychosocial model of health and illness
(ii) Basic nature of stress, Cognitive appraisal of stressors, Some major causes of stress, Management of stress

UNIT- II: Health and Illness

(i) Behavioral and psychological correlates of illness, Approaches to promoting wellness, Some common health beliefs and their implications
(ii) Models of health- The cognition models- The health belief model, The protection motivation model, Leventhal's self-regulatory model.

UNIT –III: Health and Coping

(i) Individual differences in symptom perception, Coping with the crises of illness; Compliance behavior and improving compliance.
(ii) Health enhancing behavior- Diet management, Yoga and Exercise

UNIT- IV: Health Issues

(i) Children health issues- Malnutrition, Immunization, Autism, ADHD
(ii) Health issues of women and elderly: **Diabetes, Osteoporosis, Alzheimer's Disease, Depression**

Practical:

(i) **Sleep Quality**: To assess the Sleep quality of 4 college students The Pittsburgh Sleep Quality Index (PSQI)
(ii) **Coping Strategies:** To assess of the Coping Strategies of 4 college students by Tobin's Coping Strategy Inventory (TCSI)

Text Books:

- Taylor, S.E. (2006). Health Psychology (6th Ed.). New York: Tata McGraw Hill
- Brannon and Feist. Health Psychology.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Ogden, J. (2007). Essentials of Health Psychology. McGraw Hill.

Core Paper XIII COUNSELING PSYCHOLOGY

Introduction: The course is designed to develop entry level counseling psychologists who will be capable of understanding and demonstrating behavior and attitudes in the basic areas of professional counseling.

Learning Objectives:

- To help students understand and integrate current scientific knowledge and theory into counseling practice.
- To make students learn the history and professional issues related to counseling psychology.
- To help students integrate and convey information in the core areas of counseling practice.
- To help students demonstrate professional behavior in their various roles as counseling psychologists.

Expected outcomes: Students will be able to

- Understand the purpose of counseling and practice of counseling ethically following different approaches.
- Understand the basics of counseling process and use them for counseling students, families, couples, distressed, and handicaps.

UNIT-I: Basics of Counseling

(i) Meaning, scope and purpose of counseling with special reference to India; The counseling process, counseling relationship, counseling interview

(**i**) Characteristics of a good counselor, Ethics and values in counseling; Education and training of the counselor

UNIT –II: Theories and Techniques of Counseling

(i) Psychodynamic approach-Freud and Neo Freudians; Humanistic approach-Existential and Client centered

(ii) Cognitive approach- Rational-emotive and transaction analysis; Behavioral approach-Behavior modification; Indian contribution- yoga and meditation

UNIT- III: Counseling Programs

(i) Working in a counseling relationship, transference and counter transference, termination of counseling relationship, Factors influencing counseling

(ii) Student counseling, Emphases, roles and activities of the school, and college counselor.

UNIT –IV: Counseling application

(i) Family and Marriage Counseling, Family life and family cycle, Models and methods of family counseling

(ii) Alcohol and drug abuse counseling; Counseling the persons with Suicidal tendencies, and Victims of Harassment and Violence

Practical:

(i) **Marital Relationship-** To assess the marital relationship of 2 couples using Lerner's Couple adjustment scale

(ii) **Case Reporting:**To complete four case studies of high school students with problem

behavior in the appropriate case record proforma

Text Books:

- Gladding, S.T. (2009). Counseling: A comprehensive profession (6th Ed.). New Delhi: Pearson India
- Mishra, H.C. &Varadwaj, K. (2009). Counseling Psychology: Theories, Issues and Applications, DivyaPrakashini, Samantarapur, Bhubaneswar, Odisha
- Burnard Philip. (1995). Counseling Skills Training – A sourcebook of Activities. New Delhi: Viva Books Private Limited.
- Gibson, R.L & Mitchell M.H. (2003). Introduction to counseling and Guidance. 6th edn. Delhi: Pearson Education
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Feltham, C and Horton, I. (2000). Handbook of Counseling and Psychotherapy. London: Sage.
- Misra, G. (Ed) (2010). Psychology in India, Volume 3: Clinical and Health Psychology. New Delhi: Pearson India.
- Nelson-Jones. (1995). The theory and practice of counseling. 2nd Edn. London: Holt, Rinehart and Winston Ltd
- Mohanty, G. B. (2018). Counseling Psychology, Kalyani Publisher, New Delhi.

Core Paper XIV POSITIVE PSYCHOLOGY

Introduction: Positive psychology is the scientific study of optimal human functioning to help people flourish. This is a foundation course in positive psychology to help students not only to understand the core themes of positive psychology, but also to equip them with the helpful positive interventions in various areas of professional psychology, such as clinical, health, education, organization and community.

Learning Objectives:

- To help students to understand the rationale behind positive psychology.
- To guide students to identify and analyze the key conceptual and theoretical frameworks underpinning positive psychology.
- To encourage students to appreciate the contributions of scholars from a range of disciplines and their influence on developing a positive approach to mental health.
- To make students understand and apply a strengths-based approach to mental health issues.

Expected outcomes: Students will be able to understand

- The goal of positive psychology and the basic behavior patterns that result in positive human growth from the point of view of leading positive psychologists.
- The concepts of flow and happiness and the related theories and models explaining happiness behavior and its consequences.
- All the precursors to positive psychology from character strength and altruism to resilience.

UNIT-I: Foundations

(i) Historical roots and goals of positive psychology, Positive emotions, Positive Individual traits, and positive subjective experience
(ii) Contribution of Martin Seligman, Albert Bandura, Carol Dweck and Abraham Maslow to positive psychology

UNIT- II: Flow and Happiness

(i) Components of flow, Conditions and mechanisms of flow, Positive and negative consequences of flow experience
(ii) Meaning and nature of happiness, Sources of happiness, Theories of happiness- Set-point theory, Life satisfaction and Affective state theories.

UNIT –III: Precursors to Positive Psychology

(i) Character strength, Altruism, Hope and Optimism, Positive thinking, Resilience
(ii) Psychology of well-being: Meaning of well-being, The well-being models, Factors affecting well-being, Promoting well-being among people

UNIT- IV: Ways to Positive Psychology

(i) Discovering strength, Increasing optimism, Self-direction, Purpose, gratitude, Mindfulness, and Activities and experience
(ii) Effects of exercise, Yoga, meditation and spiritual intelligence on development of positive psychology; Positive psychology in building relationship

Practical:

(i) **Happiness:** To measure the happiness of 4 adults using Oxford Happiness questionnaire
(ii) **Spiritual Intelligence:** To measure the spiritual intelligence of 4 adults using King's Spiritual Intelligence test.

Text Books:

- Seligman, M.E. (2002).Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment: Oxford University Press
- Carr, A. (2004). Positive Psychology: The science of happiness and human strength.UK: Routledge.
- Mohanty, G.B. (2018). Positive Psychology. Kalyani Publisher, New Delhi
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Peterson, C. (2006). A Primer in Positive Psychology; Oxford University Press
- Seligman, M.E. (2012). Flourish:A Visionary New Understanding of Happiness and Well-being. Oxford University Press
- Snyder, C.R. & Shane, J.L. (2005). Handbook of Positive Psychology. .Oxford University Press
- Snyder, C.R., & Lopez,S.J.(2007).Positive psychology :The scientific and practical explorations of human strengths. Thousand Oaks, CA: Sage.

Discipline Specific Elective Paper-I
PSYCHOLOGICAL RESEARCH AND MEASUREMENT

Introduction: The research methods course is among the most frequently required in the psychology and with good reason. It helps the students know about the difference between an experiment and a correlational study, the function of independent and dependent variables, the importance of reliability and validity in psychological measurement, and the need for replication in psychological research. In other words, psychologists' research methods are at the very core of their discipline. The course is designed to train the students in psychological research and measurement.

Learning Objectives:

- To provide an overview of scientific approaches to psychological research in term of sampling techniques, scientific method, and experimental designs.
- To acquaint the students with respect to psychometric, projective techniques and non-testing approaches like interview
- .

Expected outcomes: Students will be able to

- Understand the nature of psychological research and characteristics of scientific methods of research.
- Know the methods of test construction and standardization
- Know the different approaches to assessment of personality.

UNIT-I: Psychological Research

(i) Assumptions of science, Characteristics of scientific methods, Psychological research: Correlational and experimental

(ii) Sampling frame: probability and non-probability samples, sample size, sampling error

UNIT- II: Psychological Scaling and Construction of test

(i) Purpose of scaling and types of psychological data, Psychological scaling methods: Familiarity with Thurstone, Likert and Guttman scale

(ii) Construction of test: Theory of measurement error; Operationalizing a concept, Generating items, Item analysis, Item response theory

UNIT –III:

(i) **Experimental Designs:** Pretest- post-test design, Factorial designs, Randomized Block design

(ii) **Standardization of tests:** Reliability and validity of tests, Development of norms and interpreting test scores

UNIT- IV:

(i) **Assessment of Personality:** Psychometric and projective techniques, Familiarity with MMPI, Rorachsch, WAT, and TAT

(ii) **Interviewing:** Principles and procedures of interviewing, gaining cooperation, motivating respondents, training of interviewers, ethics of interviewing

Practical:

(i) **TAT:** To administer the TAT on a subject and give summary report

(ii) **Word Association test:** To administer the Jung / Kent-Rosanoff list of WAT on a subject and report on his areas of emotional difficulties

Text Books:

- Anastasi, A. (1988). Psychological Testing. New York: MacMillan
- Minium, E.W., King, B.M. & Bear, G. (1993). Statistical Reasoning in Psychology and Education. New York: John Willey

Reference Books:

- Kerlinger, F.N. (1983). Foundations of Behavioral Research. New York: Surjeet Publications
- Best, W.J. & Kahn, J.V. (2006)- Research in Education. Pearson

Discipline Specific Elective Paper-II
PSYCHOLOGY AND SOCIAL ISSUES

Introduction: Psychologists can play a largerrole in the solution of important social problems. Psychology brings two important qualities to the study of social problems: attention to psychological process and rigorous methodology. The key task in the designed course is to define social problems in part as psychological problems.

Learning Objectives:

- The course will provide social psychological analysis of some major social issues in India.

Expected outcomes: Students will be able to

- Understand the nature and characteristics of different social systems and social integration in India.
- Understand the aspects of health and wellbeing of Indian people.
- Understand about the political behavior of Indian people

UNIT-I

(i) **Understanding Social Systems:** Indian Family System; Social stratification; caste, class, power, Religious ethics

(ii) **Poverty and Deprivation:** Theories of poverty, Concomitants of poverty, Sources of deprivation, inequality and social justice.

UNIT- II

(i) **Health and wellbeing:** Role of behavior in health problems, Behavioral sciences in disease prevention and control, India's health scenario

(ii) **Political Behavior:** Development of ideology, Use of small groups in politics, Issues of human and social development, Quality of life and development

UNIT –III: Antisocial Behavior

(i) Corruption and bribery, Juvenile delinquency, terrorism,
(ii) Crime and criminal behavior, Alcoholism and drug abuse, Psychopath

UNIT- IV

(i) **Social integration:** The concept of social integration; Causal factors of social conflicts and prejudices; Psychological strategies for handling the conflicts and prejudices; Measures to achieve social integration.

(ii) **Violence:** Nature and categories of violence, violence in family and marriage, rape, Collective violence for social change

Practical:

(i) **Quality of Life:** To assess the quality of life family of 4 families using Beach CenterFamily Quality of Life Scale

(ii) **Community Integration:** To assess the community integration of a village by using Community integration questionnaire (CIQ) of Barry Willer

Text Books:

- Srinivas, M.N. (1966). Social change in modern India, .Bombay: Allied
- Mohanty, A .K. and Mishra, G. (Eds.) (2000). Psychology of Poverty and Disadvantage. New Delhi: Concept
- Mishra, H.C. and Misra, S. (2009). Psychology of Deviants, DivyaPrakashani, Bhubaneswar

Reference Books:

- Banerjee, D. (1998). Poverty, class and health culture in India, Vol. I, Delhi PrachiPrakashan
- Dube, S.C. (1987) Modernization and Development. ND: Sage
- Mishra, G. (1999). Psychological perspectives on stress and Health. New Delhi: Concept
- Sen, A. &Sen A.K. (Eds.). (1998). Challenges of contemporary Realities: A psychological Perspective. New Delhi: New Age International

Discipline Specific Elective Paper-III PSYCHOLOGY OF DISABILITY

Introduction: According to WHO, disability is any restriction or lack resulting from an impairment of ability to perform an activity in the manner or within the range considered normal for a human being. While individuals may have physical or psychological impairments, it is often the society and environment that contributes to the experience of disability by failing to accommodate people with impairments. Inclusion and access is a fundamental human right and inclusive and accessible communities are vital for individual and community wellbeing. Study of psychology of disability would help the students understand this social responsibility.

Learning Objectives:

- The objective of the course is to provide students with an overview of the disability from the psychological perspective.

- Drawing from the four units, students will be exposed to varying disability definitions, cultural meanings and representations.
- What does it mean to be "disabled"? How has this meaning changed over time in India? What factors affect a person's experience of disability? Why should people in psychology learn about these matters?

Expected outcomes: Students will be able to

- Know about different types of disability and their prevalence in India.
- Understand various socio-cultural models of disability
- Gain knowledge about disability policies in India
- Understand about intervention and rehabilitation of disables in India

UNIT I

(i) Conceptualizing Disability: Meaning and Definition, Types of disability, Assessment and Diagnosis
(ii) Understanding Disability Policy in India: Equal opportunities Bill, Rehabilitation Council of India, National Trust

UNIT-II

(i) Theorizing Disability: Charity Model: Welfare Model; Medical Model
(ii) Social Model: culture as disability; Empowerment Model

UNIT- III

(i) Disability support: Beliefs and attitudes towards disability; Family, care, and support structure
(ii) Issues of Access: Built and Psychological; Education and Employment, learning disability

UNIT -IV

(i) Designing Interventions: Psychotherapeutic approaches; Rehabilitation
(ii) Contemporary Debates: euthanasia, prenatal selection

Practical:

(i) To assess the attitude of 8 college students by using 'Attitude towards Disabled Persons Scale" (Yuker et al., 1998).
(ii) To assess the knowledge of 4 college students about Disability Policy in India using a Questionnaire.

Text Books:

- Chib, M. (2011). One Little Finger. New Delhi: Sage Publications Pvt. Ltd.
- Dalal, A. K. (2011). Folk wisdom and traditional healing practices: Some lessons for modern psychology. In MatthijsCornelissen, GirishwarMisra, &SuneetVarma (eds) Foundations of Indian Psychology: Practical applications (Vol. 2) Longman, Pearson Education, New Delhi
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, Divya Prakashani, Samantarapur, Bhubaneswar

Reference Books:

- Ghai, A. (2015). Rethinking Disability in India. India: Routldge. Ghai, A. (2010). Psychology of Disabled in G.Misra (Ed.) Psychology in India: Advances in research. New Delhi: Pearson education. Ghai, A. (2006 [2003]) (Dis)Embodied Form: Issues of Disabled Women. New Delhi: Shakti Books.

- Goodley. D & Lawthom. R. (2006). Disability and Psychology: Critical Introductions and Reflections. Palgrave Macmillan.

Discipline Specific Elective Paper-IV
DISSERTATION / RESEARCH PROJECT

Introduction: The research experience of students is greatly enriched by early exposure to conducting research. There are numerous benefits of undergraduate students who get involved in research. They are better off in understanding published works, determine an area of interest, can discover their passion for research and may start their career as a researcher. Further, students will be able develop ability for scientific inquiry and critical thinking, ability in the knowledge base and communication of psychology. This course is included to promote above mentioned abilities among the students.

Learning Objectives:

- To help students to learn how to develop scientific research designs in the study of psychology.
- To guide students to understand the previous research in their field of interest and review them to arrive at a research problem
- To encourage the students to learn ways to describe and measure human behavior.
- To help students understand the logic of hypothesis testing and application of appropriate statistical analysis.
- To make students to learn the methods of writing a research report.

Expected outcomes: Students will be able to

- Independently prepare a research design to carry out a research project
- Review the related research papers to find out a research problem and relevant hypotheses
- Understand the administration, scoring and interpretation of the appropriate instrument for measurement of desired behavior
- Learn the use of statistical techniques for interpretation of data.
- Learn the APA style of reporting a research project.

Unit I

A student is required to carry out a project on an issue of interest to him / her under the guidance and supervision of a teacher. In order to do so s/he must have the knowledge in research methodology and of steps in planning and conducting a research. The supervisors may help the students to go on field study / study tour relevant to their work. Thirty hours of class may be arranged in the routine to help students understand research methodology, and planning, conduction and reporting on the research. An external examiner with the supervisor as theinternal examiner will evaluate the research project on the basis of scientific methodology in writing the report, and presentation skill and performance in the viva.

Format

- **Abstract –** 150 words including problem, method and results.
- **Introduction** – Theoretical considerations leading to the logic and rationale for the present research
- **Review**- Explaining current knowledge including substantive findings and theoretical and methodological contributions to the topic, objectives and hypotheses of the present research

- **Method** – Design, Sample, Measures, Procedure
- **Results**- Quantitative analysis of group data (Raw data should not be attached in Appendix) Graphical representation of data wherever required. Qualitative analysis wherever done should indicate the method of qualitative analysis.

➢ **Discussion**

➢ **References (APA Style) & Appendices**

- Project should be in Soft binding. It should be typed in Times New Roman 14 letter size with 1.5 spacing on one sides of the paper. Total text should not exceed 50 pages (References & Appendices extra).
- Two copies of the project should be submitted to the College.
- ***Project - American Psychological Association (APA) – Publication Manual 2006 to be followed for project writing***

Mark distribution for dissertation / Research project						
Identification of problem	**Review of Literature**	**Methodology**	**Analysis**	**Findings**	**Viva-voce**	**Total**
10	10	10	25	20	25	100

Or

DSE Paper-IV /Alternative to dissertation
PSYCHOLOGY OF CRIME

Introduction: This course provides an introduction to psychology of crime and criminal behavior. The topics covered in this paper include meaning, nature and theories of criminal behavior; crime prevention and control; and about the trauma of some victims of crime.

Learning Objectives:

- To provide students with an overall knowledge of psychology of crime.
- To help students understand the psychosocial perspectives of crime.
- To make students aware about the processes of crime prevention and control.
- To help students understand the trauma of victims of some types of crime.

Expected outcomes: Students will be able to

- Define criminal behavior and explain the psychosocial factors of crime and criminal behavior.
- Discuss the social and psychological theories of crime and criminal behavior.
- Describe how crimes are prevented and controlled by police and other agencies.
- Describe the behavior and mental health of the victims of crimes.

UNIT-I: Introduction to crime

(i) Definition, meaning, and nature of criminal behavior; Factors of criminal behavior: Antisocial values; Peer influence; Antisocial personality; Dysfunctional family; Substance abuse
(ii) Major types of crimes: Homicide; Robbery, Sexual offences; Cybercrimes.

UNIT- II: Theories of Criminal Behavior

(i) Social disorganization theory; Rational choice theory; Strain theory
(ii) Social learning theory; Social control theory, Labeling theory; Genetic theory

UNIT –III: Crime prevention and Control

(i) Crime prevention models: Primary prevention, Secondary prevention; Tertiary prevention
(ii) Crime control: Crime control model and Due process model

UNIT –IV: Special Victims

(i) Rape and sexual assault; Domestic violence; Bullying and school violence
(ii) Workplace violence, Victims of terrorism

Practical:

(i) **Guilt quotient:** Test your subject's Guilt Quotient Using Chattopadhyay's"What is your guilt quotient?" scale.
(ii) **Domestic Violence:** Using the "Domestic Violence Scale (Michale, 2008)" assess your subject's attitude towards domestic violence.

Text Books:

- Counseling Crime Victims: Practical Strategies for Mental Health Professionals; Laurence Miller, Springer Publishing Company, USA.
- Criminal Psychology; Nabin Kumar; LexisNexis, USA

Reference Books:

- Inside the Criminal Mind, S. E. Samenow; BDWY/ Newyork

Generic Elective Paper-I INTRODUCTORY PSYCHOLOGY

Introduction: The course is designed to provide the students a basic understanding of the psychology of human behavior. The students will be given exposure to concepts, terminology, principles, and theories that comprise an introductory course in psychology.

Learning Objectives:

To help the students know the sources and processes of development of modern scientific psychology.

- To help the students develop a scientific temperament in studying and understanding human behavior.

Expected outcomes: Students will be able to

- Define the term psychology and demonstrate command of the basic terminology, concepts, and principles of the discipline.
- Gain knowledge of scientific methodology–the variety of ways in which psychological data are gathered and evaluated / interpreted.
- Identify and compare the major perspectives in psychology: Recognize how each approach views human thought and behavior.
- Understand the physiological and biochemical links of human behavior.

UNIT-I: Introducing Psychology

(i) Concept and definition of psychology, Roots of psychology, Psychology as a scientific discipline.
(ii) Key Perspectives in Psychology- Behavioral, Cognitive, Humanistic, Psychodynamic, and Sociocultural

UNIT- II: Methods in Psychology

(i) Natural Observation, Survey and Case Study- Nature, advantages and limitations.
(ii) Experimental and Correlational methods-Nature, advantages and limitations.

UNIT –III: Biological Bases of Behavior

(i) Structure and functions of the neurons, Communication within and between neurons, Chemical regulation of the endocrine glands.
(ii) Structure and functions of the Central nervous system and Autonomic nervous system

UNIT-IV: States of Mind

(i) Nature of consciousness; changes in consciousness- sleep-wake schedules

(ii) Extended states of Consciousness- Hypnosis, Meditation and Hallucinations

Practical:

(i) R.L. by Method of Limits: Students are required to find out the R. L. of volar surface of the right arm of a subject by method of limits
(ii) D.L. by Method of Constant Stimuli: To find out the D.L. for lifted weight of your subject by method of constant stimuli.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi: Pearson Education.
- Hilgard& Atkinson- Introduction to Psychology (2003) 14th Edition, Thomson Learning Inc.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., & Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.
- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata-McGraw Hill.

Generic Elective Paper-II

BASIC DEVELOPMENTAL PROCESSES

Introduction: The course is designed to expose students to a basic understanding about the fundamental concerns of developmental psychology and provide examples of the following three dimensions of development: growth, differentiation, and orderly progression.

Learning Objectives:

- To help students gain some key ideas about human development and the perspectives to understand and explain such developments.
- To help the students understand the significance of prenatal period for human development.
- To help the students understand the developmental preparations of the childhood and the

implications of developmental milestones for the normal human development.

Expected outcomes: Students will be able to

- Understand the nature, types, and principle of development.
- Understand the processes of formation of life and development during pre- and post-natal periods.
- Understand about the different aspects of preparation for future life.

UNIT-I: Basics of development

(i) Meaning, nature, and types of development; Principles of development; Factors influencing development

(ii) Perspectives of development- Psychoanalytic; Mechanistic; Organismic; Humanistic

UNIT- II: Life in formation

(i) Fertilization, determination of sex, multiple birth; Prenatal development- germinal stage, embryonic stage, fetal stage; Factors influencing prenatal development

(ii) Physical and motor developments, Social and emotional developments during childhood.

UNIT –III: Life in preparation

(i) Physical and motor developments, Social and emotional developments during adolescence.

(ii)Piaget's stage of cognitive development; Kohlberg's stages of moral development

Unit- IV: Self and identity

(i) Emergence of self; Structure of the self; Development of personal identity

(ii) Development of self-control; Development of gender differences and gender roles

Practical:

(i) **Locus of Control:** To assess the Locus of Control of four college students by using Rotter's Locus of Control Scale.

(ii) **Emotional Intelligence:** To measure the emotional intelligence of four college students by using the Schutte's Emotional Intelligence Scale.

Text Books:

- Sigelman, G.K. & Schaffer, D.R. (1995). Life-span Human Development, Brooks / Cole Publishing Co. Pacific Grove, California.
- Berk, L. E. (2010). Child Development (8th Ed.). New Delhi: Prentice Hall.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Papalia, Diane E., Sally Wendos Olds (2006). Human Development. 9th Edition. New Delhi: Tata McGraw Hill
- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

Generic Elective Paper-III

BASIC PSYCHOLOGICAL PROCESSES

Introduction: The course is designed to provide the student a basic understanding of the psychological processes from sensation to thought and communication. The student will be given exposure to the concepts, terminology, principles, and theories relating to each of the mental

processes that constitute human psychology.

Learning Objectives:

- To help the students to understand the mental processes to begin with sensation and perception up to how it results in thoughts and communication.
- To help the students gather knowledge about the structural and functional dynamics of each of the mental processes and their interconnectedness.

Expected outcomes: Students will be able to

- Understand the basic sensory actions and the processes of integration of sensory actions in creating and interpreting perceptual events.
- Gain knowledge of the important processes and principles of human learning as well as the structural functional attributes of human memory to help conserve the learning outcomes.
- Understand the structural and functional properties of language and the way it helps thought, communication, problem solving and decision making through development of concepts, ideas, images, and so on.

UNIT-I: Sensation and Perception

(i) Basics of sensation- Sensory receptors (eye and ear), transduction, sensory thresholds, and sensory adaptation

(ii) Nature of perceptual process- Figure and ground, Grouping (Gestalt laws), Perceptual constancies, and illusions, Perception of distance and depth.

UNIT- II: Learning and Memory

(i) Nature and principles of Classical conditioning, Operant conditioning, and Observational learning

(ii) The Atkinson and Shiffrin Model of Memory; Types of Memory- episodic, semantic and procedural; Causes of Forgetting- interference, repression, and amnesia

UNIT –III: Language and Communication

(i) Properties and structure of language, Linguistic hierarchy, Language acquisition- predisposition, Nature of effective communication

(ii) Stages of language development; critical period controversy; speech error and its implications

UNIT –IV: Thinking and Reasoning

(i) Thinking process; concepts, categories and prototypes, Decision making and factors of influencing decision making.

(ii) Inductive and deductive reasoning; Problem solving approaches; Steps in problem solving

Practical:

(i) **Learning Curve:** To demonstrate the Learning Curve as a function of Learning trials using Non-sense Syllables.

(ii) **Serial Position Effect:** To demonstrate the serial position effect on memory in learning a list of nonsense syllables.

Text Books:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi, Pearson Education.

- Feldman, R.S. (2004). Understanding Psychology (6th Edition), New Delhi, Tata Mc. Graw Hill.
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practicals in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Morgan, C.T., King, R.A., Weisz, J.R., &Schopler, J. (2008). Introduction to psychology (7th edition) Bombay: Tata-McGraw Hill.

Generic Elective Paper-IV
PROCESSES OF HUMAN EMPOWERMENT

Introduction: Human empowerment is ultimately an individual condition of gaining the power to control and modulate changes in one's own life those are considered important to one's identity and adjustment. The purpose of the course is to introduce to the students the basics of human empowerment and how the empowerment processes are strengthened and improved.

Learning Objectives:

- To help students gain ideas about intelligence and personality as foundations of human empowerment.
- To make students understand how motivation and emotion are empowering processes to human development.
- To help students gain insight into human behavior as products of empowerment.

Expected outcomes: Students will be able to

- Know the structural components and functional dynamics of both intelligence and personality.
- Understand the significance of emotion and motivation in behavior management.
- Understand significant aspects of social behavior as resulting in happiness, well-being and personal growth.

UNIT-I: Basics of empowerment

(i) Intelligence- Heredity, environment, and intelligence, Theories of Gardner, Stenberg, & PASS
(ii) Measuring Intelligence: intelligence tests; Interpretation of test score, Cross-cultural issues in testing intelligence

UNIT- II: Sources of Power (1)

(i) Personality- Freud's theory, and Social cognitive theory
(ii) Personality-Trait and type approach, Biological and sociocultural determinants, Psychometric and projective assessment.

UNIT- III: Sources of Power(2)

(i) Motivation-Drive theory, Arousal theory, Expectancy theory, Maslow's need hierarchy
(ii) Emotion-Theories of James-Lange, Cannon-Bard, &Schachter-Singer

UNIT –IV: **Proving empowered**

(i) Social behavior- Meaning of attribution and errors in attribution, Meaning of social cognition

and processing of social information
(ii) Positive Psychology-Scope and aims, Nature and characteristics of happiness, Subjective well-being and personal growth

Practical:

(i) **Intelligence test-** To test the non-verbal intelligence of Two college students using Raven's Standard Progressive Matrices
(ii) **Personality Type-** To assess the personality type of a student obtaining responses from the student and two other significant persons in his /her life by using Glazer's test of Personality Type

Text Books:

- Baron, R.A. (1995).Psychology- The Essential Science, Pearson Education Company of India Pvt. Ltd.
- Gerrig, R.J. &Zimbardo, P.G. (2010). Psychology and Life (19th Ed.). Delhi: Allyn & Bacon
- Snyder, C.R. & Shane, J.L. (2005) Handbook of Positive Psychology: Oxford University Press.
- Mohanty, N., Varadwaj, K. & Mishra, H.C. (2014). Explorations of Human Nature and Strength: Practical in Psychology, DivyaPrakashani, Samantarapur, Bhubaneswar.

Reference Books:

- Baron, R. A. & Byrne, D. (2003). Social Psychology, 10th Edition, Prentice Hall
- Misra, G. (2009). Psychology in India, Vol 1: Basic Psychological Processes and Human Development. India: Pearson
- Dash, U.N., Dash, A.S., Mishra, H.C., Nanda, G.K. & Jena, N. (2004). Practical Exercises in Psychology: Learning about Yourself and Others. Panchasila, Bhubaneswar

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COURSESTRUCTUREFOR+3B.A.SANSKRIT(HONS.-CC,DSE&GENERICELECTIVE)

1st Year (08 Papers : 800 Marks)					
Sl. No.	**Semester – I**	**Marks-Credits**	**Sl. No.**	**Semester-II**	**Marks-Credits**
1	Core Course (SKT.)-1	(100 -6)	5	Core Course (SKT.)-3	(100-6)
2	Core Course (SKT.)-2	(100 -6)	6	Core Course (SKT.)-4	(100-6)
3	AECC-1Env. Studies	(100 -4)	7	AECC-2 M.I.L. (A.ENG/ ODIA/ SANS/ HINDI)	(100-4)
4	Generic Elective- 1 (If SKT.)	(100-6)	8	Generic Elective- 2 (If SKT.)	(100-6)
	(6+6+4+6 = 22 Credits)	**400 Marks**		**(6+6+4+6 = 22 Credits)**	**400 Marks**
2nd Year (10 Papers : 1000 Marks)					
Sl. No.	**Semester – III**	**Marks-Credits**	**Sl. No.**	**Semester-IV**	**Marks-Credits**
9	Core Course (SKT.)-5	(100 -6)	14	Core Course (SKT.)-8	(100-6)
10	Core Course (SKT.)-6	(100 -6)	15	Core Course (SKT.)-9	(100-6)
11	Core Course (SKT.)-7	(100 -6)	16	Core Course (SKT.)-10	(100-6)
12	SEC-1 Eng. Communicative	(100-4)	17	SEC-2 Office Management	(100-4)
13	Generic Elective- 3 (If SKT.)	(100-6)	18	Generic Elective- 4 (If SKT.)	(100-6)
	(6+6+6+6+4+6 = 28 Credits)	**500 Marks**		**(6+6+6+6+4+6 = 28 Credits)**	**500 Marks**
3rd Year (8 Papers : 800 Marks)					
Sl. No.	**Semester – V**	**Marks-Credits**	**Sl. No.**	**Semester-VI**	**Marks-Credits**
19	Core Course (SKT.)-11	(100 -6)	23	Core Course (SKT.)-13	(100-6)
20	Core Course (SKT.)-12	(100 -6)	24	Core Course (SKT.)-14	(100-6)
21	DSE (SKT) – 1	(100 -6)	25	DSE (SKT) – 3	(100-6)
22	DSE (SKT) – 2	(100-6)	26	DSE (SKT) – 4 (Project)	(100-6)
	(6+6+6+6 = 24 Credits)	**400 Marks**		**(6+6+6+6 = 24 Credits)**	**400 Marks**

Grand Total: 26 Papers
Grand Total Credits:148(22+22+28+28+24+24)
Grand Total Marks: 2600 (400+400+500+500+400+400)
CC= Core Course-1400
DSE= Discipline Specific Elective-400
GE= Generic Elective- 400
SEC= Skill Enhancement Course- 200
AECC= Ability Enhancement Compulsory Course- 200

ABBREVIATION: 1. CC= Core Course, 2. **DSE**= Discipline Specific Elective, 3. **GE**= Generic Elective, 4. **SEC**= Skill Enhancement Course, 5. **AECC**= Ability Enhancement Compulsory Course

NAME OF THE PAPERS AND ABBREVIATIONS AT A GLANCE

1st YEAR

SEMESTER-I

1. CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT -[MTBS]
2. CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE -I -[D-1& HSL-1]
3. AECC-1 ENVIORNMENTAL SCIENCE -[ENVSC]
4. GE-1 KHANDAKAVYA & DARSANAKAVYA -[KK & DK]

SEMESTER-II

5. CC-3 DRAMA -II & DRAMATURGY -[D-2 & DT]
6. CC-4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR& PROSODY -[TPGM]
7. AECC-2 M.I.L.
8. GE – 2 MORAL TEACHINGS AND BASICS OF SANSKRIT -[MTBS]

2nd YEAR

SEMESTER-III

9. CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II -[PT & HSL-2]
10. CC-6 META-RULES OF PANINIAN GRAMMAR, POETICS AND FIGURES OF SPEECH -[PG-2 & SD]
11. CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION- I -[PG-3 & TR-1]
12. SEC-1 COMMUNICATIVE ENGLISH -[COMLIS]
13. GE-3 TECHNICAL LITERATURE IN SANSKRIT -[TELISA]

SEMESTER-IV

14. CC-8 UPANISAD, RAMAYANA & BHAGAVADGITA -[UP, RM & BG]
15. CC-9 CASE AND CASE ENDINGS OF PANINIAN GRAMMAR, TRANSLATION- II & LEXICON -[PG-4, TR-2 & LX]
16. CC-10 ORNATE PROSE IN CLASSICAL SANSKRIT -[OPRCS]
17. SEC-2 MODERN OFFICE MANAGEMENT -[MOFM]
18. GE-4 ETHICAL LITERATURE IN SANSKRIT -[ETLS]

3rd YEAR

SEMESTER-V

19. CC-11 ORNATE POETRY IN SANSKRIT -[OPS]
20. CC-12 VEDA, VEDIC GRAMMAR &HISTORY OF VEDIC LITERATURE -[VDGRL]
21. DSE-1 SOCIO – POLITICAL THOUGHT IN ANCIENT INDIA -[SPTIN]
22. DSE-2 ETHICAL LITERATURE IN SANSKRIT -[ETLS]

SEMESTER-VI

23. CC-13 AYURVEDA & VRKSAYURVEDA -[ARV & VRV]
24. CC-14 TECHNICAL LITERATURE IN SANSKRIT -[TELISA]
25. DSE-3 TRANSLATION, EDITING AND WRITING SKILL -[TEWS]
26. DSE-4 (PROJECT PREPARATION AND PRESENTATION) -[PROJECT]

1st YEAR

SEMESTER-I

CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT [Term end: 80 +

Midterm 20 = 100 marks] **Marks**

1. *Hitopadesa* 32
2. *Yaksaprasna of Mahabharata (Aranyakaparva, ch.313)* 32
3. *Sabdarupa &Dhaturupa* 16

CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE -I [Term end : 80 + Midterm20= 100 marks]

1. *Abhijnanasakuntalam* (Act I-IV) 40
2. *History of Sanskrit Literature*-I 40

(*Ramayana*, *Mahabharata*, General out lines of *Puranas*, *Mahakavya* & Sanskrit Drama)

SEMESTER-II

CC-3 DRAMA -II & DRAMATURGY [Term end: 80 + Midterm 20= 100 marks]

1.*Abhijnanasakuntalam* (Act V-VII) 40
2. *Dramaturgy* 40

CC-4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR & PROSODY [Term end: 80 + Midterm 20= 100 marks]

1. *Vocabulary Relevant to Sanskrit Grammar and Arrangement of Paninian Grammar* 20
2. *Samjnaprakaranam* 40
3. *Chandas* 20

2nd YEAR

SEMESTER-III

CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II [Term end: 80 + Midterm 20= 100 marks]

1. *Meghadutam-* (*Purvamegha*) 40
2. *History of Sanskrit Literature-II* 40

(Gitikavyas/Khandakavyas,Campu, Gadyakavyas, Kathasahitya)

CC-6 META-RULES OF PANINIAN GRAMMAR, POETICS AND FIGURES OF SPEECH [Term end: 80 + Midterm 20= 100 marks]

1. *Paribhasa Prakaranam* 40
2. *Sahityadarpanah(Ch. I & II)* 40
3. *Sahityadarpanah (Alamkaras)* 20

CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION-
I [Term end: 80 + Midterm 20= 100 marks]

1. *Siddhantakaumudi*(*Karaka- Vibhakti* I-IV) 60
2. *Translation from Sanskrit- Odia/ Eng* 20

SEMESTER-IV

CC-8 *UPANISAD, RAMAYANA* & *BHAGAVADGITA* [Term end: 80 + Midterm 20= 100 marks]

Marks

1. *Kathopanisad (Adhyaya-I, Vallis-I,II&III)* 40
2. *Ramayana (Ch.IX of Aranyakand, Ahimsa Prasamsa)* 20
3. *Bhagavatagita(Ch.XV)* 20

CC-9 CASE AND CASE ENDINGS OF PANINIAN GRAMMAR, TRANSLATION- II & LEXICON [Term end: 80 + Midterm 20= 100 marks]

1. *Siddhantakaumudi*(*Karaka- Vibhakti* V-VII) 40
2. *Translation from Odia/ Eng passage-Sanskrit* 20
3. *Amarakosa* 20

CC-10 ORNATE PROSE IN CLASSICAL SANSKRIT [Term end: 80 + Midterm 20= 100 marks]

1. *Inscrption* 20
2. *Dasakumaracharitam* (*Purvapithika Dvitiya Ucchvasa*) 20
3. *Sukanasopadesa* 40

.

3rd YEAR

SEMESTER-V

CC-11 ORNATE POETRY IN CLASSICAL SANSKRIT [Term end: 80 + Midterm 20= 100 marks]

1. *Sisupalabadham*(Canto-I Verses 01-48) 40
2. *Kiratarjuniyam* (Canto-I) 40

CC-12 VEDA,VEDIC GRAMMAR &HISTORY OF VEDIC LITERATURE [Term end: 80 + Midterm 20= 100 marks]

1. *Vedic Suktas* 40
2. *Vedic Grammar* 20
3. *History of Vedic Literature* 20

SEMESTER-VI

CC-13 AYURVEDA AND VRKSAYURVEDA [Term end: 80 + Midterm 20= 100 marks]

1. *Ayurveda (Carakasamhita- Sutrasthana, dhirgham jivitiyadhyaya)* 60
2. *Vrksayurveda* (*Vrksayurvedadhyaya of Brhatsamhita*) 20

CC-14 TECHNICAL LITERATURE IN SANSKRIT [Term end: 80 + Midterm 20=100 marks] (JYOYISA & VASTU)

1.*Jyotisha* (*Jyotihsara-ratnavali* Chap- I) 40
(Grahanaksatraparicayaprakaranam)
2.*Vastu* (*Vasturatnakara* Chap-I) 40
(Bhuparigrahaprakaranam)

GENERIC ELECTIVE (GE)

04 Papers in Generic Elective such as 1, 2, 3 & 4
(One examinee may choose SANSKRIT as GE- A or GE-B)

GE- 1 KHANDAKAVYA & DARSANA -KAVYA ***80+20 = 100 Marks***

1. *Meghadutam-* (*Purvamegha*) 60
2. *Bhagavatagita(Ch.XV)* 20

GE-2 MORAL TEACHING AND BASICS OF SANSKRIT 80+20 = 100 Marks

1. *Hitopadesa* 32
2. *Yaksaprasna of Mahabharata (Aranyakaparva, ch.313)* 32
3. *Sabdarupa &Dhaturupa* 16

GE-3 TECHNICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks
(JYOYISA & VASTU)

1. *Jyotisa* (*Jyotihsara-ratnavali* Chap- I) 40
(Grahanaksatraparicayaprakaranam)
2. *Vastu* (*Vasturatnakara* Chap-I)40
40
(Bhuparigrahaprakaranam)

GE-4 ETHICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks

1. *Cāṇakyanīti (*Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. *Nītiśataka* of Bhartrhari (Verses 1-50) 40 marks

DISCIPLINE SPECIFIC ELECTIVE (DSE)

SEMESTER-VI

Total 04 Papers DSE- 1, 2, 3 & 4 (Paper 4 is meant for Project Preparation & Presentation)

DSE- 1

SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA 80+20 = 100 Marks

1. ***Arthasastra (Adhikarana* I.1- 4) 40 Marks**
2. ***Dharmasastra* 40 Marks**

Yājñavalkyasmṛti (*Vyavahārādhyāya* verses 1-65)

DSE-2

ETHICAL LITERATURE IN SANSKRIT 80+20 = 100 Marks

1. ***Cāṇakyanīti (***Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. ***Nītiśataka* of Bhartrhari** (Verses 1-50) 40 marks

DSE-3

TRANSLATION, EDITING AND WRITING SKILL **80+20 = 100 Marks**

1. Anuvada Kala-	**20**
2. Precises Writing-	**20**
3. Proof Correction and Transliteretion	**20**
4. Essay	**20**

DSE – 4 INDIAN PHILOSOPHY : GENERAL IDEAS

1. Astika	**60 Marks**
2. Nastika	**20 Marks**

OR

DSE-04 PREPARATION AND PRESENTATION OF PROJECT ***80+20 = 100 Marks***

Project- 80 Marks

Presentation- 20 Marks

(The Project work should be done preferably on Creative writings and Translation wroks of Sanskrit Language.)

+3 M.I.L.(Sanskrit) Paper-1

(For Hons. Students as AECC-2 if Sanskrit M.I.L.-1) Full Marks- 80 + 20 = 100Marks

1. SANSKRIT PROSE	***40 Marks***
2. SANSKRIT POETRY	**40 Marks**

SYLLABUS IN DETAIL

1st YEAR
SEMESTER-I

CC- 1 MORAL TEACHINGS AND BASICS OF SANSKRIT 80+20 = 100 Marks

1.	***Hitopodeśa Mitralabha* (*Prastavana, Kathāmukha, Brddhavyaghrapathiakakatha, Mrgajambukakatha & Gṛdhravidalakatha*)**	32 Marks
2.	***Yaksaprasna of Mahabharata(Aranyakaparva, ch.313*** *from Verses no. 41 to 133)*	32 Marks

Long Questions -1 (About 300 words) 16 Marks

3. ***Śabdarupa* & *Dhaturupa*** ('a' *karanta*, 'i' *karanta*, 'ī'*karanta*, 'u'*karanta*, 'ū' *karanta*, 'in' *bhaganta*, *Mātṛ*, *Pitṛ*, *Asmad*, *Yusmad*, *Tad* (**Sabdarupas**).

16 Marks

Lat, *Laṅ*, *Vidhiliṅ*, *Lṛt*, *Lot* and *Litlakaras* path, *Ni*, *Kṛ*, *Sev*, *Han*, *Pā*, *Dā*, *Śru*, *Śī* and *Krīṇ* in the form of *Ātmanepada*, *Parasmaipada* or *Ubhayapada* whichever is applicable. **(*Dhaturupas*)**

Unit-I & II *Hitopodeśa Mitralabha and Sabdarupa* **40 Marks**

Long Questions -1 (About 300 words)

16 Marks

Short Questions -2 (About 50 words each) 5×2=10 Marks

Translation of a textual verse 6 Marks
Sabdarupa – 4 2 x 4 = 8 Marks

Unit-III & IV *Yaksaprasna* of *Mahabharata and Dhaturupa* **40 Marks**

Long Questions-1 (About 300 words) 16 Marks

Explanation - 1(About 150 words) 10 Marks

Translation of a textual verse 6 Marks
Dhaturupa – 4 2 x 4 = 8 Marks

Core Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) Kapildev Giri, Chaukhamba Publications, Varanasi.
2. *Mahabharata*, Gitapress, Gorakhpur (Prescribed Text)
3. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation andProduction, Bhubaneswar, 2013

Suggested Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) N.P. Dash and N.S. Mishra, Kalyani Publishers,New Delhi
2. *Hitopadesah* (*Mitralabhah*) (Ed.) B.S. Mishra, Vidyapuri, Cuttack
3. *Yaksaprasna, T. K. Ramaayiyar, R. S. Vadhyar & Sons. Palkad, Kerala*
4. *Yaksaprasna, Ed. Dr. Nirmal Sundar Mishra, A.K. Mishra Agency, Cuttack, 2016*

CC-2 DRAMA-I & HISTORY OF SANSKRIT LITERATURE – I 80+20 = 100 Marks

1. *Abhijnanasakuntalam* (Act I-IV) **40 Marks**

2. History of Sanskrit Literature-I **40 Marks**

(*Ramayana*, *Mahabharata,* General out lines of *Puranas, Mahakavyas* and Sanskrit Dramas)

1. *Abhijnanasakuntalam* (Act I-IV) **40 Marks**

Unit-I & II Long Question -1(About 300 words) 12 Marks
Short Questions -2 (About 50 words each) 5×2=10 Marks
Translation of Texual Verse- 1 06 Marks
Textual Grammar 12 Marks
i) *Sandhi- (4)* 1×4= 4 Marks

ii) *Karaka&Vibhakti-(2)* 2×2= 4 Marks
iv) *Samasa-(2)* 2×2= 4 Marks

2. History of Sanskrit Literature-I **40 Marks**

Unit- III *Ramayana & Mahabharata,General out lines of Puranas (Defination & Number)*
Long Question -1(About 150 words) 12 Marks
Short Questions -2(About 50 words each) 4x2= 08 Marks

Unit- IV (General Outlines of *Mahakavyas with special refence to Ashvaghosa, Kalidasa, Bharavi, Magha* and Sriharsa and Sanskrit Dramas *with special refence to* Bhasa, Kalidasa, Sudraka, Visakhadatta, *Ashvaghosa*, Bhattanarayana)

Long Questions -1(About 150words)	12 Marks
Short Questions -2(About 50 words each)	4x2= 08 Marks

Core Readings :

1. Abhijnanasakuntalam (Ed.) M.R. Kale,Motilal Banarsidass Publishers Pvt. Ltd., NewDelhi-11007, 8th Reprint-2010

2. History of Sanskrit literature, Baladev Upadhyay, Chaukhamba Publications, Varanasi.

Suggested Readings :

1. Abhijnanasakuntalam (Ed.) R.M. Bose, Modern Book Agency Pvt. Ltd., 10 BankimChatterjee Street, Calcutta

2. Abhijnanasakuntalam (Ed.) R.M.Mohapatra, Books &Books , Cuttack

3.Abhijnanasakuntalam (Ed.) H.K. Satapathy, Kitab Mahal, Cuttack

4. Sanskrit Drama, A.B.Keith , Oxford University Press, London

5. Samskrta Sahiytara Itihasa, (Odia) H.K. Satapathy, Kitab Mahal, Cuttack- 753003.

GENERIC ELECTIVE -1

KHANDAKAVYA & DARSANAKAVYA **80 +20 = 100 Marks**

1. *Meghadutam*(Purvamegha) **60 Marks**

2. Gita (Chapter.XV) **20 Marks**

1. *Meghadutam*- (*Purvamegha*) **60 Marks**

Unit-I	Long Question – 2 (About 150 words each)	12 x 2= 24 Marks
Unit- II	Short Questions - 4(About 50 words each)	5 x 4 = 20Marks
Unit-III	i) Explanation of One Verse (About 150 words)	10 Marks
	ii) Translation of One Verse into Odia/ English	06 marks

***2.Bhagavadgita* (Chap.XV)** **20 Marks**

Unit-IV	Long Question - 1(About 150 words)	12Marks
	Explanation of One Verse (About 150 words)	08 Marks

Core Reading:

1. *Meghadutam* (Ed.) M.R. Kale, Motilal Banarsidass, Delhi
2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

Suggested Reading:

1. *Meghadutam* (Ed.) B.S. Mishra, Vidyapuri, Cuttack, 1st Edn-1999
2. *Meghadutam* (Ed.) Radhamohan Mahapatra, Books and Books, Vinodvihari, Cuttack, 1984
3. *Shrimad-bhagavad-gita* (Ed.) S. Radhakrishnan, Bharatiya Vidya Bhavan
4. *Shrimad-bhagavad-gita* (Ed.) Gambhirananda, Ramakrishna Mission

SEMESTER-II

CC - 3 DRAMA - II & DRAMATURGY **80+20 = 100 Marks**

1.*Abhijnanasakuntalam* (Acts V-VII) **40 Marks**

2. *Dramaturgy* **40 Marks**

(*Nandi,Prastavana, Purvaranga, Panca-arthaprakṛti*, *Pancasandhi*, Panca-*arthopaksepaka, Nataka,Prakarana from sahityadarpana*)

***1. Abhijnanasakuntalam* (Acts V-VII)** **40 Marks**

Unit-I & II Long Question -1(About 300 words) 12 Marks

Short Questions -2 (About 50 words) 5×2= 10 Marks

Explanation of textual verse- 1(About 150 words) 8 Marks

Translation from Sanskrit to Odia/ English-1 verse 5 Marks

Translation from Prakit to Sanskrit-1 5 Marks

2. *Dramaturgy* (*Sahityadarpana*,Chapter- VI) **40 Marks**

Unit-III

Nandi, Prastavana, Purvaranga, Nataka, Prakarana

Short Notes on any four 5× 4= 20 Marks

Unit-IV

Pancasandhi , *Panca - arthaprakṛti* and *Panca-arthopaksepaka*

Short Notes on any four 5× 4= 20 Marks

Core Readings :

1. Abhijnanasakuntalam (Ed.) M.R. Kale,Motilal Banarsidass Publishers Pvt. Ltd., NewDelhi-11007, 8th Reprint-2010

2. Sahitya Darpana with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.

Suggested Readings :

1. *Abhijnanasakuntalam* (Ed.) H.K. Satapathy, Kitab Mahal, Cuttack
2. *Sahitya Darpana* (Ed.) P.V.Kane, Motilal Banarsidass Publishers Pvt. Ltd., New Delhi
3. *Odia Translation* of Sahityadarpana by Narayana Mohapatra, Odisha Sahitya Academy,Bhubaneswar.
4. *Sahityadarpana* evam Chanda (Ed.) Dr. Braja Sundar Mishra, Satyanarayan Book Store,Cuttack
5. *Sahityadarpana o Chanda* (Ed.) Niranjan Pati, Vidyapuri, Cuttack

CC- 4 AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR & PROSODY ***80+20 = 100 Marks***

1. ***Vocabulary relevant to Sanskrit Grammar and Arrangement of Paninian Grammar*** **20 Marks**
2. ***Samjna-prakaranam from Vaiyakarana Siddhanta Kaumudi*** **40 Marks**
3. ***Chanda from Srutabodha*** **20 Marks**

1. Vocabulary relevant to Sanskrit Grammar and Arrangement of Paninian Grammar

Unit- I **20 Marks**

(*Sutra, Vartika, Bhasya, Astadhyayi, Siddhantakaumudi, Dhatupatha, sthani, Agama, Adesa, Nadi, Nistha,Krdanta, Taddhita,Tinanta,Nijanta,Sananta, Yananta, Namadhatu, Vikarana, Luk, Lopa, Sarvadhatuka, Ardhadhatuka, ti & Upadha* = 26)

Short Notes on any - 4 5×4= 20 Marks

2. *Samjnaprakaranam* **40 Marks**

Unit- II From beginning upto **najjhalau**
four questions to be answered 5×4=20 Marks

Unit- III Rest of the Sutras 5x4 = 20
four questions to be answered Marks

3. *Chanda* (Prosody)- *Srutabodhah* **20 Marks**

(Chandas such as *-: Arya, Anustubh, Indravajra, Upendravajra,* Upajati, *Vamsastha, Vasantatilaka, Mandakranta, Malini, Shikharini, Shardula-vikridita, Sragdhara*.)

Unit- IV Definition and Examples of 4 Chandas - out of 7 asked (The students are advised to compose slokas in seminar period) 5×4= 20 Marks

Core Readings :

1. *Siddhanta-kaumudi* with *Balamanorama* and *Tattvabodhini*, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. Vyakaranadarpana, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar- 2013
3. Shrutabodha, Hari Prasad Sharma, Nirnaya Sagar Press. Bombay

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K.Mishra Publishers Pvt. Ltd, Cuttack.
2. Siddhanta-kaumudi (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. Siddhanta-kaumudi (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi
4. Siddhanta-kaumudi (Ed.) P.R.Ray, Sailabala Womens College,(Skt.Deptt.) Cuttack.
5. Sahityadarpana Evam Chhanda (Ed.) Dr. Brajasundar Mishra, Satyanarayana Book Store, Cuttack**.**

GENERIC ELECTIVE -2

MORAL TEACHINGS AND BASICS OF SANSKRIT **80+20 = 100 Marks**

1. ***Hitopodeśa Mitralabha* (*Prastavana, Kathāmukha, Brddhavyaghrapathiakakatha, Mrgajambukakatha & Gṛdhravidalakatha*)** **32 Marks**
2. ***Yaksaprasna of Mahabharata(Aranyakaparva, ch.313***

from Verses no. 41 to 133) **32 Marks**

3. *Śabdarupa* & *Dhaturupa* **16 Marks**

('a' *karanta*, 'i' *karanta*, 'ī' *karanta*, 'u' *karanta*, 'ū' *karanta*, 'in' *bhaganta*, *Māṭṛ*, *Piṭṛ*, *Asmad*, *Yusmad*, *Tad* **(*Sabdarupas*).**

Lat, *Laṅ*, *Vidhiliṅ*, *Lṛt*, *Lot* and *Litlakaras* in the form of *Ātmanepada*, *Parasmaipada* or *Ubhayapada* whichever is applicable. (*Dhaturupas*) *path*, *Ni*, *Kṛ*, *Sev*, *Han*, *Pā*, *Dā*, *Śru*, *Śī* and *Kṛ*,

Unit-I & II *Hitopodeśa Mitralabha and Sabdarupa* **40 Marks**

Long Question -1 (About 300 words)	16 Marks
Short Questions -2 (About 50 words each)	5×2=10 Marks
Translation of a textual verse	6 Marks
Sabdarupa – 4	2 x 4 = 8 Marks

Unit-III & IV *Yaksaprasna* of *Mahabharata and Dhaturupa* **40 Marks**

Long Question-1 (About 300 words)	16 Marks
Explanation - 1(About 150 words)	10 Marks
Translation of a textual verse	6 Marks
Dhaturupa – 4	2 x 4 = 8 Marks

Core Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) Kapildev Giri, Chaukhamba Publications, Varanasi.
2. *Mahabharata*, Gitapress, Gorakhpur (Prescribed Text)
3. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation andProduction, Bhubaneswar, 2013

Suggested Readings :

1. *Hitopadesah* (*Mitralabhah*) (Ed.) N.P. Dash and N.S. Mishra, Kalyani Publishers,New Delhi
2. *Hitopadesah* (*Mitralabhah*) (Ed.) B.S. Mishra, Vidyapuri, Cuttack
3. *Yaksaprasna, T. K. Ramaayiyar, R. S. Vadhyar & Sons. Palkad, Kerala*
4. *Yaksaprasna, Ed. Dr. Nirmal Sundar Mishra, A.K. Mishra Agency, Cuttack, 2016*

2nd Year

SEMESTER-III

CC-5 POETRY & HISTORY OF SANSKRIT LITERATURE- II ***80+20 = 100 Marks***

1. Meghadutam- (Purvamegha) ***40 Marks***
2. History of Sanskrit Literature-II ***40 Marks***
(Gitikavyas / Khandakavyas, Campu, Gadyakavyas and Kathasahitya)

1. Meghadutam- (Purvamegha) ***40 Marks***

Unit-I & II	*Long Question - 1(About 300 words)*	*12 Marks*
	Short Questions – 3 (About 50 words each)	*4×3= 12 Marks*
	i) Explanation of One Verse (About 150 words)	*10 Marks*
	ii) Translation of One Verse into Odia/ Sanskrit	*06 Marks*

2. History of Sanskrit Literature-II ***40 Marks***

Unit-III	*Gitikavyas / Khandakavya(Kalidas, Bhatrhari & Jayadev)*	
	Long Questions -1(About 300 words)	*12 Marks*
	Short Questions -2 (About 50 words each)	*4x2= 08 Marks*
Unit- IV	*Campu (Ramayana campu, Bharata campu, Nala campu & Nilakantha campu)* *Gadyakavyas (Suvandhu, Banabhatta & Dandi)* *Kathasahitya (Gunadhya, Somadeva, Visnusarma & Pandita Narayana)*	
	Long Question -1 (About 150 words)	*12 Marks*
	Short Questions -2 (About 50 words each)	*4x2= 08 Marks*

Core Readings :

1. *Meghadutam* (Ed.) M.R. Kale, Motilal Banarsidass, Delhi
2. *Samskrta Sahitya ka Itihasa*, Baladeva Upadhyaya, Choukhamba, Varanasi.

Suggested Readings:

1. *Meghadutam* (Ed.) Dr. Braja Sundar Mishra, Vidyapuri, Cuttack, 1st Edn-1999

2. *Meghadutam* (Ed.) Radhamohan Mahapatra, Books and Books, Vinodvihari, Cuttack,1984

3. *Samskrta Sahitya ka Ruparekha*, Vacaspati Goreilla, Choukhamba Vidyabhavan, Varanasi.

4. *Samskrta Sahityara Itihasa*, H.K. Satapathy, Kitab Mahal, Cuttack
5. Samskrta Sahitya Itihasa, Text Book Bureau, Govt. of Odisha, Bhubaneswar

CC-6 META - RULES OF PANINIAN GRAMMAR, POETICS & FIGURES OF SPEECH **80+20 = 100 Marks**

1. *Paribhasaprakaranam* of *Vaiyakarana Siddhantakaumudi* **20 Marks**
2. *Sahityadarpanah (Ch.I & II)* **40 Marks**
3.*Sahityadarpanah* (Selected *Alamkaras* from *Ch.X*) **20 Marks**

1. Paribhasaprakaranam **20 Marks**
Unit- I Four *Sutras* to be explained. 5×4= 20 Marks

2. Poetics **40 Marks**

Unit- II *Sahityadarpana Ch. I (Kavya laksana, Kavya prayojana, Kavya hetu, Kavya bheda)*
Long Question -1 (About 300 words) 12 Marks
Short Notes – 2 (About 50 words each) 4x2 = 8 Marks

Unit- III *Sahityadarpana Ch. II* (*Vakya*, *Pada*, *Abhidha*, *Laksana*, *Vyanjana*)

Long Question -1(About 300 words) 12 Marks
Short Questions -2 (About 50 words each) 4x2= 8 Marks

3. **Figures of speech** (without Sub-division) **20 Marks**
Sahityadarpana(Ch.X)

(*Alamkaras* such as-
Anuprasa,*Yamaka*,*Slesa*,*Upama*,*Rupaka*,*Utpreksa*,*Bhrantiman, Nidarsana, Arthantaranyasa, Aprastuta-prasamsa, Apahnuti, Vyatireka, Vibhavana, Visesokti, Samasokti, Svabhavokti*)

Unit- IV 5×4= 20 Marks
Definition and Examples of **Four***Alamkaras* (figures of speech) out of **seven** asked.

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass, Delhi
2. *Sahitya Darpana* with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.

Suggested Readings:

1. Siddhanta-kaumudi (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Sahitya Darpana* (Ed.) P.V.Kane, Motilal Banarsidass Publishers Pvt. Ltd., New Delhi
3. *Odia Translation* of Sahityadarpana by Narayana Mohapatra, Odisha Sahitya Academy, Bhubaneswar.
4. *Sahitya Darpana* with Laksmi Tika (Sanskrit) and Vimala Tika, (Hindi) (Ed.) K.M.Sastri, Chaukhamba Publications, Varanasi.
5. *Sahityadarpana* evam Chanda (Ed.) Dr. Braja Sundar Mishra, Satyanarayan Book Store,Cuttack.
6. *Sahityadarpan, Dr. Niranjan Pati, Kalyani Publishers, Ludhiana*.

CC-7 CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION – I

80+20 = 100 Marks

1. *Vaiyakarana Siddhantakaumudi*(*Karaka-Vibhakti* I-IV) 60 Marks
2. Translation from Sanskrit unseen passage to Odia/ English 20 Marks

1. *Siddhantakaumudi(Karaka-Vibhakti I-IV)* 60 Marks

Unit- I (*Prathama&Dvitiya*)
Two *Sutras/ Vrtti/ Vartika* to be explained. 10×2= 20 Marks

Unit- II (*Trtiya*)
Two *Sutras/ Vrtti/ Vartika* to be explained 10×2= 20 Marks

Unit- III (*Caturthi*)
Two *Sutras/ Vrtti/ Vartika* to be explained. 10×2= 20 Marks

Unit -V *Translation from Sanskrit unseen passage into Odia/ English* *20 Marks*

One unseen Sanskrit Passage is to be given for Translation into Odia/ English
(At least 08 sentences) 2.5 x 8 = 20 Marks

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation and Production,Bhubaneswar- 2013

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Siddhanta-kaumudi* (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. *Siddhanta-kaumudi* (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi
4. *A Guide to Sanskrit Composition and Translation*, M.R.Kale,Motilal Banarsidass, NewDelhi
5. *Brhat Anuvada Candrika*, Chakradhara Hamsa Nautial Shastri, Motilal Banarsidass, New Delhi

GENERIC ELECTIVE -3

TECHNICAL LITERATURE IN SANSKRIT (JYOTISA & VASTU) 80+20 = 100 Marks

1. *Jyotisa* (*Jyotihsara-ratnavali*, Chap I) 40 Marks
(*Graha-naksatra-paricaya-prakaranam*)
2. Vastu (*Vasturatnakara,* Chap-I) 40 Marks
(*Bhuparigraha-prakaranam*)

1. *Jyotisa* 40 Marks

Unit-I & II

Long Question -2 (About 150 words each) 12 x 2 = 24Marks
Short Questions - 4 (About 50 words each) 4x4 = 16 Marks

2. *Vastu* 40 Marks

Unit-III & IV

Long Question -2 (About 150 words each) 12x2=24Marks

Short Questions - 4 (About 50 words each) 4x4 = 16 Marks

Core Readings :

1. *Jyotihsara-ratnavali*(Part-I) (Ed.) Pandit Baikoli Mahapatra, Radhakrishna Pustakalaya, Satyanarayan Temple Road, Berhampur,Ganjam,Odisha
2. *Vasturatnakar* (Ed.) Vindhyeshwari Prasad Dwivedi, Chowkhamba Krishnadas Academy, Varanasi

Suggested Readings:

1. Grahanaksatra paricaya prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.

2. Bhuparagraha – prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.

3. Jyotisavisvakosa, Haridutta Sharma, Subodh Publication, New Delhi

4. Vaidika jyotisa, Dr.G.S.Shastri, Chaukhamba Samskriti bhabana, Varanasi

5. Bharatiya jyotisa, Dr.Nemichandra Shastri, Bharatiya Jnanapitha,New Delhi-110003

6. Jyotisa- tattvanka, Gitapress, Gorakhpur (2014)

7. RajaballavamVastusatram, Ed. Dr Srhrikrishna Jugnu, Parimal Publication, Delhi, 2005

8. Vastu, Astrology & Architecture, (Copmilation of Research Paper of ANational Conference on Vastu & Jyotisa), Ed.by Gayatri Dev Vasudev, MLBD,New Delhi,(4th reprint-2015)

CC-8 UPANISAD, RAMAYANA & BHAGAVADGITA 80 +20 = 100 Marks

1. ***Kathopanisad*** **(Vallis-I,II&III)** **40Marks**
2. ***Ramayana (Ch.IX of Aranyakanda, Ahimsa prasamsa*** **20Marks**
3. ***Bhagavadgita*** **(Chap.XV)** **20 Marks**

1. *Kathopanisad* (Adhyaya I, Vallis-I, II & III) **40 Marks**

Unit- I & II Long Questions -2 (About 150 words each) 12x2=24 Marks

i) Explanation - 1 Mantra (About 150 words) 10 Marks
ii) Translation- 1 06 Marks

2. Ramayana (Ch. IX of Aranyakanda, Ahimsa prasamsa) **20 Marks**

Unit- III Long Question-1(About 150 words) 12 Marks

Two short questions (About 50 words each) 4x2 = 08 Marks

Unit-IV Bhagavadgita **(Chap.XV)** **20 Marks**

Long Question-1(About 150 words) 12 Marks

Explanation - 1 Mantra (About 150 words) 08 Marks

2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

3. *Srimad Valimkiya Ramayanam,*Gita Press, Gorakhpur (Prescribed Text)

Core Readings :

1. *Kathopanisad* with *Sankarabhasya* (Ed.) V.K. Sharma, Sahitya Bhandar, Subhas Bazar, Meerut

2. *Shrimad-bhagavad-gita*, Gita Press, Gorakhpur

3. *Srimad Valimkiya Ramayanam,* Gita Press, Gorakhpur (Prescribed Text)

Suggested Readings:

1. *Kathopanisad with* Sankarabhasya, Ed. Dr. Haramohan Mishra, Vidyapuri, Cuttack.
2. *The Message of the Upanisad* , Swami Ranganathananda, Bharatiya VidyaBhavan, K.M. Munsi Marg Mumbai.
3. *Valmiki Ramayana*, (Crtical Edition), Oriental Institute, Baroda
4. *Shrimad-bhagavad-gita* (Ed.) S. Radhakrishnan, Bharatiya Vidya Bhavan
5. *Shrimad-bhagavad-gita* (Ed.) Gambhirananda, Ramakrishna Mission
6. *Shrimad-bhagavad-gita*(Ed.) Swami Ranganathananda, Advaita Ashrama, Kolkata- (8th reprint 2014.

CC 9 CASE AND CASE ENDING OF PANINIAN GRAMMAR, TRANSLATION- II AND LEXICON ***80 +20 = 100 Marks***

1. *Vaiyakarana Siddhantakaumudi (Karaka – vibhakti* V-VII) **40 Marks**

2. Translation of an unseen Odia / English passage into Sanskrit ***20 Marks***

3. *Amarakosa* **20 Marks**

Siddhantakaumudi (Karaka – Vibhakti V – VII)

Unit - I(CASE –V)

Explanation of any two sutras / Vrttis / Vartikas 10 x 2 = 20 Marks

Unit – II (CASE VI & VII)

Explanation of any two sutras / Vrttis / Vartikas 10 x 2 = 20 Marks
(One from VIth and one from VIIth)

Unit – III **Translation – II** **20 Marks**

One unseen Passage of Odia is to be translated into Sanskrit.

2.5 x 8 = 20 Marks

(At least Eight sentences)

3. Amarakosa *(Devata, Svarga, Visnu, Laksmi, Durga, Surya, Brahma,Siva, Kartikeya, Ganesa, Sarasvati from Svargavarga)* **20 Marks**

Unit- V Short notes on any two out of four asked 10×2= 20Marks

Core Readings :

1. *Vaiyakarana Siddhanta-kaumudi* with Balamanorama and Tattvabodhini, Vol.I (Ed.) Giridhara Sharma Chaturveda, Motilal Banarsidass
2. *Vyakaranadarpana*, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar- 2013
3. *Amarakosa* with Ramasrami tika, Choukhamba Sanskrit Series office, Varanasi

Suggested Readings:

1. *Siddhanta-kaumudi* (Ed.) Prof. G.K. Dash & Dr(Mrs) K.Dash with Navanita tika, A.K. Mishra Publishers Pvt. Ltd, Cuttack.
2. *Siddhanta-kaumudi* (Ed.) Minati Mishra, Vidyapuri, Cuttack
3. *Siddhanta-kaumudi* (Ed.) Dr. Niranjan Pati, Kalyani Publishers, New Delhi

4. *A Guide to Sanskrit Composition and Translation*, M.R.Kale,Motilal Banarsidass, New Delhi

5. Brhat Anuvada Candrika, Chakradhara Hamsa Nautial Shastri, Motilal Banarsidass, New Delhi.

6. *Namalinganuasanam* (*Amarakosa*), D.G. Padhye, Choukhamba Sanskrit Series,New Delhi

CC-10 ORNATE PROSE IN CLASSICAL SASNKRIT **80 +20 = 100 Marks**

1. ***Inscriptions*** **20 Marks**
2. ***Dasakumaracaritam* (*Purvapithika, Dvitiya Ucchvasa*)** **20 Marks**

40 Marks

3. ***Sukanasopadesa of Kadambari***

1. ***Inscriptions (Girnar inscription of Rudradaman, Prayaga (Allahabad) stone pillar inscription of Samudragupta & Mandasore inscription of Yasovarman)*** **20 Marks**

Unit-I Long Question - 1(About 150 words) 12 Marks

Short Questions – 2 (About 50 words each) 4×2= 8Marks

2. *Dasakumaracaritam*(*Purvapithika, Dvitiya Ucchvasa*) **20 Marks**

Unit- II Long Question-1 (About 150 words) 12 Marks

Short Questions -2 (About 50 words each) 4x2= 08 Marks

3. Sukanasopadesa of Kadambari **40 Marks**

Unit-III & IV	Long Question-1 (About 300 words)	16Marks
	Short Questions -2 (About 50 words each)	5x2 =10 Marks
	Textual Sentence Translation into Odia/ English	06 Marks
	Explanation - 1 (About 150 words)	08 Marks

Core Reading :

1. *Dasakumaracarita* (Ed.) M.R. Kale, Motilal Banarsidass,Delhi.
2. *Sukanasopadesa* (Ed.) Ramakanta Jha, Choukhamba Vidyabhavan, Varanasi.
3. Selected Sanskrit inscriptions (Ed.) by D.B. Pusalkar, Classical Publisher, New Delhi.

Suggested Reading :

1. *Dasakumarcarita*, Chaukhamba Publications, Varanasi.
2. *Sukanasopadesa* (Ed.) Nirmal Sundar Mishra, Kalyani Publishers, New Delhi.
3. *Abhilekhamala* (Ed.) sujata Dash, Kalyani Publisher, New Delhi.
4. *Abhilekhacayana* (Ed.) Jayanta Tripathy, Vidyapuri, Cuttack
5. *Kadambari (Purvardham*) with the com. of Bhanuchandra Siddhanjani, MLBD, New Delhi

GENERIC ELECTIVE -4

ETHICAL LITERATURE IN SANSKRIT ***80+20 = 100 Marks***

1. *Cāṇakyanīti (*Chaps-I, II, III and IV from *Cāṇakyanītidarpaṇa*) 40 marks
2. *Nītiśataka* of Bhartrhari (Verses 1-50) 40 marks

1. *Cāṇakyanīti* **40 Marks**

Unit-I & II Long Question -2 (About 150 words each) 12x2= 24 10 Marks

Short Questions – 4 (About 50 words each) Marks 3 ×2= 06 Marks

4x4=16 Marks

2. *Nitisataka*

40Marks

Unit-III & IV Long Question -2 (About 150 words each) 12x2= 24 10 Marks

Short Questions – 4 (About 50 words each) Mar 3 ks ×2= 06 Marks

4x4=16 Marks

Core Readings:

1. *Cāṇakyanītidarpaṇa* (Ed.) Gunjeswar Choudhury, Choukhamba SurabharatiPrakashan, Varanasi
2. *Nītiśataka* (Ed.) M.R. Kale, MLBD, New Delhi(Text)

Suggested Readings:

1. *Sampurna Canakyaniti (Ed.),* Dr. N.S. Mishra, A.K. Mishra Agencies, Cuttack
2. *Nītiśataka* (Ed.) Naresh Jha, Choukhamba Prakashan, New Delhi
3. *Bhartrhari Satakatrayam,* B. S. Mishra, Vidyapuri, Cuttack.

3rd Year

SEMESTER-V

CC-**11 ORNATE POETRY IN SANSKRIT - 80 +20 = 100 Marks**

1. ***Sisupalabadham*(Canto-I Verses 01-48) 40 Marks**
2. ***Kiratarjuniyam* (Canto-I) 40Marks**

1. Sisupalabadham(Canto-I Verses 01-48) 40 Marks

Unit-I & II	Long Question -1 (About 300 words)	15 Marks
	i) Explanation of One Verse (About 150 words)	10 Marks
	Short Questions- 3	5x 3=15 Marks

2. Kiratarjuniyam (Canto-I) 40 Marks

Unit-III	Long Question -1 (About 300 words)	15 Marks
Unit- IV	Explanation of One Verse (About 150 words)	10 Marks
	Short Questions - 3	5x 3=15 Marks

Core Readings:

1. *Sisupalabadham* (Ed.) S.R. Ray, Vallabhatika, Bharatiya Vidya Prakashan, New Delhi.
2. *Kiratarjuniyam* (Cantos I-III) (Ed.) M.R. Kale, Motilal Banarsidass Publishers Pvt. Ltd.,Delhi,4th Edn-1966,Rpt-1993

Suggested Readings:

1. Sisupalabadham - Canto-I (Ed.), Devanarayan Mishra,(With *Sarvankasa-tika* ofMallinatha) Sahitya Bhandar, Meerut
2.Kiratarjuniyam (Canto- I) (Ed.) Niranjan Pati,Vidyapuri, Cuttack.
3. Sisupalabadham – H.K. Satpathy, Kitab Mahal, Cuttack

CC- 12 VEDA, VEDIC GRAMMAR & HISTORY OF VEDIC LITERATURE 80 +20 = 100 Marks

1. ***Vaidika Suktas*** **40 Marks**
2. ***Vedic Grammar*** **20 Marks**
3. ***History of Vedic Literature*** **20 Marks**

1. Veda **40 Marks**

Vedic Suktas from different *Samhitas*

Agni (RV- I.1), Indra (RV- II.12) , Savitr (RV- I.35), Usas (RV- I.48), Purusa-sukta (YV XXXI.1.16), Siva-samkalpa (YV-XXX.1.6), Samjnana(RV X.191), Vak(RV X.125)

Unit-I & II	i) Long Question -2 (About 150 words each)	12x2= 24 Marks

ii) Explanation – 2 Mantra(About 150 words each) 8x2= 16 Marks

2. Vedic Grammar **20 Marks**

Unit – III

The following Sutras are to be taught:
Chandasi pare'pi, Vyavahitasca, Caturthyarthe bahulam chandasi, Chandasi lun-lan-litah,

Linarthe let,Leto'datau, Sibbahulam leti, Itasca lopah parasmaipadesu, Sa uttamasya, Ata ai, Vaito'nyatra, Hr-grahor bhaschandasi, Chandasi ubhayatha, Tumarthe se-sen-ase-asen- kse-kasen-adhyai-adhyain-kadhyai-kadhyain-shadhyai-shadhyain-tavai-taven-tavenah, Va chandasi, Ses chandasi bahulam, Prakrtya'ntapadam avyapare, Nipatasya ca, Supam suluk purva-savarnac che-ya-da-dya- ya-jalah, Idanto masi, Ajjaserasuk, Dirghadati samanapade

Two *sutras* to be explained	5×2=10Marks
Two *sadhanas* to be worked out	5×2=10 Marks

3. History of Vedic Literature **20Marks**
(*Samhita*, *Brahmana*, *Aranyaka*, *Upanisad*)

Unit-IV	Long Question -1 (About 150 words)	12 Marks
	Short Questions – 2(About 50 words each)	4 ×2= 8 Marks

Core Readings :

1. *New Vedic Selection* (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, NewDelhi
2. *Vaidika Sahitya aur Samskrti*, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

1. *Vaidika sahitya o Samskrti* , A.C. Das, Grantha Mandira, Cuttack
2. *Veda O Vaidika Prakarana*,(Ed) Niranjan Pati, Vidyapuri, Cuttack.
3. *History of Indian Literature* Vol. I, M.Winternitz, MLBD, New Delhi
4. *Vaidik sahitya ki Ruparekha*,Umashankar Sharma Rsi,Chawkhamba Vidyaprakashan, Varanasi
5. Vaidika Sahitya O Samskrti, Bholanath Rout, Chitrotpala Publication, Salipur

DISCPLINE SPECIFIC ELECTIVE (DSE)-1

DSE-1 SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA ***80+20 = 100 Marks***

3. ***Arthasastra (Adhikarana* I.1- 4)** **40 Marks**
4. *Dharmasastra*
   Yājñavalkyasmṛti (*Vyavahārādhyāya* verses 1-65) **40 Marks**

***1. Arthasastra (Adhikarana* I.1-4 from the beginning up to vinayadikarana)** **40 Marks**

Unit- I & II — Long Questions -2 (About 150 words each) 16 Marks
Short Questions – 4 (About 50 words each) 4 ×4= 16 Marks

12x2= 24 Marks
4x4 = 16 Marks

2. *Dharmasastra*

a)Yājñavalkyasmṛti
Units- III & IV –
Long Question -2 (About 150 words each) **40Marks**
Short Questions - 4(About 50 words each)

12x2= 24 Marks
4x4=16 Marks

Core Readings:

1. *Kautilya Arthashastra*, (Ed. &Trans.) R.P. Kangle, 3 Vols., Motilal Banarsidass, New Delhi
2. *Yājñavalkyasmṛti* (*Vyavahārādhyāya*), (Ed.) Kishore Chandra Mahapatra, Jageswarilane, Balighat, Puri

Suggested Readings:

1. The*Arthashastra*. (Ed.& Trans), L.N. Rangarajan, Penguin Classics, India, 1992
2. The*Arthashastra*. (Ed.) N.P. Unni, Bharatiya Vidya Prakashan, New Delhi
3. *Arthashastra* (Odia Trans.) Anantarma Kar, Odisha Sahitya Academy, Bhubaneswar
4. *Kautilya Arthashastra*, (Ed.) Karunakar Das, Kitab Mahal, Cuttack.
5. *Yājñavalkyasmṛti*, (Ed.) M.N. Dutta, Parimal Publications, New Delhi

DISCPLINE SPECIFIC ELECTIVE (DSE)-2

DSE-2 ETHICAL LITERATURE IN SANSKRIT ***80+20 = 100 Marks***

1. ***Cāṇakyanīti* (Chaps- I, II, III and IV from *Cāṇakyanītidarpaṇa*)** **40 marks**
2. ***Nītiśataka* of Bhartṛhari (Verses 1-50)** **40 marks**

1. *Cāṇakyanīti* **40 Marks**

Unit-I & II — Long Question -2 (About 150 words each) 10 Marks
Short Questions – 4 (About 50 words each)

12x2= 24 Marks
3 ×2= 06 Marks
4x4=16 Marks

2. *Nitisataka*

40Marks

Unit-III & IV — Long Question -2 (About 150 words each) 10 Marks

12x2= 24 Marks

Short Questions – 4 (About 50 words each) 3 ×2= 06 Marks
4x4=16 Marks

Core Readings:

3. *Cāṇakyanītidarpaṇa* (Ed.) Gunjeswar Choudhury, Choukhamba SurabharatiPrakashan, Varanasi
4. *Nītiśataka* (Ed.) M.R. Kale, MLBD, New Delhi(Text)

Suggested Readings:

4. *Sampurna Canakyaniti (Ed.),* Dr. N.S. Mishra, A.K. Mishra Agencies, Cuttack
5. *Nītiśataka* (Ed.) Naresh Jha, Choukhamba Prakashan, New Delhi
1. *Bhartrhari Satakatrayam,* B. S. Mishra, Vidyapuri, Cuttack.

SEMESTER-VI

CC-13 AYURVEDA & VRKSAYURVEDA 80+20 = 100 Marks

1. *Ayurveda* (*Carakasamhita- Sutrasthana, dhirgham jivitiyadhyaya)* **60 Marks**

2 *Vrksayurveda* (*Vrksayurvedadhyaya of Brhatsamhita)* **20 Marks**

Unit I , II & III - ***Ayurveda*** (*Carakasamhita*) **60 Marks**

Long Questions – 2 (About 150 words each) 12 x 2 =24 Marks

Short Questions - 4 (About 50 words each) 6x 4 = 24 Marks
Explanation – 1 (About 150 words) 12 Marks

Unit-IV *Vrksayurveda (Vrksayurvedadhyaya of Brhatsamhita)* 20 Marks

Long Question -1 (About 150 words) 12 Marks
Short Questions - 2 (About 50 words each) 4x2 = 8 Marks

Core Readings :

1. *Carakasamhita, Brahmananda Tripathy, Chawkhamba Surabharati Prakasan, Varanasi.*
2. *Brhatsamhita of Barahmihira, Ed. Sudhakar Dwivedi, Sampurnanda Samskrita Viswavidyalaya,Varanasi*

Suggested Readings:

1. *Samskrita Vanmayaka brhata itihas* (Vol.17) Ayurved ka itithas Uttarpradesh Samskrit Sansthan, Lukhnow, 2006
2. *Ayurved ka Brhat Itithas,* Atridev Vidyalankar, Chawkhamba, Delhi
3. *Carakachintanam,* Priyabrata Sharma, Chawkhamba, Delhi
4. *Vrksayurveda*, Ed. Dr. Narayana Prasad Dash, Vidyapuri, Cuttack.

CC – 14 TECHNICAL LITERATURE IN SANSKRIT (JYOTISA & VASTU) 80+20 = 100 Marks

1. *Jyotisa* (*Jyotihsara-ratnavali*, Chap I) (*Graha-naksatra-paricaya-prakaranam*) **40 Marks**

2. Vastu (*Vasturatnakara*, Chap-I) (*Bhuparigraha-prakaranam*) **40 Marks**

1. *Jyotisa* **40 Marks**

Unit-I & II

Long Question -2 (About 150 words each)	12 x 2 = 24Marks
Short Questions - 4 (About 50 words each)	4x4 = 16 Marks

2. *Vastu* **40 Marks**

Unit-III & IV

Long Question -2 (About 150 words each)	12x2=24Marks
Short Questions - 4 (About 50 words each)	4x4 = 16 Marks

Core Readings :

3. *Jyotihsara-ratnavali*(Part-I) (Ed.) Pandit Baikoli Mahapatra, Radhakrishna Pustakalaya, Satyanarayan Temple Road, Berhampur,Ganjam,Odisha

4. *Vasturatnakar* (Ed.) Vindhyeshwari Prasad Dwivedi, Chowkhamba Krishnadas Academy, Varanasi

Suggested Readings:

1. *Grahanaksatra paricaya prakaranam*, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.
2. Bhuparagraha – prakaranam, Dr. N.S. Mishra, Kalyani Publishers, Ludhiana.
3. *Jyotisavisvakosa*, Haridutta Sharma, Subodh Publication, New Delhi
4. *Vaidika jyotisa*, Dr.G.S.Shastri, Chaukhamba Samskriti bhabana, Varanasi
5. *Bharatiya jyotisa*, Dr.Nemichandra Shastri, Bharatiya Jnanapitha,New Delhi-110003
6. *Jyotisa- tattvanka*, Gitapress, Gorakhpur (2014)
7. *RajaballavamVastusatram*, Ed. Dr Srhrikrishna Jugnu, Parimal Publication, Delhi, 2005
8. *Vastu, Astrology & Architecture*, (Copmilation of Research Paper of ANational Conference on Vastu & Jyotisa), Ed.by Gayatri Dev Vasudev, MLBD,New Delhi,(4th reprint-2015)

DSE-3

TRANSLATION, EDITING AND WRITING SKILL **80+20 = 100 Marks**

2. Anuvada Kala-	**20**
2. Precises Writing-	**20**
3. Proof Correction and Transliteretion	**20**
4. Essay	**20**

Unit-I **Anuvada Kala-** **20 Marks**

Translation of one Odia/ English Paragraph in to Sanskrit

Unit-II **Precises Writing-** **20 Marks**

One Sanskrit Paragraph is to be precised in 1/3rd words and a suitable title is to be suggested.

Unit-III **Proof Correction and Transliteretion**

20 Marks

i. Proof Correction of **two** *wrongly printed* Sanskrit Verses from the Prescribed text are to set for necessary Proof Correction- 5x2=10Marks

ii. Transliteretion of **two** Sanskrit Verses from Prescribed text are to be written in Roman/ Italic script with diacritical marks. 5x2=10Marks

Unit- IV**Essay** **20 Marks**

One Essay in Sanskrit (About 300 words) 20Marks

Core Readings:

1. Samskrta Vyakaranadarpana, Odisha Text Book Bureau, Bhubaneswar
2. Samskrta Nibandha Satakam, Kapildev Dwivedi, Chawkhamba Publication, Banaras

Suggested Readings:

1. Brht Anuvada Shiksa, Chakradhara Hansa Nautiyal, MLBD, New Delhi
2. Samskrta- nibandhadarsah, Rammurti Sharma, Sahitya Niketan, Kanpur

DSE – 4 INDIAN PHILOSOPHIES: GENERAL IDEAS

1. **Astika** **60 Marks**
2. **Nastika** **20 Marks**

1. **Astika**

Unit – I **Samkhya and Yoga** **20 Marks**

Twenty – five elements of Samkhya, Satkaryavada and Astangayoga of Yogadarsana.
Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Unit – II **Nayavaisesika** **20 Marks**

Asatkaryavada, Saptapadarthas, Armbhavada, Paramanuvada
Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Unit – III **Vedanta Mimamsa** **20 Marks**

Saktidvaya of Maya in vedanta, Vivartavada, Netivada and karma in Mimamsa, Svatapramanyavada.

Long question – 1 (About 150 words)	12 Marks
Short Questions – 2 (About 50 words each)	4x2= 8 Marks

Unit IV ***Nastikas Carvak Jaina & Bouddha*** ***20 Marks***

Svabhavavada, Adibhautikasukhavada of Carvak, Ratnatryam, Sapta-bhanga-naya/ Syadvada

of Jaina, Aryasatyas, Ksanikavada, Nairatmyavada & Moksa of Bouddha.

Long question – 1 (About 150 words) 12 Marks
Short Questions – 2 (About 50 words each) 4x2= 8 Marks

Core Reading :

1. Bharatiya Darsana (Odia), Gouranga Charana Nayak, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar.

Suggested Readings :

1. History of Indian Philosophy, S.N. Dasgupta, MLBD, New Delhi.
2. Indian Philosophy, S. Radhakrishnan, George Allen and Unuin Ltd., New York.
3. A Critical Survey of Indian Philosophy, C. D. Sharma, MLBD, New Delhi.
4. Outlines of Indian Philosophy, M. Hiriyana, MLBD, New Delhi.

OR

DSE-04 PREPARATION AND PRESENTATION OF PROJECT **80+20 = 100 Marks**

Project- 80 Marks

Presentation- 20 Marks

(The Project work should be done preferably on Creative writings and Translation wroks of Sanskrit Language.)

DETAILS OF M.I.L. (SANSKRIT)

+3 M.I.L.(If Sanskrit)
Paper-1

(For Hons. Students as AECC-2) M.I.L.-1

Full Marks- 80 + 20 = 100Marks

1. **SANSKRIT PROSE** **40 Marks**
2. **SANSKRIT POETRY** **40 Marks**

Unit- I & II SANSKRIT PROSE **40 Marks**

1. Aparīksitakārakam
2. Pitṛbhaktih
3. Jimutavahanakatha

Unit- I Two Long Questions – (About 150 words each) 12x2= 24Marks
Unit-II Four Short Questions - (About 50 words each) 4×4 = 16Marks

Unit- III & IV SANSKRIT POETRY ***40 Marks***

1. Mahabharata Santi Parva (Ch. 70 on Qualities of Ruler)
2. Mahabharata Santi Parva (Ch. 107 on Democracy)
3. Mahabharata, Santiparva, (Ch. 120 on Duties of Ruler)

Unit- III Two Long Questions (About 150 words each) 12x2= 24 Marks
Unit- IV Four Short Questions - (About 50 words each) 4×4 = 16 Marks

Core Reading:

1. *Samskrta-pravesa*, Utkal University, Vanivihar, Bhubaneswar
2. *Mahabharata Santi Parva*, Gita Press, Gorakhpur

Suggested Reading:

1. *Mahabharata Santi Parva,* Rastriya Sanskrit Sansthan, New Delhi

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SOCIOLOGY UNDERGRADUATE SYLLABUS FOR HONOURS

SL.No	Semester	Number	Title of the Course	Marks	Credit
1	1st	DSC.H.SOC.1	Introduction to Sociology-1	80+20	6
2		DSC.H.SOC.2	Introduction to Sociology-2	80+20	6
3		GE.H.SOC.1	Introduction to Sociology-1	80+20	6
4		AECC.H.SOC.1		80+20	4
5	2nd	DSC.H.SOC.3	Indian Society	80+20	6
6		DSC.H.SOC.4	Sociology of Environment	80+20	6
7		GE.H.SOC.2	Indian Society	80+20	6
8		AECC.H.SOC.2		80+20	4
9	3rd	DSC.H.SOC.5	Classical Sociological Thinkers	80+20	6
10		DSC.H.SOC.6	Social Change & Development	80+20	6
11		DSC.H.SOC.7	Sociology of Gender	80+20	6
12		GE.H.SOC.3	Social Change and Development	80+20	6
13		SEC SOC.1	Political Sociology	80+20	4
14	4th	DSC.H.SOC.8	Rural Sociology	80+20	6
15		DSC.H.SOC.9	Globalization & Society	80+20	6
16		DSC.H.SOC.10	Marriage, Family and Kinship	80+20	6
17		GE.H.SOC.4	Rural Sociology	80+20	6
18		SEC SOC.2	Industrial Sociology	80+20	4
19	5th	DSC.H.SOC.11	Research Methodology	80+20	6
20		DSC.H.SOC.12	Social Movements in India	80+20	6
21		DSE.H.SOC.1	Sociology of Health	80+20	6
22		DSE.H.SOC.2	Sociology of Education	80+20	6
23	6th	DSC.H.SOC.13	Population & Society	80+20	6
24		DSC.H.SOC.14	Social Disorganization & Deviance	80+20	6
25		DSE.H.SOC.3	Urban Sociology	80+20	6
26		DSE.H.SOC.4	Field Work& Dissertation / Tribes of India	80+20	6
	TOTAL			**2600**	**0**

HONOURS PAPERS:

Core Paper – 14 papers
Discipline Specific Elective – 4 papers
Generic Elective for non Sociology students – 4 papers. Incase University offers 2 subjects as GE, then papers 1 and 2 will be the GE paper.

Marks per paper - Midterm: 20 marks, End term : 80 marks, Total – 100 marks
Credit per paper – 6
Teaching hours per paper – 50 hours + 10 hours tutorial

CORE PAPER I INTRODUCTION TO SOCIOLOGY-I

This introductory paper intends to acquaint the students with Sociology as a social science and the basic concepts used in the discipline. It also focuses on the social processes and the social institutions that man encounters as a member of the society.

Objectives: After studying this paper the student can

- Can get to know the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature and scope of the discipline and its approach.
- Develop knowledge about its historicity.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions man encounters as a member of the society.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Discipline and Perspective

Meaning, Definition and Subject Matter
Emergence of Sociology
Nature and Scope of Sociology
Importance of Sociology

Unit-2: Sociology and other Social Sciences

Sociology, Anthropology and History
Sociology and Psychology
Sociology and Political Science
Sociology and Economics

Unit-3: Basic Concepts

Society and Community**,** Associations and Institutions
Social Groups and Culture
Role and Status.
Power and Social Norms

Unit-4: Social Stratification

Meaning, Definition, Characteristics
Forms of Stratification-Caste, class & gender
Theories of stratification: Functional, Marxian
& Weberian Theories of stratification
Elite Theory: Pareto, C Wright Mills.

Suggested Text Book:

1. Haralambos, M. & Holborn , Sociology: Themes and Perspectives, Harper Collins; Eighth edition, 2014

Reference Readings:

1. C.N.Shankar Rao, Principles of Sociology: With an Introduction to Social Thought, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2006
2. Inkles, A.,What is Sociology? An Introduction to the Discipline and Profession, Englewood Cliffs, New Jersey: Prentice Hall, 1964.
3. Mills, C.W., The Power Elite, Oxford:Oxford University Press, 1954.
4. Bottomore, T. B. Sociology: A Guide to Problems and Literature, New Delhi: S. Chand, 2008
5. Paul B. Horton, Chester L. Hunt.. Sociology, McGraw-Hill., 1984
6. Giddens, Anthony., Introduction to Sociology, Polity Press 1991

CORE PAPER II INTRODUCTION TO SOCIOLOGY-II

This part two introductory paper intends to provide some additional knowledge on the interrelationship between individual and society, the types of societies and the various social processes that contribute to sustain the society over a period of time.
Objectives: After studying these two papers, the student can

- Develop knowledge about the subject matter, nature and scope of the key topics and its approach.
- Develop knowledge about individual and society.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Individual, Society and Culture:

Social Structure
Types of Society – Primitive, Agrarian and Industrial
Relationship between individual and society
Culture and Personality, Theories of Self: Cooley and Mead

Unit-2: Socialization

Meaning, Definitions & types
Stages of Socialization Process

Agencies of Socialization
Theories of Socialization- G H Mead, C.H Cooley

Unit-3: Social Control

Meaning, Definitions & Nature
Importance of social Control
Types of Social Control: Formal and Informal
Agencies of Social Control

Unit-4: Social Processes

Meaning and Definition
Associative Social Processes- Cooperation, Accommodation, Assimilation
Dissociative Social Processes- Competition and Conflict
Cooperation, Conflict and Competition: Interrelations and relevance

Suggested Text Books:

1. Rao ,C.N.Shankar, Principles of Sociology: With an Introduction to Social Thought, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2006
2. Haralambos & Holborn , Sociology: Themes and Perspectives Harper Collins; Eighth edition, 2014

Reference Readings:

1. Mills, C.W.,*The Sociological Imagination*, Oxford: Oxford University Press, 1959.
2. Giddens ,Anthony, Introduction to Sociology, 1991
3. Rawat, H.K. Contemporary Sociology, Rawat Publication, Jaipur, 2013
4. Johnson, Harry M. Sociology: A Systematic Introduction, New Delhi, Allied Publishers, 1995
5. Smelser Neil J. *Hand Book of Sociology*, Sage Publications, Inc. 1998
6. Dasgupta,Samir and Saha,Paulomi An Introduction to Sociology,Pearson,2014

CORE PAPER III INDIAN SOCIETY

Every society has its own peculiar structure and there are some institutions universal to every society, but with their unique manifestations in each society. There are some change agents and initiatives that enable the society to change with the passage of time. This paper focuses on the structure of the Indian society and the changing aspects with the processes operating change agents and initiatives.

Objectives: After studying these two papers on Indian society, the student can

- Get an impression about the basic composition of Indian society, its historical moorings, basic philosophical foundations of the society and the institutions.
- Learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.

Learning Outcomes: This paper is expected to bring familiarity in a student about Indian society. It will present a comprehensive, integrated and empirically –based profile of Indian society. It is hoped that the structure and processes operative in the society, the change agents operating in Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

Unit-1: Composition of Indian Society and Approaches to the study of Indian Society:

Religious composition, Linguistic composition &Racial composition
Unity in diversity
National Integration—Meaning, Threats (Communalism, Linguism, Regionalism)
Approaches to the study of Indian society: Structural-Functional, Marxian and Subaltern

Unit-2: Historical Moorings and Bases of Hindu Social Organization

Varna Vyavastha and relevance
Ashrama and relevance
Purusartha and relationship with Ashramas
Doctrine of Karma

Unit-3: Marriage and Family in India

Hindu Marriage as Sacrament, Aims of Hindu marriage, Forms of Hindu Marriage.
Hindu Joint Family-Meaning & disintegration
Marriage among the Muslims & Tribes
Changes in Marriage and Family in India

Unit-4: The Caste System in India

Meaning, Definitions & features of Caste
Functions & Dysfunctions of Caste
Factors affecting caste system
Recent Changes in Caste System

Suggested Text Book:

1**.** Rao ,C.N.Shankar, Sociology of Indian Society, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2004

Reference Readings:

1. Shah, A.M., *The Household Dimension of the Family in India: A Field Study in a Gujarat Village and a Review of Other Studies*, Delhi: Orient Longman, 1973.
2. Uberoi, P. (ed.), *Family, Kinship and Marriage in India*,New Delhi: Oxford University Press, 1993.
3.. Y. Singh , *Modernisation of Indian Tradition*, Jaipur: Rawat Publications, 1986
4..Ram Ahuja, Indian Social System, Rawat Publications, 1993
5. Sharma, KL. Indian Social Structure and Change, Rawat Publication, 2008
6. Srinivas, M.N. India*: Social Structure*. New Delhi: Hindustan Publishing Corporation, 1980

CORE PAPER- IV SOCIOLOGY OF ENVIRONMENT

Environment and society are in constant interaction with each other. It is the environment which sustains life in society and it is the society that is responsible for the preservation and the degradation of the environment. In the recent years environmental challenges have posed a threat to the lives on the planet. Keeping this in view, the present paper tries to create awareness among the students about the major environmental issues and the efforts geared to tackle them.

Objectives: After going through this paper, the student can

- Derive knowledge about the close interaction between society and environment.
- Gain substantial idea about the environmental issues and their repercussions on humanity.
- Accumulate ideas about the ideological currents, issues that drive environment movements.
- Get aware about the global and national efforts to conserve environment.

Learning Outcomes: The very aim of this paper is to disseminate knowledge about the significance of environment for society, to change the practices that can protect and preserve the environment and to make the students participate in the mission to preserve, protect and promote the cause of environment.

Unit-1: Conceptual Issues of Sociology of Environment

Sociology of Environment: Meaning, emergence and scope

Environment and Society – their inter-relations, Ecology and Environment.
Eco-system.
Sustainable Development

Unit-2: Environmental Movements

2.1 Narmada Bachao Andolan
2.2Ganga Bachao Abhiyan
Silent valley movements
Eco-feminist movement

Unit-3: Major Environmental Issues:

Global Warming & Climate Change.
Loss of Biodiversity
Deforestation.
Urban Wastes, Industrial wastes

Unit-4: Environmental Protection:

Environment protection efforts at the global level
Efforts at national level
Role of Civil Society Organizations

Role of Corporate Social Responsibility in environmental protection

Suggested Text Books:

1. Biswas, Anupama Environment & Society, Wisdom Press (ISBN) (CBCS).
2. Giddens, Anthony "Global Problems and Ecological Crisis": 2nd edition New York. W.W.Norton and Co.,1996

Reference Readings:

1. Baviskar, A., In the Belly of the River: Tribal Conflicts Over Development in the Narmada Vally, New Delhi: Oxford University Press, 2005.
2. DharamGhai, (ed) Development and Environment: Sustaining People and Nature UNRISD Blackwell Publication,1994.
3. Schumacher, E. F., Small is Beautiful: A Study of Economics as if People Mattered,London: Blond and Briggs, 1973.
4. Prasad, A., Against the Ecological Romanticism: Verrier Elwin and the Making of an Anti-modern Tribal Identity, Delhi: Three Essays Collective, 2011.
5. Maria Mies&Vandana Shiva, Ecofeminism, Fernwood Pub. Halifax, Nova Scotia, Canada, 1993
6. Gadgil Madhav& Ram Ch. Guha, Ecology & Equity: The use and abuse of Nature in contemporary India, New Delhi, OUP, 1996.

CORE PAPER V CLASSICAL SOCIOLOGICAL THINKERS

Sociology originated as an intellectual response to the crisis confronting the mid nineteenth century European society. Its development over two centuries has been influenced by a variety of socio-economic and political conditions. It is now established as a multi-paradigmatic academic discipline, with its body of theoretical knowledge enriched and its methodological techniques and procedures systemized. This paper is intended to familiarize the students with the social, political, economic and intellectual contexts in which sociology emerged as a distinctive discipline. It deals with the contributions of the forerunners of the discipline and with the contributions of the founders who gave a systematic shape to the subject.

Objectives: After going through these two papers, the student can

- Gain an understanding of some of the classical contributions in Sociology, and their contemporary relevance.
- Learn about the methodological shift in the discipline over the years.

Learning Outcomes: This paper is expected to clarify and broaden the student's knowledge about the theoretical and methodological contributions of the classical contributors to the subject and the contemporary relevance of these theories.

Unit-1: Auguste Comte

Law of the Three Stages
Hierarchy of Sciences & Positivism
Organismic Analogy
Theory of Social Evolution

Unit-2: Karl Marx

2.1Historical and Dialectical Materialism
2.2Class struggle
2.3 Alienation
2.4 Theory of Capitalism

Unit-3: Emile Durkheim

Division of Labour in Society
Rules of Sociological Method
Theory of Suicide
Theory of Religion

Unit-4: Max Weber

Social Action
Protestant ethic and the spirit of capitalism
4.3Ideal type
4.4Bureaucracy, Authority

Suggested Text Books:

1. Morrison, Ken, Marx, Durkheim, Weber: Formation of Modern Social Thought, London, Sage, 1995
2. Lewis A. Coser,Masters of Sociological Thought, New York, Harcourt Brance Jovanovich (Text Book), 1977

Reference Readings :

1. F. Abraham & J.H.Morgan, Sociological Thought, Wyndham Hall Press, 1989.
2. Kenneth, A.,*The Social Lens: An Invitation to Social and Sociological Theory*, London: Sage. 2011.
3 Ramond Aron, Main Currents in Sociological thoughts Vol. I & Vol. II Harmondsworth, Middlesex: Penguin Books,1967 (1982 reprint).
4. Ritzer, George, Sociological Theory, New Delhi, Tata-McGraw Hill, 1996
5. Waters, M., *Modern Sociological Theory*, London: Sage, 2000
6. Fletcher, R .*The Making of Sociology: A Study of Sociological Theory*, Volume 1 and 2, Thomas Nelson & Sons Ltd , 1972

CORE PAPER VI SOCIAL CHANGE AND DEVELOPMENT

Change is the law of nature and every society is subject to change. Social change has always been a central concern of Sociological study. Change takes different forms. Change has its pattern which is spelt out by various theories. Change is often propelled by various factors. This paper is designed to provide some ideas to the student about such process, theories and factors.

Objectives: After going through this paper, the student can

- Derive knowledge about the meaning, nature, forms and patterns of change.
- Get an idea about the theories that explain change and their adequacy in explaining so.
- Get an impression about the factors that propel change in the society.

Learning Outcomes: This paper is expected to provide a wholesome idea to the students about the process of social change. They can relate their experience with the theoretical explanations.

Unit-1: Social Change:

Meaning and Nature
Social Evolution & Social Progress: Meaning and features
Social Development: Meaning and Features
Factors of Change: Cultural, Technological, Demographic

Unit-2: Theories of Social Change:

Evolutionary theory
Functionalist theory
Conflict Theory
Cyclical Theory

Unit-3: Models of development:

Indicators of Social Development
Capitalist
Socialist
Gandhian

Unit-4: Processes of Social Change in Indian Context:

Sanskritsation
Westernisation
Modernisation
Secularisation

Suggested Text Books

1. Steven, Vago, Social Change,Pearson Prentice Hall, 2003 5th Rev.Edt

Reference Readings:

1. Jairam Kansal , Social Change & Development, Wisdom Press (ISBN) (CBCS), 2004

2. Singh, Y.,Modernization of Indian Tradition: A Systematic Study of Social Change, Faridabad: Thompson Press Limited, 1973.

3. Rudolf, L and Rudolf, S. H., Modernity of Tradition: Political Development in India,

Chicago: University of Chicago Press, 1984.

4. Moore, W.E Social Change, Prentice Hall of India, New Delhi, 1965.

5. Mishra, B Capitalism, Socialism and Planning, South Asia Books, 1998

6. Escobar, A., Encountering Development, London: Zed Books, 2012

CORE PAPER VII SOCIOLOGY OF GENDER

The biological basis to the differences between the sexes does not explain the inequalities faced by the sex groups in the society. In the society variations are marked in the roles, responsibilities, rights of and relations between sex groups depending on the social prescriptions relating to sex affiliations. The differences, inequalities and the division of labour between men and women are often simply treated as consequences of 'natural' differences between male and female humans. But, in reality the social norms, institutions, societal expectations play a significant role in deciding and dictating the behaviour of each sex group. This is the fundamental of the study of Gender and Society.

Objectives: After studying this paper, the student can

- Conceptualize what is "Gender" and what is "Sex" and draw a line of distinction between the two.
- Note the difference in gender roles, responsibilities, rights and relations.
- Trace out the evolution and institutionalization of the institution of "Patriarchy".
- Get to know the theories of Feminism that brought women issues and demands to the forefront.
- Assess the initiatives undertaken for gender development with the paradigm shift from time to time.

Learning Outcomes: This paper is expected to generate ideas and sensitivity about gender in a student which he/she can put into practice in daily life. This will lead to change the prevalent biases and gender practices and create a gender neutral social world where both men and women can enjoy their basic rights and cherish to achieve their dreams.

Unit-1: Social Construction of Gender

Gender as a Social Construct
Gender Vs. Sex
Gender Stereotyping and Socialization
Gender Role

Unit-2: Feminism

Meaning and Definitions

Origin , Growth of Feminism, Waves of Feminism
Patriarchy
Theories of Feminism-Liberal, Radical, Socialist, Marxist, Post Modernism

Unit-3: Gender and Development

Approaches -WAD, WID and GAD.
Gender Mainstreaming: Meaning, Policies and Programmes
Women Empowerment: Meaning and Dimensions: Political, Economic and Social.

Unit-4: Women in India through ages

Status of Women in Ancient Period
Medieval Period
Women in Pre- independence India
Women in Contemporary Indian Society

Suggested Text Book:

1. Bhasin, Kamla, Understanding Gender, Kali for Women,2003

Reference Readings:

1. Prabhakar,Vani Gender and Society, Wisdom Press (ISBN) (CBCS), 2012
2. Choudhury , Maitry *Feminism in India: Issues in Contemporary Indian Feminism*, Kali for Women, New Delhi,2004.
3. Walby, S.,*Theorizing Patriarchy*, John Wiley and Sons,1990.
4. John, M. E. (ed.),*Women's Studies: A Reader*, New Delhi: Penguin India, 2008.
5. Pilcher, J and Whelehan, I. , *Fifty Key Concepts in Gender Studies.*London: Sage, 2004.
6. Forbes, G. *Women in Modern India*, Cambridge: Cambridge University Press, 1996.

CORE PAPER VIII RURAL SOCIOLOGY

Rural Sociology is a specialized branch of Sociology describing the society of villages and rural areas. As the rural areas or the villages mark the beginning of human civilization, this paper is designed to bring out the distinct features of the rural society with their typologies and typicalities. In the present paper an attempt is made to introduce the student with the development of this branch overtime with its focus on the typicality of Indian villages, their structures, changing features and social problems faced by the rural people.

Objectives: After studying this paper, the student can

- Get an impression about the emergence of the sub discipline Rural Sociology and the forces contributing for its origin.
- Learn about the nature of this branch of knowledge, its subject matter andsignificance.
- Collect information and knowledge about the mooring of the sub discipline in the Indian context.
- Generate an idea about the typicality of the rural society and the institutions operating therein and their dynamics.
- Derive ideas about rural social problems of the country.

Learning Outcomes: India thrives in her villages. By going through this paper, the student can have a grip on the grass roots of Indian society. This will enable the student to understand the society in a better manner, to note the heterogeneities in culture, institutions and their functions, changes, the contrasts found between the rural urban societies and the problems faced by the people.

Unit- 1: Introduction to Rural Sociology

1.1 Meaning, Definition & Nature
Origin & Subject Matter of Rural Sociology
Importance of Rural Sociology
Evolution and Growth of Village Community

Unit- 2: Rural Social Structure

Village Community-Meaning & Types
Rural-Urban Contrast & Continuum
Agrarian Economy
Dominant Caste, Emerging class structure in rural India

Unit- 3: Rural Social Problems

Poverty
Unemployment
Indebtedness
Rural factionalism

Unit- 4: Rural Development Programmes

Community development Programmmes, Cooperative Movements and Panchayati Raj System
Swarnajayanti Gram SwarozgarYojana (SGSY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
National Rural Livelihood Mission (NRLM)
National Rural Health Mission (NRHM)

Suggested Text Books:

1. Sharma, R.N. Rural Sociology,Media Promoters and Publishers. Pvt. Ltd. 1983
2. Singh , Kartar Rural Development: Principle Policies and Management, Sage, New Delhi,1995

Reference Readings:

1. Choudhury, Anjana Rural Sciology, Wisdom Press ,2004
2. S.L. Doshi, S.L &P.C.Jain , Rural Sociology, Jajpur, Rawat,2002.
3.Maheswari, S.R Rural Development in India, Sage Publication, New Delhi,1985.
4. Ahuja, Ram Rural Sociology,Popular Prakashan Ltd; New edition 2011
5.Desai, A.R .Rural Sociology in India, Popular Prakashn, Bombay, 1997
6. Ray E. Pahl "The Rural-Urban Continuum." *Sociologia Ruralis* 6(3–4):299–327. Reprinted in R. E. Pahl, ed. *Readings in Urban Sociology*. Oxford: Pergamon, 1970

CORE PAPER- IX GLOBALISATION & SOCIETY

Globalization is the dominant process of social change in the contemporary world. It has resulted in the sinking of time and space and collapse of borders. It is a new coinage for an old process. It has its own dimensions, distinct features and impacts on society. It has given birth to new role players. All these are the focal points of discussion of this paper.

Objectives: By going through this paper, the student can

- Collect information about the meaning and nature of this process, its historical mooring.
- Amass knowledge about its dimensions and impacts, both positive and negative.
- Get introduced to the agencies that manage the process.

Learning Outcomes:

This paper is expected to acquaint the student with an ongoing social process; which can bring tremendous changes in the nations.

Unit-1: Globalisation

1.1 Meaning, characteristics of Globalisation
Emergence of Globalisation
Liberalisation- Meaning & characteristics
Privatisation- Meaning & characteristics

Unit-2: Dimensions of Globalisation

Economic
Technological
Political
Cultural

Unit-3: Consequences of Globalisation

Rising Inequality
Environmental Degradation
Consumerism
Health and Security

Unit-4: Impact of Globalisation in Indian Context:

Cultural Impacts
Impact on Education
Impact on Religion
Impact on Women

Suggested Text Books:

1. Biswas, Anupama Globalization and Society, Wisdom Press (ISBN) (CBCS)
2. Bhagawati, Jagdis, In Defence of Globalization, Oxford Univ. Press, Delhi 2004.

Reference Readings:

1. Pathak, A., Modernity, Globalization and Identity: A Reflexive Quest, Delhi: Aakar Books, 2006
2. Singh, Y. Culture Change in India: Identity and Globalization. Jaipur: Rawat, 2006.
3. Sengupta, A., Reforms, Equity and the IMF: An Economist's World, Delhi: Har-Anand Publications PVT limited, 2001
4. Jha, Avinash, Background to Globalisation, Centre for education and documentation. Mumbai, 2000
5. Arjun Appadurai, Modernity at large: Cultural Dimensions of Globalization, Delhi, OUP, 1997.
6. Joseph E. Stiglitz,Globalization & its Discontents,W.W. Norton & Company, 2002

CORE PAPER- X MARRIAGE, FAMILY& KINSHIP

This course provides a brief account of the classical approaches to the study of family and kinship. It exposes the students to the distinct aspects of these three interrelated institutions in the Indian context. Finally, it discusses some contemporary issues that pose a challenge to the normative model of these institutions.

Objectives: By going through this paper, the student can

- Understand the three institutions that are the foundations of the society.
- Comprehend the theoretical perspectives on these institutions.
- Get to know the rules governing these institutions.
- Estimate the changes coming over these institutions with the process of social change.

Learning Outcomes:

This paper is expected to instill knowledge about the foundational institutions, their governing principles and the continuity and change features of these institutions.

Unit-1: Marriage

Marriage as a social institution
Functions of marriage
Rules of marriage, Types of marriage
Changes in the institution of marriage

Unit-2: Family

Family as a social institution

Rules of Marriage and Types of family
Functions of family
Contemporary Changes in family

Unit-3: Kinship System

Meaning, Definition & Types
Kinship Terminologies & usages
Kinship system in North India & South India

Clan, Lineage

Unit-4: Contemporary Issues

Migration and its impact on family
Domestic Violence
Dowry
Divorce

Suggested Text Books:

1. Kapadia , K.M. Marriage and family in India : London, Oxford Univ. Press, 1966

Reference Readings:

1. Maya Majumdar, Maya Marriage, Family & Kinship, Wisdom Press (ISBN), (CBCS), 2005
2. Shankar Rao, C.N. Principles of Sociology: With an Introduction to Social Thought, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2006
3 Karve, Irawati Kinship Organisation in India, Poona, Deccan college, 1953
5. Robin Fox , Kinship and Marriage: An Anthropological Perspective, Pelican,1967

6. Patricia Uberoi, Family, Kinship & Marriage in India, Oxford University Press, Delhi, 1993

CORE PAPER- XI RESEARCH METHODOLOGY

Since the days of August Comte, a debate and a deliberate attempt has been initiated to provide a scientific character to social sciences. In this attempt empirical research has been introduced as an integral part of observing social reality and generalizing it objectively without any subjective predisposition. Gradually, research methods have been developed and introduced in social sciences to bring it in par with scientific observations. The essence of this paper lies in introducing the students with these methods of research to ensure objectivity as far as practicable in social research.

Objectives: By going through this paper, the student can

- Get an understanding of the nature of scientific methods, nature of social Phenomena and the way of attaining value neutrality.
- Have a grip over the basic steps involved in social research and the types of social research with their applicability
- Develop an insight into the need and types of research design and the use of sampling method for attending objectivity and scientific study.

Learning Outcomes: This paper is designed and incorporated to acquaint the students with the scientific ways of studying social phenomena. This provides them with a research insight that will enable them to capture the most relevant data in an objective manner. The market demand of this paper will be very high as the students well versed with this paper will be highly demanded in academics, fundamental research, and policy research undertaken both by Government and Non- Government agencies.

Unit-1: Meaning & Significance of Social Research

Meaning ,Definitions & Utility of Social Research
Major Steps in Social Research
Scientific Method-Characteristics
Applicability of Scientific Method

Unit-: 2 Hypothesis & Sampling

Meaning, definitions and Characteristics of Hypothesis
Types of and sources of Hypothesis
Sampling-Meaning & Characteristics
Types of sampling-probability & non-probability

Unit -3: Tools and Techniques of Data Collection

Qualitative methods and Quantitative methods
Observation
Interview Schedule, Questionnaire
Case study

Unit-:4 Data Analysis & Report Writing

Significance of Measures of Central Tendency
Mean, Median, Mode
Tabulation and Data Analysis
Report Writing

Suggested Text Books:

1. Goode William J and Paul K. Hatt. Methods in Social Research. New York: McGraw-Hill Book Co, 1952

2. Wilkinson T.S& P.L. Bhandarkar, Methodology & Techniques of Social Research, Himalaya Publishing House, 2010

Reference Readings:

1. Bajpayee, . S.R. Methods of Social Survey and Research, KitabGhar, 1960.
2. Seale, C. (ed), *Researching Society and Culture*, London: Sage, 2014.
3. Young , P.V.Scientific Social Survey and Research, Prentice Hall, New Delhi, (Ref.Book) 1939
4. Kothari, C.R Research Methodology: Methods and Techniques, Bangalore ,Wiley Eastern, 1985
5. Bryman, Alan Quality and Quantity in Social Research, Unwin Hyman, London, 1988.
6. Jayram , N. Sociology: Methods and Theory, Madras, Macmillan Madras, 1989.

CORE PAPER- XII SOCIAL MOVEMENTS IN INDIA

Movements reflect the voices raised against the prevailing practices of a society. Every society witnesses social movement in some form or the other. Movements bring social change and transformation. It is a collective effort that is driven by particular issues and brings forth changes. The present paper tries to provide a rudimentary impression to the students about the concept, nature and types of movements with a thrust on the movements witnessed by Indian society.

Objectives:

- To introduce to the students with the concept of social movements and their dynamics.
- To introduce the students to the role of social movements in social transformation.
- To help them understand the various approaches to the study of social movements.

Learning Outcomes: The very aim of this paper is to disseminate knowledge about the concept of social movements and its process and change making role in the society.

Unit-1: Social Movement

1.1 Meaning, definitions
Nature and Characteristics of Social Movement
Causes of Social Movement
Types of Social Movement- Revolutionary, Reforms, Revival

Unit-2: Peasant Movements in India

Champaran Satyagraha
The Bardoli Movement in Gujarat
The Peasant Revolt in Telengana
The Tebhaga Movement in Bengal

Unit-3: Backward Castes & Tribal Movement in India

Mahar Movement in Maharashtra
Dalit & Non-Brahmin Movement in Tamilnadu, SNDP movement in Kerala
Santhal Insurrection
Jharkhand Movement

Unit-4: Women's Movement in India

The Social Reform Movement and Women
Women in the Indian National Movement
Women in Chipko Movement
Contemporary Women's Movement

Suggested Text Books:

1. Shah, Ghanashyam Social Movements in India, Sage Publication, New Delhi, 1990
2. Rao, M.S.A.edt. ,Social Movements in India 1920-1950, OUP Delhi, 1983

Reference Readings:

1. Kumar, R.,History of Doing: An illustrated Account of Movements for Women's Rights and Feminism in India , New Delhi: Zubban, 1997.
2. Agnihotri, I. and Mazumdar, V., Changing Terms of Political Discourse: Women's Movement in India, in T. K. Oomen (ed.), Social Movements II: Concerns of Equity and Security, New Delhi: OUP,2010.
3. Geetha, V and Rajadurai, S. V., Towards a Non-Brahmin Millennium: From Iyothee Thass to Periyar. Delhi: Popular Prakashan, 1998.
4. Dhanagare D. N. Peasants Movements in India, Oxford University Press, 1983
5. Omvelt, Gail Social Movements in India, Rowman& Littlefield, INC, Oxford, 1993
6.Singh, K.S. Tribal Movements in India, Foundation Pub. New Delhi, 1982

CORE PAPER- XIII POPULATION & SOCIETY

Demography is both an index and instrument of development and change. India as a country is plagued by population explosion which retards, the economy and blocks social progress. Irrespective of several positive attempts undertaken by the government, India has failed to control its population problem. This paper is designed to provide an idea to the students about population dynamics and its impact on society.

Objectives: After going through this paper, the student can

- Understand the various facets of population studies and the theories that depict population change.

- Develop specific idea on Indian population structure, policies adopted and programmes launched in the country to check population.
- Assess the role of various agencies in population control.

Learning Outcomes: The very aim of this paper is to acquaint the students with a perennial problem of the Indian society that is population growth and the measures introduced to control it.

Unit: 1 Population Studies

1.1 Meaning & Scope of Population Studies
Population & Society-Relationship
Importance of Population Studies
Causes and effects of Population Growth

Unit: 2 Population Theories

Malthusian Theory
Optimum Theory of Population
2.4 The Theory of Demographic Transition
2.4 Applicability of Population Theories in Contemporary Scenario

Unit: 3 Determinants of Population Growth

Fertility
Migration
Mortality
Measures to control population growth

Unit: 4 Population Compositions in India

Sex Composition
Age Compositions
Literacy Composition
Rural & Urban Composition

Suggested Text Book:

1. Hans, Raj Population Studies with special reference to India, Sujeet Publication, New Delhi, 1978

Reference Readings:

1. S.N. Agarwal, Population studies with Special Reference to India,New Delhi: Lok Surjeet Publiction, 1989
2. Bose ,Ashish Demographic Diversity in India, Delhi: B.R.Publishing Corporation, 1991
3. Dubey, Surendra Nath Population of India, Delhi: Authors Press,2001
4. Chandrasekhar S. (ed) Infant Mortality, Population growth and Family Planning in India, London, George Alen and Unwin Ltd., 1974
5. Srivastava, O.S. Demography and Population Studies, Vikas Pub. House, New Delhi, 1998
6. Jain , R.K A Textbook of Population Studies, Neha Publishers & Distributors,2013

CORE PAPER- XIV SOCIAL DISORGANIZATION & DEVIANCE

No society is fully organized in character. Disorganization is apt to occur from time to time.

Disorganization is a manifestation of the deviant behavior found among some individuals. This deviance occurs when the individuals feel that the normative order of the society and its institutions are not need fulfilling in character. This present paper makes an attempt to provide an impression about the scenario of disorganization, its forms, causes and consequences with the theories explaining the situation.

Objectives: After going through this paper, the student can

- Understand the meaning, causes, consequences and forms of social disorganization.
- Learn about the theories explaining the disorganization situations.
- Comprehend the concept of crime and the existing theories of punishment.

Learning Outcomes: This paper is designed with an expectation to impress upon a student on the concept of deviant behavior leading to social disorganization, forms, theoretical foundations and criminal activities which he encounters in real life situations.

Unit-1 : Social Disorganization

1.1 Meaning and Nature
Causes and Consequences of Social Disorganization
Family Disorganization - Causes and Consequences
Personality Disorganization- Causes and Consequences

Unit- 2: Theories of Deviant Behaviour

Durkheim's Theory
Merton's Theory
Differential Association theory
Delinquent Sub-Culture theory

Unit- 3 : Crime and Punishment :

Crime-Definitions and types
Causes & Consequences of Crime
Juvenile Delinquency-Causes and consequences
Theories of Punishment: Retributive, Deterrant, Reformative

Unit-4: Social Problems:

Alcholism
Terrorism
Human Trafficking
Drug Addiction

Suggested Text Book

1. Memoria, C.B.Social Problems and Social Disorganization in India, Kitab Mahal, Allahabad, 1980.

Reference Readings:

1. Prabhakar , Vani Social Disorganization & Deviance, Wisdom Press (ISBN) (CBS) 2016
2 Ahuja, Ram Social Problems in India, Rawat, 2014

3. Sharma, R.N.Criminology & Penology, Surjit Publication, New Delhi,2008
4. Ahuja, Ram Criminology, Rawat, 2001
5. Shankar Rao , C.N.Indian Social Problems, S.Chand& Co. Pvt. Ltd.(Revised edt.), 2015
6. Sharma, P.D.Criminal Justice Administration, Rawat, 1998

DISCIPLINE SPECIFIC ELECTIVE, PAPER-1 SOCIOLOGY OF HEALTH

Objectives: After studying this paper, the student can

- Gain knowledge on the sociology of health and medicine.
- Can get an insight on socio-cultural dimensions in the construction of illness and medical knowledge.
- Can gain understanding on health sector reforms of Government of India.
- Gain knowledge on medical pluralism for treatment of disease.

Learning Outcome: Students are expected to know the concept of health from different perspectives. They can also learn about the contemporary trend of Sociology of Health in India. By knowing various health policies and programs in India student can expand the information base and disseminate the same to others.

Unit – 1: Sociology of Health

Meaning & Definition
Emergence of Health Sociology
Scope of Sociology of Health
Social Determinants of Health

Unit – 2: Sociological Perspectives of Health

Functionalist
Marxist
Post structuralist
Feminist

Unit-3: Health Programs in India

Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)
Janani SurakshaYojana (JSY)
National Urban Health Mission
National AIDS Control Programme

Unit-4: Health Sector Reforms of the Government of India:

Health Policies of the Government of India
Role of ICDS
Protective & Preventive measures
Promotive measures (modern & indigenous)

Suggested Text Book:

1. Cockerham, William C. Medical Sociology Englewood, Cliffs, Prentice Hall 1978.

Reference Readings:

1. Dak, T.M. Sociology of Health in India, Kaveri Printers, New Delhi,1991.

2. Blaxter, M., Health, Cambridge: Polity Press, 2004.

3. White, K., An Introduction to Sociology of Health and Illness, London: Sage, 2016, third edition

4. Prasad, Purendra and Amar Jesani edt. Equity and Access Health Care Studies, Oxford University Press, 2018

DISCIPLINE SPECIFIC ELECTIVES, PAPER-2 SOCIOLOGY OF EDUCATION

Objectives: After going through this paper, the student can

- Get to know the meaning and theoretical perspectives on sociology of education
- Get familiar with the relationship between education and society.
- Get insights on role of education in Nation building.
- Get an understanding on inequality in education that persists at various levels.
- Gain knowledge on constitutional provisions and various education policies

Learning Outcomes: The students are expected to learn various perspectives on education through the contributions of both Indian and western thinkers. Knowledge on education policies and constitution provisions can prepare the students for the development of their own higher education. Students can develop academic interest by knowing the contribution of education in nation building as well as the educational inequalities which persist in the society.

Unit-1: Sociology of Education

Meaning & Concept of Sociology of Education
Interrelationship between Education and Society
Literacy & Education
Education as Social Construct

Unit-2: Perspectives on Sociology of Education

Dominant Perspectives on Sociology of Education
Functionalist
Conflict Critical Perspectives

Unit-3: Education, Social Process

3.1 Education and Socialization
Education and Social Change
Education and Social Mobility
Education and Development

Unit-4: Educational Programs, Policies & Issues in India

Educational Policies in India
Universalisation of Primary Education
Privatisation of Education
Right to Education in Contemporary India

Suggested Text Book:

1 Jayram, N., Sociology of Education in India. Rawat. Jaipur., 2015

Reference Readings:

1. Morish, I. The Sociology of Education. An Introduction. London. Unwin Publication, 1972.
2. Freire, P., *Pedagogy of the Oppressed*, New York: Seabury Press, 1970.
3. Hooks, B. *Teaching to Transgress*, New York: Routledge,1994
4. Aggarwal, J.C Yearbook of Indian Education. New Delhi, 1992
5. Dwibedi, Ramnath. Education and Society, Kalyani Publisher, New Delhi2016.
6. Kilpatrick, M.O. Philosophy of Education. McMillan Company1963

DISCIPLINE SPECIFIC ELECTIVES, PAPER-3 URBAN SOCIOLOGY

Urbanisation is an important social process that changed the face of human civilization. It was initiated with the process of modernization, transport revolution, coming up of river valley civilizations, establishment of trade links and industrial revolution. Urbanisation has brought both prosperity and problems. It is one of the earnest tasks of Sociology to trace out the evolution of the process, social; problems associated with it and policy planning and measures undertaken to overcome these challenges. This paper Urban Sociology concentrates upon these tasks.

Objectives: After going through this paper, the student can

- Understand the specific traits of urban areas, its historical patterns of growth.
- Develop knowledge about urban social institutions and problems
- Gain insight into urban development plans, programmes and efforts.

Learning Outcomes: By going through this paper, the students can get an insight into the basic features of an urban area, the way cities grow, the major problem that encounter urban population and the various urban development programmes designed by the Government of India, their implementations, achievements and limitations.

Unit-1: Introduction to Urban Sociology

Meaning, and Subject matter of Urban Sociology
Importance of Urban Sociology
Specific traits of Urban Community
Urbanism as a way of life

Unit-2: Theories of patterns of city growth:

Concentric zone theory
Sector model
Multiple nuclei theory
Exploitative Model & symbolic approach theory

Unit-3: Urban Social Problems

Urban Crime
Problem of Slums
Problem in Urban Basic Services
Urban Pollution

Unit –4: Urban Development Programmes in India

Smart City Mission (SCM)
Jawaharlal Nehru National Urban Renewal Mission (JNNURM)
Atal Mission for Rejuvenation and Urban Transformation (AMRUT)
National Urban Livelihoods Mission (NULM)

Suggested Text Book:

1.Sharma,R.N.Urban Sociology, Atlantic Publishers & Distributors Pvt Ltd,2014

Reference Readings:

1. Rao M. S. A. Urban Sociology in India: Reader and Sourcebook ,Sangam Books Limited; New edition ,1992Satish Sharma, Urban Sociology, Wisdom Press (ISBN) (CBCS)
2. Jayapalan, N . Urban Sociology, Atlantic Publishers,2002,
3. Dhandeva, M.S. Sociology & Slum, Archives Books, New Delhi, 1989.
4. Sandhu, R.S Urbanization in India: Sociological Contributions, Sage Publication, New Delhi, 2003.
5. William G. Flanagan, William G. Urban Sociology: Images and structure, Allyn & Bacon, Boston. 1999.
6. Ramachandran, R Urbanization and Urban system in India, Oxford Univ. Press, New Delhi, 1989

DISCIPLINE SPECIFIC ELECTIVES, PAPER-4

FIELD WORK AND DISSERTATION
(College can give this choice only for students with above 60% aggregate marks)

Objectives: This paper is designed

- To provide a basic exposure to the student to the fields and to acquaint him/her with the research process.
- To equip them with the capacity to browse secondary literature from right sources and with a process of reviewing relevant literature.
- To promote in them an ability to capture the right type of data and put them into documentation format.

(Dissertation: 80 marks and Viva-voce: 20 marks)

- Dissertation may be written on any social institution, problem or may be an evaluative study.
- It should be based on empirical study.
- Size of the dissertation should be around 5000 words.
- Dissertation paper will be examined jointly by one Internal and one External Examiner to be appointed by the University. Marks will be awarded jointly by the Internal and External Examiners on the basis of the written Dissertation and Viva-

voce.

OR TRIBES OF INDIA

Objectives: The present paper aims

- To provide a fair stock of knowledge to the students on the tribes and tribal life.
- To enable the students to understand the problems faced by the tribes
- To give impression and knowledge on the tribal development plans, policies and programmes.

Learning outcomes: After going through this paper it is expected that the students will gain fair idea about the Indian tribes, their demography and distribution. They will be sensitized about tribal situations and the challenges faced by them today. Finally, they can get an account of the safeguards created for them through the Constitution, legislations and programmes and the changes noted in the tribal society of the country today.

Unit-1: Tribes: Their Distribution and Demography

1.1 Tribe: definitions, characteristics and demography
Geogrpahic distribution of the tribes
N.K.Guha's Classification on Tribes
Caste and Tribe

Unit-2: Social Organisation of the Tribes

Tribal economic system
Tribal political system
Tribal religion
Women in Tribal Society

Unit-3: Challenges Faced by the Tribes

Land alienation, Migration
Alcoholism and Indebtedness
Tribal Displacement
Tribal health and Sanitation

Unit-4: Changes and Upliftment of the Tribes

Constitutional safeguards for the tribes
Legal provisions for tribes
Flagship programmes of the Government for the tribes
Recent Changes in Tribal Life

Suggested Text Books:

1. Hasnain, Nadeem, Indian Anthropology, New Royal Book Co 2011

2. Majumdar, D.N. and T.N.Madan, An Introduction To Social Anthropology, Asia Pub. House, 2010

Reference Readings:

1. Hasnain Nadeem Tribal India, New Royal Book Company, 2017 edition

2. Joshi Vidyut and Chandrakant Upadhyaya (eds), Tribal Situation in India: Issues and Development ,Rawat Publications,2017

3. Rath Govind Chandra,edt. Tribal Development in India:The Contemporary Debate, Sage Publications,2006

4. Paul Mitra, Kakali Development Programmes And Tribals Some Emerging Issues, Kalpaz Publications,2004

5. Munshi, Indra The Adivasi Question, Orient Blackswan Private Limited,2018

6. Mohanty,P.K. Development of Primitive Tribal Groups in India, Kalpaz Publications,2003

GENERIC ELECTIVE PAPER I INTRODUCTION TO SOCIOLOGY

This introductory paper intends to acquaint the students with Sociology as a Social Science and the basic concepts used in the discipline. It also focuses on the social processes and the social institutions that man encounters as a member of the society.

Objectives: After studying these two papers, the student can

- Get to know the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature and scope of the discipline and its approach.
- Develop knowledge about its historicity.
- Can get acquainted with the basic concepts used in the subject.
- Can generate ideas about the social processes and social institutions man encounters as a member of the society.

Learning Outcomes: This paper is expected to clarify and broaden the student's notion about the subject, the basic concepts used and some universal societal processes. This will provide a wholesome picture about what the subject is all about.

Unit-1: Discipline and Perspective

Meaning, Emergence of Sociology
Definition, Subject Matter
Nature and Scope of Sociology
Relationship of Sociology with Anthropology, Political Science, History and Economics

Unit-2: Basic Concepts

Society and Community
Associations and Institutions
Social Groups and Culture
Role and Status

Unit-3: Social Stratification

Meaning, Definition, Characteristics
Forms of Stratification-Caste, class & gender
Functionalist Theorists of stratification (Parsons, Davis & Moore)
Marxian & Weberian Theories of stratification

Unit-4: Socialization and Social Control

4.1 Meaning, Definitions, Stages of Socialization Process.

4.2. Agencies of Socialization

Social Control: Meaning, Definitions, importance of social control
Agencies of Social Control: Formal and Informal

Suggested Text Books:

1. Rao ,C.N.Shankar, Principles of Sociology: With an Introduction to Social Thought, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2006
2. Haralambos &Holborn , Sociology: Themes and Perspectives Harper Collins; Eighth edition, 2014

Reference Readings:

1. Mills, C.W.,*The Sociological Imagination*, Oxford: Oxford University Press, 1959.
2. Giddens ,Anthony, Introduction to Sociology, 1991
3. Rawat, H.K. Contemporary Sociology, Rawat Publication, Jaipur, 2013
4 Johnson, Harry M. Sociology: A Systematic Introduction, New Delhi, Allied Publishers, 1995
5. Smelser Neil J. *Hand Book of Sociology*, Sage Publications, Inc. 1998
6. Dasgupta,Samir and Saha,Paulomi An Introduction to Sociology,Pearson,2014

GENERIC ELECTIVE PAPER II INDIAN SOCIETY

Every society has its own peculiar structure and there are some institutions universal to every society, but with their unique manifestations in each society. There are some change agents and initiatives that enable the society to change with the passage of time. This paper focuses on the structure of the Indian society and the changing aspects with the processes operating, change agents and initiatives.

Objectives: After studying these two papers on Indian society, the student can

- Get an impression about the basic composition of Indian society, its historical moorings, basic philosophical foundations of the society and the institutions.
- Learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.

Learning Outcomes: This paper is expected to bring familiarity in a student about Indian society. It will present a comprehensive, integrated and empirically –based profile of Indian society. It is hoped that the structure and processes operative in the society, the change agents operating in Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

Unit-1: Composition of Indian Society and Approaches to the study of Indian society:

Composition of Indian Society: Religious, Linguistic and Racial
Unity in diversity
National Integration--Meaning & Threats (Communalism, linguism, regionalism)
Approaches to the study of Indian society: Structural-Functional, Marxian and Subaltern

Unit-2: Historical Moorings and Bases of Hindu Social Organization

Varna Vyavastha and relevance
Ashrama and relevance
Purusartha and relationship with Ashramas
Doctrine of Karma

Unit-3: Marriage and Family in India

Hindu Marriage as Sacrament, Aims of Hindu marriage, Forms of Hindu Marriage
Hindu Joint Family-Meaning & disintegration
Marriage among the Muslims & Tribes
Changes in Marriage and Family in India

Unit-4: The Caste System in India

Meaning, Definitions & features of Caste
Functions & Dysfunctions of Caste
Factors affecting caste system
Recent Changes in Caste System

Suggested Text Book:

1. Rao ,C.N.Shankar, Sociology of Indian Society, S.Chand & Co. Pvt. Ltd.(Revised edt.), 2004

Reference Readings:

1. Shah, A.M., The Household Dimension of the Family in India: A Field Study in a Gujarat Village and a Review of Other Studies, Delhi: Orient Longman, 1973.
2. Uberoi, P. (ed.), Family, Kinship and Marriage in India, New Delhi: Oxford University Press, 1993.
3.. Y. Singh , Modernisation of Indian Tradition, Jaipur: Rawat Publications, 1986
4..Ram Ahuja, Indian Social System, Rawat Publications, 1993
5. Sharma, KL. Indian Social Structure and Change, Rawat Publication, 2008
6. Srinivas, M.N. India: Social Structure. New Delhi: Hindustan Publishing Corporation, 1980

GENERIC ELECTIVE PAPER III

SOCIAL CHANGE AND DEVELOPMENT

Change is the law of nature and every society is subject to change. Social change has always been a central concern of Sociological study. Change takes different forms. Change has its pattern which is spelt out by various theories. Change is often propelled by various factors. This paper is designed to provide some ideas to the student about such process, theories and factors.

Objectives: After going through this paper, the student can

- Derive knowledge about the meaning, nature, forms and patterns of change.
- Get an idea about the theories that explain change and their adequacy in explaining so.
- Get an impression about the factors that propel change in the society.

Learning Outcomes: This paper is expected to provide a wholesome idea to the students about the process of social change. They can relate their experience with the theoretical explanations.

Unit-1: Social Change:

Meaning and Nature.
Social Evolution & Social Progress: Meaning and features
Social Development: Meaning and Features
Factors of Change: Cultural, Technological, Demographic

Unit-2: Theories of Social Change:

Evolutionary theory
Functionalist theory
Conflict Theory
Cyclical Theory

Unit-3: Models of development:

Indicators of Social Development
Capitalist
Socialist
Gandhian

Unit-4: Processes of Social Change in Indian Context:

Sanskritsation
Westernisation
Modernisation

1.5 Secularisation

Suggested Text Books:

1. Steven, Vago, Social Change, Pearson Prentice Hall, 2003 5thRev.Edt

Reference Readings:

1. Jairam Kansal , Social Change & Development, Wisdom Press (ISBN) (CBCS), 2004
2. Singh, Y., *Modernization of Indian Tradition: A Systematic Study of Social Change*, Faridabad: Thompson Press Limited, 1973.
3. Rudolf, L and Rudolf, S. H., *Modernity of Tradition: Political Development in India*,Chicago: University of Chicago Press, 1984.
4. Moore, W.E Social Change, Prentice Hall of India, New Delhi, 1965.
5. Mishra, B Capitalism, Socialism and Planning, South Asia Books, 1998
6. Escobar, A., *Encountering Development*, London: Zed Books, 2012

GENERIC ELECTIVE PAPER IV RURAL SOCIOLOGY

Rural Sociology is a specialized branch of Sociology describing the society of villages and rural areas. As the rural areas or the villages mark the beginning of human civilization, this paper is designed to bring out the distinct features of the rural society with their typologies and typicalities. In the present paper an attempt is made to introduce the student with the development of this branch overtime with its focus on the typicality of Indian villages, their structures, changing features and social problems faced by the rural people.

Objectives: After studying this paper, the student can

- Get an impression about the emergence of the sub discipline Rural Sociology and the forces contributing for its origin.
- Learn about the nature of this branch of knowledge, its subject matter andsignificance.
- Collect information and knowledge about the mooring of the sub discipline in the Indian context.
- Generate an idea about the typicality's of the rural society and the institutions operating therein and their dynamics.
- Derive ideas about rural social problems of the country.

Learning Outcomes: India thrives in her villages. By going through this paper, the student can have a grip on the grass roots of Indian society. This will enable the student to understand the society in a better manner, to note the heterogeneities in culture, institutions and their functions, changes, the contrasts found between the rural urban societies and the problems faced by the people.

Unit- 1: Introduction to Rural Sociology

1.1 Meaning, Definition & Nature
Origin & Subject Matter of Rural Sociology
Importance of Rural Sociology
Evolution and Growth of Village Community

Unit- 2: Rural Social Structure

Village Community-Meaning & Types
Rural-Urban Contrast & Continuum
Agrarian Economy
Dominant Caste, Emerging class structure in rural India

Unit- 3: Rural Social Problems

Poverty
Unemployment
3.4 Indebtedness
3.4 Rural factionalism

Unit- 4: Rural Development Programmes

Community development Programmmes, Cooperative Movements and Panchayati Raj System
Swarnajayanti Gram SwarozgarYojana (SGSY), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
National Rural Livelihood Mission (NRLM)
National Rural Health Mission (NRHM)

Suggested Text Books:

1. Sharma, R.N. Rural Sociology,Media Promoters and Publishers. Pvt. Ltd. 1983
2. Singh , Kartar Rural Development: Principle Policies and Management, Sage, New Delhi,1995

Reference Readings :

1. Choudhury, Anjana Rural Sciology, Wisdom Press ,2004
2. S.L. Doshi, S.L &P.C.Jain , Rural Sociology, Jajpur, Rawat,2002.
3. Maheswari, S.R Rural Development in India, Sage Publication, New Delhi,1985.
4. Ahuja, Ram Rural Sociology,Popular Prakashan Ltd; New edition 2011
5. Desai, A.R .Rural Sociology in India, Popular Prakashn, Bombay, 1997
6. Ray E. Pahl "The Rural-Urban Continuum." *Sociologia Ruralis* 6(3–4):299–327. Reprinted in R. E. Pahl, ed. *Readings in Urban Sociology*. Oxford: Pergamon, 1970

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Areas of Training

Sl. No.	Name of the Paper	Units needing a coverage under training	Days required	Total no. of training sessions needed
1.	Sociology of Environment	4 units	4 days	16
2.	Research Methodology	2 units	2 days	8
3.	Social Movements in India	4 units	4 days	16
4.	Population & Society	2 units	2 days	8
5.	Sociology of Health	4 units	4 days	16
6.	Sociology of Education	4 units	4 days	16
Total	06 Papers	20 Units	20 Days	80 sessions

Criteria 1.1.3

APPENDIX-IV

BOTANY

Date. 27.02.15 / Place - Departmental Room - 21

The Board of Studies for Botany syllabus 2014/15 was held under the chairmanship of Dr R. K. Maharana as per the schedule with following members and passed after discussion :-

(signature) 27/2/15

Members Present :—

1. Dr R. K. Maharana - Chairman (signature) 27/2/15
2. Prof. P. K. Sahoo - member (signature)
3. Prof J. N. Dash - member. (signature) 27/2/15
4. Mrs S. Panda - do - (signature) 27/02/15
5. Mrs S. Swain - do - (signature) 27/02/15
6. Ms. R. R. Mahapatra - do - (signature) 27/02/15
7. Dr Anwar Hussain - Sub. Expert. Hussain. 27/2/15
8. Prof. Dhiren Kumar Pattnaik - do - (signature)
9. Dr Chinmay Pradhan - Vice-Chancellor Nominee. (signature)
10. Dr Nihar Ranjan Nayak - AC Member -
11. Sri Dhirendra Patra - Rep. (Ori/Engg) -

DTP copies of the syllabi were approved with appended signature of the members of the Board of Studies for Botany and the Chairman.

(signature) 27/2/15

S. K. Dash
PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

Dt. 19.01.16 / Place - Departmental Room.

The Board of Studies for Botany syllabus 2015/16 (CBS) was held under the Chairmanship of Dr. R.K. Maharana as per the schedule with following members and passed after discussion.

Members Present:—

1. Dr R.K. Maharana – Chairman – 19/1/16
2. Prof P.C. Sahoo – member –
3. ~~Dr~~ J. N. Dash – do – 19/1/16
4. Mrs S. Parida – do – 19/1/16
5. Mrs S. Swain – do – 19/1/16
6. Mrs R.R. Mahapatra – do –
7. Dr Anwar Hussain. Sub. Expert.
8. Prof Dhiren Kumar Pattnaik " – Dhirenkumar
9. Dr Chinmay Pradhan Nominated (V.C).
10. Sri Dhirendra Ku Pradhan Rep (Gn/Corporate).
11. Dr Nehar Ranjan Nayak. Alumni Member.

DTP Copies of the Syllabus were approved with appended Signature of the members of the Board of Studies in Botany and the Chairman.

19.01.16

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

NC

Dt. 07.12.16. / Place. Departmental Room 25

The Board of Studies for Botany syllabus for Hon. 2016/17 was held under the chairmanship of Dr. R.K. Maharana as per the schedule with following members and passed after discussion:—

Members Present :—

1. Dr R.K. Maharana - Chairman - 7/12/16.
2. Mr P.K. Sahoo - Member.
3. Dr J.N. Dash - - do.
4. Mrs S. Panda - - do - 7/12/16
5. Mrs S. Swain - - do - 7/12/16
6. Mrs R.R. Mahapatra - - do - 7/12/16
7. Dr Arun Kumar Rath - - do - 7/12/16
8. Dr Lintanjali Rout - - do - 7.12.16
9. Dr Padan Kumar Jena - Sub. Expert. 7/12/16
10. Dr Chitta Ranjan Mahapatra - " 7/12/16
11. Prof. Anatha Bandhu Das - V.C. nominee - 7/12/16
12. Sri Dilip Kumar Mahapatra - Representative (Industry) - 7/12/16
13. Sri Balabhadra Jena - Alumni Member.

It is unanimously resolved that the syllabus of Utkal University for Bot (H) remain in toto for the session 2016-17.

7/12/16.

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

Dt. 11.08.17 / Place: Departmental Room

The Board of Studies for Botany Syllabus for the year 2017/18 was held under the Chairmanship of Dr R.K. Maharana as per the schedule with following members and passed after discussion -

Members present :-

1. Dr R.K. Maharana - Chairman - 11/8/17
2. Mr P.K. Sahoo - Member -
3. Dr J.N. Dash - " -
4. Mrs S Panda - " -
5. Mrs S. Swain - " - 11/8/17
6. Mrs R.R. Mahapatra - " - 11/8/17
7. Dr Arun Kumar Rath - " - 11/8/17
8. Dr Lilanjali Rout - " -
9. Mr Ganesh Mishra - " - 11.8.17
10. Dr Padan Kumar Jena - Sub. Expert - 11/8/17
11. Dr Chitta Ranjan Mahapatra - " - 11/8/17
12. Prof Anatha Bandhu Das - V-C Nominee - 11/8/2017
13. Mr Dilip Kumar Mahapatra - Rep. Industry. 11/08/17
14. Mr Balabhadra Jena - Alumini Ne.

DTP copies of the syllabi have approved with appended signature of the members of the Board of Studies in Botany. It is unanimously resolved the syllabi for 2017/18 for Botany (Hons) & Chairman.

11/8/17

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

Date 19.9.18 / Place Departmental room

The Board of Studies for Botany syllabus 2018-19 for +3 Degree science was held under the chairmanship of Dr. R. K. Maharana as per the schedule with following members. The syllabus was discussed and approved.

Members Present

1. Dr. R. K. Maharana. Chairman.
2. Dr. T. N. Das. – Member.
3. Mrs. S. Parida. " 19/9/18
4. Mrs. S. Swain. " 19/9/18
5. Mr. R. R. Mohapatra " 19/9/18
6. Dr. A. K. Rath. " 19/9/18
7. Dr. Gitanjali Rout. " 19.9.18
8. Mr. Ganesh Mishra " 19.9.18
9. Dr. Padan Ku. Jena. Nominated. 19/9/18
10. Dr. Chitta Ranjan Mohapatra. "
11. Prof. A. B. Das. – " (V.C).
12. Mr. Dillip Ku. Mohapatra. Representative Industry.
13. Mr. Balabhadra Jena. "

D.P. copy of syllabus here approved with appended signature of members of the Board of Studies in Botany and the Chairman.

19/9/18.

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

Date 06.11.19 / Place. Departmental Room 31

The Board of Studies for Botany syllabus 2019/20 for +3 Degree science was held under the chairmanship of Dr. R.K. Maharana as per the schedule with following members and passed after discussion.

Members present :-

1. Dr R.K. Maharana - Chairman - [signature] 6/11/19
2. Dr J.N. Das - Member [signature] 6/11/19
3. Mrs S. Parida - [signature] 6/11/19
4. Mrs S Swain - [signature] 06/11/2019
5. Mrs R.R. Mahapatra - [signature] 6/11/19
6. Mr Ganesh Mishra - [signature] 6/11/19
7. Mrs Pranati Nayak - Pranati Nayak
8. ~~Miss Rit...shree Mallick~~ -
Miss Ritishree Mallick. Ridishree Mallick
9. Dr Padan Kumar Jena - Nominated - [signature] 6/11/19
10 Prof (Dr) Chandi Charan Rath - " -
11 Prof (Dr) Anatha Bandhu Das - " (V.C). [signature] 6/11/2019
12 Mr Sraban Ku Pradhan - Representative Industry - [signature] 6-11-2019

13. Dr Manas Ranjan Satapathy - Alumini (R) [signature] 6/11/19

DTP copy of Syllabus have approved with appended signature of members of the Board of Studies in Botany and the Chairman with following changes. 3rd Sem CC-5 Unit-II added (Bignonia, Aristolochia, Boerhaavia, Bougainvillea), 4th Sem Unit-3 deleted (Coronation Stonetone, Eucharomation, Hetero, Chalt...)

[signature] 6/11/19

[signature]
PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

Meeting of Board of Studies (CHEMISTRY)

Department of Chemistry
Dt. 27.02.2015
Time -
Place - Chemistry department Office room.

The meeting of Board of Studies for Chemistry was held in the department of Chemistry on dt. 27.02.2015 at Mr. Bijoy Kumar Swain, HOD, Chemistry presided over the meeting as the chairman and following resolutions were made.

Resolution no. 1 :- The list of question setters, moderators and examiners were prepared by the Board of Studies for Chemistry in separate sheets.

Resolution no. 2 - The Syllabus for +3 degree Chemistry Honours and pass remain intact. Chemistry major elective unit I (Solid state) of paper II (4th Semester) was recast and kept same as per unit II of paper II of Chemistry pass (Sem. II) (Solid state)

Members Present

1. Sri Bijoy Kumar Swain
HOD, Chemistry, Chairman
27.2.15
2. Prof. Dr. Baman Ch. Acharya
Professor, College of Basic Science and Humanities
OUAT, BBSR
3. Dr. Ajaya Ky. Pattnaik
Reader, KBDAV college
Nimakanpur
A. Pattnaik 27/2/15

PRINCIPAL
NAYAGARH [illegible] COLLEGE

4. Mrs. Kabita Mohapatra
Lect. in Chem.
Nayagarh (Auto) College

5. Mr. B. K. Sahoo
Lect. in Chemistry
Nayagarh Auto. College

27.2.15

25.2.15

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

29.2.15

H.O.D, CHEMISTRY
Nayagarh Autonomous College
Nayagarh

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

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NAYAGARH AUTONOMOUS COLLEGE, NAYAGARH
DEPARTMENT OF CHEMISTRY

Minutes of the meeting of the Board of Studies of the Department of CHEMISTRY

The Members of the Board of Studies of Chemistry Department met today i.e, on 19.01.2016 in the department at 11.00 AM under the chairmanship of Capt. B.P.Hota, Head of the Department. The following members were present in the meeting.

1. Dr. Satyaban Jena 19/1/16.
2. Dr. Baman Acharya
3. Dr. A.K. Pattanayak 19/1/16
4. Dr. C.P. Das 19/1
5. Dr. S.K. Mishra
6. Sri B.K.Swain
7. Smt Kabita Mohapatra Kmahapatra 19.1.16
8. Sri B. K.Sahoo 19.1.16.

The following resolutions were adopted unanimously.

01. The Syllabus of 2015-16 admission Batch covering all Semisters under CBCS was approved as submitted. The members felt to advise that the spellings are to be corrected and the word "Pass" is to be replaced by 'GE'. The old syllabus for prior CBCS Course (Adm Batch 13-14 & 14-15) to continue as it is.
02. The names of the Examiners for the Semisters theory and Practical Examination is finalised (List-1 attached)
03. The names of the question setters and moderators is finalised (List-2 attached).
04. Senior members suggested for conduct of Seminars with outside-Subject experts. and.
05. The members felt to advise to procure the books in the syllabus for the Dept. Seminars.

HOD Chemistry

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

Meeting of the Board of Studies

Department of Chemistry
Nayagarh Autonomous College, Nayagarh
Dt. 07.12.2016.
Time - 11:00 A.M.
Place :- Chemistry Deptt. Office. Room.

The meeting of the Board of Studies of Chemistry Department was held on Dt. 07.12.2016 at 11.00 AM. in the office room of the department under the chairmanship of Mr. B.K. Swain, Head of the Department. The following members were present in the meeting.

1. Mr. B.K. Swain, Reader & Head. (chairman)
2. Capt. B.P. Hota, Reader
3. Mrs. K. Mohapatra, Reader — kmohapatra 7.12.16
4. Mr. B.K. Sahoo, Reader — Bksahoo
5. Miss S. Mallik, Lecturer — SMallik 7.12.16
6. Mr. Yajnadutta Swain, Lecturer — Yswain 7.12.16

Subject Experts

7. Prof R.N. Mallick, Rtd. Reader P.N. (Auto.) College, Khordha — RNMallick 7.12.16
8. Prof Dr. P.K. Satpathy, Professor North Orissa University, Baripada — Pksatpathy
Subject Expert nominated by V.C.
9. Prof Dr. B.N. Patra, Reader P.G. Deptt of Chemistry (U.V.) — BNPatra 7.12.16

Rep Industry
10. Mr. Suman Kumar Tripathy, Chief Chemist, Tata Steel, Jajpur
11. Dr. Santosh Ku. Mishra, Senior Scientist, IMMT, BBSR.

S.K. Mishra

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The following resolutions were adopted unanimously by the Board of studies of Chemistry

1. The CBCS Syllabus prescribed by Utkal University for admission batch 2016-17 was adopted in toto without any change.
2. It was also decided by the Board that there will be no change in the CBCS Syllabus prescribed by the University for admission batch 2015-16 and old Syllabus prior to CBCS course adopted by the Board of studies for 2014-15 admission batch.
3. The names of Examiners for the Semester Examination (theory & practical) were finalised and submitted.
4. The list of names for question setters and moderators for Chemistry was also finalised and attached.

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Chairman
H.O.D. CHEMISTRY
Nayagarh Autonomous College
Nayagarh

Meeting of Board of Studies of Chemistry 23.

Date: 11.08.2017
Place: Department of Chemistry
Nayagarh Autonomous College, Nayagarh
Time:

The meeting of the Board of Studies of Chemistry was held on 11.08.2017 at in the office room of Chemistry Department under the Chairmanship of Mr. B. K. Swain Head of the Department to discuss and adopt the syllabus prescribed for chemistry The following members were present in the meeting.

1. Mr. B.K. Swain, Reader & Head. 11/8/17
2. Capt. B. P. Hota, Reader
3. Miss K. Mohapatra, Reader 11.8.17
4. Mr. B. K. Sahoo, Reader 11.8.17
5. Miss S. Mallik, Lecturer 11.8.17
6. Mr. Yajnadutta Swain, Lecturer 11.8.17.

Subject Experts.

7. Mr. R. N. Mallik, Rtd. Reader 11.8.17
P.N. Auto. College, Khordha
8. Prof Dr. P.K. Satapathy, 11.8.17
Professor, North Orissa University
Subject expert nominated by V.C.
9. Prof Dr. B. N. Patra, Reader 11/8/17.
Utkal University, Vani Vihar
Representative from Industry
10. Mr. Suman Kumar Tripathy
Chief Chemist, Tata Steel, Jajpur
Post graduate meritorious alumnus.
11. Dr. Santosh Kumar Mishra
Scientist, IMMT, Bhubaneswar

The following resolutions were unanimously adopted by the Board of Studies of Chemistry

1. The CBCS Syllabus prescribed by Utkal University for admission batch 2015-16 and old Syllabus prior to CBCS Syllabus remain intact.
2. The CBCS Syllabus prescribed by the Utkal University for Chemistry (Hons) and Generic Elective (Chemistry) papers for session 2016-17 was adopted in toto for Nayagarh Autonomous College for admission batch 2016-17 and 2017-18.
3. It was resolved to rearrange the Skill enhancement course (SEC-II) for chemistry Honours students to make it 100 marks course as per Utkal University guidelines with effect from 2017-18 for admission batch 2016-17, 2017-18 onwards for 4th Semester Examination.
4. SEC-II for 4th Semester Chemistry (Hons) Students was modified and adopted as follows

Skill Enhancement Course-II
(For Chemistry (Hons) Students of 4th Semester)
SEC-II : Pesticides and Fuel chemistry
(Credits = 4, F.M = 100, End Sem - 80, Mid Sem - 20)
Theory = 60 Lectures

UNIT-I (PESTICIDES)

Unit I: General introduction to pesticides (Natural and synthetic), benefits and adverse effects, changing concepts of pesticides, Synthesis and uses of representative pesticides in the following classes: Organochlorines (DDT, Gammaxene); Organophosphates (Malathion,

C.C. Das

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Parathion); Carbamates (Carbofuran and Carboryl); Quinones (Chloranil)

UNIT-II: (FUEL, COAL, & PETROLEUM)

Review of energy sources (renewable and non-renewable) classification of fuels and their calorific values, coal: Uses of coal (fuel and nonfuel) in various industries, its composition, carbonisation of coal, coal gas, producer gas and water gas composition and uses. Fractionation of coal tar, requisite of a good metallurgical coke, coal gasification (Hydro gasification and catalytic gasification). Petroleum and petrochemical industry; composition of crude petroleum, Refining and different types of petroleum products and their applications.

UNIT-III: (PETROLEUM PRODUCTS)

Fractional Distillation of Petroleum (Principle and process) Cracking (thermal and catalytic cracking) Reforming of petroleum and non petroleum fuels (LPG, CNG, LNG, biogas fuel derived from biomass) fuel from waste, clean fuels, Petrochemicals: venyl acetate propylene oxide, Isoprene, Butadiene, Toluene and xylene.

UNIT-IV: (LUBRICANTS)

Lubricants: Classification of lubricants, lubricating oils (conducting and non conducting) Solid and semisolid lubricants, synthetic lubricants, properties of lubricants (viscosity index, cloud point, pore point) and their determination.

Reference books.

1. R. Cremlyn, Pesticides, John Wiley
2. B.K. Sharma, Industrial chemistry, Goel publishing house
3. E. Stocchi - Industrial chemistry - Vol-I. Ellis Horwood, UK

5. The names of Examinens for the semester Examinati (Theory and practical) for session 2017-18 were finalised and the list was prepared & submitted.
6. The list of names for question setters and moderators for chemistry was finalised and submitted.

11/8/17

Chairman
H.O.D. CHEMISTRY
Nayagarh Autonomous College
Nayagarh

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Meeting of Board of Studies of Chemistry

Date: 19.09.2018
Place: Department of Chemistry
Nayagarh Autonomous College, Nayagarh.
Time: 11.30 A.M

The meeting of the Board of Studies of Chemistry was held on Dt. 19.09.2018 at 11.30 A.M in the office room of Chemistry Department under the Chairmanship of Mrs. K. Mohapatra Head of the Department to discuss and adopt the syllabus prescribed for Chemistry.

The following members were present in the meeting.

1. Mr. B.K. Swain, Reader & Head
2. Mrs. K. Mohapatra, Reader — K Mohapatra 19.9.18
3. Mr. B.K. Sahoo, Reader — 19.9.18
4. Miss S. Mallik, Lecturer — S Mallik
5. Mr. Y. Swain, Lecturer — Y Swain
6. Mrs. B. Nanda, Lecturer. — B Nanda

Subject Experts

7. Mr. R.N. Mallik, Rtd. Reader
P.N. Auto. College, Khordha
8. Prof. Dr. P.K. Satapathy
Professor, North Odisha University

Subject expert nominated by V.C.

9. Prof. Dr. B.N. Patra, Reader — 19/9/18
Utkal University, Vanivihar.

Representative from Industry

10. Mr. Suman Kumar Tripathy
Chemist, Tata steel, Jajpur
11. Dr. Santosh Kumar Mishra
Senior Technical officer (CCC, CSIR-IMMT. — 19/9/18

adopted by the Board of studies of Chemistry

1. The CBCS Syllabus prescribed by Utkal Univer[illegible] for admission batch 2016-17 will remain in [illegible]

2. The CBCS syllabus prescribed by the Utkal University for Chemistry (Hons.) and Generic Elective (Chemistry) papers for session 2018-19 was adopted.

3. The syllabus of skill enhancement course (SEC) was changed. The new topic "Modern Office Management" was introduced by the Utkal University and adopted for session 2017-18 and 2018-19. Further FLS for [illegible] and PPCA for 6th sem will be offered as value added cou[rse]

4. The names of Examiners for the semester Exam[ination] (Theory and Practical) for session 2018-19 were finalised and the list was prepared and submitted.

5. The list of names for question setters and moderators for chemistry was finalised and sub[mitted]

6. It was resolved to add known nitrogen conta[ining] organic compounds in the CC-6 organic chemistry paper. (3rd Semester)

The practical paper for CC-6 3rd semester [was] modified and adopted as follows

1. Functional group test for alcohols, Phen[ols], Carbonyl, Carboxylic acid group, Amine, N[itro] and Amide functional group.

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2. Organic Preparations

(i) Acetylation of one of the following compounds amine (aniline, o,m-p [illegible]

4. The names of Examiners for the Semester Examination (Theory and Practical) for session 2018-2019 were changed and the final list was prepared and submitted.

5. The list of names for question setters and moderators for Chemistry was finalised and submitted.

19.09.18

Chairman

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and o-, m, p- anisidine.) and phenols (napthol, salicylic acid) by any one method.
a) Using conventional method
b) Using green approach
ii) Benzoylation of amines and one of the following phenols
iii) Bromination of any one
a) Acetanilide by conventional methods.
b) Acetanilide using green approach.
iv) Nitration of any one
a) Acetanilide / nitrobenzene by conventional method.
b) Salicylic acid by green approach.

7. Theorems related to Hermitian operator and its application was introduced in the CC-12 paper of 5TH Semester Honours course.
There was only addition of "theorems related to Hermitian operator and its applications" other than there was no change in the CC-12 paper.

8. Deduction or Removal of Average and most probable distances of electron from nucleus of CC-12 Paper of 5TH Semester.

9. Removal of preliminary treatments of Separation of variables from CC-12 Paper of 5TH Semester.

10 Inclusion of 'Jablonski diagram' in Unit-IV of CC-12 paper of 5TH Semester.

11. It was resolved to add specific organic compounds i.e. Alcohols, Aldehydes, Ketone, Acids carboxylic Acids in CC-14 (Unit-I) 6TH Semester paper.

4. The names of examiners for the Semester Examination (Theory and Practical) for session 2018-2019 were changed and the final list was prepared and submitted.

5. The list of names for question setters and moderators for Chemistry was finalised and submitted.

K Mehalatri
Chairman 19.09.18

H.O.D. CHEMISTRY
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P.G. Dept.

The following resolutions were unanimously adopted by the Board of Studies of Chemistry

1. The CBCS Syllabus prescribed by Utkal University for admission batch 2018-19 will remain unchanged.
2. The CBCS Syllabus prescribed by Utkal University for admission batch 2018-19 will also remain unchanged. However Jablonski diagram will be included in 5th semester Chemistry Honours CC-XII paper as it is essential part of molecular Spectroscopy.
3. The CBCS Syllabus prescribed by Utkal University for Admission Batch 2019-20 will remain intact but Jablonski diagram will be included in 5th Semester Chemistry Honours CC-XII paper in Molecular Spectroscopy II
4. It was also resolved to perform 6th Semester practical (mixture analysis) in the morning session as time period available for even semester are less.
5. Spectrophotometric titration to be done by absorbance method or by doing titration manually followed by absorbance measurement.
6. Green chemistry manual to be used for green chemistry practical
7. The names of Examiners for the semester examination (theory and Practical) for session 2019-20 were finalised and submitted.
8. The List of names for question setters and moderators for Chemistry were finalised and submitted.

6.11.19

Chairman
HOD CHEMISTRY
Nayagarh Autonomous College
Nayagarh

BOARD OF STUDIES MEETING FOR THE SESSION 2019 - 20

Dt 06. 11. 2019

The Board of studies meeting of Electronics department for the academic session (2019-20) was held on dt. 06.11.2019 under the chairmanship of Prof H.S pattanaik, HOD Electronics in the presence of following member.in Physics dept. The meeting started with a welcome address by the chair. The minute of the last meeting was readout and confirmed.

Members Present

1. Prof. Himanshu Sekhar pattanaik
2. Dr. Dillip kumar Bisoyi
3. Dr. Ramesh ch. Biswal
4. Sri Sukumar pattanaik
5. Sri Saroj-kumar Dehury
6. Miss Sonali Sarischita
7. Smt. Ipsita Srichandan
8. Miss Abhinaya Nayak

The following resolutions were taken

1. The University syllabus published for the academic year session-2019-20 is approved unanimously with no change.

2. The list of examiners/Question setters/moderators are purposed.

3. Proposal Submitted by HOD, Electronics towards formation of question bank was highly appreciated.

The meeting came to an end by a formal vote of thanks to the chairman and members present.

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Chairman

1st Board of Studies Meeting (Electronics)
2017-18

Electronics 11.8.2017

The board of studies meeting of Dept of Electronics was held on 11.8.2017 in Physics dept. under the Chairmanship of Prof H.S Pattanaik HOD Physics. The following members were present.

1 Sri Himansu Sekhar Pattanaik. 11.8.17
2. Prof. N.C. Mishra. 11.8.17
3. Sri Sukumar Pattanaik - 11/8/17
4. Sri Bimal Kumar Behury - 11/8/17
5. Mr. Bhaskar Sahoo 11.8.2017.
6. Smt Sarojini Samantaray 11/8/17
7. Miss Sonali Sunischita Sonali 11/8/17
8. Miss Anusuya Devi Anusuya 11/8/17

The Board of study meeting of the Dept. of Electronics was being held for the first time. The HOD of the Dept. welcomes all the members at the outset and briefed regarding the Dept.

1
The Invited members gave some tips to the faculty regarding the smooth running of the Dept.

The CBCS Course of study given by the Utkal university was descussed thoroughly & accepted with some minor changes.

The names of the question setters, moderators & examiners were discussed & finalised.

It was resolved that more emphasis may be given on practicals as it will help the students in future.

S.U. Dash

The meeting end with a vote of thanks to the chair.

8.17

Chairman

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BOARD OF STUDIES MEETING FOR THE SESSION 2018-2019

Dt. 19.09.2018

The board of studies meeting of Electronics department for the academic session 2018-19 was held on dt. 19.09.2018 under the chairmanship of Prof. H.S Pattanaik, HOD Electronics in the presence of the following members in physics Department. The meeting started with a welcome address by the chair. The minute of the last meeting was readout & confirmed

Members present.

1. Prof Himansu Sekhar Pattanaik 19.9.18
2. Prof N.C Mishra 19.9.2018
3. Sri Sukumar Pattanaik Sukumar Pattanaik 19/09/18
4. Sri Bangj kumar Dehury 19/9/18
5. Mr Bhaskar Sahoo
6. Smt Sarojini Samantaray 19/09/18
7. Miss Sonali Sunischita 19/9/18

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Department of Mathematics
Ramanujan Bhavan.
Board of Studies Meeting 14, on 27.02.2015

Board of Study meeting for [illegible] 2014 held on 27.02.2015 at 11 am. in Ramanujan Bhavan in the Dept. of Mathematics in the Presence of the following members of the Boards of Studies by the Chairman Shri of HOD Mathematics Sri Trilochan Sahoo. The views and suggestions taken in the meeting is resolved for the degree 13 students having admission in 2014. which is passed attached is a Separate Sheet with the Signature of the members of Board of Studies Present. The Points outlered are

1. Though there is a full Paper (Paper VIII) of 100 marks Practical, there is no provision for math lab! This is a mater of great concern to Conduct Practicals without running the Programme in the Computer Lab or without having Knowledge of Computer. It is Suggested that for the benefit of the Students, math lab. may be Setup as early as possible to avoid lapses in conducting Practicals with a technical Staff head. The Prescribed Courses for the math Pass/Hons/Maj Elective/minor Elective are up to mark and remains unchanged with addition of Simple examples from Gauss/ Stories & Green's theorems in Paper III of Second year in advanced Calculus in unit VI. Views and Suggestion is attached as annexure-I.

The meeting ended with vote of thanks.

The chairman is authorised to prepare completely the list of Examiners and the question setter along with moderators.

1. 27/2/15
2. 27/2/2015
3. 27.2.15
4. 27.2.15
5. 27.2.15

1. Prof. T Sahoo Chairman
2. Prof. H.B. Pattanayak
4. Asst prof. S.K. Sahoo.

S.K. Dalai

(6)

Department of Mathematics
Board of Studies meet 2016, on 19.01.2016
Ramanujan Bhavan, Computer Laboratory.

Board of Studies meeting held on 19.01.2016 at 11 AM in Computer Laboratory of Ramanujan Bhavan of Dept of mathematics. The meeting is chaired by the Chairman Mr. Trilochan Sahoo and attended by the board members Prof. H.B. Pattanaik, external, Mr. S. Mishra, Mr. G. Mishra and Mr. P. Das & all are faculty members. The views and suggestions decided in the meeting is resolved and attached in a separate sheet with the signature of the all the members present. The outlines of the decision are as follow with the conformation of the resolutions of the previous meetings. The syllabus prescribed by CBCS remains unchanged. Prescribed books and reference books be provided by the College Library to the department. Computer lab should be upgraded with a technical personnel to implement the practical syllabus. Adequate number of Teaching faculty be posted for smooth functioning of the department.

The list of Examiners, question setters, and moderators proposed and approved by the Board of Studies should be strictly adhered to. More emphasis should be given for moderation of questions. Views and suggestions is attached as annexure.

The chairman is authorised to prepare the list of Examiners, the question setters and moderators as suggested by the Board.

The meeting is ended with vote of thanks to the members.

1. [signature] 19.1.16
2. [signature] 19/1/2016 (H.B. Pattanaik) S. [signature] 19-01-16

(2) [signature] 19.1.16 [signature] 19/01/16

[signature]
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(8)

Department of Mathematics
Board of Studies meeting.

venue - CSC and ITM Lab. Date. 1.8.2017

Members of the Board

1. Mr. Trilochan Sahoo. Chairman
2. Mrs. Sulata Mishra Faculty expert.
3. Mr. Debasis Pandey —do—
4. Dr. Manoj Kumar Hota —do—
5. Prof. R. N. Das. Subject Expert.
6. Dr. N. Ch. Patra —do—
7. Prof (Mrs) Namita Das VC Nominee.
8. Dr. Tadit Kumar Dash Corporate area.
9. Dr. Narmada Behera. Alumni.

Members Present

1. Trilochan Sahoo
2. Mrs. Sulata Mishra
3. Mr. Debasis Pandey.
4. Dr. Manoj Kr Hota.
5. Prof R. N. Das
6. ~~Mrs~~ Dr. ~~Namita~~ Narmada Behera.
7. Tadit Kr Das.

Agenda.

1. Welcome address by chairman.
2. Introduction by ~~Dr~~ Dr. Hota.
3. Discussion of Syllabus for 2017-18 ~~Addressed~~ table
4. ~~Pass~~ approval of Syllabus Prescribed by Utkal University for 2016-17
5. Views and Suggestions if any on the Syllabus.
6. Preparation of List of Examiners, question setters and moderators.
7. Others if any.

S. U. Das
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2017

Proceedings of the meeting.

1. Board of Studies meeting held on 11.08.2017 at 11am in Computer laboratory of Dept. of Computer Science and ITM. The meeting is chaired by the Chairman Mr. Trilochan Sahoo and attended by the members of Board of Studies. The following Proceedings were made.

1. In Hons. C1 - Paper Vector Triple Product is excluded and Elementary concept of Curl, div, gradient included in Unit IV.

2. In Hons C2 Paper [illegible]

The minutes of discussion on CBCS pattern Syllabus for 2017-18 was discussed and the ~~[illegible]~~ suggestions were written in separate sheets provided by Autonomous Section.

The Syllabus prescribed by the Utkal University for the session 2016-17 ~~[illegible]~~ was approved.

The Chairman is authorised to prepare the list of examiners, question setters and moderators and submit it to the Autonomous Section.

Dalet Kumar Dash 11/08/2017

11.8.17

S. [illegible] 11-8-17

11.8.17.

[illegible] 11/8/17

[illegible] 11/8/17

[illegible] 11/08/17

S. K. [illegible]

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Habus.

Department of Mathematics.
Board of Studies meet 2018-19 (15)
Venue. Date- 19.09.2018

Members of the Board.

1. Trilochan Sathua. Chairman
2. Mrs. Sulata Mishra faculty member
3. Mr. Debasis Pousty —do—
4. Dr. Manoj Kumar Hota —do—
5. Mr. Prafulla Chandra Das —do—
6. Prof. R. N. Das Subject expert
7. Dr. N. Ch. Patra —do—
8. Prof (Ms) Namita Das V.C. Nominee
9. Er. Tadit Kumar Dash member from corporate area.
10. Dr. Narmada Behera Alumni.

Members Present.

1. Trilochan Sathua. Chairman. 8908786345
2. Dr Rabindra Nath Das (9861071879) Rabindranath Das 19.9.18
3. Debasis Pousty (9778120265) Debasish Prusty. 19.9.18
4. Dr. Narmada Behera (9668235410) [signature] 19.9.18
5. Dr. Manoj Kr. Hota (9937642721) [signature] 19.9.18
6. Prafull Ch. Das (9437948961) Prafulla
7. Sulata Mishra (9438294516) S. Mishra 19-9-18
8. Tadit Kumar Dash. (9132994288) Tadit Dash. 19.9.18

Agenda of the Board of Studies Meet

1. Welcome Address by Chairman.
2. Introduction of members by Dr. Hota.
3. Discussion of the Syllabus for the session 2018-19 Admission Batch
4. Approval of Syllabus Prescribed by U.U. Vanivihar, BBSR.

S.K. Behera
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5. Views and Suggestions if any on the Syllabus
6. Preparation of list of question setters, examiners and moderators.
7. Others if any.

5.

6.

Proceedings.

Board of Studies meet held on 19.09.2018 at 11.30 AM in "Ramanujan Bhavan" of Department of Mathematics under the Chairmanship of Prof. Sachan Sattwa Nanda and HOD, Maths, attended by the Subject Experts, alumni, and member from Corporate Sector along with the faculty members of the Department. The meet is presided by the Chairman with welcome address and Dr. Hota gave introduce the members of the Board of Studies of this dept.

8

Discussions held on each Paper and each unit of the Syllabus Prescribed by Utkal University, Vanivihar under CBCS System the minutes of discussion done as follow.

9

10.

11

1. A thorough discussion is made on C1 - Calculus-I of Sem1. The members feel this Paper covers almost all branches of mathematics leading the students to have an overall idea of different units of Math. No changes made.
2. In C2 - algebra remains intact. No change is made in this Paper.
3. The core Paper C3 - Analysis I of 2nd Semester no change is made as the members feel the genuineness of each and unit of the Paper.
4. C4 - Differential Equations with Practical remains intact.

S. N. Dash

5. Core C5, C6, C7 i.e. Theory of Real functions (analysis II), Group theory (algebra II) and Partial differential Equations & Systems of ordinary differential Equations with practical respectively remains intact in 3rd Semester, 2nd year.

6. C8 Numerical methods with practical introducing discussion of its convergence in calculation of Sum $1/1 + 1/2 + 1/3 + 1/4 + \cdots + 1/n$ in Pr. and the remaining C9 - Riemann Integration & Series of functions (Analysis III) and C10 Ring theory & Linear algebra (Alg III) remain intact.

7. The board recommends the no change in C11 multivariate Calculus (Cal II), C12 - Probability & Statistics, C13 metric spaces & complex analysis (Analysis IV) and Linear Programming.

8. In Discipline Specific Electives (DSE) DSE1 Programming in C++ (compulsory) with practical and DSE2 Discrete mathematics no change is made. No change is recommended by the Board in DSE3 (Differential geometry and Ring theory & linear alg II) and Project work in DSE4.

9. No change is made in Generic Elective (Interdisciplinary) GEP1, GE2 Calculus & Differential Eqn) and GE3, GE4 Lin. alg & Abst. alg & Numerical analysis.

10) The board entrusted the HOD to prepare the list of examiners, question setters & moderators.

11) Laboratory facilities is inevitable for the Stds. of the Dept. So they entrust the HOD to take steps for the purpose.

12. Contingency should be provided by the Principal for the smooth running of the Dept.

13. The meeting ends with the vote of thanks by the Chairman.

0. P. Sitaram Sahu
1. [signature]
2. [signature]
3. [signature]
4. [signature]
5. Tahir Hussain Said.
6. S. [signature]
7. Debasish [signature]

S. C. [signature]
PRINCIPAL
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NAYA[illegible]

Department of Mathematics
Board of Studies meet 2019-2020 Date 6-11-19

Members of the Board

(1) Sujata Mishra (Chairman)
(2) Mr Debaraj Pousty (Faculty member)
(3) Dr Manoj Kumar Hota (Faculty member)
(4) Anup Saha Asst. Prof of Mathematics Regional Institute of Education Subject Expert
(5) Prof H B Pattanaik Retd Prof of Mathematics Ravenshaw University (Subject Expert)
(6) Manas Mohapatra (Alumni)
(7) Dr Tadit Kumar Dash (Computer Science)
(8) Prof Sabita Dutta V C Nominee

Members Present

(1) Sujata Mishra
(2) Mr Debaraj Pousty
(3) Dr Manoj Kumar Hota
(4) Anup Saha
(5) Prof H B Pattanaik
(6) Manas Mohapatra

Agenda

(1) Welcome Address by Chairman
(2) Discussion on Syllabus for admission batch 2019-2020
(3) Pass of Syllabus prescribed by Utkal University for admission batch 2019-2020
(4) Preparation of Examiner list
(5) Preparation of Question setter
(6) Preparation of list of moderators
(7) Others if any

S.U. [signature]

PHYSICS

BOARD OF STUDIES MEETING FOR THE SESSION - 2014-15, Dt. 27.02.15 (Friday).

The board of Studies meeting of Physics for the academic session 2014-15 (Admission Batch 2014) was held on dt 27.02.15 at 11 AM under the chairmanship of Prof H.S. Pattanayak, HOD, Physics in the Physics Dept in the presence of the following members. The meeting started with a welcome note by the Chairman. ~~[illegible] [illegible], Prof Pattanayak~~ ~~[illegible]~~ the

Members Present -

1 - Prof N. Barik - [signature] 27/2/15
2 - Prof S. Biswal - [signature] 27.02.15
3 - Prof H S Pattanayak - [signature]
4 - Prof S. K. Pradhan - [signature] 27.2.15
5 - Prof C. R. Das - [signature] 27/2/15
6 - Dr B. K. Pattari - [signature]
7 - Dr (Miss) S. Mishra - [signature] 27/02/15
8 - Prof R. Behera - [signature] 27.2.15

9 -
10 -

[signature]
PRINCIPAL

The following resolutions were taken unanimously.

(1) It was decided to perform some practicals by computer simulation method in order to enhance the computer as well as the practical skills of the students.

(2) Simple mathematical equations may be solved through computer programming with the help of Computer languages like fortan, C, C++.

(3) Since the University is going to introduce CBCS syllabus from the next academic session, it was unanimously decided not to bring any change in the syllabus for the session 2014-15 & leave it intact.

(4) Some new names for the were inserted in the examiner & question setter list as suggested by Prof (Dr.) N. Basak & Dr (Dr.) S. Biswal.

The meeting was ended with a vote of thanks to the Chair.

S. U. Dikshit
PRINCIPAL
NAVADWIP VIDYASAGAR COLLEGE

19.01.14

BOARD OF STUDIES MEETING FOR THE SESSION 2015-16. Dt 19.1.2016

A meeting of the Board of Studies of Physics department was held on the Physics department for the academic Session 2015-16 on 19.1.2016 under the Chairmanship of Prof. H. S. Pattanayak HoD, Physics, in the presence of the following members. The meeting started with a welcome address by the chair. The minutes of the last meeting was read out & confirmed.

Members present :

(1) Prof. N. Barik -

(2) Prof S. Biswal - Biswal

(3) Prof H. S. Pattanayak - [signature]

(4) Prof S. K. Prahan - [signature]

(5) Prof S. R. Dhu. - [signature]

(6) Dr. B. K. Pattanaik - [signature]

(7) Dr (Mrs) S. Mishra - Sanjukta Mishra.

(8) Prof R. Behera - [signature]

(9) Dr. S. K. Dash. - [signature]

The following resolutions were taken unanimously

(1) The minutes of the previous meeting was readout & confirmed.

[signature]
PRINCIPAL
RAVENSHAW UNIVERSITY

(2) Prof (Dr.) S. K. Dash advised all the faculties to make themselves synchronised well with the new CBCS system. He gave emphasis to develope a practical module of all Han's practicals by sharing the knowledge of each other in the department.

(3) The developed module is to be ventilated among the students for reference.

(4) Computer based practicals may be done by the outsourced persons in the beginning & gradually the faculty members may be trained up to handle it independently.

(5) Both the long term & short term action plan will be prepared to develop the infrastructure for the requisite Laboratory.

(6) Lab. manuals for all practicals is to be developed so that the students can get advantage of that.

(7) Alternative ways for a particular experiment may be developed so that the same expt. can be done in different ways & means.

(8) There should be close interaction among the faculty members regarding sharing of knowledge in both practical & theory.

S. K. Dash

DIRECTOR
NAVAGARHA

(9) As the CBCS was introduced by the University for the 1st time & odd Semester exam. was already over, so it was decided not to bring any change in the Syllabus for the Academic year 2015-16.

10) The question Setter & examiner list given in the previous report also stands correct for this year.

The meeting was ended with a vote of thanks to the Chair.

19.10.16

PRINCIPAL
KANAKLATA MAHAVIDYALAYA COLLEGE

BOARD OF STUDIES MEETING FOR THE SESSION 2016-17

Dt 7.12.2016

A meeting of Board of Studies of Physics department was held in the Physics department for the academic session 2016-17 on 7.12.2016 under the Chairmanship of Prof H.S. Pattanayak, HOD Physics in presence of the following members. The meeting started with a welcome address by the Chair. The minutes of the last meeting was readout & confirmed.

Members Present:

(1) Prof. N.C. Mishra 7.12.16
(2) Prof S.P. Sengupta Sambhu Prasad Sengupta 7.12.16
(2) Prof. Sabitri Acharya
(3) Er. B.C. Sahoo
(4) Prof H.S. Pattanayak 7.12.16
(5) Prof. S.K. Pradhan 7.12.16
(6) Prof S.R. Das
(7) Dr. B.K. Pattanaik
(8) Dr.(Sm) S. Nishra 7.12.16
(9) Prof R. Behera 7.12.16.
(10) Prof. A.K. Sahu
(11) Prof. U.B. Nayak. 7.12.16 7.12.16
(12) Sri Poriana Ku Sahu

The following resolution were taken unanimously.

(1) Keeping in view the verbal instruction of Utkal University we decided to continue the University CBCS Syllabus as such without any change.

S.K. Bisoi
PRINCIPAL
NAYAGARH

(2) The question setter & examiners list given in the previous year also stands intact for this year.

The meeting was ended with a vote of thanks to the chair.

C. K. Das
PRINCIPAL

Chairman. 7.12.16

BOARD OF STUDIES MEETING FOR THE SESSION 2017-18

Dt 11.8.2017.

The Board of Studies meeting of Physics department for the academic session 2017-18 was held on dt 11.8.2017 under the Chairmanship of Prof H.S. Pattanayak, HOD Physics in the presence of the following members of Physics department. The meeting started with a welcome address by the Chair. The minutes of the last meeting was read & confirmed.

Members Present

(1) Prof. N.C. Mishra - 11.8.17
(2) Prof. S.P. Sengupta - Sengupta Somnath Prasad 11.08.17
(3) Prof. Sabitri Acharya.
(4) Sri. P.K. Sahu.
(5) Er. B.C. Sahu. 11/08/2017
(6) Prof. H.S. Pattanayak 11.8.17
(7) Prof. S.K. Pradhan 11.8.17
(8) Prof S.R. Das
(9) Prof Dr. B.K. Pattanaik.
(10) Prof Dr. S. Mishra. 11.8.17
(11) Prof. R. Behera 11.8.17.
(12) Prof A.K. Sahu
(13) Prof. J.B. Nayak, 11.8.17 11.8.17

The following resolutions were taken unanimously

1. The minutes of the previous meeting was read & confirmed.

S.U. Pradhan
PRINCIPAL
NAYAGARH

22

BOA

2. ~~[illegible]~~ Some minor changes ~~[illegible]~~ ~~[illegible]~~ in the Syllabus as made & are approved in the Core papers.

3. In the practicals of different Core papers some available experiments were included in addition to the prescribed experiments.

* 4. The generic Syllabus (GE I & GE II) was modified to a greater extent as the prescribed course is very heavy.

5. The question setter & examiner list given in the previous year stands intact for this year.

The meeting ended with a vote of thanks to the chair & members present.

[signature] .8.17
Chairman
Board of Studies_Physics.

S.K. [signature]
PRINCIPAL

BOARD OF STUDIES MEETING FOR THE SESSION 2018-2019

Dt - 19.9.2018

The board of studies meeting ~~for~~ of Physics department for the academic session 2018-19 was held on dt. 19.9.2018 under the chairmanship of Prof. H.S. Pattanaik, HOD, Physics in the presence of the following members in Physics Department. The meeting started with a welcome address by the chair. The minute of the last meeting was readout & confirmed.

Members Present

(1)	Prof. N.C. Mishra	19.9.2018
(2)	Prof. Sabitri Acharya	
(3)	Sri P.K. Sahoo	19.09.18
(4)	Sri B.S. Sahoo	
(5)	Prof. H.S. Pattanaik	19.9.18
(6)	Prof. S.K. Pradhan	19.9.18
(7)	Prof. S.R. Das	25/9
(8)	Prof. Dr B.K. Pattanaik	
(9)	Prof. Dr S. Mishra	190918
(10)	Prof. R. Behera	
(11)	Prof. A.K. Sahoo	19.9.18
(12)	Prof. J.B. Nayak	19/09/18
(13)	Prof Smt. S. Mohapatra	19.9.18

After an hour long discussion on the prevailing syllabus, it is resolved that.

1. In view of the implementation of unified Pattern of Syllabus to be made

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NAYAGARH

effective from the current academic Session 2018-19 as announced by Govt of Odisha at Dept of Higher Education it is resolved not to take any charge therein.

2. The list of examiners / question setters / moderators are prepared.

3. Proposal submitted by HOD, physics towards formation of a question bank was highly appreciated by the members and was accepted.

The meeting came to an end by a formal vote of thanks to the chair and members present.

19.9.19

PRINCIPAL
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BOARD OF STUDIES MEETING FOR THE SESSION 25

(2019-2020)

Dt. 06.11.2019

The board of studies Meetings of Physics department for the academic session 2018-19 was held on dt. ~~[illegible]~~ 06.11.2019 under the chairmanship of Prof. H.S. Pattanaik, HoD, Physics in the Presence of the following Members in the physics department. The Meeting started with a Welcome address by the Chairman. The Minute of the 12st meeting was readout and Confirmed

Members Present

(i) Dr. Prafulla Kumar Panda
(ii) Basanta Kumar Sahoo 6.11.19
(iii) Dr. S S Dash
(iv) Dr. R C Bisoyal.
(v) Mr. Himanshu Sekhar Pattanayak
(vi) Mr. Suresh Kumar Pradhan
(vii) Mr. Saroj Ranjan Das
(viii) Dr. Bipin Kumar Pattnaik
(ix) Dr.(Mrs) Sanjukta Mishra
(x) Mr. Rabindra Behera dt. 6.11.2019
(xi) Sri Ashok Kumar Sahoo
(xii) Sri Jyoti Bhusan Nayak
(xiii) Acharya Kumar Kar
(xiv) Swagatika Mohapatra
(xv) Mr. Hemanta Mohapatra
(xvi) ~~Mr. Basant~~

The following resolutions were taken. Unanimously.

1. The University Syllabus published for the academic year 2019-20 is approved unanimously. With a Minor
2. Printing Correction.

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NAYAGARH

ZOOLOGY

Board of Studies Meeting.
Department of Zoology
Nayagarh Autonomous College, Nayagarh
Date - 27-2-15 Time - 12 Noon.
Session - 2014-15

Members present :-

1. Chairman - Dr. Ashok Kumar Mohaty
2. V.C. Nominee :- Prof. Dr. B.C. Guru.
3. Subject Expert. Dr. Arjun Sahoo
4. Subject Expert. Prof. P.K. Mohanty
5. Representative from Corporate Body. - Dr. Kanta Das Mohapatra.
6. Meritorious Alumini :- Dr. Sunanda Chandra Pradhan
7. Faculty Member :- Capt. Manjushree Ard
8. Faculty Member :- Brajabandhu Behera.

The Board of Studies meeting of the Zoology Department met on 27.2.15 at 12 noon in the Department of Zoology sitting room under the chairmanship of the Head of the Department of Zoology of Nayagarh Autonomous College, Nayagarh in the presence of above noted members.

The members went through the syllabus and necessary correction were made in the syllabus for the session 2014-15 (2014 Admission).

The syllabus for 2014-15 session was prepared and approved unanimously by the members.

The list of examiners, paper setters and moderators were prepared & approved.

27.2.15 27.2.15
Chairman 27/2/15

S.C. [signature]
PRINCIPAL

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Board of Studies Meeting
Department of Zoology
Nayagarh Autonomous College, Nayagarh
Date :- 19.01.2016 Time - 11.45 Am.
Session - 2015-16

Members Present :-

1. Chairman :- Dr Ashok Kumar Mohanty [signature] 19/1/16
2. V.C Nominee :- Prof. Dr. B.C. Guru.
3. Subject Expert - Dr. Arjun Sahu
4. Subject Expert :- Prof. Dr. Prafulla Ku. Mohanty
5. Representative from Corporate Sector :- Dr. Mrs. Kavita Das Mohapatra [signature] 19.01.16
6. Meritorious alumnus :- Dr. Sunaida Ch. Pradhan
7. Faculty members :- Capt. Manjushree Das [signature]
8. Faculty Members :- Brajabandhu Behera [signature]
9. Faculty Members :- Smt. Mita Mohapatra [signature]

The Board of Studies meeting of the Zoology Department met on 19.01.16 at 11.45 in the Department of Zoology sitting room under the Chairmanship of the Head of the Department of Zoology of Nayagarh Autonomous College, Nayagarh in the presence of above mentioned members.

The members went through the syllabus and necessary correction were made in the syllabus for the session 2015-16 (2015 Admission batch).

The Syllabus for 2015-16 session was prepared and approved unanimously by the members.

The list of examiners, paper setters and moderators were prepared and approved.

[signature] 19.01.16 [signature] 19.1.16 [signature] 19.01.16 C.K. Das Mohapatra [signature] 19th Jany, 2016 (CPK MOHANTY) [signature] 19/1/16 Chairman

[signature] PRINCIPAL NAYAGARH AUTONOMOUS COLLEGE

Board of Studies meeting
Department of Zoology
Nayagarh Autonomous College, Nayagarh
Date – 7.12.16
Session – 2016-17

Members Present :-

1. Chairman – Dr. Ashok Kumar Mohanty (signed) 7/12/16
2. V.C Nominee – Prof. (Mrs) Pravati Kumari Mohapatra (signed) 7.12.2016
3. Subject expert – Dr. Smt. Chinmayee Mohanty (signed)
4. Subject expert – Dr. Krushna Chandra Rath (signed) 7/12/16
5. Representative from Corporate Sector : – Dr (Mrs) Kanta Das Mohapatra (signed) 7.12.16
6. Meritorious alumnus – Dr. Surendra Ch. Pradhan (signed) 7.12.16
7. faculty members – Capt. Manjushree Pati (signed) 7.12.16.
8. faculty member – Brajabandhu Behera (signed)
9. faculty member – Smt. Mita Mohapatra (signed) 7.12.16.

~~10. faculty member : ...~~
~~11. faculty m~~

The Board of Studies meeting of the Zoology department met on 7.12.16 at 12.15 pm in the Department of Zoology sitting room under the Chairmanship of the Heads of the Department of Zoology of Nayagarh Autonomous College, Nayagarh in the presence of above mentioned members.

The members went through the subject syllabus and necessary corrections were made in the syllabus for the session 2016-17 (2016 Adm batch)

The syllabus for 2016-17 session was prepared and approved by the members unanimously.

The list of examiners, paper setters and moderators were prepared and approved.

(Signatures) 7.12.2016, 7.12.16, 7/12/16, 7/12/16, 07.12.16, 7/12/16, 7.12.16, 7/12/16

S. K. Das (signed)
PRINCIPAL
NAYAGARH ...

Board of Studies meeting
Department of Zoology
Nayagarh Autonomous College, Nayagarh
Date: 11.8.2017
Session - 2017-18

Members Present:—

1. Chairman — Dr. Ashok kumar Mohanty
2. V.C. Nominee:- Prof (Mrs) Prasanta kumari Mohapatra
3. Subject expert:- Dr. (Smt) Chinmayee Mohanty
4. Subject expert:- Dr. Krushna Chandra Sahu
5. Representative from:- Dr (Mrs) Kanta Das Mohapatra. Corporate Sector
6. Meritorian Alumnus - Dr Sunanda Chandra Badhai
7. Faculty member - Capt. Manjushree Pati
8. Faculty member - Brajabandhu Behera
9. Faculty member - Smt. Mita Mohapatra
10. Faculty member - Mahendra Sethi
11. Faculty member - Tanushree Maharana

The Board of Studies meeting of the Zoology Department met on 11.8.2017 at 12.30 pm in the Department of Zoology sitting room under the Chairmanship of Head of the Zoology Department Nayagarh Autonomous College, Nayagarh in the presence of above mentioned members.

The members went through the subject syllabus and necessary corrections were made in the syllabus for the session 2017-18 (2017 Admission batch)

The syllabus for 2017-18 session was prepared and approved by the members unanimously.

The list of examiners, paper setters and moderators were prepared and approved.

OFFICE OF THE PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH-752069
((06753) 252234

COMPOSITION OF BOARD OF STUDIES (2018-2019)
DEPARTMENT OF ZOOLOGY

Sl. No.	Members		Address
1	**Chairman**		
	1.Dr. Ashok Kumar Mohanty	:	Reader & Head, Department of Zoology, Nayagarh Autonomous College, Nayagarh
2.	**Faculty of the Department**	:	
	1. Capt. Manjushree Pati	:	Reader
	2.Mr Brajabandhu Behera	:	Lecturer
	3.Mrs Mita Mohapatro	:	Lecturer
	4.Mr.Mahendra Sethi	:	Lecturer
	5.Miss Tanushree Moharana	:	Lecturer
3.	**Two experts in the subject outside the college to be nominated by the Academic Council**		
	1. Dr. Smt.Chinmayee Mohanty	:	H.O.D Zoology, P.N.Autonomous College,Khurda
	2. Dr.Krushna Chandra Rath	:	H.O.D Zoology Banki Autonomous College, Banki
4.	**One expert to be nominated by the Vice-Chancellor from a panel of six recommended by the Principal**		
	1. Prof. (Mrs.) Pravati Kumari Mohapatra	:	P.G. Deptt. of Zoology, Utkal University, Bhubaneswar
5.	**One representative from industry / corporate area / allied area relating to placement**		
	1. Dr. (Mrs.) Kanta Das Mohapatra	:	Principal Scientist, Fish Genetics CIFA, Kaushlyaganga, Bhubaneswar
6.	**One post-graduate meritorious alumnus to be nominated by the Principal.**		
	1. Dr.Sunanda Chandra Pradhan	:	Dept.of Environmental Science F.M University, Balasore

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Resolution Dt - 6/11/19

A meeting of the Board of Studies of the Department of Zoology was held under the Chairmanship of Major. Manjushree Pati, Reader & Head, Department of Zoology of Nayagarh Autonomous College, Nayagarh on 06/11/19 in the sitting room of the Department of Zoology at 11AM in the presence of the following members. The following resolutions were made unanimously.

Members Present -

1. Major Manjushree Pati — Chairman
2. Mr. Brajabandhu Behera — Member
3. Mrs. Rita Mohapatra — Member
4. Mr. Mahendra Sethi — Member
5. Mrs. Tanushree Mohanty — Member.
6. Prof. P. K. Mohanty — V.C. Nominee
7. Dr. Mrs Ranta Das Mohapatra - Corporate Representative
8. Prof Netaji Upadhyaya Subject Expert.

Business Transacted

(1) The syllabus was slightly changed with minor alteration and deletion because of repetition which will be effective from the session 2019-20.

(2) The list of paper setter and moderator is prepared

S. C. Pati
PRINCIPAL
NAYAGARH

COMMERCE

Board of Studies Meeting
for the Academic Session 2014-15 27
Dated. 27.02.2015 8

AGENDA

1. Regularisation of Syllabus of 2014 Admission Batch except 1st semester
2. List of Question setters, Moderators and Examiners.
3. Other matters if any.

Members Present

1. Sri D.B. Sahu, HOD. Com - 27/2/15
2. Sri S.G. Mishra - Retd. Registrar, Com. S.G. Mishra 27/2/2015
3. Dr. P.C. Mohapatra - Retd. Principal.
4. Prof. R.K. Bal, V.C. V-C. Nominee.
5. Mr. Trailokya Mishra CEO, Mgr. Sugar complex.
6. Mr. Devi Prasad Kar - Affinity Bicycles School. 27/2/2015
7. Mr. K.C. Dash, Sr. Lect -
8. Mr. B.D. Gouda, Lect. 27/2/15
9. Dr. L.D. Sahoo, Lect. - 27/02/2015
10. Mr. P.K. Acharya, Lect - 27.2.15
11. Mr. S.K. Adhikari, Lect - Sushanta 27.02.15

S.K. Das

Resolutions adopted and passed

1. The syllabus of 2014 Admission Batch is discussed and finalised without any changes.

2. The list of question setters, moderators and examiners is finalised.

3. Discussions have been made to prepare question bank.

The meeting was over with the vote of thanks to the members of the Board of studies by Dr. L Dsalva.

27.2.15

PRINCIPAL

Board of Studies meeting for the Academic Session 2015-16 Dt. 19.01.2016

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AGENDA

1. Finalisation of syllabus of 2015 Admn Batch
2. List of Question setters, Moderators and Examiners.
3. Other matters if any

Members Present

1. Sri B D Gouda HOD Com 19/01/16.
2. Sri S G Mishra Retd. Reader in Com.
3. Dr. P C Mohapatra Retd. Principal 19/01/16.
4. Dr. R K Bal U.U. VC Nominee
5. Mr. Trailokya Nishra Chairman, Ngr. Sugar complex
6. Mr. Deviprasad Kar Affinity Business School 19/1/16
7. Mr. K C Dash Sr. Lect.
8. Dr. L D Sahoo Lect. 19/01/16
9. Mr. P K Acharya Lect. 19.1.16
10. Mr. S K Adhikari Lect. 19/01/16
11. Ms. S Sahoo Lect.

Resolutions adopted and passed

1. The syllabus issued by Utkal university was adopted without any changes.

2. The list of Question setters, moderators and examiners is finalised.

3. Resolved to take steps for preparation of Question Bank.

The meeting was over with a vote of thanks to the chair as well as members of the Board of studies.

Banshidhar Naik
19/01/2016

S.N. Dalai

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

Board of Studies meeting for the Academic Session 2017-18 Dt. 11.08.2017

Agenda

1. Finalisation of syllabus of 2017 Admn Batch
2. List of Question setters, moderaters and examiners
3. Other matters if any

Members Present

1. Sri B D Goude HOD com — 11/08/2017
2. Dr. Maheswar Sahu (V C Nominee) PG Deptt. of Commerce — 11/8/17
3. Dr Brajabandhu padhiary Reader in commerce (subject Expert) — 11.8.2017
4. Sri Samir Kumar Mahapatra Reader in Commerce (Subject Expert) — 11-8-17
5. Mr. Sambit Sethy Manager Recruitment Pinnacle Human Resource Pvt. Ltd. — 11/8/17
6. CA Chandresh Kumar Nayak Bhubaneswar (Alumni)
7. Sri K C Dash Sr. Lect.
8. Dr. L D Sahoo Lect. — 11.8.17
9. Sri P K Acharya Lect.
10. Sri S K Adhikari Lect. — 11.08.17
11. Ms S Mallik Lect. — 11.8.17

Board of studies meeting held on 11.08.2017 in the Department of Commerce.

1. Sri B D Gouda HOD chaired the meeting.

*2. Resolved to adopt GST specific courses in Indirect Tax Law (BCH 6.2 Core-14)

3. The lists of Examiners, moderators and question setters have been finalised.

The meeting was over with a vote of thanks to the chair and the attending members.

11/8/17

11/8/17

11.8.2017

11/08/2017

11-8-17.

11/08/17

11.08.17

11.8.17

11.08.17

11.8.17

Board of Studies meeting for the 3rd Academic Session 2018-19

Dt. 19.09.18

Agenda

1. Finalisation of syllabus of 2018 Admission Batch for B.Com and ITM
2. List of Question setters, moderators and examiners.
3. Other matters if any

Members present

1. Sri B.D. Gouda, HOD commerce — 19/09/18
2. Dr Maheswar Sahu (VC nominee) PG. Deptt of Commerce,
3. Dr. Brajabandhu Padhiary (Subject expert) Reader in Commerce
4. Sri Sameer Kumar Mohapatra (Subject expert) Reader in commerce. 19.9.18
5. Mr. Samit Sethy Manager Recruitment Pinnacle Human Resource Pvt. Ltd 19.9.18
6. CA Chandresh Kumar Nayak (Alumni) Bhubaneswar
7. Sri K.C. Dash Sr. lecturer — 19.9.18
8. Sri L.D. Sahoo Lecturer 19.9.18
9. Sri P.K. Acharya. Lect. 19.9.18
10. Sri S.K. Adhikari Lect. 19/09/18
11. Ms S. Mallik Lect. — 19.9.18

34 Board of Studies meeting held on 19.09.2018 in the department of Commerce

Resolution adopted and Passed

1. Sri B. D. Gouda, HOD chaired the meeting.
2. It is resolved that ~~GST~~ syllabus for 2017-20 has been adopted for 2018-21 as it is.
3. Resolved that Business Accounting (CC-6), Management Accounting (CC-10) and Financial management (DSE-2) of ITM havebeen framed to 5 units each.
4. The lists of Examiners, moderators and question setters have been finalized.

The meeting was over with a vote of thanks to the chair and the attending members.

Samapur 19.9.18   [signature] 19/09/18   [signature] 19.9.18

[signature] 19.9.2018

[signature] 19/9/18   [signature] 19.9.18   [signature] 19/09/18

[signature] 19.9.18   [signature] 19/9/18   [signature] 19.9.2018

[signature]

PRINCIPAL

NAYAGARH ... COLLEGE

Board of Studies meeting for the 31st
Academic session 2019-20 Dt 06.11.19

Agenda

1. Finalisation of Syllabus of 2019 Admn Batch for B.Com and ITM
2. List of Question Setters - moderator and examiners as enclosed
3. Other matters if any.

Members Present-

1. Shri B.D. Gouda, HOD Commerce
2. Prof. Anil Kumar Swain, Retd. Reader P.G Dpt. of Commerce, Utkal Univ. 6/11/19
3. Dr. Smruti Ranjan Das, Asst. Prof. Department of Business Administration (North Odisha Univ.) 6/11/19
4. Dr. Sebat Kumar Digal P.G Dpt. of Commerce, R.D. Women's Univ.
5. Mr. Sambit Sethy - Manager Recruitment, Pinnacle Human Resource Pvt. Ltd - 6/11/19.
6. Mr. Chandresh Kumar Nayak, CA (Alumini)
7. Dr. K.D. Sahoo Lecturer
8. Dr P.K. Acharya Lecturer
9. Mr. S.K. Adhikari Lecturer
10. Mrs. S. Mallik Lecturer
11. Ms. Prateekshaya Ray Lecturer

S.C. Das
PRINCIPAL
NAVAJIVAN [illegible]

26. Board of Studies meeting held on 06.11.2019 in the Department of Commerce.

Resolution adopted and Passed

1. Sri B. D. Gouda, HOD chaired the meeting

2. It is resolved that the Syllabus for 2019-20 that Provided by the University remain same ~~with~~ except the subject of 2nd Semester SEC-2 E-Commerce, is replaced for communicative ~~-~~ English SEC-1.

3. It is resolved that ITM syllabus for 2018-19 has been adopted for 2019-20 as it is.

4. In case of existency or difficulties, the board authorises the HOD of Commerce / Comptroller of examination of the college to do the needful in smooth conduct of the examination work such as record setting and evaluation.

The list of ~~the~~ examiners, moderators and Question setters have been finalized. and approved as enclosed herewith

5. It is resolved that further that the nomenclature ~~remain at che~~ of Communicative english of Sem-2. paper AECC-2 is ~~to~~ changed to english communication as per the advice of english Department.

The meeting was over with a vote of thanks to the chair and the attending members.

S. K. Behera
PRINCIPAL
NAYAGARH ...
N... ...H

(signature) 6/11/19
(HEMALATA ...)

(signature) 6/11/19
(SAMBIT SETHY)

(signature) 6/11/19
(DR. SMRUTIRANJAN DAS)

(signature) 6/11/19

(signature) 6/11/19

(signature) 6/11/19

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(Economics)

Proceedings of Board of Studies

dt - 27.02.15

In the presence of Prof. Binodini Narendra, Lect in Eco. P.M. M.MV, Nayagarh, Mr. Netrananda Pattnaik, Nayagarh, Prof. Ashok Kr Tripathy, Reader & Head Dept. of Eco, Nayagarh Auto. College, Nayagarh, Mr. Ashutosh Mishra, Nyr Auto. college, Dr. Dillip Kr Mishra, Nyr Auto College, the following was unanimously resolved,

1. That the existing syllabus for the academic session 13-14 was discussed and all the members agreed for the continuation of the same for the academic session 14-15.

The meeting ended with thanks to the chair., Prof. Ashok Kr Tripathy, H.O.D. Dept. of Economics, Nayagarh Auto. College, Nayagarh.

Name	Signature
1. Ashok Kumar Tripathy	AK Tripathy
2. Netrananda Pattnaik	27/2/15
3. Mrs Binodini Narendra	27.02.2015
4. Ashutosh Mishra	27.02.2015
5 Dr. Dillip Kr. Mishra	27.2.15
	27.2.15

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

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Proceedings of the Board of Studies
dt - 19.01.16

A meeting of the Board of Studies of the Department of Economics was held on 19.01.16 at. 11.00 AM. with Prof. Ashok kumar Tripathy, H.O.D. in the chair. The following members were present in the meeting.

1. Prof. Dr. Kartik Prasad Jena, Reader in Economics, B.J.B. Auto. College.
2. Mr. Netrananda Pattanik
3. Prof. Binodini Narendra, P.M. Mahavidyalay
4. Prof. Ashutosh Mishra
5. Dr. Dillip ku Mishra

The new syllabus was discussed and approved with minor corrections as detailed below;

1. In core3, module-III, in place of evolution and functions of money, "definition's and functions of money" is added.

2. In core-3, Module-V, the portion, "consumption, saving-investment functions" is deleted as already this being there in classical theory of employment approach.
3. Besides these two changes, the CBCS course in total for the admission batch 2015-16 remains in tact.
4. The list of examiners, question setters and moderators was also decided.

signatures:

1. Ashok Kumar Tripathy
2. Kartik Prasad Jena.
3. Ashutosh Mishra
4. Dilip Kumar Mishra
5. Binodini Narendra 19.1.16
6. Netrananda Pattnaik 18.1.2016

A.K. Tripathy 19.01.16 Reader in HOD Eco.

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Proceeding of the Board of studies

Dt - 11/08/2017.

A meeting of the Board of studies of the department of Economics was held on 11/08/2017 at 11.00 AM with Prof. Ashok Kumar Tripathy, H.O.D in the chair. The following members were present in the meeting.

1. Prof. Dr. Kartik Prasad Jena, Associate Professor & Reader of Economics, Model Degree College, Nayagarh
2. Prof. Dr Himanshu Sekhar Rout, Reader in A&A Economics, Utkal University
3. Prof. Dr Rabindra Ku. Mishra, Principal P.S College, Khandapara
4. Prof. Dr. Dilip Ku. Mishra
5. Prof. Rupesh Maharana
6. Prof. Sushant Ku. Barik
7. Prof. Pitabas Paiswal, Sarankul college, Sarankul

The new syllabus for 2016-17 remained intact & syllabus for 2017-18 admission batch was discussed and approved with the following minor changes by the members present.

(1) DSE syllabus - 5th Semester
   (i) Economic History of India
   (ii) Odisha Economy

(2) In 6th semester (1) Project work
   (2) Agricultural Economics

1. (H.S.ROUT)
2. Kartik Prasad Jena 11.08.2017
3. Rabindra Kumar Mishra 11/08/17
4. 11.08.17
5. Rupesh Kumar Maharana
6. Sushanta Ku Barik
7. Pitabas Paiswal

S.U.Bal
PRINCIPAL
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NAYAGARH

Proceedings of the Board of Studies
11.08.2017

A meeting of the Board of Studies of the Department of Economics held on 11.08.2017.

PRINCIPAL
NAVAGARH COLLEGE

Proceedings of the Board of Studies

dt- 19.09.18

A meeting of the Board of Studies of the Department of Economics was held on 19-09-2018 at 11.am. with Dr. Dilip Kumar Mishra, H.O.D. in the chair. The following members were present in the meeting ① Mr Susanta Kumar Barik. Lect. in Eco.
② Mr. Pitabas Bijwal. Lecturer in Economics. Sasankul College, Sasankul.
③ Mr. Ashok Kumar Barik. Lecturer in Economics. Nayagarh Autocollege. Nayagarh.
④ Miss Ahilagna Sukanya. Lecturer in Economics. Nayagarh Autonomy College. Nayagarh

The Syllabus of 2018-19 remained same and no change occured in the Syllabus. The DSE papers are:-
5th Semester: DSE ① Economic History of India.
DSE ② Research methodology.
6th Semester:- DSE 3 - Agricultural Economics.
DSE 4 - Project

① Susanta 19.09.18
② Ashok 19/09/18
③ Asukanya 19.09.18
④ Pita 19.09.18

S.K. Das
PRINCIPAL
NAYAGARH AUTONOMY COLLEGE

Econom

Proceeding of the meeting of the Board of Studies held on 6th Nov 2019 at 11.00 A.M

PAGE NO.: 01
DATE: / /

The meeting of the Board of Studies of Dept. of Economics, Nayagarh autonomous college, Nayagarh was held on 6th Nov 2019 at 11:00 A.M in the department room under the chairmanship of Dr. Ashutosha Mishra, Head of the department with the following members.

Members Present

① Dr. Ashutosha Mishra, chairperson

② Dr. Dilip Kumar Mishra

③ Swant Ku. Bonik

④ Anita Mahapatra. Subject Expert
Lect. in Economics, KSUB College
Bhanjanagar

⑤ Sanatana Rout, Associate, SBI, Nayagarh
Representative from corporate Area

⑥ Pitabas Biswal, Alumni member
Lect. in Economics, Sorankul college
Sorankul

The following resolutions were adopted for the session 2019-20

① The course of study for 1st, 2nd, 3rd & 4th semester for Hons & Elective students was finalised & affirmed.

② The syllabus for 5th & 6th semester was affirmed with the selecting of DSE Papers by the members present.

(i) DSE 01 - Public Economics
(2) DSE 02 - Money & Banking
(3) DSE 03 - Environmental Economics
(4) DSE 04 - Project

③ List of Examiners and moderators & question setters were finalised.

Cont.

Meeting of Board of Studies in Education

DT - 27.02.2015

A meeting of Board of Studies in Education was held on 27.02.2015 in the department of Dairies with following members and resolution adopted as follows under the chairmanship of Sri Dhiren Mishra, HOD.

Members Present.

1. Sri Pradipta Ku Bejdal
2. Sri Vyomkesh Rath. - Vyom
3. Sri Prasant Ku Mishra.
4. Sri Dhiren Mishra - Dhiren
5. Sri Gulak Bihari Nayak. - Gulak
6. Sri Nibedita Sahoo. - Nibedita

Res-1 → The minutes of the last Board of Studies was reread and approved.

Res-2 → The Syllabus was thoroughly discussed and minor changes was accepted.

+3. 1st Yr
SEMESTER →

Paper-01 → unit-3 → Existentialism and Pericialism (Philosophy & education) has been changed.

Paper-02 - unit-3 - Accessment of personality added.

+3. IInd Yr.

Paper - 6th → Minor changes in this unit that of Implimentation of New Policies in the field of education.

(Note:) We want Sem. III Paper-3 in the Syllabus

S. K. Dalai

Meeting of Board of Studies in Education

Dt. 19.01.2016

A meeting of Board of Studies in Education was held in 19.01.2016 in the Dept of Education with following members and resolution adopted and the following under the Chairmanship of Dhiren Mishra Head of the Department Education Nayagarh Autonomous College.

Members Present.

1. Dr. Pramod Das - [signature]
2. Dr. Prasanna Mishra - [signature]
3. Smt. Vyomkesh Rath - [signature]
4. Sri. Pradyumna Ku Biswal - [signature]
5. Dr. Dasarathi Biswal - [signature]
6. Sri Dhiren Ku Mishra - [signature]
7. Sri Golak Bihari Nayak - [signature]
8. Smt Niveditta Sahoo - [signature]

Resolution - 01.

The committee decided not to change & modify the papers in all semesters. But in practical paper there will be some little change. Practical papers in all semester papers should be change in accordance with the related topics. There will be a positive co-relation between the theory & practical papers.

Resolution. 2 -

All units should be divided into two bits and each bit included by three to four chapters.

[signature]

PRINCIPAL
NAYAGARH ... SCHOOL ...

Meeting of Board of Studies in Education

DT - 11.08.2017

A meeting of Board of studies in Education was held in 11.08.2017 in the departmental premises with following members and resolution adopted as follows under the Chairmanship of Sir. Dhiren Mishra, HOD

Members Present

1. Vyomakesh Rath - V. Rath
2. Rabinarayan Panigrahi - Rabin
3. Dr. Pramod Dhu - Pramod
4. Sri Dhiren Mishra - Dhiren
5. Sri Golak Bihari Nayak - Golak
6. Nibedita Sahoo - Nibedita

Res 1 → The minutes of the last Board of Studies was repeated and approved.

Res 2 → The syllabus was throughly discussed and minor changes was accepted.

+3, 1st year

SEM-01

Papers 01 → Philosophy of Education
Unit II - Metaphysis, Epistemology & Axiology - added.

SEM-02

Papers 04 → Nominal, Ordinal, Ratio & Interval Scale - added.

+3, 2nd year

Papers 12 → Smapling Methods - added.

PRINCIPAL

Meeting of Board of Studies in Education
dt. 19.9.18

A meeting of the Board of Studies in Education was held on 19.9.18 in the departmental premises with the following members present and the resolution adopted as follows under the chairmanship of Sri Dasarathi Behera, HOD.

Members present

1. Dr. Surendranath Satapathi
2. Dr. Rabindranath Panigrahi
3. Mr. Dhiren Kumar Mishra
4. Prasant Kumar Mishra
5. Mr. Golak Bihari Nayak
6. Mrs. Nibedita Sahoo
7. Sri Dasarathi Behera (Chairman)

Res-I The minutes of the last Board of Studies was read and approved

Res-II The Syllabus was thoroughly discussed and minor changes as under was made/accepted.

CC-3 / Unit V
Personality : Meaning, nature and theories (Trait and Type theory)

CC-11 / Unit 5
Report of NKC with regard to School education.

CC-12 / Unit 5
System of Education : Australia (against Japan)

Res-III Further the Board authorized the Chairman Board of Studies in Education to prepare the examiners of different exams and paper setters for different ensuing exams as he deems fit and proper.

The meeting was ended with a vote of thanks to the Chair

Members:
Surendranath Satapathi 19.9.18
19/09/18
19/09/18

Meeting of Board of Studies in Education

Dt. 6.11.19

A meeting of Board of Studies in Education was held on 6.11.19 in the Departmental premises with following members & resolution adopted as as follows under the chairmanship of Sri Golakh Bihari Nayak, HOD.

Members present

1 Sri Dasarathi Bisal 6.11.19
2. Sri Pradeepta Kumar Bisal 6.11.19
3. Sri Golakh Bihari Nayak (Chairman) 6.11.19
4. Smt. Nibedita Sahoo 6.11.19

Resolution 1 :

The state model syllabus for undergraduate course in Education was discussed broadly paperwise & appreciated and accepted without any change.

Resolution 2 :

The Board of Studies prepared the Examiner, Question setter and moderator list in the prescribed proforma.

The meeting ended with vote thanks to the chair

S.K. Bisal

Meeting of Board of Studies in Education

Dt. 6.11.19

A meeting of Board of Studies in Education was held on 6.11.19 in the Departmental premises with following members & resolution adopted as are follows under the chairmanship of Sri Golakh Bihari Nayak, HOD.

Members present :

1 Sri Dasaratha Bisal 6.11.19
2 Sri Pradeepta Kumar Bisal
3. Sri Golakh Bihari Nayak (Chairman) 6.11.19
4. Smt. Nibedita Sahoo 6.11.19

Resolution 1 :

The state model syllabus for undergraduate course in Education was discussed wisely paperwise & appreciated and accepted without any change.

Resolution 2 :

The Board of Studies prepared the Examiner, Question setter and moderator list in the prescribed proforma.

The meeting ended with vote thanks to the chair

S.N. Das
PRINCIPAL
NAYAGARH

Meeting of the Board of Studies, English Dept.
27/02/2015

Members Present:-

1) Rajendra Mishra
2) Pradip Kumar Samantaray
3) Baishnab Charan Mishra.
4) Shibaprasad Das, Nayagarh Autonomous College,
5) Laxmidhar Mishra, Chairman, H.O.D.
6) Rajendra Kumar Jena, Member, Nayagarh Auto College.
7) Prafulla Kumar Pradhan

.....A meeting of the Board of Studies was held on 27th Feb. 2015 in the Deptt. room with the members of the Board of Studies under the chairmanship of the H.O.D. English. The minutes of the last meeting were read and passed.

As the Govt. is proposing to introduce common syllabus in all the Universities and Autonomous Colleges of Odisha, it is unanimously resolved not to change the syllabus for the current academic session.

The meeting ended with a vote of thanks to all the members present

S.U.D. Mishra
PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

L. Mishra
H.O.D. English
27.2.15
Chairman.

Meeting of the Board of Studies on 19.1.16 at 11a.m.
(English Deptt.)

Members Present:

1) Rajendranath Mohan
2) Pradip Kumar Samantaray
3) Laxmidhar Mishra
4) Prafulla Kumar Pradhan
5) Keshaba Chandra Rautray
6. Shibaprasad Sahu
7. Baishnab Charan Sahu
8. Gajendra Kumar Jena.

A meeting of the Board of Studies in English was held on 19.1.16 at 11am in the Deptt Room under the chairmanship of Mr Laxmidhar Mishra, H.O.D., English. As C.B.C.S syllabus is adopted for this session, that is 2015-2016, it is resolved to have NO CHANGE in the New Syllabus. As ~~only~~ syllabus is only available for the first two Semesters it is proposed to look into the next Semester Syllabi and take appropriate decision lateron.

The meeting ended with thanks to all the members.

L. Mishra
19.1.16
H.O.D. Eng.
Chairman

S.K. Pradhan
PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE

Meeting of the Board of Studies on the 11th August 2017 at 11.00 a.m. (Deptt. of English)

Members Present:

1- Sri Laxmidhar Mishra, H.O.D., Chairman.
2- Shibaprasad Das, Deptt. of English
3- Shishir Barik, Dept. of English
4- Bikram Ranjan Sahu
5- Keshaba Chandra Rautray,
6- Ishab Mishra
7- Sudarsan Sahoo, Dept. of J&MC. Berhampur University

A meeting of the Board of Studies was held on 11.08.17 at 11.00 am in the Dept. Room under the chairmanship of Sri Laxmidhar Mishra, H.O.D. English. It was unanimously resolved to have no change in the syllabus.

The C.B.C.S. syllabus for all semesters was duely approved. *LCS & CR are to be offered as value added courses.

The meeting ended with a vote of thanks to all.

* LCS = Life Coping Skill
CR = Corporate Readiness

L. Mishra
11.8.17
H.O.D. English
Chairman.

Meeting of the Board of Studies

at 11:00 a.m. on the 19th Sept. 2018.

Members Present :-

1. Laxmidhar Mishra, Head, Dept. of English
2. Bikram Keshari Rout, Head, Dept. of English G.I.F.T.
3. Sudarsan Sahoo, School of Mass Communication, KIIT
4. Shibaprasad Dey, Dept. of English
5. Jogendra Parida, Dept. of English
6. Shishir Barik, Dept. of English
7. Keshab Chandra Rauta, Dept. of English

There was held a meeting of the Board of Studies in English at 11 a.m. on 19/09/18 in the Department Room under the Chairmanship Mr Laxmidhar Mishra, HOD. English. Though it was unanimously resolved to have no change in the syllabus, members felt the need of incorporating two new topics to unit 2 of the SEC-I course, i.e. SOFT SKILLS offered for SEM-3. As SOFT SKILLS include communication skills, work ethics, etc. members laid emphasis on incorporation of such basic features into the design from the session 2018-19.

The meeting ended with a vote of thanks to all members present.

L. Mishra
19.09.18.
Head, Dept. of English
Chairperson

Meeting of the Board of Studies at 11:00 a.m. on the 6th Nov. 2019

Members Present :-

1- Laxmidhar Mishra, H.O.D., Chairman
2 — Gangadhar Dash, S.B. Khandapada
3- Bikram Keshari Rout, GIFT, Bhubaneswar
4. Biswa Ranjan Sahoo, Lecturer in English Banki College
5. Alakananda Mishra - Associate Prof. R.D. Women's University, Bhubaneswar
6. Shila P. Dash Nayagarh (A) College, Nayagarh
7. Keshaba Chandra Rautray, Nayagarh (A) College, Nayagarh
8. Jogendra Parida Nayagarh Auto. College, Nayagarh
9. Ashab Mishra Nayagarh Auto. College, Nayagarh
10. Shishir Barik, Nayagarh Auto. College, Nayagarh

There was held a meeting of the Board of Studies in English at 11 am. on 6/11/2019 in the Department Room under the chairmanship of Mr Laxmidhar Mishra, HOD, English.

To begin with, as requested by Controller of Exams., it was resolved in the meeting that Communicative English - Special Course as SECC-1 would be offered to all Second Year Students (academic batch 2018-19) pursuing UG Courses in Arts, Science and Commerce under Utkal University and the same course would be adopted by II yr. U.G. Students in 2019-20 (Vide letter No. 675/57/OSHEC, dated 16/02/2019 and No. 679/57/OSHEC, dated 16/02/2019 and letter No. COE/2047/2019, dated 30/07/2019 of Utkal University).

Secondly, it was approved in the meeting that in order to avoid confusion AECC syllabus for Commerce Students would be termed as AECC (English Communication) whereas AECC for Sc. and Arts students would be termed as AECC (Alternative English), as suggested by the

HISTORY

BOARD OF STUDIES: ~~2014-15~~ 2015-2016

Dt = 11.08.~~2014~~ 2015

Time - 11.00 AM

Venue: Dept Seminar Room

Members Present

* Prof. Prasanta Ku Pattnaik (HOD, Nayagarh Auto College) — Signature, 11.8.2015
* Prof. Basanta Ku Mallik (Prof. in Hist., U.U. Vanivihar) — Signature, 11.8.15
* Prof. Smt Sradhanjali Tripathy (P.S. College, Khandapara) — Signature, 11.8.15
* Prof. SK Esaque (Reader & Nayagarh Auto College) — Signature, 11-8-2015
* Prof. Md Osmar Mallick (Nayagarh Auto College) — Md Osmar, 11.8.2015
* Prof. Prasanta Ku Panda (Nayagarh Auto College) — Prasanta Ku Panda, 11.8.2015
* Prof. Dr. Santosh Ku Mallik (Nayagarh Auto College) — Santosh Kumar Mallik, 11-8-2015

Agenda

1. Preparation of Syllabus for various Courses keeping in view of the Stakeholders
2. Suggest panel of names to the Academic Council for appointment of Examiners
3. Co-ordination for research, teaching, extension and other academic activities in the Department
4. Suggest for innovative teachings and evaluation Techniques

S.K. Behera
PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

Resolution

01. The Agenda is discussed and it is resolved unanimously that the [redacted] year.

02. It is unanimously resolved to adopt latest techniques about the method of historical geography & Uptodate news method for import teachings:
All the staffs are required to undergo Orientation. Refresher as per the RUSA / UGC guidelines and norms. All are advised to attend the Dist, State and National level History Seminars.
About the evaluation work, the members of the Board likes to view on the +2 CHSE question setters so prepare the questions that to justify the standard of +2 Students & evaluation must be on a justified mode.

03. The names of the examiners are accepted after a brief discussion.

(a) Prof Jagannath Mallick - Banki A. College.
(b) Prof Biranchi Nayak - -do-
(c) Prof Shyam Sunder Rout - -do-
(d) Prof Aswini Ku Nayak. Odgaon College
(e) Prof Snehalata Dash. N.P.M. Mohavidyalaya.
(f) Prof Alekh Ch Bhuyan - Gadamitri College.
(g) Prof Basanta Ku Samantray - Raj Sunakhala College
(h) Prof Ms. Sandhyarani Tripathy P.S. College.
(i) Prof Ms Dipti Mandal - Nirmapan Arts College

S.K. Bal

BOARD OF STUDIES OF [illegible] 2016-2017

[illegible] 2016

[illegible] - 11.30 AM

Venue. Department Seminar Room

- Prof Prasanta Kr Pattnaik (HoD Nayagarh Auto College) — Prasanta Kr Pattnaik 14.8
- Prof Ashutosh Kr Nayak (HoD - R S Mahavidyalaya Odagaon) — [signature] 14.8
- Prof Basantalata Das (HoD - NFMM Nayagarh) — [signature] 14.8.16
- Prof Sk E Seque (Nayagarh Auto College) — [signature] 14.8.2016
- Prof - Md Omar Mallik. Nayagarh Auto College. — Md Omar Mallik 14.8.2016
- Prof Prasanta Kr Panda. Nayagarh Auto College. — Prasanta Panda 14.8.2016
- Prof Dr. Santosh Kr Mallik (Nayagarh Auto College) — Santosh Kumar Mallik 14.8.2016.

Discussions of the Meeting

01. The HOD has Presented one copy of Syllabus to all members and discussion continued about every aspects of the Syllabus - about Hons & Elective students. also Page 82-89 of the Syllabus. G-Elective is discussed in detail. Out of 4 option. 02 Papers on Indian history has to be accepted for the session 2016-2017

02. The Guests elaborate their experience on Syllabus and on teaching at University and various college level

03. The Guest are anxious to know about the every aspects of the department. Md. Omar Mallik gave a brief description about this. One Combined Photograph also snatched among the faculty & guests

S. K. [signature]

HISTORY

BOARD OF STUDIES - 2016-17 & 17-18

Dt - 11-08-2017 (Friday)

Time - 11:00 AM

Venue - Dept of History Seminar Room

Members Present.

- Prof Basanta Kumar Samantary — (Reader & HOD, Raj Sunakhala College) 11.08.17
- Prof Prafulla Kumar Rath. — 11/8/17 (Reader & HOD, Begunia College)
- Prof Smt Sradhanjali Tripathy, — 11.8.17 (P.S College, Khandapara)
- Prof SK Esaque — 11.8.17. (Reader & HOD History Nayagarh Auto-College)
- Prof Md Omer Mallick — 11.08.17 (Nayagarh Auto-College)
- Prof Parasanta Kumar Parida — 11.8.17 (Nayagarh Auto-College)
- Prof Dr Santosh Kumar Mallick — 11.08.17 (Nayagarh Auto-College, Nayagarh)

Agenda

01. Prepare of Syllabi for various courses keeping in view the objectives of the College, interest of the stakeholders and national requirement for consideration and approval of the Academic Council.
02. Suggestion of methodologies for innovative teaching & evaluation techniques.
03. Suggest panel of names to the Academic Council for appointment of examiners and
04. Coordinate research, teaching, extension and other academic activities in the Dept.

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Resolution

01 - Agenda is widely discussed & it is resolved unanimously that the old syllabus is to be approved for 2016-17 & 2017-18.

02. It is unanimously resolved to adopt latest technique - the historical geography, & uptodate news method to impart teaching. All the staff are required to undergo Orientation, Refresher as per the RUSA / UGC guideline. All are to attend the Dist, State & National level History seminars as far as practicable.

So far as evalution is considered, the Board likes to view on the +3 Question setters to prepare the questions that to justify the standard of +3 students.

Evalution are to be made in fair & justified way.

03. On the examiners, it is widely discussed & the names of following persons are accepted

(a) Prof Biranchi Nayak - Banki A. College.
(b) Prof Jaginath Mallick - -do-
(c) Prof Shyam Sundar Rout - -do-
(d) Prof Basanta Kumar Samatray - Begunia College
(e) Prof Prafulla Kumar Rath - Raj Sunakhala College
(f) Prof Alekh Ch. Bhuyan - Gadamanitri College
(g) Prof Mrs Dipti Nanda - Nimapara Au. College
(h) Prof Mrs Sradhanjali Mohanty - PS College, Khandapara
(i) Prof Aswini Kumar Nayak - R.S. Mahavidyalaya

S.K. Acharya

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NAYAGARH

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04. It is resolved to access the students of History Hons to Durdura Museum & to Udayapur, Nuagaon Museum & library for the knowledge of students & faculty.
The students are to have study tour to Khandagiri, Udayagiri, Dhauli, Historical Natural Museum, State Museum, & State Archives, places of historical importance.

05. It is also unanimously resolved to make necessary steps to have interlink among the History Depts of the District, Nayagarh & nearby colleges to have a healthy tradition to strengthen the cause of history.

The meeting is held with a co-ordial atmosphere with vote of thanks by Dr. Santosh Kumar Mallick at 01.57 pm.

Reported by Omer Malik

Signature

Principal, Nayagarh Autonomous College, Nayagarh

11.8.17
H.O.D. - HISTORY
NAYAGARH JR./AUTO. COLLEGE
NAYAGARH

(11-08-17)

1. Mrs. Sradhanjali Tripathy Lect. in History, P.S. College.
2. Sk Isaque. HOD Hist, OJO College, Khandapada
3. Basanta Kumar Samantaray Reader in History Raghunath ala college
4. Profulla Kumar Rath Reader in History Begunia College
5. Dr. Santosh Kumar Mallick Lecturer in History, Begunia
6. Prasanta Kumar Panda, Nayagarh Auto. College, Nayagarh Lecturer in History Nayagarh (A) Colle

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NAYAGARH

BOARD OF STUDIES - 2018-19.
Dt 19-09-2018 (Wednesday)
Time - 11.00 AM

Venue - Dept. of History Seminar Room.

Members Present:

(01) Sj Basanta Kumar Samantaray - Basanta Kumar Samantaray 19.9.18
Rtd - Reader & HOD, Raj Sunakhala College.

(02) Sj Prafulla Kumar Rath
Rtd - Reader & HOD, Begunia College Dt-Khurda. - Prafulla K Rath 19/9/18

(03) Smt Sradhanjali Tripathy
Lecturer (S.S.B) Dept of History - Sradhanjali Tripathi 19.9.18
P.S College, Khandapara, Dt-Nayagarh

(04) SK Esaque
HOD, Dept of History - [signature] 19.9.18
Nayagarh Auto-College

(05) Md Omer Mallik
Lect (G.A) Dept of History - Md Omer Mallik 19-09-18
Nayagarh Auto-College.

(06) Sj Prasanta Kumar Panda, - [signature] 19.9.18
Lect, Dept of History,
Nayagarh Auto-College,

(07) Dr Santosh Kumar Mallick,
Lect - (SSB) - Dept of History - [signature] 19.09.18
Nayagarh Auto - College -

Agenda.

01 - Prepare of Syllabi for various courses keeping in view the objectives of the College, interest of the stakeholders and national requirement for consideration and approval of the Academic Council.

02 - Suggestion of Methodology for innovative teaching & evaluation techniques.

03 - Suggest Panel of names to the Academic Council for appointment of examiners and

[signature]

5/1

04- Co-ordinate research, teaching, extention & other academic activities in the Dept.

Resolution :-

01- Agenda is widely discussed & it is resolved unanimously, that the syllabus is to be approved for 2018-19.

02. It is unanimously resolved to adopt latest technique - the historical geography & uptodate views method to impart teaching. All the staffs of the Dept. are required to undergo Orientation/ Refresher as per the RUSA/ UGC guideline. All are to attend the Dist./ State/ National seminars as far as practicable.

So far as evalution is concerned, the Board likes to view on the +2 CHSE Question setters to prepare the questions that to justify the standard of +2 students. Evalution are to be made in fair & justified way.

03- On the examiners, it is widely discussed & the names of following persons are accepted

(a) Sri Jagannath Mallick - retired, Banki A. College
(b) Sri Shyam Sundar Rout - -do-
(c) Sri Basanta Kumar Samantray, Raj Sunakhala College
(d) Sri Prafulla Kumar Rath - Begunia College
(e) Sri Alekha Chandra Bhuyan - Gadamanitri College
(f) Smt. Dipti Nanda - Nilamadhapara College
(g) Sri Aswini Kumar Nayak. RSM, Odagaon

H.O.D. HIST. NAYAGARH JR. AUT.

(b) Smt Sradhanjali Shripathy - P.S College, Khandapara.

04. It is resolved to access the Students of History Hons- to Durgapur Museum & to Udayapur, Nuagaon Museum & Library for the Knowledge of Students & faculties.
The students are to have study tour to Khandagiri, Udayagiri, Dhauli, Historical Natural Museum, State Museum & State Archives, places of historical importance.

05. It is also unanimously resolved to make necessary steps to have interlink among the History Depts-s of the District, Nayagarh & nearby Colleges to have a healthy tradition to strengthen the Cause of history.

06- It is unanimously resolved to suggest to (DSE) replace the History of USAmerica with the History of Odisha - enlarge - the enpower the Odisha students about the History & Culture of the State.

The meeting is come to an end with vote thanks by Dr Santosh Kumar Mallick.

Depster- Md Omer Mallick

Signature

01- Sj Basanta Kumar Samantary - 19.9.18
02- Sj Prafulla Kumar Rath - 19/9/18
03- Smt Sradhanjali Shripathy - 19.9.18
04- SK Esque 19.9.18
05- Md Omer Mallick - 19-09-18
06- Sri Prasanta Kumar Parida - 19.9.18
07- Dr Santosh Kumar Mallick

H.O.D. HISTORY
NAGARH JUNIOR COLLEGE
NAYAGARH

57

Dt 06-XI-19
(Wednesday)

Venue - Seminar Room

[illegible] of all, the HOD has welcomed all the member of the Board of Study.

The HOD has instructed Md Omer Mallik, the faculty member to introduce Dr Mrs Jayanti Dora (the Prof in the Dept of History, Vani Vihar) the nominee of Hon'ble Vice Chancellor of Utkal University for this Board of Study

Members Present -

01- Dr Mrs Jayanti Dora — [signature] 6.11.19
02 · Prof AIeKRLCh - Bhuyan — (Principal, Jadupur [illegible] College) [signature]
03 · Er SK Yusuf — [signature] 6/11/2019
04 - SK Esaque (HOD) [signature] 06.11.19
05 - Prof Aswinikumar Nayak — [signature] 6.11.19 (Principal, R.S Mahavidyalaya, Odagaon)
06 - Mrs Sradhanjali Tripathy — [signature] 06.11.19 (P.S College, Khandapara)
07 - Mr Prasanta Kumar Panda — [signature] 6.11.19
08 - Dr Santosh kumar Mallick — [signature] 06.11.2019
09 - Md Omer Mallick - MdOMlk 06-XI-19

Discussion & decission made

01 - The HOD has presented one copy of the Syllabus to Dr Dora. Madam Dora has entered into discussion with the members regarding every aspects of the Syllabus. A discussion is looked to Generic Elective.

Page No 19, covering of elective is discussed in detail. Out of 04 options presented by the University, 02 papers on Indian History are to be accepted for this session - 2019-20

[signature]

(i) Prof. Shyam Sundar Nanf Brinke Auto College

07- Dr. the Dean has suggested for Academic Flexibility
- Paper publication / Seminar / Book Publication / Study tour / Smart Class & above all experience.
The faculty members of the Dept — have accepted the suggestion & are to advance more in this regard -

08 We all also shared our views of the need of the study of history, the art of teaching history & to be flexible to the study & students mass at all and at large.

HOD 06.11.19

H.O.D. - HISTORY
NAYAGARH JR./AUTO. COLLEGE
NAYAGARH

Written by
Md Omer Mallik
06-XI-19

06.11.19

06.11.19

PRINCIPAL
NAYAGARH AUTONOMOUS COLLEGE
NAYAGARH

S.K. Dash
PRINCIPAL
NAYAGARH ... COLLEGE
NAYAGARH

ODIA

NC

ରାଜ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ, ଶିଓଲୀ ସଂସ୍ଥାନ

ସ୍ଥାନ: ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ - ପ୍ରକୋଷ୍ଠ, ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ତା ୨୪-୨-୨୦୧୫।

ଗତ ତା ୨୪-୨-୨୦୧୫, ବୁଧବାର ପୂର୍ବାହ୍ନ ୧୧ ଘଣ୍ଟା ସମୟରେ ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ ପ୍ରକୋଷ୍ଠରେ ୨୦୧୪-୧୫ ଶିକ୍ଷାବର୍ଷର ସ୍ନାତକ ପ୍ରଥମ, ଦ୍ୱିତୀୟ ଓ ତୃତୀୟ ବର୍ଷ / ସ୍ନାତକୋତ୍ତର ପ୍ରଥମ ଦ୍ୱିତୀୟ ବର୍ଷ ନିମନ୍ତେ ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ ବୈଠକ ବିଭାଗୀୟ ମୁଖ୍ୟ ଡ. ଚନ୍ଦ୍ରଲକ୍ଷ୍ମୀ ପରିଡ଼ାଙ୍କ ଅଧ୍ୟକ୍ଷତାରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା।

ଉକ୍ତ ବୈଠକରେ ଓଡ଼ିଆ ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦର ନିମ୍ନ ସ୍ୱାକ୍ଷରକାରୀ ସଦସ୍ୟମାନେ ଉପସ୍ଥିତ ରହି ପାଠ୍ୟ ଆଲୋଚନାରେ ଅଂଶ ଗ୍ରହଣ କରିଥିଲେ।

ଉପସ୍ଥିତ ସଦସ୍ୟ ମାନଙ୍କ ସ୍ୱାକ୍ଷର।

୧. ଡ. [illegible] - [illegible]
୨. ପ୍ରଫେସର [illegible] ମହାପାତ୍ର - [illegible] ମହାପାତ୍ର
୩. ଡ. [illegible] ଦାସ - [illegible]
୪. ଡ. ଚନ୍ଦ୍ରଲକ୍ଷ୍ମୀ ପରିଡ଼ା - ଚନ୍ଦ୍ରଲକ୍ଷ୍ମୀ ପରିଡ଼ା
୫.

ଉପସ୍ଥିତ ସଦସ୍ୟମାନଙ୍କ ଆଲୋଚନାକ୍ରମେ [illegible] ତଥା ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ପ୍ରଣୀତ ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମରେ କୌଣସି ପ୍ରକାର ପରିବର୍ତ୍ତନର ଆବଶ୍ୟକତା ନଥିବା ସର୍ବସମ୍ମତ ଭାବେ [illegible] ୨୦୧୫-୧୬ ଶିକ୍ଷାବର୍ଷ ନିମନ୍ତେ ପାଠ୍ୟକ୍ରମରେ ପରିବର୍ତ୍ତନ କରାଯାଇ ନାହିଁ। ଏହା ସର୍ବସମ୍ମତିକ୍ରମେ ଗୃହୀତ ହେଲା।

ପରିଶେଷରେ ସଭା ସମିତିରେ [illegible] ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା ଉକ୍ତ ବୈଠକରେ ଉପସ୍ଥିତ ସଦସ୍ୟ ସଦସ୍ୟାଙ୍କୁ ଧନ୍ୟବାଦ ଅର୍ପଣ ପୂର୍ବକ ବୈଠକ ସମାପ୍ତ ଘୋଷଣା କରାଗଲା।

ଚନ୍ଦ୍ରଲକ୍ଷ୍ମୀ ପରିଡ଼ା
ତା ୨୪.୨.୧୫
ସଭାପତି, ଓଡ଼ିଆ ବିଭାଗ

ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ, ବୈଠକ ସଂଖ୍ୟା - ୧୦

ସ୍ଥାନ : ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ - ପ୍ରକୋଷ୍ଠ, ନବରଙ୍ଗପୁର ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ତା ୧୮-୧-୨୦୧୬ .

ଅଦ୍ୟ ତା ୧୮-୧-୨୦୧୬, ମଙ୍ଗଳବାର ପୂର୍ବାହ୍ନ ୧୧ ଘଟିକା ସମୟରେ ନବରଙ୍ଗପୁର ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗୀୟ ପ୍ରକୋଷ୍ଠରେ ୨୦୧୫-୧୬ ଶିକ୍ଷାବର୍ଷର +୩ ପ୍ରଥମ ବର୍ଷ କଳା ଓ ବିଜ୍ଞାନ ଶ୍ରେଣୀ ପାଇଁ ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ନିମନ୍ତେ ବିଭାଗୀୟ ମୁଖ୍ୟ [illegible] ଙ୍କ ସଭାପତିତ୍ୱରେ ଏକ ବୈଠକ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ଏହି ବୈଠକରେ ଓଡ଼ିଆ ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦର ନିମ୍ନ ସ୍ୱାକ୍ଷରକାରୀ ସଦସ୍ୟଗଣ ଉପସ୍ଥିତ ରହି ପାଠ୍ୟକ୍ରମ ପ୍ରସ୍ତୁତିରେ ଅଂଶ ଗ୍ରହଣ କରିଥିଲେ ।

ଉପସ୍ଥିତ ସଦସ୍ୟ ମାନଙ୍କର ସ୍ୱାକ୍ଷର :

୧. [illegible] - [illegible]
୨. [illegible] [illegible]
୩. [illegible]
୪. [illegible]
୫. [illegible]
୬.
୭.

ଉପସ୍ଥିତ ସଦସ୍ୟମାନଙ୍କ ଆଲୋଚନା କ୍ରମେ ଉଚ୍ଚଶିକ୍ଷା ବିଭାଗର 'ପସନ୍ଦ ଓ [illegible] ପାଠ୍ୟକ୍ରମ (CBCS) ୨୦୧୫-୧୬ ଅନୁଯାୟୀ ନବରଙ୍ଗପୁର ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟର ପ୍ରଥମ, ଦ୍ୱିତୀୟ ଓ ତୃତୀୟ ବର୍ଷ ପାଇଁ ପାଠ୍ୟ ଖସଡ଼ା ପ୍ରସ୍ତୁତ କରାଗଲା ।

୧) ପ୍ରଥମ ବର୍ଷର +୩ ପ୍ରଥମ ବର୍ଷ କଳା ଓ [illegible] ର [illegible] ଓଡ଼ିଆ ପାଇଁ [illegible] ଓ ଭାଷା ସାହିତ୍ୟକୁ ଗ୍ରହଣ କରାଗଲା ।

୨) ପ୍ରଥମ ବର୍ଷାନ୍ତ ଓ ଦ୍ୱିତୀୟ ବର୍ଷାନ୍ତ +୩ ପ୍ରଥମ ବର୍ଷ କଳା ଶ୍ରେଣୀ ପାଇଁ [illegible] 'ଶୁଦ୍ଧ ଲିଖନ କଳା'କୁ ଗ୍ରହଣ କରାଗଲା । ~~[illegible]~~

୩) ସ୍ନାତକ ଓଡ଼ିଆ ବିଭାଗ ପାଇଁ ପାଠ୍ୟକ୍ରମରେ [illegible] ସଂପୂର୍ଣ୍ଣ ଗ୍ରହଣ କରାଗଲା ।

S. K. [illegible]

୭. +3 ପ୍ରଥମବର୍ଷ (2015-16) ପାଇଁ ୪ଟି ଡିଏସଇ ପତ୍ରର ପାଠ୍ୟକ୍ରମ
ରେ ସ୍ୱତନ୍ତ୍ର ବିଷୟ ରୂପେ (Discipline Specific Elective)
ଗୁଡ଼ିକ ପ୍ରସ୍ତୁତ କରାଯାଇଥିଲା । ଏହି ପତ୍ରଗୁଡ଼ିକରେ
'ଲୋକ ଓ ଲୋକ ସାହିତ୍ୟ ଅଧ୍ୟୟନ' ଓ ପ୍ରୟୋଗ ରୂପେ ଏବଂ
'ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ' ଭଳି ବିଷୟ ଗୁଡ଼ିକ ରହିଥିଲା ।
ଏହି ପତ୍ରଗୁଡ଼ିକ ପାଇଁ ଦ୍ୱିତୀୟ ପତ୍ରରେ 'ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତି'କୁ
ଗ୍ରହଣ କରାଯାଇଥିଲା ।

୮. +3 (2015-16) ବର୍ଷ ଦ୍ୱିତୀୟ ବର୍ଷ ପତ୍ରଗୁଡ଼ିକ ପାଇଁ ... ପତ୍ର ପାଇଁ ... ଗ୍ରହଣ କରାଯାଇଥିଲା ।

ପରିଶେଷରେ ବୈଠକର ସମସ୍ତ ସଦସ୍ୟଙ୍କୁ
ଧନ୍ୟବାଦ ଅର୍ପଣ କରାଯାଇ ବୈଠକ ସମାପ୍ତ କରାଗଲା ।

ଡ. ... ପଣ୍ଡା
ତା. ୧୮-୯-୨୦୧୫
ବିଭାଗୀୟ ମୁଖ୍ୟ

S.K. [signature]

PRINCIPAL
NAYAGARH ... COLLEGE
NAYAGARH

ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ, ବୈଠକ ସଂଖ୍ୟା, ତା ୧୧.୮.୧୬.
ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ, ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ

ମୁ. (Wed.)

ଆଜି ତା ୧୧.୮.୧୬ ରିଖ ପୂର୍ବାହ୍ନ ୧୧ ଘଟିକା ସମୟରେ ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ ର ପାଠଗୃହ । ପ୍ରକୋଷ୍ଠରେ ୨୦୧୬-୧୭ ଶିକ୍ଷାବର୍ଷ ର ସ୍ନାତକ ଓ ସ୍ନାତକୋତ୍ତର [illegible] ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ ର ଏକ ବୈଠକ ବିଭାଗୀୟ ମୁଖ୍ୟା ଦ. [illegible] ଙ୍କ ଅଧ୍ୟକ୍ଷତାରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା ।

୪ ଉକ୍ତ ବୈଠକରେ ଓଡ଼ିଆ ପାଠ୍ୟ ନିର୍ଦ୍ଧାରଣ ପରିଷଦର ସମସ୍ତ ସମ୍ମାନନୀୟ ସଦସ୍ୟ/ସଦସ୍ୟାମାନେ ଉପସ୍ଥିତ ରହି ପାଠ୍ୟ ପ୍ରସଙ୍ଗ

୨। ଉପସ୍ଥିତ ସଦସ୍ୟ / ସଦସ୍ୟାଙ୍କ ସ୍ୱାକ୍ଷର:

(୧) ନବୀନ କୁମାର ନାୟକ.
(୨) ମୃତ୍ୟୁଞ୍ଜୟ ପଟ୍ଟନାୟକ.
(୩) ବିଜୟ କୁମାର ବେହେରା।
(୪) [signature]
(୫) ଜ୍ୟୋତ୍ସ୍ନାରାଣୀ ମହାରାଣା
(୬) ରାଜକୁମାରୀ ବେହେରା
(୭) [signature]
(୮) ସନ୍ଦେଶ ବେହେରା
(୯) ଉତ୍ତମ କୁମାର ମିଶ୍ର-
(୧୦)

ଉପସ୍ଥିତ ସଦସ୍ୟା / ସଦସ୍ୟା ମାନଙ୍କ ଆଲୋଚନା ପରେ ପାଠ୍ୟକ୍ରମ ସମ୍ବନ୍ଧିତ ହୋଇ ସର୍ବସମ୍ମତି କ୍ରମେ ନିମ୍ନଲିଖିତ ସିଦ୍ଧାନ୍ତ ନିଆଗଲା ।

(୧) +୩ ପ୍ରଥମ ବର୍ଷ (2015-16) ସାହିତ୍ୟ ୪ର୍ଥ ସେମିଷ୍ଟର ପାଠ୍ୟକ୍ରମରେ ଗୁଚ୍ଛ ଭିତ୍ତିକ ବୈକଳ୍ପିକ ପାଠ (Discipline specific Elective) 'ନାଟକ ଓ ଏକାଙ୍କିକା ସାହିତ୍ୟ' ପ୍ରଥମ ଖଣ୍ଡ ର ବଦଳରେ 'ପ୍ରତିଶୋଧ ... ' କୁ ଗ୍ରହଣ କରାଗଲା ।

(୨) +୩ ପ୍ରଥମ ବର୍ଷ (2015-16) ର ଷଷ୍ଠ ସେମିଷ୍ଟର ପାଠ୍ୟକ୍ରମରେ ଦ୍ୱିତୀୟ ଗୁଚ୍ଛ ଭିତ୍ତିକ ବୈକଳ୍ପିକ ପାଠ (Discipline specific Elective)

S. K. [signature]

[illegible] '[illegible]' ଶୀର୍ଷକ [illegible] ।
ଏବଂ '[illegible]' ଶୀର୍ଷକ Project Paper [illegible] ।

(୨) +3 [illegible] (2015-16) [illegible] Core - 19 [illegible] ।

(୩) +3 [illegible] (2015-16) [illegible] Core Course P.G. 2 [illegible] (୨, ୩, ୪, ୫) [illegible] ।

(୪) (2015-16) ବର୍ଷର [illegible] Core Course P.G. 2 [illegible] ।

(୫) 2015-16 ବର୍ଷର [illegible], 2016-17 ଓ 2017-18 [illegible] ।

ଡ. [illegible]

[illegible], ଓଡ଼ିଆ [illegible]

S.C. [illegible]

PRINCIPAL

NAYAGARH [illegible] COLLEGE

[illegible]

ପାଠ୍ୟ ପର୍ଯ୍ୟାଲୋଚନା ପରିଷଦ, ବୈଠକ ସଂଖ୍ୟା-୧୨, ତା ୧୯।୦୯।୨୦୧୮
ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗ, ନବରଙ୍ଗପୁର ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ, ନବରଙ୍ଗପୁର ।

ଆଜି ତା ୧୯।୦୯।୨୦୧୮ ରିଖ ବୁଧବାର ପୂର୍ବାହ୍ନ ୧୧ ଘଟିକା ସମୟରେ ନବରଙ୍ଗପୁର ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗର ପାଠକକ୍ଷରେ ୨୦୧୮-୧୯ ଶିକ୍ଷାବର୍ଷର ସ୍ନାତକ ପ୍ରଥମ ଓ ଦ୍ୱିତୀୟ/ତୃତୀୟ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ନିମନ୍ତେ ପାଠ୍ୟ ପର୍ଯ୍ୟାଲୋଚନା ପରିଷଦର ଏକ ବୈଠକ ବିଭାଗ ମୁଖ୍ୟ ଡ. ଗୋବିନ୍ଦ ଚନ୍ଦ୍ର ଦାଶଙ୍କ ସଭାପତିତ୍ୱରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା ।

ଉକ୍ତ ବୈଠକରେ ଓଡ଼ିଆ ପାଠ୍ୟ ପର୍ଯ୍ୟାଲୋଚନା ପରିଷଦର ସମସ୍ତ ସ୍ଥାୟୀ ସଦସ୍ୟ/ସଦସ୍ୟାମାନେ ଉପସ୍ଥିତ ରହି ପାଠ୍ୟକ୍ରମ ପ୍ରସଙ୍ଗରେ ଆଲୋଚନା କରିଥିଲେ ।

ଉପସ୍ଥିତ ସଦସ୍ୟ/ସଦସ୍ୟାଙ୍କ ସ୍ୱାକ୍ଷର :

୧. [signature]
୨. [signature]
୩. [signature]
୪. [signature]
୫. [signature]
୬. [signature]
୭. [signature]
୮. [signature]

ଉପସ୍ଥିତ ସଦସ୍ୟ/ସଦସ୍ୟାମାନଙ୍କ ଆଲୋଚନା ଭିତ୍ତିରେ ପାଠ୍ୟକ୍ରମ ପୁନର୍ଗଠିତ ହୋଇ ସର୍ବସମ୍ମତିକ୍ରମେ ସମସ୍ତ ପ୍ରସ୍ତାବମାନ ଗୃହୀତ ହେଲା-

(୧) ୨୦୧୮-୧୯ ବର୍ଷର ପାଠ୍ୟ ବ୍ୟବସ୍ଥା ଅନୁଯାୟୀ Core Course ର ପ୍ରଥମ ପର୍ଯ୍ୟାୟରୁ ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ ପର୍ଯ୍ୟନ୍ତ ପାଠ୍ୟ ବିଷୟଗୁଡ଼ିକ ଅପରିବର୍ତ୍ତିତ ରହିଲା ।

(୨) Core Course ର ପଞ୍ଚମ ପର୍ଯ୍ୟାୟ (ସେମିଷ୍ଟର ୫) ର ପ୍ରଥମ ଏକକରେ ଥିବା ସାରଳା ମହାଭାରତ ସଭାପର୍ବ ପରିବର୍ତ୍ତେ ସାରଳା ମହାଭାରତରେ ~~[illegible]~~ ମୂଷିକ ପର୍ବ ପାଠ୍ୟ ରହିବ, ଗ୍ରହଣ କରାଗଲା ।

C.K. [signature]

ପ୍ରଥମ Core Course ୧୧ ର ଦ୍ୱିତୀୟ ଅଧ୍ୟାୟରେ ଥିବା ଈଶ୍ୱର ମହାନ୍ତିଙ୍କ 'ଶୋଭନା' ଓ 'ଇନ୍ଦ୍ର ପ୍ରତିମା' ପରିବର୍ତ୍ତନ କରାଯାଇ ନାଥାସଙ୍କ 'ଚିତ୍ରିଣୀ' ଓ 'ପ୍ରୀତି' ଗଳ୍ପ ଗ୍ରହଣ କରାଗଲା।

(୩) ଷଷ୍ଠ ପର୍ଯ୍ୟାୟର Core Course ୧୩ ସଂଖ୍ୟା ୧୩ ଓ ୧୪ ରେ ଅଧିକନ୍ତୁ ପାଠ୍ୟକ୍ରମ (୨୦୧୯-୨୦ ପାଠ୍ୟ ବର୍ଷରୁ) ଅପରିବର୍ତ୍ତିତ ରଖାଗଲା।

(୪) ଗୁରୁକ୍ଷଳା ବୈକଳ୍ପିକ ବିଶେଷ ପାଠ୍ୟ (DSE) – ୧ ରେ ଥିବା Course-5 ର ଅଧ୍ୟାୟ ସଂଖ୍ୟା ... ... ପାଠ୍ୟଥିବା 'ପ୍ରାଚୀନ ମଧ୍ୟକାଳୀନ କବିତା' 'ବୀର ବିହାରୀ' ଓ 'ମନୋବୋଧ ଚଉତିଶା' ପରିବର୍ତ୍ତେ 'ରାମଙ୍କ ବନ୍ଦନା' ଓ 'ଜେମା ବିହାରୀ' କୁ ଗ୍ରହଣ କରାଗଲା।

(୫) DSE-୨ ... ବିଭାଗରେ Course-8 କୁ ଗ୍ରହଣ କରାଯାଇ ନୂଆ ପାଠ୍ୟକ୍ରମ ରଖାଗଲା। DSE-୩ ରେ Course-4 କୁ ଗ୍ରହଣ କରାଯାଇ ଅପରିବର୍ତ୍ତିତ ରଖାଗଲା।

(୬) ଆନ୍ତଃ ବିଭାଗୀୟ ସାଧାରଣ ବୈକଳ୍ପିକ ପାଠ (GE) ର ପ୍ରଥମ ଓ ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ ନିମନ୍ତେ Core Course-2 କୁ ଏବଂ ତୃତୀୟ ଓ ଚତୁର୍ଥ ପର୍ଯ୍ୟାୟ ନିମନ୍ତେ Core Course-4 କୁ ଅପରିବର୍ତ୍ତିତ ରୂପେ ପାଠ୍ୟ ନିମନ୍ତେ ଗ୍ରହଣ କରାଗଲା।

ପରିଶେଷରେ ବୈଠକରେ ଉପସ୍ଥିତ ସମସ୍ତ ସଦସ୍ୟ/ସଦସ୍ୟାମାନଙ୍କୁ ଧନ୍ୟବାଦ ଅର୍ପଣ କରାଯାଇ ପାଠ୍ୟ ସମିତିର ବୈଠକ ସମାପ୍ତି ଘୋଷଣା କରାଗଲା।

ଅନୁମୋଦିତ।

ନଳିନ କୁମାର ... ୧୨.୦୫.୨୦୧୯

... ୧୨/୫/୨୦୧୯

... ୧୨.୫.୨୦୧୯

... ୧୨.୦୫.୧୯

... ୧୨.୦୫.୨୦୧୯

... ୧୨.୦୫.୨୦୧୯

... ୧୨.୦୫.୨୦୧୯

... ଓଡ଼ିଆ ବିଭାଗ

S.K. Dash

ପାଠ୍ୟକ୍ରମ ନିର୍ଦ୍ଧାରଣ ପରିଷଦ, ବୈଠକ ସଂଖ୍ୟା: ୧୩

ସ୍ଥାନ: ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ବିଭାଗୀୟ ପ୍ରକୋଷ୍ଠ
ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ, ନୟାଗଡ଼
ଦିନାଙ୍କ: ୦୬.୧୧.୨୦୧୯

ଅଦ୍ୟ ତା ୦୬.୧୧.୨୦୧୯ ରିଖ, ବୁଧବାର ପୂର୍ବାହ୍ନ ୧୧ ଘଣ୍ଟା ସମୟରେ ନୟାଗଡ଼ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଓଡ଼ିଆ ଭାଷା-ସାହିତ୍ୟ ବିଭାଗର ପ୍ରକୋଷ୍ଠରେ ୨୦୧୯-୨୦ ଶିକ୍ଷାବର୍ଷର ସ୍ନାତକ ସମ୍ମାନ, ଆଧୁନିକ ଭାରତୀୟ ଭାଷା (ଓଡ଼ିଆ) ଓ ନିର୍ବାଚିତ ଓଡ଼ିଆ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ନିମନ୍ତେ ପାଠ୍ୟକ୍ରମ ନିର୍ଦ୍ଧାରଣ ପରିଷଦର ଏକ ସାଧାରଣ ବୈଠକ ବିଭାଗୀୟ ମୁଖ୍ୟ ଡ. ଗୋବିନ୍ଦଚନ୍ଦ୍ର ଦାଶଙ୍କ ଅଧ୍ୟକ୍ଷତାରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ଉକ୍ତ ବୈଠକରେ ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମ ନିର୍ଦ୍ଧାରଣ ପରିଷଦର ନିମ୍ନ ସ୍ୱାକ୍ଷରକାରୀ ସଭ୍ୟବୃନ୍ଦ ଉପସ୍ଥିତ ରହି ପାଠ୍ୟଖସଡ଼ା ପ୍ରସ୍ତୁତ ଓ ବିମର୍ଶରେ ସକ୍ରିୟ ଅଂଶ ଗ୍ରହଣ କରିଥିଲେ ।

ଉପସ୍ଥିତ ସଭ୍ୟବୃନ୍ଦଙ୍କ ସ୍ୱାକ୍ଷର

କ୍ର.ସଂ:
୦୧. ଡ. ବସ୍ତୁପ୍ରିୟା ଓତା — [signature] ୦୬.୧୧.୧୯
୦୨. ଡ. ପ୍ରେମାନନ୍ଦ ମହାପାତ୍ର — ପ୍ରେମାନନ୍ଦ ମହାପାତ୍ର
୦୩. ଡ. ପ୍ରଦୀପ କୁମାର ଚୌଧୁରୀ — ପ୍ରଦୀପ କୁମାର ଚୌଧୁରୀ
୦୪. ରାମକୃଷ୍ଣ ରଥ — ରାମକୃଷ୍ଣ ରଥ
୦୫. ରାଜକୁମାରୀ ବେହେରା — ରାଜକୁମାରୀ ବେହେରା
୦୬. ଡ. ଗୋବିନ୍ଦଚନ୍ଦ୍ର ଦାଶ — [signature]
୦୭. ଡ. ବାନାମ୍ବର ସ୍ୱାଇଁ — ପୀତାମ୍ବର ସ୍ୱାଇଁ
୦୮. ସହଦେବ ବେହେରା — ସହଦେବ ବେହେରା ୦୬.୧୧.୨୦୧୯ S.K. [signature]
୦୯. ଜ୍ୟୋତ୍ସ୍ନାଞ୍ଜଳି ମହାରାଜ — ଜ୍ୟୋତ୍ସ୍ନାଞ୍ଜଳି ମହାରାଜ
୧୦. ବିଦ୍ୟୁଲତା ପଣ୍ଡା — ବିଦ୍ୟୁଲତା ପଣ୍ଡା /୦୬.୧୧.୧୯

ଉପସ୍ଥିତ ସଭ୍ୟମାନଙ୍କ ଆଲୋଚନା କ୍ରମେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ପ୍ରଚଳିତ ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମରେ କୌଣସି ପରିବର୍ତ୍ତନର ଆବଶ୍ୟକତା ନ ଥିବା ଅଧ୍ୟସଭ୍ୟ ଅନୁଭବ କରି ଗତ ୨୦୧୯-୨୦ ଶିକ୍ଷାବର୍ଷ ନିମନ୍ତେ ପାଠ୍ୟକ୍ରମରେ ପରିବର୍ତ୍ତନ କରାଗଲାନାହିଁ ଏହା ସର୍ବସମ୍ମତ କ୍ରମେ ଗୃହୀତ ହେଲା । ପରିଶେଷରେ ଭାଷା-ସାହିତ୍ୟର ସାମ୍ପ୍ରତିକ ପ୍ରଗତି ସମ୍ପର୍କରେ ସଂକ୍ଷେପ ଆଲୋଚନା ପୂର୍ବକ ସଦସ୍ୟମାନଙ୍କୁ ଧନ୍ୟବାଦ ଅର୍ପଣ ସହିତ ବୈଠକ ଶେଷ କରାଯାଇଥିଲା

[signature] ୦୬.୧୧.୨୦୧୯
ବିଭାଗୀୟ ମୁଖ୍ୟଙ୍କ ସ୍ୱାକ୍ଷର .