रानी दुर्गावती विश्वविद्यालय
Rani Durgavati Vishwavidyalaya
(Formerly, University of Jabalpur)
(NAAC Accredited Grade "B" University)

सरस्वती विहार, पचपेढ़ी, जबलपुर–482001 (म.प्र.)
Saraswati Vihar, Pachpedi, Jabalpur-482001 (M.P.)

Programme outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the Programmes offered by the Institution

Department of PG Studies and Research in Ancient Indian History, Culture and Archaeology

Programme Offered

1. M.A. Ancient Indian History, Culture and Archaeology
2. Ph.D. Ancient Indian History, Culture and Archaeology

M.A. Ancient Indian History, Culture and Archaeology

This criterion describes the level of knowledge and understanding, skills and competencies, attitudes and values which a student of M.A. Ancient Indian History, culture and Archaeology occupies after the completion of the programme. The programme has been designed for the learning experiences and assessment procedures to be applied in such a way that the student gets a fair opportunity to attain the intended program learning outcome. The qualification descriptors would mirror the understanding and knowledge related to Ancient Indian History, culture and Archaeology as well as the generic skills including global competencies which the student of this programme shall acquire.

The student after the completion of the program should be able to apply the disciplinary knowledge and transferable skills acquired to new context and should be able to identify and analyse problems and seek solutionsto them in real life situations. He should be able to apply the acquired subject-related skills to employment opportunities.

PROGRAMME OUTCOMES:

PROGRAMME SPECIFIC OUTCOMES:

PSO-1. The programme specific outcomes relating to M.A. Ancient Indian History, culture and Archaeology Programme are given as under:

PSO-2. Demonstrate a set of basic skills of communication and explication of the subject practices with clarity.

PSO-3. Demonstrate a coherent and systematic knowledge of the field of Ancient Indian History, culture and Archaeology showing an understanding of various civilizations and cultural developments in relation tothe specific field of the subject.

PSO-4. Display an ability to understand various antiquities and their importance.

PSO-5. Display an ability to find out Archaeological sites for excavation.

PSO-6. Display an ability to survey of Archaeological and Historical sites.

PSO-7. Display an ability to understand the importance of Manuscripts and Inscriptions.

PSO-8. Apply appropriate methodologies for the development of the creative and analytical ability of the student.

PSO-9. Ability to learn and use methods of conservation and preservation of antiquities.

PSO-10. To enable the student to develop an awareness of the ancient history and cultural richness of India as animportant outcome of Ancient Indian History, culture and Archaeological studies.

PSO-11. To learn skills related to research to present new ideas or make innovations in the field finally leading to the betterment of the society.

PSO-12. Recognize employability options for the student available after the programme. Help them make more meaningful choices regarding their career in areas, such as professional archaeologist, curator of museums, options in academic career and tourist guide etc.

PSO-13. The student will be trained in such a way that he will develop life-long learning abilities to cope with the objectives of his concern throughout his life.

SEMESTER- I

Paper I Elements of Indian Archaeology

Course Outcomes

Students will be able to identify the major characteristics and demonstrate in-depth knowledge of Elementsof Indian Archaeology.

CO-1. Analyse scope of the course. and relation with other filed ofknowledge.

CO-2. Learn methods of exploration and excavation.

CO-3. Collect and maintain records of antiquities.

CO-4. Learn methods of conservation and preservation of antiquities.

Paper II Political History Of Ancient India From Vedic Age to 550 A.D.

Course Outcomes

Develop a basic understanding of Historical sources. Students will be gain the ability to understand chronological knowledge of Vedic and Mahajan padas age. Develop a basic knowledge of political conditions, republic states, rise of empire, invasion and its effects. Students will be gain knowledge about rise of a first and biggest empire of ancient India. Develop a clear understanding about political condition ancient India.

Paper III Political History Of Ancient India From 550A.D. TO 1206 A.D.

Course Outcomes

students will be able to trace the rise of different dynasties. Understand and examine the elements of the Vardhan and early chalukyasdynasty. students will be able to gain a chronological knowledge of various dynasties.

Paper IV Ancient Indian Culture

Course outcomes

Students will be able to gain a knowledge of cultural unity of India.Understand and creatively engage with the traditions of ancient India.To understand cast and education system.Students will be able to understand the Administration, political ideas and institutions of ancient India.

SEMESTER - II

Paper I Elements of Indian Archaeology

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Stone age cultures in India.

CO-2. Identify the major characteristics and demonstrate in-depth knowledge of stone age.

CO-3. Students will be learn about Harappan culture.

CO-4. Students will be learn and study about Iron its antiquity, pottery and Rock paintings.

Paper II Political History Of Ancient India From Vedic Age To 550 A.D.

Course outcomes

CO-1. Students will be able to develop a basic understanding of the history of western India.
CO-2. Develop a basic understanding of political condition of south India.
CO-3. Develop a basic understanding of political condition of north India.
CO-4. Students will be able to develop a basic understanding of the dynasties of India.

Paper III Political History Of Ancient India From 550 a.d. To 1206 a.d.

Course outcomes

Students will be able to gain a basic knowledge of the dynasties of early medieval India.

Paper IV Ancient Indian Culture

Course outcomes

Students will be able to gain a basic knowledge of the ancient literature, religion and philosophy.

SEMESTER III

Paper I Ancient Indian Palaeography And Epigraphy

Course outcomes

CO-1. Students will be able to gain a basic knowledge and learn about origin and development of ancient script.
CO-2. Students will be learn to read and translate the inscriptions.
CO-3. Students will be able to gain a basic knowledge about administration, political, social, economical life ofancient India.

Paper II Ancient Indian Numismatics

Course outcomes

CO-1. Students will be able to gain a basic knowledge about origin, antiquity and importance of coins in thereconstruction of history.
CO-2. Coin's study also informs about weapons, flags, religious believes. wealth of the dynasty.
CO-3. Students will be able to know making process of coins, ratio of metals and shape-size of coins in ancientIndia.

Paper III Ancient Indian Art And Iconography

Course outcomes

CO-1. Students will be able to gain a basic knowledge about sculptures of the ancient and early medieval India.
CO-2. Students also know the development and characteristic features of sculptures. Students also know aboutschools of art and different images.

Paper IV Ancient Indian Architecture

Course outcomes

Students will be able to gain a basic knowledge about literary and archaeological sources of ancient Indian architecture. Basic knowledge of town planning in ancient India. Basic understanding of origin and development of caves and temple architecture.

SEMESTER IV

Paper I -Ancient Indian Palaeography And Epigraphy

Course outcomes

Students will be learn methods of dating and use of numerals in ancient Indian inscriptions. Students will be able to know about writing material in ancient Indian era. By reading and translation of inscriptions students know chronology, victories, administration and cultural life.

Paper II – Ancient Indian Numismatics

Course outcomes

Students studied coins and they know the qualities of coins from different dynasties. Through the coins study they able know co-relation between two states, trade, rise and fall of the dynasties. Students will be able to know about weight of coins. Students will be able to know about clothes and ornaments wearing god- goddess and king-queen shown on coins.

Paper III- Ancient Indian Art And Iconography

Course outcomes

Students will be able to know characteristics features of iconography which is described in ancient texts.

Paper IV Ancient Indian Architecture

Course outcomes

Students will be able to know the classification of ancient Indian templearchitecture.They know the techniques of architecture. Students will be able to know the material and types of stones used in templearchitecture.

Department of PG Studies and Research in Biological science

Programme Offered

1. **B.Sc. (Hons.) BIOTECHNOLOGY**
2. **B.Sc. (Hons.) MICROBIOLOGY**
3. **M.SC. BIOSCIENCE**
4. **M.SC. BIOTECHNOLOGY**
5. **Ph.D. Botany, Bioscience, Biotechnology, Microbiology, Zoology**

B.Sc. (Hons.) BIOTECHNOLOGY

PROGRAMME OUTCOMES

- The aim of the undergraduate degree in Biotechnology is to make students knowledgeable about the various basic concepts in wide ranging contexts which involve the use of knowledge and skills of living

entities and their manipulation. Their understanding, knowledge and skills in emerging biotechnological tools needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

PROGRAMME SPECIFIC OUTCOMES

PSO-1. A candidate who is conferred B.Sc. (Hons) degree in Biotechnology needs to have acquired/developed following competencies during the programme of the study:
PSO-2. Acquired knowledge and understanding of the biotechnological concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and related areas.
PSO-3. Demonstrate key practical skills/competencies in working with various biological entities for study anduse in the laboratory as well as outside, including the use of modern molecular assessment and manipulation protocols.
PSO-4. Empower the students to undertake advance knowledge about biotechnological protocols and researches

SEMESTER I

PAPER I CODE UBC 101 BOTANY

Course Outcomes

CO-1. The student will be able to identify major groups of plants and compare the characteristics of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
CO-2. Students will be able to use the evidence based comparative botanical approach to explain the evolution oforganism and understand the genetic diversity on the earth.
CO-3. Students will be able to understand adaptation, development, behaviour, morphology, anatomy and reproduction of different forms of life.
CO-4. Demonstrate proficiency in the experimental techniques and methods to study of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
CO-5. Students will be able to Understands concepts of Binomial Nomenclature and elementary knowledge of International Code of Botanical Nomenclature. Systematic position, distinguishing characters and economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

PAPER 2 CODE UBC 102: MICROBIOLOGY

Course Outcomes

Upon successful completion of the course, the students will

CO-1. Be acquainted with the historical account and development of microbiology as a scientific discipline.
CO-2. Have gained knowledge on different systems of classification. They will also acquire an overview ofacellular and cellular microorganisms.
CO-3. Have acquired in-depth knowledge of the diversity, distribution, cell structure, life cycles and economicimportance of algae.

CO-4. Have gathered detailed information on the diversity, distribution, structure, life cycles and economic importance of fungi.
CO-5. Be aware of general characteristics of protozoa and their economic importance and have a broad perspective of the scope of microbiology.

PAPER 3 CODE UBC 103: CHEMISTRY-I

Course Outcomes

CO-1. The students will learn about the principle, methodology, calculation and application involved in quantitative, chemical and spectrophotometric methods.
CO-2. The student shall learn the essential concepts of chirality, configuration, isomerism in organic chemistry and nomenclature of isomers. Students will familiarize with the elementary concept of saturated aliphatic hydrocarbons reactions
CO-3. The students shall learn about the fundamentals of organic chemistry with references to structure and reactivity, reagents and reactions & reaction and mechanism.
CO-4. The students will learn about ionic, covalent bonding in molecules. compare/contrast the properties of molecular and ionic compounds.
CO-5. The students will learn the elementary concepts of ionic chemical equilibrium with respect to acid – base, salt hydrolysis and solubility of ionic substances, including the IUPAC nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.

PAPER 4 ELECTIVE COURSE CODE UBE 101: COMMUNICATIONIVE ENGLISH

Course outcomes

Students will

CO-1. Improve LSRW, i.e. listening, speaking, reading and writing skills and the related sub-skills.
CO-2. Recognize and use formal elements of organizational communications: Paper writing, reports, proposals,memorandums, letters etc.
CO-3. Enhanced vocabulary with right pronunciation and improved accuracy in grammar.
CO-4. Effective oral presentations.

PAPER 5 ELECTIVE COURSE CODE UBE 102: FUNDAMENTALS OF STATISTICS

Course outcomes

CO-1. Students understand the importance of Sets, Functions and their graphs: polynomial, sine, cosine, exponential and logarithmic functions, and Sample observations. Sequences finite sequences.
CO-2. Students understand the intuitive idea of algebraic relationships and convergence, Infinite Geometric Series, Series formulas. Intuitive idea of discontinuity, continuity and limits.
CO-3. Students study the differentiation like Chain rule, Product rule and Quotient rule. Second order derivatives of above functions. Integration as reverse process of differentiation. Integrals of the functions introduced above.

CO-4. Student understands the points in plane and space and coordinate form. Examples of matrices of biologicalsciences

CO-5. Students studies about central tendency, Measures of dispersion; skewness, kurtosis. Elementary Probability. Types variable, distribution, and variance. Correlation and Regression.

SEMESTER II

PAPER 1 CODE UBC 201: ZOOLOGY

Course Outcomes:

CO-1. Knowledge of classification of each phylum from protozoa to Annelida and Arthropoda to Echinodermata up to class level with examples.

CO-2. Understanding of characteristics and systematic position of classes of Chordata.

CO-3. Discuss different organ systems- respiration, digestion, excretion, and osmoregulation; the structure and function of the organs related. Understanding of composition, function, formation, clotting mechanism, type of blood cells & blood groups with activity of the heart.

CO-4. Conceptualise Nervous system and its components- neuron structure, nerve impulse transmission (Myelinated &Non-Myelinated), Neurotransmitters, Muscle-Types, Neuromuscular junction, sliding filament theory. Understanding of metabolism of carbohydrates, fats and proteins; sense organs and endocrine glands.

CO-5. Understanding human reproductive system- reproductive organs, female reproductive cycle, implantation, maternal change during pregnancy, labour and physiology of Lactation and methods of birth control.

PAPER 2 CODE UBC 202: BASICS OF COMPUTERS

Course outcomes

CO-1. The students shall learn about the introduction, basics, organization, types and preliminary knowledge ofoperating systems and system tools.

CO-2. Students will get the idea about data representation, networks terminologies, multimedia and its applications.

CO-3. Students will get general awareness about the IT Act, system security and preliminary knowledge aboutthe I-Tax, E banking and E reservations.

CO-4. They learn basics of algorithms and programming.

PAPER 3 CODE UBC 203: CHEMISTRY-II

Course Outcomes

CO-1. The students will learn about the energy and electromagnetic spectrum.

CO-2. The student shall learn the principle, theory and applications of UV Visible spectroscopy and Infraredspectroscopy.

CO-3. The students will get knowledge in the field of Electrochemistry special in references withElectrochemical cell, Nerst equation Gibbs energy.

CO-4. The students will learn general structure, configuration and properties of Carbohydrates, Amino acids,Proteins and Peptides.

PAPER 3 ELECTIVE CODE UBE 201: FUNDAMENTALS OF BIOCHEMISTRY

Course outcomes

CO-1. Study water and their properties, buffers, pH, acid, base, covalent bond and weak bonds, structure of atom.
CO-2. Enzyme, classification, structure, activity, inhibition, kinetics, allosteric enzymes etc.
CO-3. Structure and chemistry of Carbohydrate, protein, lipid, vitamins, pigments, antibiotics; functions, analysis.
CO-4. Biological membranes and Transport: membrane dynamics, solute transport across membranes.
CO-5. Biosignalling, signalling in microorganisms and plants, Bioenergetics and Metabolism; bioenergetics andthermodynamics, phosphoryl group transfers and ATP.

PAPER 4 ELECTIVE CODE UBE 202: BIOANALYTICAL TECHNIQUES

Course Outcomes

CO-1. Upon successful completion of the course, the student
CO-2. Will have identified the principle components of a light microscope, fluorescence microscope, phase contrast microscope, confocal and electron microscope, simultaneously learning about their principles and practical applications in visualizing, identifying and measuring cell, its components and biomolecules. The student will be familiar with staining and preparation of samples for microscopy.
CO-3. Will have gained an in-depth knowledge of principles and applications of paper chromatography, thin layer chromatography, gel filtration chromatography, ion- exchange chromatography, affinity chromatography, GC, HPLC. This enables the students to apply the acquired knowledge in isolation and separation of biomolecules for analysis.
CO-4. Will have learnt basic concepts of various techniques used to resolve and analyse nucleic acids and proteins - agarose gel electrophoresis, native polyacrylamide gel electrophoresis, SD polyacrylamide gel electrophoresis, isoelectric focusing, 2D gel electrophoresis, zymogram preparation.
CO-5. Will be able to understand absorption spectra of biomolecules, and will be able to interpret UV-visible andfluorescence spectroscopy outputs.
CO-6. Will have clear fundamentals of centrifugation, RCF, sedimentation coefficient, different types of rotors used, principle and working of differential and density gradient centrifugation, preparative and analytical scales of centrifuge, and the specific uses of ultracentrifuge. Students will also be acquainted with limitations of each method.

SEMESTER III

PAPER 1 CODE UBC 301: CELL BIOLOGY I

Course Outcomes

CO-1. Upon successful completion of the course, the student:
CO-2. Will have gained knowledge about features of the cell wall, plasma membrane, cell transport mechanisms and cytoskeleton.
CO-3. Will be able to understand the structures and functions of the nucleus and different cell organelles. The structural organization and function roles of chromatin will be learnt.
CO-4. Will have understood the mechanisms of protein sorting, intracellular trafficking, protein export.
CO-5. Will have gathered understanding of how cells perceive and respond to various signals from within and outside.
CO-6. Will have learnt the mechanisms of cell division and the significance of cell cycle and its regulation. Will become familiar with stem cell technology and its applications, and basics of cancer biology including diagnostic techniques and therapy.

PAPER 2 CODE UBC 302: MOLECULAR BIOLOGY I

Course Outcomes

CO-1. Upon successful completion of the course, the student:
CO-2. Will be acquainted with the structure of various types of DNA and RNA as well as their organization as genetic material in various living organisms.
CO-3. Will gain an in-depth knowledge of DNA replication mechanisms in prokaryotes and eukaryotes, enzymesand proteins involved in replication.
CO-4. Will have learnt the fundamental principles of transcription in prokaryotes and eukaryotes, including the RNA polymerases and general transcription factors involved. Will be able to distinguish between the process in prokaryotes versus eukaryotes.
CO-5. Will understand the concept of split genes, introns, exons, spliceosomes and alternative splicing besides learning about other processing events like polyadenylation and capping. Will become familiar with RNA interference and its significance, siRNA and miRNA.

CO-6. Will get a clear understanding of translational mechanisms in both prokaryotes and eukaryotes along with the inhibitors of protein synthesis, and various mechanisms involved in regulation of gene expression in prokaryotes and eukaryotes at the level of transcription, post-transcriptional processes, and modifications in chromatin structure.

PAPER 3CODE UBC 303: RECOMBINANT DNA TECHNOLOGY

Course Outcomes

CO-1. Upon successful completion of the course, the student
CO-2. Will get an overview of developments and contributions of scientists in the field of genetic engineering.
CO-3. Will get familiarized with basic cloning tools such as enzymes used to manipulate DNA, and cloning vectors.
CO-4. Will have learnt various gene delivery methods and basic essential techniques of DNA, RNA and proteinanalysis.
CO-5. Will gather in-depth knowledge of DNA amplification and sequencing methods, and become conversantwith construction and screening of genomic and cDNA libraries

CO-6. Will become aware of the applied aspects of all major techniques being used for the benefit of humankind in the areas of agriculture and pharmaceuticals. Students will design a strategy outlining all the steps of developing a novel recombinant.

PAPER 4 ELECTIVE CODE UBE 301: FUNDAMENTALS OF BIOPHYSICS

Course Outcomes

CO-1. Discuss molecular organization of different levels of protein and molecular structure of water- hydrogen bonds and physical property of water.
CO-2. Knowledge of storage, flow of energy and their applications-electrical properties of biological compartments; electrochemical gradients, membrane potential, chemiosmotic hypothesis.
CO-3. Application of law of optics in understanding strategies of light reception in microbes, plants and animals, correction of vision faults, generation and reception of sonic vibrations.
CO-4. Understanding Neurotransmitters, Intra and intermolecular interactions in biological system Spatial and charge compatibility as determinant of such interactions by applying laws of electricity.
CO-5. Knowledge of principle, design, methods and application of UV spectroscopy; circular Dichroism and optical rotatory dispersion (ORD); Florescence spectroscopy; Infrared spectroscopy; NMR and ESR spectroscopy, Chromatography, Electrophoresis and Centrifugation.

PAPER 5 ELECTIVE CODE UBE 302: FERMENTATION TECHNOLOGY

Course Outcomes

CO-1. To understand the basis of fermentation.
CO-2. To formulate and design the production media.
CO-3. Screening and selection of production strains.
CO-4. Operating and supervision of Fermenters.
CO-5. Designing of fermentation processes for the products recovery. Knowledge of Biosafety and patent laws

SEMESTER IV

PAPER 1 CODE UBC 401: IMMUNOLOGY (COURSE CREDIT= 03)

Course Outcomes

CO-1. Upon successful completion of the course, the student
CO-2. Will be acquainted with the emergence of immunology and how the immune system protects us from infection through various lines of defence. Will have gained an in-depth knowledge of characteristics and functions of the cells of the immune system and the organization of organs of the immune system.
CO-3. Can understand the characteristics that make the molecules to act as antigens. The students will also be conversant with the types, properties and functions of antibodies made against the antigens. Will be able to outline the production and use of monoclonal antibodies
CO-4. Will understand the cell surface proteins essential for generation of acquired immune response to differentiate self and non-self-molecules and the pathways for antigen processing and presentation.

CO-5. Will be acquainted with the mechanisms by which the complement system is recruited and enhances (complements) the ability of antibodies and phagocytic cells to clear microbes and damaged cells from an organism, promotes inflammation, and attacks the pathogen's cell membranes.
CO-6. Will be acquainted with the generation and the killing mechanisms of humoral and cell mediated immunity. Will have gained in depth knowledge of various immunological techniques. Will be able to outline the immunodeficiency disorders like autoimmunity and hypersensitivity.

PAPER 2 CODE UBC 402: CELL BIOLOGY II

Course Outcomes

CO-1. Understanding of cell structure of prokaryotic and eukaryotic cell, apply knowledge of microscopictechniques for cell study.
CO-2. Knowledge of criteria of function integrity and structure of different cell organelles and transport of ions,nutrients and macromolecules across membranes.
CO-3. Empowers student to acquire knowledge about signal transduction pathway with understanding of different type of receptors and signalling molecules.
CO-4. Conceptualize cell cycle, cell division and cell death. Deep understanding of events of mitosis, apoptosis,embryonic stem cells and therapeutic cloning.
CO-5. Empowers student to acquire knowledge about biology of cancer its causes. Understanding of oncogenes,tumour suppressor gene, tumour viruses and molecular approach of cancer treatment.

PAPER 3 CODE UBC 403: MOLECULAR BIOLOGY II

Course outcomes

CO-1.RNA transcription in Prokaryotes and Eukaryotes, transcriptional regulation, RNA splicing and editing,Protein synthesis, ribosome structure and assembly,
CO-2. Fidelity of translation. Inhibitors of protein synthesis. Regulation of translation Translation-dependentregulation of mRNA and Protein Stability.
CO-3. Transcription Regulation in Eukaryotes mechanisms, Signal integration, combinatorial control,transcriptional repressors, signal transduction, Gene Silencing
CO-4. Regulatory RNAs, Riboswitches, RNA interference, miRNA, siRNA, Regulatory RNA and Xinactivation.

PAPER 4 ELECTIVE CODE UBE 401: GENETICS & GENOMICS I

Course Outcomes

CO-1. Upon successful completion of the course, the student will have
CO-2. Understanding Mendel’s work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information. The student will be able to correlate Mendel’s ratios through Mitosis and Meiosis.
CO-3. Knowledge of Principles and theories of Inheritance, pedigree analysis, extensions of Mendelian Genetics;Incomplete and co dominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effectson phenotypic expression, sex linked inheritance.

CO-4. Deep understanding of crossing over and its Cytological and Molecular mechanism. They will be able to measure linkage intensity using Recombination frequency, two factor and three factor crosses, Interference and coincidence. Knowledge of somatic cell genetics an alternative approach to gene mapping.
CO-5. Conceptualize types of Mutation, its molecular basis of mutation and detection using Attached X method, DNA repair mechanisms.
CO-6. Empowers the student about mechanism of sex Determination: Environmental factors, Barr bodies, Dosage compensation, extra chromosomal Inheritance: Chloroplast mutation/Variegation in Four o' clock plant and Chlamydomonas, Mitochondrial mutations in Neurospora and yeast, maternal effects, Infective heredity-Kappa particles in Paramecium. Understanding of Quantitative Genetics: Quantitative and multifactor inheritance, Transgressive variations, Heterosis.

PAPER 5 ELECTIVE CODE UBE 402: BIOINFORMATICS

Course outcomes

CO-1. Students get familiarized with hardware and software of modern computers. They understand system andapplication software.
CO-2. Students are exposed basics of bioinformatics and its tools.
CO-3. Students study various biological databases, retrieval of genetic and biomolecular sequences.
CO-4. Students learn various retrieval and alignment tools including construction of phylogenetic trees andannotations on sequences.
CO-5. Students learn about different techniques and tools of genome analyses and reconstruction of metabolicpathways.

SEMESTER V

PAPER 1 CODE UBC 501: PLANT BIOTECHNOLOGY

Course Outcomes

CO-1. Recall terms, definitions and history of in vitro cultures in our country. Describe embryo and endospermculture, embryo rescue after wide hybridization and its applications.
CO-2. Knowledge of processes of plant regeneration under in vitro conditions and their practical application –organogenesis, somatic embryogenesis, meristem, Shoot tip culture and haploids.
CO-3. Conceptualize protoplast isolation, culture and various steps in the regeneration of protoplasts.
CO-4. Discuss various methods for fusing protoplasts- chemical and electrical. Define Cyprids and its application.
CO-5. List use of plant cell, protoplasts and tissue culture for genetic manipulation of plants and practical application of genetic transformation. Understanding of Tumour formation on plants using a tumefaciens (Monocots vs. Dicots).

PAPER 2 CODE UBC 502: ENVIRONMENTAL BIOTECHNOLOGY

Course Outcomes

CO-1. Deep understanding of existing and emerging technologies dealing with management of environmentalquality and pollution.
CO-2. Empowers the students with the knowledge of municipal solid and liquid waste treatments, Classificationof Wastes.
CO-3. Students will able to learn about the renewable and non-renewable energy resources and clean fueltechnologies.
CO-4. Students will be able to understand EIA and environmental audit.
CO-5. Conceptual understanding of global environmental problems- ozone depletion, UV-B greenhouse effectsand global warming, acid rain, and their impacts and biotechnology approaches for management.

PAPER 3 CODE UBC 503: ANIMAL BIOTECHNOLOGY

Course Outcomes

CO-1. Deep understanding of animal cell culture substrate, culture media, preservation and maintenance of celllines.
CO-2. Empowers the students with the knowledge of production of monoclonal antibodies, and bioreactors forlarge scale culture of cells.
CO-3. Students learn different growth factors promoting proliferation of animal cells (EGF, FGF, PDGF, IL-1,IL-2, NGF, and erythropoietin).
CO-4. Knowledge of transgenic animals, in vitro fertilization and embryo transfer.
CO-5. Conceptual understanding of Transplantation, Stem cells and its application.

PAPER 4 ELECTIVE CODE UBE 501: ENTREPRENEURSHIP & IPR

Course Outcomes

CO-1. Understanding entrepreneurship, human behaviour, business ethics, performance appraisal and (SWOT)analysis
CO-2. Knowledge of Market survey techniques with principles of product selection and development.
CO-3. Deciphering marketing and sales management; its characteristics and techniques.
CO-4. Understanding financial – institutions, incentives and statements; books of accounts.
CO-5. Application of technical feasibility of project, plant layout and process planning of product. QC, CPM,PERT for establishing SSI.

PAPER 5 ELECTIVE CODE UBE 502: GENETICS & GENOMICS II

Course Outcomes

CO-1. Knowledge of genetic analysis and mapping in Bacteria and Bacteriophages.
CO-2. Understanding of transposable element; prokaryotic, composite. Eukaryotic and uses of transposons.
CO-3. Conceptualize the mechanism of developmental biology and embryonic development of different model; Drosophila melanogaster Saccharomyces cerevisiae, Caenorhabditis elegans, Arabidopsis thaliana, and Xenopus leaves.

CO-4. Understand different biological database that provide information about protein and nucleic acid, sequencesimilarity and alignment; Gene feature identification. Understanding of Gene Annotation and analysis of transcription and translation; Post-translational analysis and Protein interaction.
CO-5. Knowledge of genetic analysis, system biology, functional genomics, forward and reverse genetics. Understanding of population and evolutionary genetics.

B.Sc. (Hons.) MICROBIOLOGY

PROGRAMMER OUTCOME

The aim of the undergraduate degree in Microbiology is to make students knowledgeable about the various basic concepts in a wide-ranging context which involve the use of knowledge and skills of Microbiology. Their understanding, knowledge and skills in Microbiology needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

PROGRAMMER SPECIFIC OUTCOMES

A candidate who is conferred an UG (Hons) degree i.e. B.Sc. (Hons) degree in microbiology needs to have acquired/developed following competencies during the programme of the study: 1. Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others. 2. Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices 3. Competent enough to use microbiology knowledge and skills to analyse problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/ studies etc. 4. Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

SEMESTER I

PAPER 1 Code UMB 101: INTRODUCTION TO MICROBIAL WORLD

Course Outcomes

CO-1. Upon successful completion of the course, the students
CO-2.will be acquainted with the historical account and development of microbiology as a scientific discipline.
CO-3.will have gained knowledge on different systems of classification. They will also acquire an overview ofacellular and cellular microorganisms.
CO-4.will have acquired in-depth knowledge of the diversity, distribution, cell structure, life cycles and economic importance of algae.
CO-5.will have gathered detailed information on the diversity, distribution, structure, life cycles and economicimportance of fungi.
CO-6.will be aware of general characteristics of protozoa and their economic importance.
CO-7.will have a broad perspective of the scope of microbiology.

PAPER 2 Code UMB 102: TECHNIQUES IN MICROBIOLOGY

Course outcomes

CO-1. Major learning outcome of this course is that students develop a very good understanding of several microbiological techniques and instruments which are commonly used in a microbiology laboratory. The students have learnt

CO-2. Principles which underlies sterilization of culture media, glassware and plastic ware to be used for microbiological work.

CO-3. Principles of a number of analytical instruments which the students have to use during the study and also later as microbiologists for performing various laboratory manipulations.

CO-4. Handling and use of microscopes for the study of microorganisms which are among the basic skills expected from a practicing microbiologist. They also get introduced a variety of modifications in the microscopes for specialized viewing.

CO-5. Several separation techniques which may be required to be handled later as microbiologists.

PAPER 3 Code UMB 103: CHEMISTRY

Course Outcomes:

CO-1. The students will learn about the principle, methodology, calculation and application involved in quantitative, chemical and spectrophotometric methods.

CO-2. The student shall learn the essential concepts of chirality, configuration, isomerism in organic chemistry and nomenclature of isomers. Students will familiarize with the elementary concept of saturated aliphatic hydrocarbons reactions.

CO-3. The students shall learn about the fundamentals of organic chemistry with references to structure and reactivity, reagents and reactions & reaction and mechanism.

CO-4. The students will learn about ionic, covalent bonding in molecules. compare/contrast the properties of molecular and ionic compounds.

CO-5. The students will learn the elementary concepts of ionic chemical equilibrium with respect to acid – base, salt hydrolysis and solubility of ionic substances.

CO-6. Students will learn the IUPAC nomenclature, stereochemistry, structures, reactivity, and mechanism ofthe chemical reactions.

PAPER 5 Code UMBE 101: COMMUNICATIVE ENGLISH

Course outcomes

Students will

CO-1. Improved LSRW- listening, speaking, reading and writing skills and the related sub-skills.

CO-2. Recognize and use formal elements of organizational communications: Paper writing, reports, proposals, memorandums, letters etc.

CO-3. Enhanced vocabulary with right pronunciation and improved accuracy in grammar. • Effective oral presentations.

SEMESTER II

PAPER 1 Code UMB 201: BACTERIOLOGY

Course Outcomes

After successful completion of the course, the student

CO-1. Will gain knowledge about morphology, structure and organisation of different cell components and be able to differentiate between cell walls of Gram positive and Gram-negative bacteria, cell walls and cell membranes of archaea and eubacteria.
CO-2. Will also be able to explain gram and acid-fast staining reactions and effect of antibiotics and enzymes on cell wall structure. Will get familiar with various techniques used for isolation, cultivation and preservation of different types of bacterial cultures.
CO-3. Will gain insight into working and importance of compound microscope.
CO-4. Will understand nutritional requirements of different types of bacteria and formulation of media for bacterial growth.
CO-5. Will be able to briefly explain methods of asexual reproduction in bacteria.
CO-6. Will understand different phases of growth curve and be able to define generation time and growth rate. Can define and differentiate various types of classifications.
CO-7. Will gain insight into techniques used in polyphasic bacterial taxonomy.
CO-8. Will get acquainted with differences between archaea and eubacteria and can list their important general characteristics along with ecological significance and economic importance.

PAPER 2 Code UMB 202: MEDICAL MICROBIOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have understood the diverse nature of the normal microflora of the body and its significance as well. Student will have also acquainted themselves with the terminology and scientific nomenclature used in describing disease causation and pathogenic features of microbial agents of disease.
CO-2. Will have gained an in-depth knowledge about the spectrum of diseases caused by bacterial pathogens, and an understanding of the course of disease development and accompanying symptoms. Will become familiar with the methods of transmission, epidemiological aspects as well as prevention and control methods.
CO-3. Will become acquainted with the spectrum of diseases caused by viral pathogens. Also will understand thecourse of disease development and symptoms seen in diseases of different organ systems.
CO-4. Will understand the causation of fungal and protozoal diseases and methods of prevention and control.
CO-5. Will learn about the current approaches to diagnosis of diseases.

PAPER 3 Code UMB 203: CHEMISTRY

Course Outcomes

CO-1. The students will learn about the energy and electromagnetic spectrum.
CO-2. The student shall learn the principle, theory and applications of UV Visible spectroscopy and Infraredspectroscopy.
CO-3. The students will get knowledge in the field of Electrochemistry special in references with Electrochemical cell, Nerst equation Gibbs energy.
CO-4. The students will learn general structure, configuration and properties of Carbohydrates, Amino acids,Proteins and Peptides.

PAPER 4 Code UMBE201: BASICS OF COMPUTERS

Course outcomes

CO-1. The students shall learn about the introduction, basics, organization, types and preliminary knowledge ofoperating systems and system tools.
CO-2. Students will get the idea about data representation, networks terminologies, multimedia and its applications.
CO-3. Students will getgeneral awareness about the IT Act, system security and preliminary knowledge about theI-Tax, E banking and E reservations.

PAPER 5 Code UMBE 202: BIOANALYTICAL TECHNIQUES

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have identified the principle components of a light microscope, fluorescence microscope, phase contrast microscope, confocal and electron microscope, simultaneously learning about their principles and practical applications in visualizing, identifying and measuring cell, its components and biomolecules. The student will be familiar with staining and preparation of samples for microscopy
CO-2. Will have gained an in-depth knowledge of principles and applications of paper chromatography, thin layer chromatography, gel filtration chromatography, ion- exchange chromatography, affinity chromatography, GC, HPLC. This enables the students to apply the acquired knowledge in isolation and separation of biomolecules for analysis.
CO-3. Will have learnt basic concepts of various techniques used to resolve and analyze nucleic acids and proteins - agarose gel electrophoresis, native polyacrylamide gel electrophoresis, SDSpolyacrylamide gel electrophoresis, isoelectric focusing, 2D gel electrophoresis, zymogram preparation.
CO-4. As well as be able to understand absorption spectra of biomolecules, and will be able to interpret UVvisible and fluorescence spectroscopy outputs.
CO-5. Will have clear fundamentals of centrifugation, RCF, sedimentation coefficient, different types of rotors used, principle and working of differential and density gradient centrifugation, preparative and analytical scales of centrifuge, and the specific uses of ultracentrifuge. Students will also be acquainted withlimitations of each method.

CO-6. Will be introduced to the concepts of advanced techniques like flow cytometry, circular dichroism, surfaceplasmon resonance and mass spectrometry. Students will also appreciate the applications of these techniques and recent developments that have come about due to these advanced techniques.

SEMESTER III

PAPER 1 Code UMB 301 CELL BIOLOGY-I

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have gained knowledge about features of the cell wall, plasma membrane, cell transport mechanismsand cytoskeleton.
CO-2. Will be able to understand the structures and functions of the nucleus and different cell organelles. Thestructural organization and function roles of chromatin will be learnt.
CO-3. Will have understood the mechanisms of protein sorting, intracellular trafficking, protein export.
CO-4. Will have gathered understanding of how cells perceive and respond to various signals from within andoutside.
CO-5. Will have learnt the mechanisms of cell division and the significance of cell cycle and its regulation. Willbecome familiar with stem cell technology and its applications.
CO-6. Will understand the basics of cancer biology including diagnostic techniques and therapy.

PAPER 2 Code UMB 302: PHYCOLOGY & MYCOLOGY

Course outcomes

By the completion of this course the students able to

CO-1. Describe useful and harmful activities of fungi and algae.
CO-2. Identify commonly available fungi and algae and their characteristics.
CO-3. Discuss how fungi and algae are used as biofertilizers in agriculture and as biopesticides.
CO-4. Grow mushroom in the laboratory.

PAPER 3 Code UMB 303: VIROLOGY

Course Outcomes

Upon successful completion of the course the student

CO-1.will have acquired the knowledge in the following areas.
CO-2. Will be able to describe the nature, properties and structure of viruses and will also gain knowledge oftaxonomy of different groups of viruses.
CO-3. Will be familiar with diversity and multiplication of lytic and lysogenic bacteriophages.
CO-4. Will be able to describe different ways of viral transmission, and prominent and unusual genomic featuresof different viruses with their significance.

CO-5. Will understand about the replication strategies, maturation and release of important plant, animal and bacterial viruses.
CO-6. Will have gained knowledge about strategies to prevent viral infections: interferons, vaccines and antiviralcompounds
CO-7. Will understand the concept of oncogenesis, DNA and RNA cancer causing viruses and will learn of newly emerging viruses which have the potential to cause serious threats to public health and have become a global concern.

PAPER 4 Code UMBE 301: MOLECULAR BIOLOGY-I

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will be acquainted with the structure of various types of DNA and RNA as well as their organization as genetic material in various living organisms.
CO-2. Will gain an in-depth knowledge of DNA replication mechanisms in prokaryotes and eukaryotes, enzymesand proteins involved in replication.
CO-3. Will have learnt the fundamental principles of transcription in prokaryotes and eukaryotes, including the RNA polymerases and general transcription factors involved. Will be able to distinguish between the process in prokaryotes versus eukaryotes.
CO-4. Will understand the concept of split genes, introns, exons, spliceosomes and alternative splicing besides learning about other processing events like polyadenylation and capping. Will become familiar with RNA interference and its significance, siRNA and miRNA.
CO-5. Will get a clear understanding of translational mechanisms in both prokaryotes and eukaryotes along with the inhibitors of protein synthesis.
CO-6. Will understand various mechanisms involved in regulation of gene expression in prokaryotes and eukaryotes at the level of transcription, post-transcriptional processes, and modifications in chromatin structure.

PAPER 5 Code UMBE 302: RECOMBINANT DNA TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will get an overview of developments and contributions of scientists in the field of genetic engineering.
CO-2. Will get familiarized with basic cloning tools such as enzymes used to manipulate DNA, and cloning vectors.
CO-3. Will have learnt various gene delivery methods and basic essential techniques of DNA, RNA and protein analysis.
CO-4. Will gather in-depth knowledge of DNA amplification and sequencing methods.
CO-5. Will become conversant with construction and screening of genomic and cDNA libraries.
CO-6. Will become aware of the applied aspects of all major techniques being used for the benefit of humankind in the areas of agriculture and pharmaceuticals. Students will design a strategy outlining all the steps of developing a novel recombinant.

SEMESTER IV

PAPER 1Code UMB 401: MICROBIAL PHYSIOLOGY AND METABOLISM

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will have got acquainted with the diverse physiological groups of bacteria/archaea and microbial transportsystems.
CO-2. Will have an in-depth knowledge of patterns of bacterial growth, bacterial growth curve, calculation ofgeneration time and specific growth rate, and effect of the environment on growth.
CO-3. Will understand the variety of pathways used by bacteria for energy generation and conservation duringgrowth on glucose under aerobic and anaerobic conditions.
CO-4. Will become conversant with two important fermentation pathways in microbes.
CO-5. Will have an added knowledge on the groups and families of chemolithotrophs and phototrophs, based ontheir ability to extract energy from inorganic compounds and assimilate carbon from CO2.
CO-6. Will have learnt about a typical capability of prokaryotes to reduce nitrogen gas to ammonia. Will becomefamiliar with the physiology of nitrogen fixation and assimilation of inorganic nitrogen by bacteria.

PAPER 2 Code UMB-402: GENETICS AND GENOMICS-I

Course Outcomes

Upon successful completion of the course, the student will have

CO-1. Knowledge of Genetic material and genetic recombination.
CO-2. Understanding the stages of gene expression: phenomena of cell division.
CO-3. Improved understanding of mutation and mutagens.
CO-4. Applying the Mendelian principles and its extensions to solve genetic problems

PAPER 3 Code UMB 403: CELL BIOLOGY-II

Course Outcomes

Understanding of processes that control eukaryotic cell cycle, cell division and cell death.

CO-1. Conceptualized the mechanisms of signal transduction and cell-cell interaction.
CO-2. Knowledge of stem cell and their therapeutic uses and limitations.
CO-3. Linking the rapid advances in cell biology for a better understanding of diseases like Cancer and itscytology

PAPER 4Code UMBE 401: MOLECULAR BIOLOGY-II

Course outcomes

CO-1. Study of RNA polymerase and mechanisms in prokaryotic and eukaryotic cell.
CO-2. Study of RNA modification, split genes, RNA splicing, m-RNA transport
CO-3. Translation process in prokaryotic and eukaryotic cell.
CO-4. Transcription regulation in prokaryotes and eukaryotes and regulatory RNAs.

PAPER 5 Code UMBE 402: IMMUNOLOGY

Course Outcomes

CO-1. Upon successful completion of the course, the student
CO-2. Will be acquainted with the emergence of immunology and how the immune system protects us from infection through various lines of defence.
CO-3. Will have gained an in-depth knowledge of characteristics and functions of the cells of the immune systemand the organization of organs of the immune system.
CO-4. Can understand the characteristics that make the molecules to act as antigens. The students will also be conversant with the types, properties and functions of antibodies made against the antigens. Will be able to outline the production and use of monoclonal antibodies.
CO-5. Will understand the cell surface proteins essential for generation of acquired immune response to differentiate self and non-self-molecules and the pathways for antigen processing and presentation.
CO-6. Will be acquainted with the mechanisms by which the complement system is recruited and enhances (complements) the ability of antibodies and phagocytic cells to clear microbes and damaged cells from an organism, promotes inflammation, and attacks the pathogen's cell membranes.
CO-7. Will be acquainted with the generation and the killing mechanisms of humoral and cell mediated immunity. Will have gained in depth knowledge of various immunological techniques. Will be able to outline the immunodeficiency disorders like autoimmunity and hypersensitivity.

SEMESTER V

PAPER 1 Code UMB 501: FOOD AND DAIRY MICROBIOLOGY

Course Outcomes

On successful completion of the course, the student

CO-1. Will be aware of the possible sources of contamination of foods and the parameters affecting microbial growth in foods.
CO-2. Will gain insight into the microbial spoilage of some foods.
CO-3. Will acquire an in-depth knowledge of various physical and chemical methods used for food preservation. Will be acquainted with microbial production of fermented dairy and non-dairy food products. Will alsobe able to understand the health benefits of prebiotics, probiotics and symbiotic.
CO-4. Will be conversant with some food-borne diseases and will be able to explain methods for detection of food borne pathogens • Will be able to understand the concept of quality control of food.

PAPER 2 Code UMB 502: MICROBIAL ECOLOGY

Course Outcomes

After studying this course, the student

CO-1. Will know about the diverse microbial populations present in various natural habitats (different types).
CO-2. Would understand the interaction of microbes with both micro and macro-organisms (plants and animals).
CO-3. Would become aware of the importance of microbes in any ecosystem with reference to nutrient cycling/biogas-chemical cycling.
CO-4. Would become familiar with and gain knowledge about the various methods of waste treatment (solid andliquid) and management.
CO-5. Would become aware of the degradable properties of a microbial population present in a habitat/ecosystem.
CO-6. Would gain knowledge of the methods used in testing the potability of water.

PAPER 3 Code UMB 503: INDUSTRIAL MICROBIOLOGY

Course Outcomes

Upon successful completion of the course the student

CO-1. Will understand the development and importance of industrial microbiology and will be conversant withdifferent types of fermentation processes in liquid media as well as solid state substrates media.
CO-2. Will learn about the design, operation and uses of different types of fermenters of laboratory, pilot andindustrial scale.
CO-3. Will gain insight into the techniques of isolation, screening, preservation and maintenance of industriallyimportant microbial strains and different types of media used in fermentation processes.
CO-4. Will be acquainted with principles of techniques used for the extraction and purification of industrialproducts produced using microbial fermentation processes.
CO-5. Will have gained in-depth knowledge of the principles of microbial production and recovery of industrialproducts at large scale.

PAPER 4 Code UMBE 501: GENETICS AND GENOMICS II

Course Outcomes

Student will

CO-1. Conceptualize the mechanism of developmental biology and embryonic development of different modelorganism.
CO-2. Analyze and interpret biological and evolutionary problems in terms of genetics and genomics concepts.
CO-3. Knowledge of key processes involved in inheritance and expression of gene.

PAPER 5 Code UMBE 502: PLANT PATHOLOGY

Course Outcomes

Upon successful completion of the course, the student

CO-1. Student will know about concept of disease, causal agents of plant diseases, identification methods andmanagement of crop diseases.
CO-2. Student will know importance of sign and symptoms for detection of pathogens and disease, integratedmethods of disease management, use of biological and chemicals in disease management.
CO-3. Students will know various laboratory methods of detection of plant pathogens and evaluation ofbiological and chemical agents against plant pathogens.
CO-4. Student will know plant viruses, important viral diseases of crops, sign and symptoms and management ofviral diseases.
CO-5. Students will know biological method of plant growth, disease control and conventional and industrialproduction of bio control agents.
CO-6. Students will know principles and utilization of integrated pest management of field crop.

M.SC. BIOSCIENCE

PROGRAMMER OUTCOME

The aim of the undergraduate degree in Microbiology is to make students knowledgeable about the various basic concepts in a wide-ranging context which involve the use of knowledge and skills of Microbiology. Their understanding, knowledge and skills in Microbiology needs to be developed through a thorough teaching learning processes in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts, write short research-based projects where they are guided and mentored by the academic and other experts of the subject.

PROGRAMMER SPECIFIC OUTCOMES

A candidate who is conferred an UG (Hons) degree i.e. B.Sc. (Hons) degree in microbiology needs to have acquired/developed following competencies during the programme of the study: 1. Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others. 2. Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices 3. Competent enough to use microbiology knowledge and skills to analyse problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/ studies etc. 4. Developed a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

SEMESTER I

PAPER 1 CODE BSC101: BIOLOGICAL DIVERSITY OF VIRUSES, BACTERIA AND FUNGI

Course Outcomes

CO-1. Conceptualize the history and scope of microorganisms with emphasis on origin and general features of prokaryotes and eukaryotes. Learners will be able to understand the status and economic importance of microorganisms in agriculture, industry and medicine.
CO-2. Knowledge of basic techniques of staining, isolation, enumeration, maintenance and preservation of microbial culture; with understanding of composition of different culture media and nutritional requirement of microorganisms.
CO-3. Empowers the student to acquire knowledge about the habitat, structure, reproduction, biochemical characterization and Classification of Bacteria, Cyanobacteria and Actinomycetes.
CO-4. Understanding of the structure, multiplication and classification of viruses, Scrapie Virosoids, Prions and Viroids ; general account of Rickettsia, Chlamydia and Mycoplasma.
CO-5. Knowledge of habitat, structure, reproduction and classification of fungi.

PAPER 2 CODE BSC102:DEVELOPMENTAL BIOLOGY (ANIMAL)

Course Outcomes

CO-1. Enabling students to understand the process of development of male and female gonads including ultrastructural details of the reproductive tissues and cells.
CO-2. The students also learn the process of fertilization including initial changes in an ovum in terms of various planes of cleavages and their significance in eventual development of individuals, taking some examples of Annelids and Mollusks.
CO-3. The students are also made acquainted with initial process of embryogenesis; gastrulation and organogenesis taking some animal models.
CO-4. The fetus development is the next component with which students are versed with. The placental development and various types of mammalian placenta is also included.
CO-5. The students learn various aspects of metamorphosis and organogenesis with respect to life cycle transformations in insects and amphibians.

PAPER 3 CODE BSC103: BASIC ECOLOGY

Course Outcomes

The student will able to get the huge knowledge of population ecology.

CO-1. Students will be able to study the concept, organization and study of the community with the concept ofniche and biodiversity.
CO-2. Students will be able to understand the vegetative organization in community. Students will get to knowabout how changes take place during ecological succession.
CO-3. Student will have developed knowledge about structure and function of ecosystem. They also will understand about biogeochemical cycle in environment and its role.
CO-4. Demonstrate proficiency in the experimental techniques and methods to study the ecosystem.

PAPER 4CODE BSE101: BIOMOLECULES

Course Outcomes

CO-1. Enabling students to understand the importance of water in maintaining the various biochemical reactionssuch as buffering, phosphorylation, oxidation-reduction etc.
CO-2. The students learn the principle of working of enzyme and the process of enzymology, that is, how theenzymes work and where the active sites play a key role.
CO-3. The students also learn the basic and functional structures of all the biomolecules in detail.
CO-4. The inter-relationships and communication between the biomolecules is a major part of signal transduction. The students become well versed with this mode of biological process.
CO-5. The students learn various techniques such as chromatography, spectroscopy and electrophoresis to understand the purity of biomolecules and their analytical properties for further application.

PAPER 5 CODE BSE102:BIOENERGETICS AND INTERMEDIARY METABOLISM

Course outcomes

CO-1. Learners will understand the concepts of bioenergetics, mitochondrial respiratory chain, cytochromescharacterization and Oxidative phosphorylation.
CO-2. Students will get huge knowledge of cell transport systems, influx and efflux mechanisms, symport,antiport, uniport.
CO-3. Students will learn about the carbohydrate metabolism; glycolysis, TCA cycle, energy generation, energyrich bonds, biosynthesis of sugars, HMP shunt and alternate pathways.
CO-4. Students will learn about lipid metabolisms; fatty acid synthesis and oxidation, triglycerol, steroids andterpenes.
CO-5. Students will understand about the amino acid and nucleic acid biosynthesis, degradation, regulation, ureacycle, inhibitors and inborn error metabolism.

SEMESTER II

PAPER 1 CODE BSC201:TAXONOMY OF ANGIOSPERMS

Course Outcomes

CO-1. Understanding principles of biodiversity and its conservation. Gaining insight into the rules of nomenclature, adaptive features of ICBN and different classification systems.
CO-2. Learning and applying different techniques of identification, documentation of plants and role of computerin database identification. They will know how to prepare herbarium and use of keys to identify floras.
CO-3. Knowledge of modern taxonomy and its application in taxonomic evidences from anatomy, embryology palynology, cytology, secondary metabolites. Understanding numerical taxonomy OUT's coding.
CO-4. Empowers student to recognize, collect and compare the plants of the given fourteen angiosperm families. Learners will be able to describe the plant specimen with taxonomical terms, floral formula and diagrams.
CO-5. Acknowledge the economic uses of plants in modern society. An increased awareness and appreciation of plants & plant products encountered used by tribes of MP. Knowledge of important families of useful plants, the parts used and active biomolecules present in medicinal plants. COURSE CONTENTS UNIT I Principles of Biodiversity & its conservation, Concept of systematic, Identification.

PAPER 2 CODE BSC202:BIOSTATISTICS AND COMPUTER APPLICATIONS

Course Outcomes

CO-1. Proficiency of students in various techniques of collection, collation, summarization and presentation of data. They could learn basic concepts of probability and probability distribution functions along with applications.
CO-2. Understanding and applications of descriptive and inferential statistics enabling students to use tests of significance in biological data.
CO-3. Can apply Analysis of Variance tools and different experimental designs to biological experiments, enabling them to minimize experimental and sampling errors.
CO-4. Understands concepts of correlation and regression tools and techniques, attempts extrapolation and simulation of biological processes.
CO-5. Empowers students to utilize software packages in digital analysis and processing of biological data. Integrate informatics with biology through data submission protocols, sequence alignment and searches, annotations and possible applications in human health and welfare.

PAPER 3 CODE BSE201:BIOLOGY OF THE IMMUNE SYSTEM

Course Outcomes

Upon successful completion of the course, the student

CO-1. Will be able to understand the fundamental bases of immune system and immune response.
CO-2. Will be able to gather information about the structure and organization of various components of theimmune system.
CO-3. Will be able to understand the genetic organization of the genes meant for expression of immune cellreceptors and the bases of the generation of their diversity.
CO-4. Will be able to understand the operation and the mechanisms which underlie the immune response.
CO-5. Will be able to apply the knowledge gained to understand the phenomena like host defense, hypersensitivity (allergy), organ transplantation and certain immunological diseases.

PAPER 4 CODE BSE202:RESOURCE UTILIZATION AND CONSERVATION

Course Outcomes

CO-1. Deep understanding of distribution, structure and function of various aquatic and terrestrial biomes.
CO-2. Learn definitions, types and utilities of biodiversity along with threats along their applications in management and sustainable development of resources from various biomes. CO3: Empowers students to apply in-situ and in-vitro techniques in conservation of aquatic and terrestrial resources in real time.
CO-3. Understands concepts of pollution of different environments and can monitor and treat pollution loads in artificial and natural ecosystems; and appreciate nuances of industrial, societal and urban pollutions.
CO-5. Gains insight knowledge about remote sensing of earth resources along with platforms, sensors and scanners, visual and digital interpretation of remotely sensed

PAPER 5 CODE BSE203:MICROBIAL METABOLISM

Course Outcomes

CO-1. The student will able to get the huge knowledge about microbial growth, measurement, growth curve,types of growth and effect of environmental factors.
CO-2. Students will understand the process of Chaemolithotrophy, Methanogenesis, photosynthetic and accessory pigments, oxygenic and anoxygenic photosynthesis, electron transport, generation of ATP and fixation of carbon dioxide.
CO-3. Learners will gain the idea about respiratory metabolism EMP, ED, glyoxalate pathway, TCA cycle,phosphorylation, Pasteur Effect and fermentation.
CO-4. Student will know about assimilation of nitrogen, synthesis of major amino-acids, polyamines;peptidoglycan-biopolymers as cell components.
CO-5. Students will understand the microbial development, sporulation and morphogenesis and organization ofmicrobes.

SEMESTER III

PAPER 1CODE BSC301:PLANT PHYSIOLOGY

Course Outcomes

CO-1. The student will able to get the huge knowledge about pathways of water through xylem and phloem.Know about the requirement of mineral nutrition for plant growth.
CO-2. Students will understand the process of Photosynthesis, Respiration and Nitrogen metabolism.
CO-3. Learners will gain the idea about Stress physiology – Responses of plants to biotic and abiotic stresses,biological clock and the photoperiodism.
CO-4. Student will know about the Plant Growth hormones (Auxins, Gibberellins. Cytokinins, Ethylene), theyunderstand the biosynthesis of phenolic acids, alkaloids.
CO-5. Demonstrate proficiency in the experimental techniques and methods to study the plant physiology.

PAPER 2 CODE BSC302:GENETICS& MOLECULAR BIOLOGY

Course Outcomes

CO-1. Understanding of DNA as the genetic material and its types. Knowledge of chromatin organization,euchromatin, heterochromatin, C value paradox and restriction mapping.
CO-2. Knowledge of Mutation, its kind and mechanism of DNA repair system.
CO-3. Conceptualize different aspects of genetics of microorganism with deep understanding of molecularmechanism of recombination, role of Rec ABC&D, linkage and crossing over.
CO-4. Empowers student to acquire knowledge about different enzymes of DNA replication, transcription and translation. Deep understanding of DNA and RNA sequencing methods, process of transcription and posttranscriptional processing.

CO-5. Gains insight into the process of translation and gene expression in prokaryotes and eukaryotes by understanding different types of RNA, translational factors, concept of operon ; lac and tryptophan and different models of gene expression in eukaryotes.

PAPER 3 CODE BSC303:ANIMAL PHYSIOLOGY

Course Outcomes

CO-1. The students learn the nutritional pattern in animals in relation to hormonal and enzymatic regulation of digestion with reference to homeostasis.
CO-2. Blood and lymph – their structure and function related to gas exchange, ion transport and clotting and defense is dealt in good detail.
CO-3. The students are also made acquainted with the very importance of muscles in relation to structure, function and physiology. Further, the neuromuscular interconnection and basic role of neuronal tissue at different level is elaborately dealt with here.
CO-4. The complete physiology of invertebrate and vertebrate excretion system is learnt by the pupil.

PAPER 4CODE BSE301:ADVANCED MOLECULAR BIOLOGY

Course Outcomes

CO-1. To understand key principles of how cells work, including gene regulation, protein synthesis and signaltransduction.
CO-2. To locate, analyse, evaluate and synthesise information from a wide variety of sources to understand thekey principles of Molecular Biology.
CO-3. To read, interpret and discuss major contributions to Molecular Biology research published in scientificresearch literature.
CO-4. To develop effective, creative and innovative solutions, both independently and cooperatively, to currentand future research problems in Molecular Biology.

PAPER 5 CODE BSE302:AGRICULTURAL MICROBIOLOGY

Course Outcomes

CO-1. Describe role of microorganism in recycling soil nutrients, biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability, production of plant growth promoting substances and inhibiting pathogens.
CO-2. Critically discuss the need for agricultural microbiology and explain their limitations.
CO-3. Clarify application of microorganisms in varied fields of agricultural microbiology like bioremediation, biofertilizers and waste water treatment.
CO-4. Analyse various aspects of N2 fixation, Phosphate solubilization, PGPR etc. Pre and post harvesting agricultural losses, management, formulation, mass production and applications.

CO-5. Green revolution, transgenic plant, gene protection technology, resistant verities, management of agricultural waste as food, feed and fuel.

PAPER 6CODE BSE303:BIOPROCESS ENGINEERING AND TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will have gained insight on industrially important microbes, recent developments in fermentation processes and various optimization strategies at fermenter level.
CO-2. Understands the concept of sterilization methods and principles of batch and continuous processes.
CO-3. Attains knowledge about designing of industrial strains and various media optimization strategies .
CO-4. Learns about the design, types of fermenters and various critical components of bioreactors
CO-5. Is able to describe control parameters, fluid rheology and process constraints in a large scale bioreactor
CO-6. Gets introduced to various strategies of product recovery from a fermentation broth . Acquires knowledgeabout various industrially relevant microbial products and their production process.
CO-7. Understand the principles of microorganisms during various food-processing & preservation steps.
CO-8. Comprehend the interactions between microorganisms and the food environment, and factors influencingtheir growth and survival.

PAPER 7 CODE BSE304: BIOTECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will learn about various industrially relevant microbial products and their production process, role of biotechnology in environment management.
CO-2. Acquires knowledge about strains development, selection of hyper producers, microbial products, metabolic engineering and various industrial relevant microbial products and their production process Learns about the designing of recombinant heterologous expression systems such as E. coli, yeast,mammalian and insect cells.
CO-3. Learns about sterilization at reactor scale and different types of sterilization strategies
CO-4. Attains knowledge about designing large scale industrial processes and types of cultivation strategies Understands the concept of recombinant biomolecules, therapeutic proteins, vaccines, antibodies, bio-pesticides, bio-fertilizers, and probiotics .
CO-5. Understands different types of regulatory approvals required for drug development and difference betweenbiologics, biosimilars and biobetters

SEMESTER IV

(CREDITS 18)

Course g Outcomes

CO-1. Student is able to conceive a problem based on current published research.

CO-2. Student is able to carry out comprehensive survey of literature on the topic of research
CO-3. Student is able to make culture media for various microbes
CO-4. Student is able to isolate microorganism from different environmental/ food sources
CO-5. Student is able to identify the isolated microorganism using biochemical and molecular methods
Studentis able to assess the microorganism's ability to produce various enzymes
CO-6. Student becomes well-versed in different enzymatic assay systems
CO-7. Student learns correct handling and use of instruments
CO-8. Student learns correct handling of reagents and chemicals
CO-9. Student learns how to execute experiments correctly.
CO-10. Student learns the importance of including controls in all experiments
CO-11. Student learns how to plot the results.
CO-12. Student learns how to analyze data, using statistical tools where necessary
CO-13. Student learns how to interpret the results from all possible angles.
CO-14. Student learns how to present the project in the form of a slide show before and audience of 20-30 people.
CO-15. Student is exposed to the science of thesis writing.

M.SC. BIOTECHNOLOGY

PROGRAMME OBJECTIVES :

The objective of the Master's Program in Biotechnology is to equip the students to gain conceptual and analytical skills about biological materials, biotechnological tools and techniques.

- The program emphasizes to apply knowledge acquired about prokaryotic and eukaryotic cellular processes, structural and genetic manipulation of cellular material and processes, and data processing and interpretation techniques.
- The imparting of laboratory training for bioassay protocols of biological materials, their manipulative treatments, emerging tissue culture and genetic recombinant techniques, and bioinformatics databases and tools.
- Students will be able to address application skills of biotechnological techniques and tools in fields of biomolecules including enzymes, environment, animals, microbes and plants.

3. PROGRAMME OUTCOMES :

The Masters in Biotechnology Program will cater to the expanding demand for skilled manpower, which is equipped with an understanding of modern research protocols and ethics involving both cellular and molecular materials from biological entities in alleviation and remediation of energy demands, environmental conservation and management, plant health and yield management, human health including emerging epidemic and pandemic disease loads, and synthesis of multi-functional enzymes, organisms and their survival in nature to maintain natural biodiversity and ecological balance.

A M.Sc. Biotechnology student should be able to independent study and researches related to

- Isolation of novel biological material, its assay and multiplication, and manipulation.
- Application of modern emerging methodological and analytical tools and techniques in qualitative and quantitative assessment of biological materials and processes.
- Extraction of biological molecules and sub-molecules and their biochemical, genetic and molecular characteristics and dynamics.

- Designing of bioassay experiments, assessment of their outcomes, their modeling and simulation.
- Efficient retrieval of information from national and international biological databases, analysis of retrieved information and contribution to new knowledge.
- Integration of up- and down-stream processing of bioassay experiments and their analytical and application assessment.
- Undertaking of researches involving genomics, metabolomics, and protemics.
- Competition at national and international to pursue career in advanced studies in research and industrial establishments.
- Independent documentation and communication of scientific results in the public domain as well as peer-reviewed scientific magazines and journals.
- Filing of intellectual property rights to national and international registries

SEMESTER I

PAPER 1 CORE CODE BTC101: CELL BIOLOGY

Course Outcomes

CO-1. Understanding of structure of prokaryotic and eukaryotic cell, and application of knowledge of microscopic techniques for cell study.
CO-2. Knowledge of functional integrity and structure of different cell organelles and transport of ions, nutrientsand macromolecules across membranes.
CO-3. Knowledge about signal transduction pathway with understanding of different type of receptors andsignaling molecules.
CO-4. Conceptualization of cell cycle, cell division and cell death. Deep understanding of events of mitosis,apoptosis, embryonic stem cells and therapeutic cloning.
CO-5. Knowledge about biology of cancer and its causes. Understanding of oncogenes, tumor suppressor gene,tumor viruses and molecular approach of cancer trea

PAPER 2 CORE CODE BTC102:ANIMAL CELL SCIENCE AND TECHNIQUES

Course Outcomes

CO-1. Understanding the basic structure and organization of animal cell; equipment's and materials for animal cell culture technology; primary and established cell lines cultures; introduction and function of the balanced salt solutions and simple growth medium, serum and supplements; role of carbon dioxide in to the culture.
CO-2. Learning the different parameters, i.e. viability and cytotoxicity; biology and characterization of the cultured cells and basic techniques of cultured cells like disaggregation of tissue and primary culture; maintenance of cell culture.
CO-3. Knowledge about various techniques like Scaling up of animal cell culture, cell synchronization, cell cloning and micro-manipulation, cell transformation.
CO-4. Understanding the application of animal cell cultures, stem cell cultures, cell culture based vaccines, somatic cell genetics.

CO-5. Conceptualize the application of Organ and histotypic culture, measurement of cell death, apoptosis, three dimensional culture and tissue engineering

PAPER 3 CODE BTC103: MICROBIAL PHYSIOLOGY AND GENETICS

Course Outcomes

CO-1. Gains insight about growth dynamics, mathematical expression, growth curves and yields, types of growth; effect of environmental factors storage and maintenance of cultures.
CO-2. Understanding of concepts of metabolic diversity, including photosynthetic, chemolithotrophicand nitrogen fixation, nitrate and sulfate reduction, fermentation, decomposition, methanogenesis and acetogenesis, hydrocarbon transformation.Gains insight knowledge about structural and metabolic diversity of bacteria, viruses, viroids and prions. Prokaryotic cells structure.
CO-3. Insight into host-parasite relationship, colonization, types of toxins, and their structures, mode of action, Chemotherapy/antibiotics: antimicrobial agent antibiotics, mode of action, antibiotics resistance.
CO-4. Sound knowledge of genes, mutation and mutagenesis; types of mutagens and mutation; Ames test, complementation test, Bacterial genetic recombination, plasmids and transposons; bacterial genetics mapping.

PAPER 4 ELECTIVE CODE BTE101 : BIOMOLECULES

Course Outcomes

CO-1. Enabling students to understand the importance of water in maintaining the various biochemical reactionssuch as buffering, phosphorylation, oxidation-reduction, etc.
CO-2. The students learn the principle of working of enzyme and the process of enzymology, i.e. how theenzymes work and where the active sites play a key role.
CO-3. The students also learn the basic and functional structures of all the biomolecules in detail.
CO-4. The inter-relationships and communication between the biomolecules is a major part of signal transduction. The students become well versed with this mode of biological process.
CO-5. The students learn various techniques such as chromatography, spectroscopy and electrophoresis to understand the purity of biomolecules and their analytical properties for further application

PAPER 5 ELECTIVE COURSECODE BTE102:BIOENERGETICS AND INTERMEDIARY METABOLISM

Course Outcomes

CO-1. Enabling students to understand finely detailed energy dynamics of a biomembrane, the componentsinvolved therein and various physiological attributes driven by aforementioned energy transformation.
CO-2. The students learn the principle of working of mitochondria as a model of energy transducer with specialreference to its membrane associated respiratory processes leading to formation of ATP.
CO-3. The students also learn the anabolic and catabolic processes involving carbohydrates in marinating theenergy balance of the cell.

CO-4. Thebiosysnthesis of lipids that constitute the biomenbranes is understood at the level of enzymes and pathways.
CO-5. The catabolic role of amino acids in the formation of urea and abnormalities due to metabolic errors in these cycles is learnt by students. The synthesis of nucleic acids, the hereditary material, involving purinesand pyrimidines is made acquainted to the learners.

SEMESTER II

PAPER 1 CODE BTC201: MOLECULAR BIOLOGY

Course Outcomes

CO-1. The students learn about different models and biochemical processes associated with nucleic acid replication in diverse model organisms.
CO-2. The learners get a deep acquaintance with the process of DNA recombination and repair in model organisms.
CO-3. The pupils become well versed with the process of DNA-dependent RNA synthesis (transcription) and post-transcriptional modifications thereby generating transfer, messenger and ribosomal RNA. Channelling of specialized proteins to their correct positions is also made aware of.
CO-4. Students learn function of cancer-associated and cancer-preventing genes as well as techniques and applications related to ribozymes and antisense RNA.
CO-5. Sophisticated techniques related to genome mapping, DNA fingerprinting, genome cloning and recognition of desired genes are elaborated along their applications

PAPER 2 CODE BTC202: MACROMOLECULES & BASIC ENZYMOLOGY

Course Outcomes

CO-1. The students learn the unitary model of functioning of the enzymes and the environmental factors affecting the efficiency of working of the enzyme
CO-2. The kinetics of the enzyme leading to catalysis in polar and non-polar environments, and the contribution of metal ions, water, pH, cofactor and coenzyme in overall efficiency of the enzyme is made understood in detail.
CO-3. The students become well versed with the selected model enzymes with their regulatory pattern in overall control of anabolic and catabolic pathways. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 22 of 46
CO-4. The learners get acquainted with the physiological role of the appropriate conformation of macromolecule and assemblies playing a contributing to the efficiency of catalytic proteins.
CO-5. Various biochemical techniques related in elucidating the overall structure of the different biomolecules and their specific role in specific conformations is learnt by the students..

PAPER 3 CODE BTC203

BIOSTATISTICS AND COMPUTER APPLICATIONS

Course Outcomes

CO-1. Proficiency of students in various techniques of collection, collation, summarization and presentation of data. They could learn basic concepts of probability and probability distribution functions along with applications.
CO-2. Understanding and applications of descriptive and inferential statistics enabling students to use tests of significance in biological data.
CO-3. Can apply Analysis of Variance tools and different experimental designs to biological experiments, enabling them to minimize experimental and sampling errors.
CO-4. Understands concepts of correlation and regression tools and techniques, attempts extrapolation and simulation of biological processes.
CO-5. Empowers students to utilize software packages in digital analysis and processing of biological data. Integrate informatics with biology through data submission protocols, sequence alignment and searches, annotations and possible applications in human health and we

PAPER 4 ELECTIVE CODE BTE201: BIOLOGY OF THE IMMUNE SYSTEM

Course Outcomes

CO-1. Students will be able to understand the fundamental bases of immune system and immune response.
CO-2. Information about the structure and organization of various components of the immune system.
CO-3. Students learn the genetic organization of the genes meant for expression of immune cell receptors and thebases of the generation of their diversity.
CO-4. Will be able to understand the operation and the mechanisms which underlie the immune response. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 26 of 46
CO-5. Application of the knowledge gained to understand the phenomena like host defense, hypersensitivity (allergy), organ transplantation and certain immunological diseases COURSE CONTENTS UNIT-I Introduction: phylogeny of immune system, innate and acquired immunity, clonal nature of imm

SEMESTER III

PAPER 1 CODE BTC301: ENVIRONMENTAL BIOTECHNOLOGY

Course Outcomes

CO-1. Deep understanding of existing and emerging technologies that are important in the area of environment and the principles and techniques which underline the environmental issues including air and water pollution.
CO-2. Empowers the students with the knowledge of Domestic waste water treatment, Classification of wastewater treatment (physical, chemical and biological)

CO-3. Students learn about concepts of Biodegradation, Biodegradation of hydrocarbon, Measurement of biodegradation. Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation), and Xenobiotic biodegradation.
CO-4. Learners will understand the concept of biodiversity: conservation and management, rules and acts. CO5: Deep understanding of global environmental problems-ozone depletion, UV-B greenhouse effect and acid rain, their impact and biotechnology approaches for management.

PAPER 2 CODE BTC302: GENETIC ENGINEERING

Course Outcomes

CO-1. Students will understand the core concepts and fundamentals of genetic engineering.
CO-2. Develop their competency on different types of strain improvements.
CO-3. Analyses of the enzymes and vectors for genetic modification for required productivity.
CO-4. Examination of gene cloning and evaluate different methods of gene transfer like metagenomics M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 33 of 46
CO-5. They are able to critically analyze the major concerns and applications of transgenic technology.

PAPER 3 CODE BTC303:PLANT BIOTECHNOLOGY

Course Outcomes:

CO-1. Understanding of different techniques of in vitro culture and media preparation. Concept of totipotency,morphogenesis, organogenesis and somatic embryogenesis.
CO-2. Knowledge of protoplast isolation, culture, fusion, somatic hybridization and cybridization.
CO-3. Concepts of transgenic plant production through Ri and Ti plasmids and direct methods.
CO-4. Concept of chloroplast transformation and its advantages, post harvest technology, and cryopreservation.
CO-5. Role of biotechnology in qualitative improvement in plants through herbicide resistance, insect resistance,disease resistance and N2 fixation. Knowledge of molecular markers: RFLP, PCR, QTL and MAS.

PAPER 4 CODE BTE301:ADVANCED MOLECULAR BIOLOGY

Course Outcomes

CO-1. To understand key principles of how cells work, including gene regulation, protein synthesis and signaltransduction.
CO-2. To locate, analyse, evaluate and synthesise information from a wide variety of sources to understand thekey principles of Molecular Biology. M.SC. BIOTECHNOLOGY 2020-2021 ONWARDS Approved by Board of Studies in Biotechnology on 15/09/2020, Faculty of Life Science on 14/10/20220 Standing committee on Executive Council on Page 37 of 46
CO-3. To read, interpret and discuss major contributions to Molecular Biology research published in scientificresearch literature.

CO-4. To develop effective, creative and innovative solutions, both independently and cooperatively, to currentand future research problems in Molecular Biology

PAPER 5 CODE BTE302:AGRICULTURAL MICROBIOLOGY

Course Outcomes

CO-1. Describe role of microorganism in recycling soil nutrients, biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability, production of plant growth promoting substances and inhibiting pathogens.
CO-2. Critically discuss the need for agricultural microbiology and explain their limitations.
CO-3. Applications of microorganisms in varied fields of agricultural microbiology like bioremediation, biofertilizers and waste water treatment.
CO-4. Analyses of various aspects of N2 fixation, Phosphate solubilization, PGPR etc. Pre and post harvestingagricultural losses, management, formulation, mass production and applications.
CO-5. Green revolution, transgenic plant, gene protection technology, resistant verities, management of agricultural waste as food, feed and fuel.

PAPER 6 CODE BTE303:BIOPROCESS ENGINEERING AND TECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Insights on industrially important organisms, recent developments in fermentation processes and various optimization strategies at fermenter level. Learns about the design, types of fermenters and various criticalcomponents of bioreactors.
CO-2. Is able to describe control parameters, fluid rheology and process constraints in large scale bioreactors.Strategies of product recovery from a fermentation broth.
CO-3. Understand the significance and activities of microorganisms in food. Recognize the characteristics of food-borne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.
CO-4. Analyze the importance of microbiological quality control programme's in food production.
CO-5. Discuss the microbiology of different types of food commodities. Describe the rationale for the use of standard methods and procedures for the microbiological analysis of food

PAPER 7 BTE304: BIOTECHNOLOGY

Course Outcomes

Upon successful completion of the course, the student:

CO-1. Will learn about industrially relevant microbial products and their production process, role of biotechnology in environment management.
CO-2. Acquires knowledge about strains development, selection of hyper producers, microbial products, metabolic engineering and various industrial relevant microbial products and their production process

Learns about the designing of recombinant heterologous expression systems such as E. coli, yeast, mammalian and insect cells.

CO-3. Learns about sterilization at reactor scale and different types of sterilization strategies.

CO-4. Attains knowledge about designing large scale industrial processes and types of cultivation strategies Understands the concept of recombinant biomolecules, therapeutic proteins, vaccines, antibodies, bio-pesticides, bio-fertilizers, and probiotics .

CO-5. Understands different types of regulatory approvals required for drug development and difference betweenbiologics, biosimilars and biobetters

Department of PG Studies and Research in Chemistry And Pharmacy

Programme Offered

1. **B.Pharma**
2. **M.Sc. Chemistry**
3. **Ph.D Chemistry**

B. Pharmacy

PROGRAMME OUTCOMES :

- Gain knowledge on basics of biology, structure & function of various systems of human body, fundamentals & principles of analytical chemistry, basics& preparation of different dosage forms, monographs of inorganic drugs& pharmaceuticals, soft-skills mamagement, and problems solving in pharmacy.
- Able to understand physiology, pathophysiological mechanisms, biochemical processes, diagnosis of various pathological conditions, understand metabolism of bioactive molecules, performing haemotological tests & biochemical tests. Basic understanding of organic reactions, identification, preparation,awareness of environmental problems, application of databases in pharmacy.
- Understanding stability, reactivity, standardisation & medicinal uses of organic compounds. Physical, physico-chemical properties & unit operations involved in dosage forms. Basics and pharmaceutical applications of microbiology.
- Gain knowledge on stereochemical aspects, synthesis of organic compounds & derivatives, chemistry, mechanism of action, pharmacology & therapeutic uses of natural & synthetic medicinal compounds. Fundamentals of crude drugs and their medicinal properties, understand & demonstrate chemical kinetics in the formulation of dosage forms.
- Gain knowledge of physico-chemical properties of drug substance, formulation, manufacturing , evaluation and packaging of various solid, liquid and semi-solid dosage forms. Chemistry, preparation, assay, mechanism of action, structure activity relationship, pharmacodynamics, pharmacokinetics of

various classes of drugs and their application in treatment of various diseases. Fundamentals, medicinal properties, isolation, characterisation, quality control & evaluation of crude drugs and development of herbal formulations. Indian pharmaceutical acts & laws and regulatory authorities governing the manufacture and sale of pharmaceuticals.

- Gain knowledge in drug design techniques, chemistry, assay, mechanism of action, structure activity relationship & pharmacology of various categories of drugs. Experimental screening models for drug discovery. Biopharmaceutics & pharmacokinetic applications in pharmacotherapy. Learn about raw materials, formulation, quality control, patenting & regulatory requirements of nutraceuticals & herbal cosmetics. Information in techniques, production & uses of biopharmaceuticals. Quality assurance, quality control systems, documentation and validation in pharmaceutical industry.
- Gain knowledge in spectroscopic studies & chromatographic techniques of drugs. Designing & evaluation of novel drug delivery systems. Technology transfer from lab scale to industry, regulatory affairs & quality management systems in pharmaceutical industry. Role of pharmacist in community and hospital. application of knpowledge gained in isolation, identification, standardisation, formulation, manufacturing & evaluation of pharmaceuticals.
- Use of statistical principles in research and development of pharmaceuticals. Knowledge of National health programs and pharmacist role. Advanced techniques used in drug design, screening, analysis of pharmaceuticals, cosmetics & nutraceuticals. Methods & importance of reporting adverse drug reactions. knowledge of regulatory science, Pharmaceutical industrial & business management.

PROGRAMME SPECIFIC OUTCOMES :

PSO-1. Detail understanding of theoretical and practical knowledge of all core and allied subjects of pharmaceutical sciences, which consist of dosage form design, routes of administration of various drugs, their mechanism of action, chemical moiety involved, doses of drugs, patient treatment, patient counseling, drug dispensing, hospital administration, drug manufacturing, QA/QC and regulation etc.
PSO-2. Highlight the concepts and operative components of pharmacovigilance, clinical pharmacy, hospital pharmacy, community pharmacy, pharmaceutical care, pharmacovigilance, pharmacoeconomics, clinical research, clinical pharmacokinetics and other related areas for the benefit of academicians, hospital/community pharmacists and industry, emphasizing the consequences of the use of medications.
PSO-3. Rigorous core course-work in biopharmaceutics, drug transport, pharmacokinetics & pharmacodynamics, drug delivery systems, cell and molecular biology, synthetic and macromolecular chemistry, chemical andbiomedical engineering, materials science, physiology and pharmacology.
PSO-4. Emphasis on Drug Discovery and Design, Drug Delivery, Drug Action and Clinical Sciences, DrugAnalysis, Cost Effectiveness of Medicines (Pharmacoeconomics), Drug Regulatory Affairs etc.

SEMESTER I

PAPER 1 BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I

Course Outcomes

Upon completion of this course the student should be able to

CO-1. Explain the gross morphology, structure and functions of various organs of the human body.
CO-2. Describe the various homeostatic mechanisms and their imbalances.
CO-3. Identify the various tissues and organs of different systems of human body.
CO-4. Perform the various experiments related to special senses and nervous system.

CO-5. Appreciate coordinated working pattern of different organs of each system

PAPER 2 BP102T. PHARMACEUTICAL ANALYSIS

Course Outcomes

Upon completion of the course student shall be able to

CO-1. understand the principles of volumetric and electro chemical analysis
CO-2. carryout various volumetric and electrochemical titrations
CO-3. develop analytical skills

PAPER 3 BP103T. PHARMACEUTICS- I

Course Outcomes

Upon completion of this course the student should be able to:

CO-1. Know the history of profession of pharmacy
CO-2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceuticalcalculations
CO-3. Understand the professional way of handling the prescription
CO-5. Preparation of various conventional dosage forms

PAPER 4 BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY

Course Outcomes

Upon completion of course student shall be able to

CO-1. know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals

CO-2. understand the medicinal and pharmaceutical importance of inorganic compounds

PAPER 5 BP105T.COMMUNICATION SKILLS

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceuticaloperation
CO-2. Communicate effectively (Verbal and Non Verbal)
CO-3. Effectively manage the team as a team player
CO-4. Develop interview skills

CO-5. Develop Leadership qualities and essentials

PAPER 6 BP 106RBT.REMEDIAL BIOLOGY

Course Outcomes

Upon completion of the course, the student shall be able to

CO-1. know the classification and salient features of five kingdoms of life
CO-2. understand the basic components of anatomy & physiology of plant
CO-3. know understand the basic components of anatomy & physiology animal with special reference to human

PAPER 7 BP 106RMT.REMEDIAL MATHEMATICS

Course Outcomes

Upon completion of the course the student shall be able to:-

CO-1. Know the theory and their application in Pharmacy
CO-2. Solve the different types of problems by applying theory
CO-3. Appreciate the important application of mathematics in Pharmacy

SEMESTER II

PAPER 1 BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II

Course Outcomes

Upon completion of this course the student should be able to**:**

CO-1. Explain the gross morphology, structure and functions of various organs of the human body.
CO-2. Describe the various homeostatic mechanisms and their imbalances.
CO-3. Identify the various tissues and organs of different systems of human body.
CO-4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etcand also record blood pressure, heart rate, pulse and respiratory volume.
CO-5. Appreciate coordinated working pattern of different organs of each system
CO-6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of humanbody.

PAPER 2 BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. write the structure, name and the type of isomerism of the organic compound

CO-2. write the reaction, name the reaction and orientation of reactions
CO-3. account for reactivity/stability of compounds,
CO-4. identify/confirm the identification of organic compound

PAPER 3 BP203 T. BIOCHEMISTRY

Course Outcomes

Upon completion of course student shell able to

CO-1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs,therapeutic and diagnostic applications of enzymes.
CO-2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
CO-3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis ofRNAs and proteins.

PAPER 4 BP 204T.PATHOPHYSIOLOGY

Course Outcomes

Upon completion of the subject student shall be able to

CO-1. Describe the etiology and pathogenesis of the selected disease states;
CO-2. Name the signs and symptoms of the diseases; and
CO-3. Mention the complications of the diseases.

PAPER 5 BP205 T. COMPUTER APPLICATIONS IN PHARMACY

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. know the various types of application of computers in pharmacy
CO-2. know the various types of databases
CO-3. know the various applications of databases in pharmacy

PAPER 6 BP 206 T. ENVIRONMENTAL SCIENCES

Course Outcomes

Upon completion of the course the student shall be able to**:**

CO-1. Create the awareness about environmental problems among learners.
CO-2. Impart basic knowledge about the environment and its allied problems.
CO-3. Develop an attitude of concern for the environment.
CO-4. Motivate learner to participate in environment protection and environment improvement.

CO-5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
CO-6. Strive to attain harmony with Nature.

SEMESTER III

PAPER 1 PHARMACEUTICAL ORGANIC CHEMISTRY –II

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. write the structure, name and the type of isomerism of the organic compound
CO-2. write the reaction, name the reaction and orientation of reactions
CO-3. account for reactivity/stability of compounds,
CO-4. prepare organic compounds

PAPER 2 BP302T. PHYSICAL PHARMACEUTICS-I (Theory)

Course Outcomes

Upon the completion of the course student shall be able to

CO-1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
CO-2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expirydate of formulations
CO-3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosageforms

PAPER 3 BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. Understand methods of identification, cultivation and preservation of various microorganisms
CO-2. To understand the importance and implementation of sterlization in pharmaceutical processing andindustry
CO-3. Learn sterility testing of pharmaceutical products.
CO-4. Carried out microbiological standardization of Pharmaceuticals.
CO-5. Understand the cell culture technology and its applications in pharmaceutical industries.

PAPER 4 BP 304 T. PHARMACEUTICAL ENGINEERING

Course Outcomes

Upon completion of the course student shall be able:

CO-1. To know various unit operations used in Pharmaceutical industries.
CO-2. To understand the material handling techniques.
CO-3. To perform various processes involved in pharmaceutical manufacturing process.
CO-4. To carry out various test to prevent environmental pollution.
CO-5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
CO-6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

SEMESTER IV

PAPER 1 BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III

Course Outcomes

At the end of the course, the student shall be able to

CO-1. understand the methods of preparation and properties of organic compounds
CO-2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
CO-3. know the medicinal uses and other applications of organic compounds

PAPER 2 BP402T. MEDICINAL CHEMISTRY – I

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. understand the chemistry of drugs with respect to their pharmacological activity
CO-2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
CO-3. know the Structural ActivityRelationship (SAR) of different class of drugs
CO-4. write the chemical synthesis of some drugs

PAPER 3 BP 403 T. PHYSICAL PHARMACEUTICS-II

Course Outcomes

Upon the completion of the course student shall be able to

CO-1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
CO-2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expirydate of formulations
CO-3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosageforms.

PAPER 4 BP 404 T. PHARMACOLOGY-I

Course Outcomes

Upon completion of this course the student should be able to

CO-1. Understand the pharmacological actions of different categories of drugs
CO-2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
CO-3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases. 4.Observe the effect of drugs on animals by simulated experiments
CO-4. Appreciate correlation of pharmacology with other bio medical sciences

PAPER 5 BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I

Course Outcomes

Upon completion of the course, the student shall be able

CO-1. to know the techniques in the cultivation and production of crude drugs
CO-2. to know the crude drugs, their uses and chemical nature
CO-3. know the evaluation techniques for the herbal drugs
CO-4. to carry out the microscopic and morphological evaluation of crude drugs

SEMESTER V

PAPER 1 BP501T. MEDICINAL CHEMISTRY – II

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Understand the chemistry of drugs with respect to their pharmacological activity
CO-2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
CO-3. Know the Structural ActivityRelationship of different class of drugs
CO-4. Study the chemical synthesis of selected drugs

PAPER 2 BP 502 T. Industrial Pharmacy - I

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
CO-2. Know various considerations in development of pharmaceutical dosage forms
CO-3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

PAPER 3 BP503 .T. PHARMACOLOGY-II

Course Outcomes

Upon completion of this course the student should be able to

CO-1. Understand the mechanism of drug action and its relevance in the treatment of different diseases 2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
CO-2. Demonstrate the various receptor actions using isolated tissue preparation
CO-3. Appreciate correlation of pharmacology with related medical sciences.

PAPER 4 BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II

Course Outcomes

Upon completion of the course, the student shall be able**.**

CO-1. to know the modern extraction techniques, characterization and identification of the herbal drugs andphytoconstituents
CO-2. to understand the preparation and development of herbal formulation.
CO-3. to understand the herbal drug interactions.
CO-4. to carryout isolation and identification of phytoconstituents .

PAPER 5 BP 505 T. PHARMACEUTICAL JURISPRUDENCE

Course Outcomes

Upon completion of the course, the student shall be able to understand:

CO-1. The Pharmaceutical legislations and their implications in the development and marketing ofpharmaceuticals.
CO-2. Various Indian pharmaceutical Acts and Laws
CO-3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
CO-4. The code of ethics during the pharmaceutical practice

SEMESTER VI

PAPER 1 BP601T. MEDICINAL CHEMISTRY – III .

Course Outcomes

Upon completion of the course student shall be able to

CO-1. Understand the importance of drug design and different techniques of drug design.
CO-2. Understand the chemistry of drugs with respect to their biological activity.
CO-3. Know the metabolism, adverse effects and therapeutic value of drugs.

CO-4. Know the importance of SAR of drugs.

PAPER 2 BP602 T. PHARMACOLOGY-III

Course Outcomes

Upon completion of this course the student should be able to:

CO-1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
CO-2. comprehend the principles of toxicology and treatment of various poisoningsand
CO-3. appreciate correlation of pharmacology with related medical sciences.

PAPER 3 BP 603 T. HERBAL DRUG TECHNOLOGY

Course Outcomes

Upon completion of this course the student should be able to:

CO-1. understand raw material as source of herbal drugs from cultivation to herbal drug product
CO-2. know the WHO and ICH guidelines for evaluation of herbal drugs
CO-3. know the herbal cosmetics, natural sweeteners, nutraceuticals
CO-4. appreciate patenting of herbal drugs, GMP .

PAPER 4 BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS

Course Outcomes

Upon completion of the course student shall be able to:

CO-1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
CO-2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe thekinetics of drug absorption, distribution, metabolism, excretion, elimination.
CO-3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.
CO-4. Understand various pharmacokinetic parameters, their significance & applications.

PAPER 5 BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
CO-2. Genetic engineering applications in relation to production of pharmaceuticals

CO-3. Importance of Monoclonal antibodies in Industries
CO-4. Appreciate the use of microorganisms in fermentation technology

PAPER 6 BP606TPHARMACEUTICAL QUALITY ASSURANCE

Course Outcomes

Upon completion of the course student shall be able to:

CO-1. understand the CGMP aspects in a pharmaceutical industry
CO-2. appreciate the importance of documentation
CO-3. understand the scope of quality certifications applicable to pharmaceutical industries
CO-4. understand the responsibilities of QA & QC departments

SEMESTER VII

PAPER 1 BP701T. INSTRUMENTAL METHODS OF ANALYSIS

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
CO-2. Understand the chromatographic separation and analysis of drugs.
CO-3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

PAPER 2 BP 702 T. INDUSTRIAL PHARMACYII

Course Outcomes

Upon completion of the course, the student shall be able to:

CO-1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
CO-2. Understand the process of technology transfer from lab scale to commercial batch
CO-3. Know different Laws and Acts that regulate pharmaceutical industry
CO-4. Understand the approval process and regulatory requirements for drug products

PAPER 3 BP 703T. PHARMACY PRACTICE

Course Outcomes

Upon completion of the course, the student shall be able to

CO-1. know various drug distribution methods in a hospital
CO-2. appreciate the pharmacy stores management and inventory control
CO-3. monitor drug therapy of patient through medication chart review and clinical review
CO-4. obtain medication history interview and counsel the patients
CO-5. identify drug related problems
CO-6. detect and assess adverse drug reactions
CO-7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
CO-8. know pharmaceutical care services
CO-9. do patient counseling in community pharmacy;
CO-10. appreciate the concept of Rational drug therapy

PAPER 4 BP 704T: NOVEL DRUG DELIVERY SYSTEMS

Course Outcomes

Upon completion of the course student shall be able

CO-1. To understand various approaches for development of novel drug delivery systems.
CO-2. To understand the criteria for selection of drugs and polymers for the development of Novel drug deliverysystems, their formulation and evaluation

SEMESTER VIII

PAPER 1 BP801T. BIOSTATISITCS AND RESEARCH METHODOLOGY

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
CO-2. Know the various statistical techniques to solve statistical problems
CO-3. Appreciate statistical techniques in solving the problems.

PAPER 2 BP 802T SOCIAL AND PREVENTIVE PHARMACY

Course Outcomes

After the successful completion of this course, the student shall be able to:

CO-1. Acquire high consciousness/realization of current issuesrelated to health and pharmaceutical problemswithin the country and worldwide.
CO-2. Have a critical way of thinking based on current healthcare development.
CO-3. Evaluate alternative ways of solving problems related tohealth and pharmaceutical issues

PAPER 3 BP803ET. PHARMA MARKETING MANAGEMENT

Course Outcomes

The course aims to provide an understanding of marketing concepts and techniques and their applicationsin the pharmaceutical industry.

PAPER 4 BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. Know about the process of drug discovery and development
CO-2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
CO-3. Know the regulatory approval process and their registration in Indian and international markets

PAPER 5BP 805T: PHARMACOVIGILANCE

Course Outcomes

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

CO-1. Why drug safety monitoring is important?
CO-2. History and development of pharmacovigilance
CO-3. National and international scenario of pharmacovigilance
CO-4. Dictionaries, coding and terminologies used in pharmacovigilance
CO-5. Detection of new adverse drug reactions and their assessment
CO-6. International standardsfor classification of diseases and drugs
CO-7. Adverse drug reaction reporting systems and communication in pharmacovigilance
CO-8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
CO-9. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation
CO-10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
CO-11. ICH guidelinesfor ICSR, PSUR, expedited reporting, pharmacovigilance planning
CO-12. CIOMS requirements for ADR reporting 13. Writing case narratives of adverse events and their quality

PAPER 6 BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. know WHO guidelines for quality control of herbal drugs
CO-2. know Quality assurance in herbal drug industry
CO-3. know the regulatory approval process and their registration in Indian and international markets

CO-4. appreciate EU and ICH guidelines for quality control of herbal drugs

PAPER 7 BP 807 ET. COMPUTER AIDED DRUG DESIGN

Course Outcomes

Upon completion of the course, the student shall be able to understand

CO-1. Design and discovery of lead molecules
CO-2. The role of drug design in drug discovery process
CO-3. The concept of QSAR and docking
CO-4. Various strategies to develop new drug like molecules.
CO-5. The design of new drug molecules using molecular modeling software

PAPER 8 BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)

Course Outcomes

Upon completion of the subject student shall be able to;

CO-1. Summarize cell and molecular biology history.
CO-2. Summarize cellular functioning and composition.
CO-3. Describe the chemical foundations of cell biology.
CO-4. Summarize the DNA properties of cell biology.
CO-5. Describe protein structure and function.
CO-6. Describe cellular membrane structure and function.
CO-7. Describe basic molecular genetic mechanisms.
CO-8. Summarize the Cell Cycle

PAPER 9 BP809ET. COSMETIC SCIENCE

Course Outcomes

CO-1. Classification of cosmetic and cosmeceutical products Definition of cosmetics as per Indian and EUregulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs
CO-2. Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classificationand application
CO-3. Skin: Basic structure and function of skin. Hair: Basic structure of hair.
CO-4. Hair growth cycle. Oral Cavity: Common problem associated with teeth and gums.

PAPER 10 BP810 ET. PHARMACOLOGICAL SCREENING METHODS

Course Outcomes

Upon completion of the course the student shall be able to,

CO-1. Appreciate the applications of various commonly used laboratory animals.
CO-2. Appreciate and demonstrate the various screening methods used in preclinical research
CO-3. Appreciate and demonstrate the importance of biostatistics and researchmethodology
CO-4. Design and execute a research hypothesis independently

PAPER 11 BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

Course Outcomes

Upon completion of the course the student shall be able to

CO-1. understand the advanced instruments used and its applications in drug analysis
CO-2. understand the chromatographic separation and analysis of drugs.
CO-3. understand the calibration of various analytical instruments
CO-4. know analysis of drugs using various analytical instruments.

PAPER 12 BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

Course Outcomes

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to:

CO-1. Understand the need of supplements by the different group of people to maintain healthy life.
CO-2. Understand the outcome of deficiencies in dietary supplements.
CO-3. Appreciate the components in dietary supplements and the application.
CO-4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

M.SC. CHEMISTRY

PROGRAMME OUTCOMES :

- To impart knowledge in fundamental aspects of all branches of chemistry.
- To acquire deep knowledge in the study of physical, chemical, electrochemical and magnetic properties, structure elucidation using various techniques and applications of various organic and inorganic materials.
- To acquire basic knowledge in the specialized areas of chemistry and to train the students in various quantitative and qualitative analyses.
- To provide a broad foundation in Chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective.
- To make the Department a growing center of excellence in teaching, cutting-edge research, curriculum development and popularizing Chemistry.
- To provide students with the skills required to succeed in M.Sc. the Chemical industry or professional school.

- To make international collaborations for students and faculty exchange and research cooperation.
- The Department would like to attain worldwide recognition in Chemistry research and teaching.
- To expose the students to a breadth of experimental techniques using modern instrumentation.
- The Department also endeavors to contribute to industry and address problems of societal importance.
- The Department also aims at chemistry outreach in the form of books, online courses, and other chemistry education activities that showcase the role of Chemistry as a central science.

PROGRAMME SPECIFIC OUTCOMES :

PSO-1. The programme learning outcomes relating to M.Sc. degree programme in chemistry may include the following: After the completion of the M.Sc. Chemistry programme, the students of our department willbe able to:
PSO-2. Work in the interdisciplinary and multidisciplinary areas of chemical sciences and its applications.
PSO-3. Analyze the data obtained from sophisticated instruments (like FTIR, NMR, GCMS, HPLC, GCMS, UVVis, Fluorescence, and TGA) for the structure determination and chemical analysis.
PSO-4. Apply green/sustainable chemistry approach towards planning and execution of research in frontier areasof chemical sciences.
PSO-5. Have sound knowledge about the fundamentals and applications of chemical and scientific theories
PSO-6. Apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories andin industries.
PSO-7. Helps in understanding the causes of environmental pollution and can open up new methods for environmental pollution control.
PSO-8. Acquires the ability to synthesize, separate and characterize compounds using laboratory and instrumentation techniques.
PSO-9. Carry out experiments in the area of organic analysis, estimation, separation, derivative process, inorganicsemi micro analysis, preparation, conductometric and potentiometric analysis.
PSO-10. Learns about the potential uses of analytical industrial chemistry, medicinal chemistry and green chemistry.
PSO-11. Understands the background of organic reaction mechanisms, complex chemical structures, and instrumental method of chemical analysis, molecular rearrangements and separation techniques

SEMESTER I

PAPER 1 CHC-102: Organic Chemistry-I

Course Outcomes:

Upon successful completion of the Course, the students will be able to: Describe chemical bonding, resonance and hyperconjugation.

CO-1. Explain the concept of aromaticity and describe the various types of aromaticity.
CO-2. Perform aliphatic nucleophilic substitution reactions. And differentiate the various types of aliphaticnucleophilic substitution.

CO-3. Explain the stereochemistry substitution reaction and identify the stereochemical notations.
CO-4. Explain the concept of UV-Vis.spectroscopy: Electromagnetic radiation, electronic transitions,BeerLambert law, Fieser-Woodward rules for conjugated dienes and carbonyl compounds.
CO-5. Explain the concept of Describe Optical Rotatory Dispersion and Circular Dichroism, deduction of absolute configuration, octant rule for ketones.

PAPER 2 CHC-103: Physical Chemistry-I

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Explain about Schrodinger equation and the postulates of quantum mechanics.
CO-2. Explain the concept of quantum chemistry, operators, oscillators and numerical
CO-3. Describe the application of perturbation theory to small molecules and applications of variation methodand perturbation theory to the helium atom.
CO-4. Discuss about the angular momentum, eigen functions and eigen values of angular momentum.
CO-5. Explain the concept of phase rule and its applications.
CO-6. Schrodinger equation for a particle in a box and quantum chemical description.
CO-7. Basics of thermodynamics and its applications. 8. Explain the kinetics of enzyme reactions.

PAPER 3 CHC-104: Spectroscopy-I

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe and understand the basic profile of electromagnetic radiations, scientific notations for absorption,emission, transmission, reflection, dispersion, polarization and Classify electromagnetic spectrum ion of spectra.
CO-2. Explain basic concept of microwave spectroscopy and classify molecules on the basis of structuralparameters like moment of inertia and intermolecular distances.
CO-3. Analyse the effect of isotopic substitution and nonrigid bond and polyatomic molecules, determine the:Rotation of molecules, rotational spectra, diatomic molecules and other structural parameters.
CO-4. Assess linear harmonic oscillator, the vibrating diatomic molecule, the simple harmonic oscillator, the anharmonic oscillator and other supporting models. Analysis of vibrating models for diatomic vibrating rotator, vibration of polyatomic molecules,
CO-5. Describe the overtones and combination frequencies, the influence of rotation on the spectra of polyatomicmolecules, the influence of nuclear spin, symmetric top molecules, analysis by Infra-red technique - Group frequencies, outline of technique and instrumentation.
CO-6. Describe the Classical and quantum of theory of Raman effect, pure rotational, vibrational and vibrational-rotational Raman spectra, rule of mutual exclusion, overtone and combination vibrations, Rotational fine structure, outline of technique and instrumentation, applications.
CO-7. Describe and understand vector representation of momenta and vector coupling, spectra of hydrogen atomand alkali metal atoms, Franck-Condon principle, electronic spectra of polyatomic molecules. Emission spectra; radiative and non-radiative decay, internal conversion, charge-transfer spectra.

PAPER 4 CHE-101A: Mathematics for Chemist and Computer for Chemist

Course Outcomes:

Uponsuccessful completion of the Course, the students will be able to:

CO-1. Describe about vectors matrix algebra.
CO-2. Describe basic rules for integration and applications of integral calculus.
CO-3. Explain about the elementary differential equations.
CO-4. Explain about the probability theorems and variance root means square deviation.
CO-5. Explain the basic and fundamental of computers.
CO-6. Describe about the operating systems, network and languages.
CO-7. Explain about the programming in chemistry.

PAPER 5 CHE-101B: Biology for Chemists and Computer for Chemist

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Function and organization of various bio-molecules present in the living cell.
CO-2. Structure of amino acid proteins, DNA, RNA, Carbohydrates, Lipids and Vitamins.
CO-3. Explain about Nucleic Acids i.e. Purine and pyrimidine bases of nucleic acids
CO-4. Explain about the basic and fundamental of computers.
CO-5. Describe operating systems, network and language.
CO-6. Explain about the programming in chemistry.

SEMESTER II

PAPER 1 CHC-201: Inorganic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the formation constant and stability of metal complexes.
CO-2. Explain reaction mechanism of square planer complexes and trans effect stability of the coordinationcomplexes
CO-3. Describe the fundamental requirement for interpretation of electronic spectra of metal compound forprediction of their properties.
CO-4. Describe the studies of metal nitrosyls and its preparation, structures and properties.
CO-5. Explain the Chemistry of dinitrogen complexes.
CO-6. Explain the concepts of symmetry and symmetry operation and groups or point groups its importance.

PAPER 2 CHC-202 : Organic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. To perform aliphatic and aromatic electrophilic substitution reactions.
CO-2. To differentiate the various types of aliphatic electrophilic substitution mechanism.
CO-3. To explain the stereochemistry substitution reaction
CO-4. To describe various reactions involved in addition to C-C double bond and C-X bond.
CO-5. To Explain the stereochemical aspects in addition reaction
CO-6. To Explain aromatic nucleophilic substitution reactions.
CO-7. To describe the basic concepts of Infrared and Raman Spectroscopy

PAPER 3 CHC-203: Physical Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe and understand the basic principle of unimolecular reactions and fast reaction kinetics
CO-2. Explain about the adsorption process and its theories
CO-3. Describe the concept of colloidal material and their stability for many practical uses.
CO-4. Explain the redox processes in electrochemical systems.
CO-5. Describe and understand the Debye-Huckel Onsager theory and determination of activity and activitycoefficient.
CO-6. Explain the Impact of irreversible electrode phenomena.
CO-7. Describe the molecular mass determination through different methods, emulsion and coagulation, ButlerVolmer's equation, Tafel's plot, Theory of polarography, Ilkovic equation, Half wave potential andits significance.

PAPER 4 CHC-204: Spectroscopy-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Explain the basic principle of photoacoustic spectroscopy.
CO-2. Describe and understand the basic methods of X-ray structural analysis of crystals.
CO-3. Describe the electron diffraction and neutron diffraction and its measurements techniques.
CO-4. Explain about the structure and functions of biomolecules.
CO-5. Describe the properties of biopolymer.
CO-6. Describe the bioenergetics and transport of ions.

PAPER 5 CHC-205: Environmental Chemistry

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the air, water, pollution by diffract industry, pesticides, microorganism.
CO-2. Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processesin air, water, and soil.
CO-3. Recognize different types of toxic substances & responses and analyze toxicological information.
CO-4. Apply basic chemical concepts to analyze chemical processes involved in different environmentalproblems (air, water & soil).
CO-5. Describe experimental methods for analysis of water and soil analysis and pollution awareness to society.
CO-6. Describe the effect of toxic elements such on environmental and biological systems.
CO-7. Describe causes and effects of environmental pollution by energy industry and discuss some mitigationstrategies.
CO-8. Introduction and principles of Green Chemistry and Introduction and different act of biodiversity.

PAPER 6 CHC-206: Inorganic Chemistry-II

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Conduct the experiments for the preparation, characterization of metal complexes
CO-2. Conduct chemical analyses by qualitative and quantitative analysis of metal complexes
CO-3. Conduct separation and estimation of amount of metal ions in binary metal ion mixture.
CO-4. Volumetric and gravimetric analysis.
CO-5. Interpretation of TG and NMR spectra of some known compounds

PAPER 7CHC-208: Physical Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Determination of velocity constant, order of the reaction and energy of activation for sopanification.
CO-2. Determine the solubility and solubility product of sparingly soluble salts, strength of strong and weakacids, Activity coefficient of zinc ions in the solution of zinc sulphate.
CO-3. Determination of strengths of halides in a mixture, valency of mercurous ions potentiometrically.
CO-4. Enzyme kinetics -inversion of sucrose, rate constant for hydrolysis/inversion of sugar using a polarimeter

SEMESTER III

PAPER 1 CHC-301: Inorganic Chemistry-III

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Describe advanced symmetry concepts of chemical molecules and its applications.
CO-2. To identify the axis, plane, center and point group, product of symmetry operation and character table ofchemical compounds.
CO-3. Chemical application of group theory in spectroscopy.
CO-4. Analyze the reaction mechanism of metal complex formation including structure and properties
CO-5. Describe the role of metal in biological system and their function.
CO-6. Describe the structural and functional relationships, mechanisms and importance of metalloenzymes.

PAPER 2 CHC-302:Organic Chemistry-III

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. To describe basics of Nuclear Magnetic Resonance Spectroscopy and its application.
CO-2. To describe photochemical reactions and photochemistry of carbonyl compounds.
CO-3. To explain the basic concepts of pericyclic reactions.
CO-4. To explain sigmatropic rearrangements reactions and to study some important rearrangements reactions indetail.
CO-5. To explain various advanced name reactions and their applications.

PAPER 3 CHC-303: Physical Chemistry III: Solid State Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the principles and kinetics of solid-state reactions.
CO-2. Explain about the stoichiometric crystal defects and non-stoichiometry.
CO-3. Describe the electronic properties and band theory
CO-4. Explain about the electrically conducting solids.
CO-5. Describe the types and theories of liquid crystals:

PAPER 4 CHE-301A (ELECTIVE PAPER I): Molecular Dynamics

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the principles of entropy, enthalpy and Gibb’s free energy.
CO-2. Explain about the theory of isotope effects and solvent effects.
CO-3. Describe the pharmacokinetics and pharmacodynamics of drug.
CO-4. Explain about the solvation and solvent effects.
CO-5. Describe the xenobiotics, biotransformation.

PAPER 5 CHE-301B (ELECTIVE PAPER II): Analytical Chemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

CO-1. Describe quantitative analysis of errors includes F- test, T- test etc.
CO-2. Explain principles and application of optical methods like AES, AAS, etc.
CO-3. Learn about the chromatographic and thermo gravimetric techniques and applications.
CO-4. Explain the principal, instrumentation and application of High-Performance Liquid Chromatography.
CO-5. Learn about the principal and instrumentation of AAS and Cyclic voltammetry.
CO-6. Determination of DO, BOD and COD, Different titration like Karl Fischer titration of water.

PAPER 6 CHE-301C: (ELECTIVE PAPER III): Photochemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the photochemical excitation and Jablonski diagram.
CO-2. Explain about the study of photochemistry of ketone-photo reduction-photo cycloaddition.
CO-3. Describe pericyclic reactions and cyclo addition and sigmatropic reactions.
CO-4. Describe stereochemical problems in relation to chemical transformations.
CO-5. Describe synthetically the processes relevant organic-chemical reactions and be able to discuss themechanism of these reactions.

PAPER 7 CHE-301D (ELECTIVE PAPER IV): Biochemistry

Course outcome

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the metal ions and K+/Na+ pump, Photosystem I and II, and transport and storage of Dioxygen.
CO-2. Explain the electron transport processes, Biological nitrogen fixation, and its mechanism, nitrogenase,Chemical nitrogen fixation.
CO-3. Learn about introduction of enzymes, mechanism of enzymes action, and types of reactions catalyzed byenzymes.
CO-4. Explain about vitamins, coenzymes, prosthetic groups, apoenzymes. Structure and biological functions ofcoenzyme A, thiamine pyrophosphate, pyridoxal phosphate, NAD+, NADP+, FMN, FAD, lipoic acid, vitamin B12.
CO-5. Explain the endergonic and exergonic reactions, Hydrolysis of ATP, synthesis of ATP from ADP, NerveConduction.

PAPER 8 CHE-302A (ELECTIVE PAPER V): Theoretical Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Explain the principles of quantum mechanics, Born-Oppenheimer approximation and its breakdown,Hartree- Fock equation.
CO-2. Describe the Maxwell-Boltzmann distribution law of molecular velocities and energies. Bose-Einstein andFermi- Dirac statistics, Application of Fermi-Dirac and Bose-Einstein statistics.
CO-3. Learn about entropy and probability, Einstein and Debye models, their weaknesses.
CO-4. Explain Onsager's reciprocity relations, electrokinetic phenomena, diffusion, coupled reactions.
CO-5. Fischer's lock and key and Koshland's induced fit hypothesis, concept and identification of active site bythe use of inhibitors, affinity labeling and enzyme modification by site-directed mutagenesis. Enzyme kinetics, Michaelis-Menten and Lineweaver-Burk plots, reversible and irreversible inhibition.

PAPER 9 CHE-302B (ELECTIVE PAPER VI): Chemistry of Materials

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. To demonstrate the understanding of materials, their classifications and applications.
CO-2. Describe the objectives of inorganic nanocomposite materials.
CO-3. Explain the mechanism of formation of nanomaterials, role of surfactants in the synthesis of nonmaterial
CO-4. To describe the Basics of metallic clusters, preparation, properties and applications of metallic clusters.
CO-5. Describe the importance and properties of defects in solids.
CO-6. Describe the Non-linear optical properties.
CO-7. Describe the band theory, free electron Theories of solid states

PAPER 10 CHE-302C (ELECTIVE PAPER VII): Electrochemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. The learner should be able to apply theories in electrochemistry to analyze electrode kinetics
CO-2. To understand representing electrochemical cell
CO-3. Explain various over potential involved during the operation the cell.
CO-4. Apply the knowledge to calculate electrochemical cell parameters, over potential, active surface areas.
CO-5. Learn about the methods of determining kinetic parameters for quasi-rversible and irreversible waves.

PAPER 11 CHE-302D (ELECTIVE PAPER VIII): Medicinal Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the SAR and QSAR of drug compounds.
CO-2. Describe methods of drug development including design and discovery.
CO-3. Explain the synthesis and structure SAR of antibiotics.

CO-4. ExplainAntibacterials and anti-malarial drug's its chemical structure and its therapeutic properties.
CO-5. Describe the common methods of preparation and its use of Non-steroidal Anti-inflammatory,Antihistaminic and antiasthmatic drugs.

PAPER 12 CHC-304: Inorganic Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Synthesis, separation and purification of following inorganic compounds, and their characterization.
CO-2. Application of the techniques and their characterization of coordination complexes

PAPER 13 CHC-306: Physical Chemistry-III

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Experimental determination of chemical reactions.
CO-2. Measurement of various properties.
CO-3. Determination of activation energy.
CO-4. Application related experiments for their research work.

SEMESTER IV

PAPER 1 CHC401 : Inorganic Chemistry-IV

Course Outcomes

Upon successful completion of the Course, thestudents will be able to

CO-1. Describe the ESR spectroscopy basic principles and its applications to transition metal complexes.
CO-2. Explain Mossbauer spectroscopy basic principles and its applications.
CO-3. Learn about the application of group theory to spectroscopy.
CO-4. Describe structure and function of metalloproteins in electron transport process.
CO-5. Explain metal complexes in transmission of energy.

PAPER 2 CHC-402: Organic Chemistry-IV

Course Outcomes

To impart advanced knowledge of conjoint spectroscopy. To learn about the mass spectrometry by different techniques.

Course Learning Outcomes: Upon successful completion of the Course, the students will be able to:

CO-1. Vibrational frequencies of functional groups, λmax of α, β-unsaturated carbonyl compounds.
CO-2. Deduction of absolute configuration, Octant rule for ketones.
CO-3. Structure elucidation of some model organic molecules by UV-Vis, IR, 1H NMR, 13C NMR and MS.
CO-4. Learn about the elimination reactions (E2, E1 and E1cB) mechanisms.
CO-5. Explain about the properties of enzymes and coenzymes.

PAPER 3 CHC-403: Physical Chemistry-IV

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Nuclear spin, nuclear resonance, saturation, J exchange phenomena.
CO-2. Principle of ESR.
CO-3. Photochemistry and photophysical principles, Theory of photoreaction.
CO-4. Steric and Conformational Properties 5. Nucleophilic and Electrophilic Reactivity.

PAPER 4 CHE-401A (ELECTIVE PAPER IX): Organic Synthesis

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Explain disconnection Approach with some examples.
CO-2. Describe the important functional group interconversions in alkene synthesis.
CO-3. Explain the concepts of one-, two-group C-C bond disconnections.
CO-4. Describe the preparation of organoboranes and their synthetic applications.
CO-5. Describe the reagents which causes oxidation in various compounds.
CO-6. Learn about the two types of reduction reactions like complete reduction and selective reduction.
CO-7. Knowledge about the stereospecific and stereoselective synthesis and its applications.

PAPER 5 CHE-401B: (ELECTIVE PAPER X): Polymers

Course Outcomes:

Upon successful completion of the Course, the students will be able to:

CO-1. Describes of fundamental concepts of biological macromolecules.
CO-2. Explain the preparation of high polymers, polymerization steps.
CO-3. Describe fundamental of conducting polymers and their various application.
CO-4. Describe the structure properties of polymers.
CO-5. Explain chemical and spectroscopic analysis of polymers.

PAPER 6 CHE-401C (ELECTIVE PAPER XI): Organo Transitional Metal Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the structure and bonding aspects of simple organometallic compounds.
CO-2. Apply different electron counting rules to predict the shape/geometry of organotransition metalcompound.
CO-3. Describe the methods of synthesis, properties of mono, di, tri, tetra, penta and hexahaptoorganotransitionmetal compound.
CO-4. Describe the steps of organotranstion metal complex catalyzed reaction for value added chemicals.
CO-5. Identify the different types of organotranstion metal complexes catalyzed reactions and apply the aboveconcepts to explain different catalytic reactions.
CO-6. Explain fluxionality of the organometallic compounds

PAPER 7 CHE-401D (ELECTIVE PAPER XII): Solid State Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Design and development of materials with pre-required properties based on the structure of solids.
CO-2. Analyze the physical-chemical along with unique optical, electrical, magnetic, thermal, and mechanicalproperties of solids that are distinct for compounds in their solution and/or gas phase.
CO-3. Describe solid state phase relations, their chemical synthesis, and thermodynamically and kineticparameters reaction kinetics as well as characterization methods.
CO-4. Develop the method to prepare, purify, and crystallize organic and inorganic solids.
CO-5. Use of spectroscopic, diffraction, microscopic, thermal, and magnetic methods to characterize organic andinorganic solids.
CO-6. Learn the unique optical, electrical, magnetic, thermal, and mechanical properties.

PAPER 8 CHE-402B (ELECTIVE PAPER XIV): Physical Organic Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. DescribeHückel molecular orbital theory for olefins.
CO-2. Explain the acids, bases, electrophiles, nucleophiles and catalysis.
CO-3. Describe the nature of non-covalent interactions at the basis of the formation of supramolecularcompounds which are held together by intermolecular bonds.
CO-4. Describe the fundamentals of supramoleculars, Supramolecular reactions and catalysis and storage ofmetals and transport across the membrane.
CO-5. Describe the redox reactions by excited metal complexes.

PAPER 9 CHE-402C (ELECTIVE PAPER XV): Heterocyclic Chemistry

Course Outcomes

Upon successful completion of the Course, the students will be able to:

CO-1. Describe the structures of classes of heterocyclic aromatic organic compounds.
CO-2. Classify simple heterocyclic aromatic compounds as electron deficient or electron rich and explain theirreactivity based on these properties.
CO-3. Apply organometallic reactions that applied in heterocyclic chemistry.
CO-4. Explain on a mechanistic level, reactions and synthesis of important electron deficient nitrogen containingheterocycles; pyridines, diazines and their benzo-condencedanalogs.
CO-5. Explain on a mechanistic level, reactions and synthesis of important electron rich heterocycles; furans,pyrroles and thiophenes and 1,3-azoles, and benzo-condencedanalogs.

Department of PG Studies and Research in Education

Programme Offered

1. B.Ed. (Education)
2. Ph.D. (Education)

PROGRAMME OUTCOME:

Aims of B.Ed. Undergraduate Programme The object of this Programme is to describe the achievements and outcomes expressed in terms of knowledge, understanding, skills, attitudes and values expected from this programme of study. The programme is designed keeping in mind innovativeness and flexibility in teaching-learning processes. It should help formulate graduate attributes, qualification descriptors, programme specific learning outcomes and course learning outcomes that are expected to be demonstrated by the student. Care has been taken to ensure the maintenance of international standards in the teacher education programe so as to inculcate in the student the spirit of global competitiveness. After the completion of the programme the student should be able to demonstrate the outcomes given below.

PROGRAMME SPECIFIC OUTCOMES:

The programme specific outcomes related to teacher education (B.Ed) Programme are given as under:

PSO-1. Prepare teachers with sound background in perspectives of education along with hands onexperiencebased on field exposure.
PSO-2. Develop a rational conceptualization of pedagogical knowledge and to incorporate it into thespecificcontent areas.
PSO-3. Prepare teachers equipped with knowledge and competencies to conduct as professionals tohandle thechallenges of the present day classroom.
PSO-4. Develop self-identity as a teacher educator through continuous experiences and reflective practices thatcontinually evaluate the effects of his/her choices and actions.
PSO-5. Develop teachers with a deep and critical awareness of professional ethics and an ability tocriticallyengage in reflective practices.
PSO-6. Understand the central concepts, tools of inquiry, and structures of the disciplines and can create learningexperiences that make these aspects of subject matter meaningful.
PSO-7. Understand how children learn and develop how they differ in their approaches to learning and createlearning opportunities that are adapted to diverse learners and learning contexts.
PSO-8. Plan learning experiences that are based on learner's existing proficiency, interests, experiences including misconceptions and errors and understand how students come to view, develop and make sense of subject matter contained in the learning experiences.
PSO-9. Use knowledge of effective verbal, nonverbal and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.
PSO-10. Understand and use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner. Page 11 of 127 VI.

SEMESTER I

PAPER 1 Name of the Programme -B.Ed CC 1Childhood & Growing Up

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. understanding of different aspects of a child's physical, motor,social and emotional development.
CO-2. understand the developmental process of children with diverse abilities in social, cultural and politicalcontext.
CO-3. Will be able to build sensitivity towards children's developmental needs and capabilities, within theirsocio-cultural context.
CO-4. Sensitive and critical understanding of the different social/educational/cultural/political realities at the coreof the exploration into childhood.
CO-5. Will be able to build an interdisciplinary frame work to interpret, analyse observations and interactionsfrom cross culture psychology.
CO-6. Will be able to provide hands-on experiences to interact with children, and training in methods tounderstand aspects of the development of children.

PAPER 2 CC 2. Education in India Status, Problems and Issues

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Understanding and perception of the role and functions of a teacher as envisaged in the NPE 1986
CO-2. Student Teacher will understand the different projects and schemes at Secondary level in M.P.
CO-3. Develop an understanding of the brief historical background of Indian Educational System in India.
CO-4. understanding of the objectives and scope of Secondary Education. Page 32 of 127
CO-5. Understanding and awareness of professional ethics.

PAPER 3 CC 3. Curriculum Development & School

Course outcomes

Upon completion of the course, the students-teacher will be able to:
CO-1. Realise the concepts of curriculum and syllabi.
CO-2. Design currticulum in the context of school experiences , evaluation , power , ideology, process andpractise and its transactional modes.
CO-3. Acquaint with the nature and types of curriculum.

PAPER 4 CC 4. Language across the Curriculum

Course outcomes

Upon completion of the course, the students-teacher will be able to:
CO-1. Recognise nature , function and role of language across the curriculum.
CO-2. Acquaint with obstacles in language usage while using the language and ways to overcome them.
CO-3. Understand importance and use of first and secondlanguage , multilingualism and impact of culture.
CO-4. Familiarise the students with the barriers to (Listening, Speaking. Reading Writing LSRW skills andactivities for developing these skills.

PAPER 5 CC 4. Language across the Curriculum

Course outcomes

Upon completion of the course, the students-teacher will be able to:
CO-1. Recognise nature , function and role of language across the curriculum.
CO-2. Acquaint with obstacles in language usage while using the language and ways to overcome them.
CO-3. Understand importance and use of first and secondlanguage , multilingualism and impact of culture.
CO-4. Familiarise the students with the barriers to (Listening, Speaking. Reading Writing LSRW skills andactivities for developing these skills.

SEMESTER II

PAPER 1 :Learning& Teaching

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Aware of different contexts of learning and situate schools as a special environment for learning;
CO-2. Reflect on their own implicit understanding of the nature and kinds of learning; Gain an understanding of different theoretical perspectives on learning with a focus on cognitive views of learning as well as social–constructivist theories; Explore the possibilities of an understanding of processes in human
CO-3. Cognition and meaning–making them as basis for designing learning environments and experiences atschool; and Page 42 of 127
CO-4. Appreciate the critical role of learner's based on differences and contexts in making meanings, and hencedraw out implications for schools and teachers.

PAPER 2 PC.1.Pedagogy of a School Part I Hindi(A)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Appreciate the importance of teaching Hindi as a second / third Language.
CO-2. Understand the aims and objectives of teaching Hindi.
CO-3. Acquire basic skills of language teaching, Aims/Objectives.
CO-4. Know the different methods of teaching .
CO-5. Prepare a lesson notes and teach accordingly. Page 44 of 127
CO-6. Appreciate and use of modern educational media.

PAPER 3 English (C)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Master the different techniques, devices of the Second language structure, sounds and vocabulary.
CO-2. Understand the status of English language.
CO-3. Distinguish between different approaches and methods of teaching English and their use in the classroom.
CO-4. Acquire the basic skills of language learning.
CO-5. Plan and execute of different types of lessons in prose, poetry according to classroom situations.
CO-6. Appreciate the importance and use of suitable audio -visual aids in class room situations.
CO-7. Know the principles of curriculum construction.
CO-8. Prepare and use appropriate tools of evaluation to measure the linguistic abilities of the pupils.
CO-9. Realize his/her responsibilities as language teacher and pursue towards the aims of professional growth.
CO-10. Acquaint the to use the language correctly.

PAPER 4 Social Science(D)

Course outcomes–

Upon completion of the course, the students-teacher will be able to:

CO-1. Develop understanding about the basic differences between Social Studies and Social Science.

CO-2. Understand the need for teaching Social Science as an integrated discipline.
CO-3. Develop the ability to justify the Relevance of Social Science in terms of Contemporary events.
CO-4. Gain knowledge about the different approaches associated with the discipline.
CO-5. Develop certain professional skills useful for classroom teaching

PAPER 5 Biological Science(E)

Course outcomes–

Upon completion of the course, the students-teacher will be able to

CO-1. Understand the nature, scope & importance of Biological Sciences and get acquainted with ancient as wellas modern developments in the field of Bio-Sciences.
CO-2. Understand the Aims, Objectives of teaching Bio-Science and will be able to state the objectives inbehavioral terms
CO-3. Acquaint with the Resources for teaching Biology & their effective Utilization.
CO-4. Exposed to Micro teaching and preparing Resource Unit, Unit Plan & Lesson Plans.
CO-5. Understand the concept of curriculum, principles of curriculum construction and trends curriculumrevision
CO-6. Be introduced to various methods, approaches & models of teaching Biological Science and implementthem in their teaching practice.
CO-7. Understand and prepare the different types of test items for the Evaluation of students performance inBiology.
CO-8. Appreciate and inculcate the Competencies and commitments needed for a biological Science Teacher.
CO-9. Plan& execute various curricular & co-curricular activities related to teaching of Bio-Science.

PAPER 6 Mathematics(F)

Course outcomes

Upon completion of the course, the students-teacher will be able to

CO-1. Recall the meaning, nature and scope of mathematics.
CO-2. Acquaint aims and objectives of teaching mathematics in Secondary school level.
CO-3. Plan teaching in mathematics at micro and macro level. Page 61 of 127
CO-4. Prepare unit plans, resource unit and organize lesson to meet at different class room situations.
CO-5. Analyse and evaluate the curriculum of mathematics at Secondary school level.
CO-6. Apply different approaches and methods of teaching mathematics in classroom situations.
CO-7. Prepare and use instructional materials in teaching mathematics.
CO-8. Prepare different kinds of test and understand the comprehensive evaluation.
CO-9. Participate and organize the different co-curricular activities in mathematics.
CO-10. Understand the professional competencies, commitments and expectations of mathematics teacher.

PAPER 7 Pedagogy of a School Subject – Part II History(A)

Course outcomes

Upon completion of the course, the students-teacher will be able to

CO-1. Understand meaning, scope and importance of History in the school curriculum.
CO-2. Acquire content knowledge of methods of history .
CO-3. Acquire knowledge of aims and instructional objectives of teaching history
CO-4. Acquire skills in planning lessons in History
CO-5. Understand and apply the principles of organizing content in the teaching history .
CO-6. Acquire knowledge about Local, Regional National, and World History.
CO-7. Acquire the knowledge of Instructional Material and resources in teaching History .
CO-8. repare suitable teaching devices & using them & organizing field trips.
CO-9. Proficient in correlating History with other school subjects.
CO-10. Cultivate the qualities of a good History teacher
CO-11. Evaluate History text books and prescribed courses
CO-12. Develop necessary skills in the application of methods and techniques in the classroom

PAPER 8 Geography(B)

Course outcomes

Upon completion of the course, the students-teacher will be able to:
CO-1. Acquire knowledge about basic facts, concepts, laws principles and trends in Geography
CO-2. Acquire knowledge and understanding of the aims and objectives of Geography
CO-3. Realize the values of learning geography
CO-4. Make use of Audio-visual aids about Geography
CO-5. Develop skills in equipping the Geography (i) Museum (ii) Room (iii) Library
CO-6. Develop skills in organizing planning- learning experiments and in writing and organizing the lesson plan.
CO-7. Acquire the knowledge of Geography Curriculum

PAPER 9 Civics(C)

Course outcomes

Upon completion of the course, the students-teacher will be able to:
CO-1. Understand meaning, scope and importance of Civics in the school curriculum.
CO-2. Acquire content knowledge of methods of Civics.
CO-3. Acquire knowledge of aims and instructional objectives of teaching Civics
CO-4. Acquire skills in planning lessons in Civics
CO-5. Understand and apply the principles of organizing content in the teaching Civics .
CO-6. Acquire knowledge about Local, Regional National, and World Civics.
CO-7. Acquire the knowledge of Instructional Material and resources in teaching Civics
CO-8. Preparing suitable teaching devices & using them & organizing field trips.

CO-9. Proficiency in correlating Civics with other school subjects.
CO-10. Cultivate the qualities of a good Civics teacher
CO-11. Evaluate Civics text books and prescribed courses
CO-12. Develop necessary skills in the application of methods and techniques in the classroom.

PAPER 10 Economics(D)

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Acquire knowledge about basic facts, concepts, laws principles and trends in Economics
CO-2. Acquire knowledge and understanding of the aims and objectives of Economics
CO-3. Realize the values of learning Economics
CO-4. Make use of Audio-visual aids about Economics and Economics
CO-5. Develop skills in equipping the Economics (i) Museum (ii) Room (iii) Library
CO-6. Develop skills in organizing planning- learning experiments and in writing and organizing the lesson plan.
CO-7. Acquire the knowledge of Economics Curriculum.

PAPER 11 Chemistry(F)

Course outcomes

Course learning outcomes Upon completion of the course, the students-teacher will be able to:
CO-1. Understand the nature, scope and importance of Chemistry with special reference to secondary schoolcontent.
CO-2. Understand the aims and objectives of teaching Chemistry.
CO-3. State the specific behavioral changes under each objective.
CO-4. Understand and make use of different approaches & methods of teaching Chemistry.
CO-5. Prepare objective based lesson plans and use them in their internship.
CO-6. Understand and employ several teaching techniques helpful to develop scientific attitude and scientificmethod.
CO-7. Plan, use and maintain the Chemistry laboratory systematically.
CO-8. Understand the principles of text-book construction. Page 81 of 127
CO-9. Understand the importance of appropriate instructional materials (hardwares and softwares) in teachingChemistry and use them by preparing/selecting them in their practice teaching.
CO-10. Understand the importance of principles of curriculum construction in the organisation of Chemistrycontact.
CO-11. Get mastery in Chemistry content and imbibe the special qualities of Physical Science teacher.
CO-12. Prepare and use different tools of evaluation to assess the achievements of students in Chemistry.
CO-13. Develop professionally by attending lectures of professional interest, reading journals, and magazines andenroll as members of professional organisation.
CO-14. Organise co-curricular activities in science i.e. seminars, field trips, exhibitions discussions etc through thescience club.
CO-15. Apply the knowledge of Chemistry to develop scientific thinking and scientific out look.

CO-16. Develop skills in analyzing the content in terms of concepts and in learning experiences.
CO-17. Construct and administer unit test, conduct experiments improves teaching aids.

PAPER 12 Total Credit – 5

Course outcomes

Upon completion of the course, the students-teacher will be able to

CO-1. Understand the nature, scope and importance of Physics with special reference to secondary schoolcontent.
CO-2. Understand the aims and objectives of teaching Physics.
CO-3. State the specific behavioral changes under each objective.
CO-4. Understand and make use of different approaches & methods of teaching Physics.
CO-5. Prepare objective based lesson plans and use them in their internship.
CO-6. Understand and employ several teaching techniques helpful to develop scientific attitude and scientificmethod.
CO-7. Plan, use and maintain the physics laboratory systematically.
CO-8. Understand the principles of text-book construction.
CO-9. Understand the importance of appropriate instructional materials (hardwares and softwares) in teachingPhysics and use them by preparing/selecting them in their practice teaching.
CO-10. Understand the importance of principles of curriculum construction in the organisation of Physics contact.
CO-11. Get mastery in Physics content and imbibe the special qualities of Physical Science teacher.
CO-12. Prepare and use different tools of evaluation to assess the achievements of students in Physics.
CO-13. Develop professionally by attending lectures of professional interest, reading journals, and magazines andenroll as members of professional organisation.
CO-14. Organise co-curricular activities in science i.e. seminars, field trips, exhibitions discussions etc through thescience club.
CO-15. Apply the knowledge of physics to develop scientific thinking and scientific out look.
CO-16. Develop skills in analyzing the content in terms of concepts and in learning experiences.
CO-17. Construct and administer unit test, conduct experiments improves teaching

PAPER 13 Skills and Strategies of Teaching

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Responds to a variety of Maxims of Teaching.
CO-2. Develop the teaching skills of Students.
CO-3. Understand the content of application of different strategies of teaching and also implement them.
CO-4. Understand the various features of models of teaching effectiveness

SEMESTER III

PAPER 1 AESD 3.Educational Psychology

Course outcomes

Upon completion of the course, the students-teacher will be able to: Page 98 of 127

CO-1. Identify how we become aware of ourselves, how we learn to interact with others, and how we influenceothers and how they influence us.
CO-2. Identify how psychologists study human behaviour and how this knowledge can be used to explain,predict, and influence behaviour,
CO-3. Identify and critically evaluate psychological research methods.
CO-4. Acquire and analyze empirical data.
CO-5. Assess the significance and impotance of research reports.
CO-6. Communicate clearly and effectively in a written format.

SEMESTER IV

PAPER 1 School and Society

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Acquaint the student teachers with the concept of gendered roles in society and their challenges. Page 99of 127
CO-2. Develop an understanding of the inequality and disparities in equal opportunities in education in societalcontext.
CO-3. Enable the student teachers to critically examine the stereotypes and rethink their beliefs.
CO-4. Student teachers to develop abilities to handle notion of gender and sexuality.

PAPER 2 Educational Technology & ICT

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Explain meaning, components, functions of computer and its historical backgrounds.
CO-2. Understand the computer peripherals and its Organization in computer system.
CO-3. Develop skill in handling computer and using word documents.
CO-4. Develop skill in computation, analysis and interpretation of data by using Excel Spread sheets.
CO-5. Understand the Educational implications of Power Point Presentation and its use in classroom context.
CO-6. Understand the applications of Information Technology in the field of teacher education programme andtraining

PAPER 3 CREATING AND INCULSIVE SCHOOL

Course outcome

Upon completion of the course, the students-teacher will be able to:

CO-1. Identify the children of special needs .
CO-2. Underestand the nature of special needs their psychoeducational characterstics and functional limitation.Page 107 of 127
CO-3. Familiarize with assessment and placement procedure for children with special needs.
CO-4. Develope understanding about accommodating special needs in regular classroom.
CO-6. Appreciate the education of children with special needs.

PAPER 4 Optional Course: (Any One of the Subject mentioned below)

Course outcomes

Upon completion of the course, the students-teacher will be able to: Page 110 of 127

CO-1. Understand the principles, scope and need of guidance and counselling in schools
CO-2. Acquaint himself with nature of different problems faced by children in context of learning anddevelopment.
CO-3. Understand the acquisition and process of learning in children with special needs.
CO-4. Acquaint himself with learning disabilities of children and its remedies
CO-5. Take up minimum guidance programme at school level.

PAPER 5 B. Environmental Education

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Understand the concept, significance, scope and terminologies, objectives and programmes ofenvironmental education. Page 113 of 127
CO-2. Develop awareness about the various types of pollution, ecological imbalances and life and contributionsof environmental activities.
CO-3. Interpret the environmental legislations in conservation and protection of the environment.
CO-4. Understand the role of governmental and non-governmental agencies in environmental education.
CO-5. Apply the methods of teaching and evaluation in environmental education

PAPER 6 Understanding the Self

Course outcomes

Upon completion of the course, the students-teacher will be able to:

CO-1. Facilitate the development of individuals who can take responsibility for their own learning and give aconscious direction to their lives.
CO-2. Students are encouraged to explore and develop through self-reflection a greater insight into their aims oflife, strengths and weaknesses and dynamics of formation of identity and a true individuality.
CO-3. Students also develop a capacity for social-relational sensitivity, effective communication skills and waysto create harmony within one’s own self and society.

CO-4. Student teachers discover and develop open-mindeness, the attitude of a self-motivated learner, havingself-knowledge and self-restraint.
CO-5. Student teachers develop the capacity for sensitivity, sound communication skills and ways to establishpeace and harmony.
CO-6. Develop the capacity to facilitate personal growth and social skills in their own students.

Department of PG Studies and Research in M.A (English)

Programme Offered

1. **M.A. English**
2. **Ph.D English**

Masters in English Literature (M.A. English)

PROGRAMME OUTCOMES :

- The object of this Programme is to describe the achievements and outcomes expressed interms of knowledge, understanding, skills, attitudes and values expected from thisprogramme of study. The programme is designed keeping in mind innovativeness and flexibility in teaching-learning processes. It should help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes that are expected to be demonstrated by the student. Care has been taken to ensure the maintenance of international standards in the teaching of literature in English so as to inculcate in the student the spirit of global competitiveness. After the completion of the programme the student should be able to demonstrate the following outcomes:

- Disciplinary knowledge of English Literature and Literary Studies
- Communication skills
- Critical thinking
- Analytical reasoning
- Problem solving
- Research-related skills
- Self-directedlearning
- Multicultural competence
- Moral and ethical awareness/ reasoning
- Digital literacy
- Leadership qualities
- Lifelong learning abilities

PROGRAMME SPECIFIC OUTCOMES :

The programme specific outcomes relating to M.A. English Programme are given as under:

PSO-1. Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity
PSO-2. Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.
PSO-3. Display an ability to read and understand various literary genres and stylistic variations.
PSO-4. Display an ability to write critically.
PSO-5. Cultivate the ability to look at and evaluate literary texts as a field of study.
PSO-6. Display knowledge to cultivate a better understanding of values – both literary values that aide us in literary judgment and also values of life at all stages.
PSO-7. Apply appropriate methodologies for the development of the creative and analytical faculties of the student.
PSO-8. Recognize employability options in English studies programme as part of skill development and as career avenues open to postgraduates in today's global world such as professional writing, content writing,translation, teaching English at different levels, mass media, journalism, aviation, communication and personality development.
PSO-9. Channelize the interest of the student towards analytical reasoning in a better way and help him make more meaningful choices regarding career after completion of the programme.
PSO-10. To enable the student to develop an awareness of the linguistic-cultural richness of India as an important outcome of English literary studies in India.

SEMESTER I

PAPER- 1 Poetry - M.A English

Course Outcomes

CO-1. Develop a basic understanding of Shakespearean, Renaissance (Non-Shakespearean) and Non English drama.
CO-2. Students will gain the ability to understand, analyze and critically appreciate texts in terms of plotconstruction, socio-cultural contexts and genre of drama.
CO-3. Engage with the major genres and forms of English literature and develop fundamental skills required forclose reading and critical thinking of the texts and concepts
CO-4. Appreciate and analyze the plays in the larger socio-political and religious contexts of the time.
CO-5. Develop a clear understanding of Renaissance Humanism that provides the basis for the texts suggested.

PAPER 2 Drama

Course Outcomes

CO-1. students will be able to trace the rise of print culture and the emergence of genre fiction
CO-2. Understand and examine the elements of early prose narrative, picaresque novel, historical novel, fictionby women and 19th century realistic novel.
CO-3. Make special and creative use of language for their expression.
CO-4. Appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
CO-5. Historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit byfocusing on major texts in the principal genres

PAPER 3 (A) Fiction

Course outcomes

CO-1. Appreciate the diversity of modern Indian literatures and the similarities between them .
CO-2. Understand and creatively engage with the notion of nation and nationalism.
CO-3. Appreciate the impact of literary movements on various Indian literatures.
CO-4. Critically engage with significant social issues like caste and gender.
CO-5. Understand the historical trajectories of Indian literatures.

PAPER 4 (B) Indian Fiction

Course outcomes

CO-1. Students will be able to demonstrate conceptual and textual understanding of prose texts.
CO-2. Students will explore its religious, political, philosophical and cultural aspects of the prescribed texts.
CO-3. Examine critically representative texts and develop comparative perspectives.

PAPER 5 Prose

Course outcomes

CO-1. Acquisition of basic knowledge of English speech sounds and speech patterns.
CO-2. Enhanced listening and speaking skills required for effective and efficient use of language for expression.
CO-3. recognize/understand the structure and various parts of the language
CO-4. Improved employability through language competency and proficiency.
CO-5. To impart the learners knowledge of English speech sounds and speech patterns
CO-6. To teach learners how to consult a pronouncing dictionary
CO-7. To enable the learners to acquire the listening skills required for effective communication.

PAPER 6 Phonetics and Spoken English

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Poetry 1.
CO-2. Identify the major characteristics and demonstrate in-depth knowledge of Pre-romantic poetry,
CO-3. Romantic Poetry, Victorian Poetry, Symbolist Poetry and Modern Poetry.
CO-4. Students will learn how poetic language can help them attain gravity, clarity, depth and
CO-5. complexity in verbal and written expression.
CO-6. Perceive literature as a fine form of expression.

SEMESTER II

PAPER 1 DRAMA

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Drama.
CO-2. Develop a basic understanding of Restoration Drama, Victorian Drama, Modern Drama and IndianDrama.
CO-3. Develop critical thinking and analytical skills through the study of literary and cultural texts.
CO-4. Examine critically key themes in representatives texts of the period and develop comparative perspectives

PAPER 2 (B) INDIAN DRAMA

Course outcomes:
CO-1. Appreciate the pluralistic and inclusive nature of Indian Drama and its attributes
CO-2. Critically appreciate the creative use of the English language in Indian Drama
CO-3. Critically engage with Indian literary texts written in English in terms of colonialism/post colonialism,regionalism, and nationalism.
CO-4. Interpret Indian drama and relate it to socio-cultural contexts and experiences.

PAPER III FICTION

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Fiction.
CO-2. Develop an in-depth understanding of 19th century fiction, rural novel psychological novel, naturalistnovel and post naturalist novel.
CO-3. Students will become aware and will be able to develop a better vision and perception of life through theirstudy.
CO-4. Explore and understand the nature of the relationships of human beings to other human beings and otherlife forms in relation to representative literary texts.

PAPER IV PROSE
Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Prose1.
CO-2. Enhanced skills and proficient expression gained through evaluation and synthesis of literary and culturaltexts
CO-3. Examine different ways of reading and using literary texts across a wide range of authors, genres andperiods.
CO-4. Examine different kinds of texts and develop comparative perspectives.

SEMESTER III

PAPER 1 CRITICAL THEORY

Course outcomes

CO-1. Students will acquire skills in the handling of theoretical issues related to the study of literature andculture.
CO-2. Students will become aware of vivid literary traditions of the world and get acquainted with literarystudies and analyse text in multiple genres through application of critical and theoretical approaches.
CO-3. Historically situate literary theorists whose works had informed and shaped various literary theoreticaldiscourses
CO-4. Sharpen interpretative skills in the light of various theoretical frameworks
CO-5. Develop awareness of various literary theories and the way they enrich and change our thinking aboutlanguage, literature and society

PAPER 2 ENGLISH LANGUAGE

Course outcomes

CO-1. Students will be able to recognise and understand the structure and various parts of the language.

CO-2. Identify the various functions language performs and the roles assigned to it.
CO-3. Understand that all languages behave alike and develop a tolerance for other languages.
CO-4. Recognize/understand the structure and various parts of the language.

PAPER 3 (A) INDIAN WRITING IN

Course outcomes:

CO-1. Engage with Indian literary texts written in English and critically appreciate its historical trajectory fromcolonial times till the present.
CO-2. Develop critical thinking and analytical skills through the study of Indian literary and cultural texts inEnglish.
CO-3. Approach Indian Writing in English from multiple positions based on historical and social locations.
CO-4. To critically appreciate the creative use of the English language in Indian Writing English.

PAPER NO.: IV (A) WRITER SPECIFIC

Course outcomes

CO-1. With in-depth knowledge in Writer Specific Study, students will be able to demonstrate enhancedconceptual and textual understanding with developed critical thinking and analytical skills.
CO-2. To promote knowledge of research methodology and research ethics in students.
CO-3. Refer to authentic sources of information and document the same properly.
CO-4. Discuss and draft a plan for carrying out a piece of work systematically.

PAPER 4 (B) AMERICAN

Course outcomes

CO-1. Students will be able to understand and analyse the diversity of American literature with historical,political, religious and philosophical contexts.
CO-2. Examine and evaluate the American mind from global and Indian perspectives and critically appreciatethe complex nature of American society.
CO-3. Appreciate the complexity of the origin and reception of American Literature particularly in relation towriters of European (Anglo-Saxons, French, Dutch and more)

PAPER-5C) LINGUISTICS AND STYLISTICS

Course outcomes

CO-1. Allow the students to develop a linguistic perspective to the study of language.
CO-2. Students will be able to demonstrate proficiency in written and oral communication.
CO-3. Understanding the existence of language in the form of different dialects based on a set of establishedfactors.

CO-4. To identify the various functions a language performs and the roles assigned to it.

PAPER 6 – COMMUNICATIVE AND CONVERSATIONAL ENGLISH

Course outcomes

CO-1. Effective and efficient use of language for their expression and to improve their employability throughlanguage competency and proficiency.
CO-2. Language competency will help them become content writers, editors, soft skill trainers, counsellors,voice trainers etc.
CO-3. Think critically or laterally and solve problems
CO-4. Develop the professional ability to communicate information clearly and effectively in all kinds ofenvironment and contexts.

SEMESTER IV

PAPER I - CRITICAL THEORY

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in critical theory
CO-2. Acquire in-depth knowledge of literary theories and critical approaches to English literature.
CO-3. Develop in students the ability and confidence to process understand and examine different kinds of texts.
CO-4. To have a historical overview of major literary theorists, particularly of the 20th century
CO-5. Ability to show an understanding of historical and philosophical contexts that led to the development ofliterary theory and its practices

PAPER 2 – ENGLISH LANGUAGE

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in English Language.
CO-2. Students will be able to demonstrate proficiency in written and oral communication.
CO-3. Understand that all languages behave alike and develop a tolerance for other languages.
CO-4. Understand that making errors is a process of learning and not hesitate to use language for the fear ofmaking errors.

PAPER 3 (A) -INDIAN WRITING IN ENGLISH

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Indian writing in English.
CO-2. Evaluate and synthesise the vision and technique used in Indian novels and perspectives of Indian dramaand postcolonial Indian poetry in English.

CO-3. Critically engage with Indian literary texts written in English in terms of regionalism and nationalism.

PAPER 3 (B) – COMMONWEALTH LITERATURE IN ENGLISH

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge of Commonwealth literature.
CO-2. Students will be able to explore commonwealth literature with historical, political and cultural aspects.
CO-3. Examine different ways of reading and using literary texts with comparative perspective

PAPER 4 (A)-WRITER SPECIFIC STUDY

Course outcomes

With in-depth knowledge in Writer Specific Study, students will be able to demonstrate enhanced conceptual and textual understanding with developed critical thinking and analytical skills.

CO-1. Develop the ability to pursue research.
CO-2. Encourage suitable research to recognize sources.
CO-3. To distinguish fact from opinion/ editorialisation
CO-4. To produce objective versus subjective pieces.

PAPER 4 (B) -AMERICAN LITERATURE

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge of acquired in American literature.
CO-2. Explore and comprehend human relationships in the American spirit and develop a better vision andperception of life.
CO-3. Analyse the American mind from global and Indian perspectives and situate it to the contemporary world.
CO-4. Critically appreciate the diversity of American Literature in the light of regional variations in climate,cultural traits and economic priorities.

PAPER 4 (C)- LINGUISTICS AND STYLISTICS

Course outcomes

CO-1. Students will be able to enhance and diversify their knowledge acquired in Linguistics in Stylistics.
CO-2. Students will be able to demonstrate proficiency in written and oral communication.
CO-3. Understand that all languages behave alike and develop a tolerance for other languages.
CO-4. Understand that making errors is a process of learning and not hesitate to use language for the fear ofmaking errors.

PAPER 5 MANAGEMENT STUDIES

Course outcomes

CO-1. Enhanced reading, writing, listening and speaking skills for effective communication and improvedemployability.
CO-2. Students will be able to inculcate profound professional ethics and social values.
CO-3. Develop the professional ability to communicate information clearly and effectively in all kinds ofenvironment and contexts.

Department of PG Studies and Research in Law

Programme Offered

1. **B.A. LL.B. (Hons.)**
2. **LLM**
3. **Ph.D**

B.A. LL.B. (Hons.)

Program Outcome

- To equip students with a sound understanding of the foundations of legal knowledge
- To expose students to a wide range of disciplinary approaches to legal study, encouraging them to reflect on the complexity of legal practice.
- Interpret And Analyze the legal and social problems and work towards finding solutions to the problems by application of laws and regulations.
- Inculcate values of Rights and Duties, and transfer these values to real-life through legal and judicial process for promoting community welfare.
- Apply ethical principles and commit to legal professional ethics, responsibilities and norms of the established legal practices.

Program Specific Outcome

PSO-1 . Acquire advance knowledge in the specific field of law chosen for the specialization.
PSO-2 . Interpret And Analyze the legal and social problems and work towards finding solutions to the problemsby application of laws and regulations.

PSO-3 . Students are equipped with the knowledge of teaching methods through the subject on Teaching Pedagogythereby enabling them to enter the teaching profession.
PSO-4 . Through compulsory research component in the form of Dissertation, the students learn to conduct research study.

SEMESTER I

PAPER 1 GENERAL ENGLISH

Course Outcomes

CO-1. Understand the language and literary conventions through various texts.
CO-2. Develop analytical and critical thinking through reading and discussion.
CO-3. Acquire competence in both spoken and written language.
CO-4. Participate actively in discussions, debates, & research ventures.

CO-5. Understand concept better and also develop ability to write effective propositions in legal context.

PAPER 2 POLITICAL SCIENCE – I (MAJOR)

Course Outcomes

CO-1. Understands the world, their country, their society
CO-2. Have the knowledge about various political concepts .
CO-3. To Understand the connection between Law and Political Science
CO-4. Understand the broad and varied nature of Political Science
CO-5. To Understand the concepts of rights duties equality etc.

PAPER 3 HISTORY – I (MINOR)

Course Outcomes

CO-1. Read and learn to distinguish between primary and secondary written texts (sources) in the field ofHistory
CO-2. Learn about the Vedic history
CO-3. To have an idea about the administrative system of the Mourays, Guptas, &Harshvardhanas
CO-4. To study the history of the Indian Rajput dynasties
CO-5. To learn about the vedic system and era

PAPER 4 ECONOMICS – I (MINOR)

Course Outcome

CO-1. Relate the micro-economic theory concepts to the practical world.
CO-2. Understand and interpret the prevailing market conditions
CO-3. Analyse the demand-supply scenario; production and cost scenario
CO-4. Illustrate the problems and solution for social and economic welfare of the country
CO-5. Describe the efficient distribution patterns for sustainable economy

PAPER 5 LAW OF TORTS

Course Outcome

CO-1. To understand the principles of Tortious liability, the defences available in an action for torts.
CO-2. Study specific torts against the individual and property.
CO-3. Critically analyse damages and liability.
CO-4. Analyse the impact of law of Tort on different entities.
CO-5. Develop knowledge on defamation, malicious prosecution, conspiracy etc..

PAPER 6 LAW OF CONTRACT

Course Outcome

CO-1. Law of Contract familiarizes the students with the various principles governing contracts suchas formation, legality, breach and enforcement.
CO-2. To study the ideologies of the judges and the subsisting socio-economic circumstances in order toevaluate the judgments.
CO-3. The objective of this course is to strengthen the basics of Law of Contracts by explaining themin the easiest ways.
CO-4. Furthermore a comparative of the English law and the Indian law of contract gives a broad insight .
CO-5. The attempt will be to identify the point of similarity and divergence between the two jurisdictions

SEMESTER – II

PAPER 1 ENGLISH LITERATURE

Course Outcome

CO-1. This will enable students to identify the intersection between law and literature and jurisprudentialquestions in literary works.
CO-2. They will also be able to understand the insights that works of literature can give to the study of law andhow literature can enhance our understanding of law.
CO-3. Students will be sensitised about social issues and provide them with an opportunity to think about law,by reading genres of literature like poetry, drama, fiction and non-fiction.
CO-4. Students will also be initiated into understanding the interplay between law and society, delayedjustice, crime and punishment.
CO-5. The course will also help the students in honing their writing and analytical skills, as they would becritiquing articles based on the various themes of students

PAPER 2 POLITICAL SCIENCE – II (MAJOR)

Course Outcome

CO-1. The course would entail an introduction of ideologies and themes like democracy and justice and also tothe ideology of liberalism.

CO-2. It will introduce the students to the key ideas of theory of separation of powers and the Constitution
CO-3. It will deal with democratic theories and theories of multiculturalism and the issue of post-colonialismand minority rights.
CO-4. The students would study about the party system, pressure groups, women's empowerment and publicopinion .
CO-5. It will introduce the students to the modern theories in the 21th century.

PAPER 3 HISTORY- II (MINOR)

Course Outcome

CO-1. The primary objective of this paper is to answer the question how and why the present has evolved fromthe past in the manner it has.
CO-2. History helps us to understand the socio, economic and political context in which legal system emerge andevolve.
CO-3. A study of the nature of the state and administrative apparatus is required for proper understanding of thelegal systems in ancient and medieval India.
CO-4. The paper will offer a close study of select themes, focusing specifically on the intersections in history andlaw.
CO-5. It will also offer understand the influence of various rulers on development of law

PAPER 4 ECONOMICS- II (MINOR)

Course Outcome

CO-1. To study the Basic features and structure of Indian Economy
CO-2. To have an idea about the Emerging trends in agricultural production
CO-3. To study the relationship between Globalization and Indian industry
CO-4. To get a analytical impact of the regional variations in economic development
CO-5. To examine the impact of poverty and unemployment on Indian economy

PAPER 5 SPECIAL CONTRACT

Course Outcome

CO-1. Law student should acquaint himself with the knowledge of special contracts apart from equippinghimself with general principles of contract.
CO-2. Study of special contracts is necessary for legal services required in a corporate office so that he canenhance his relevance as a lawyer in society
CO-3. Define and understand the concept of special contracts and explain the laws related to special Contract inIndia
CO-4. Inculcate the skills of drafting of agreements and various deeds
CO-5. Provide the comparative study with the other prevailing laws and laws of the other nations

PAPER 6 CONSTITUTION – I

Course Outcome

CO-1. Recognize various basic concepts in the Constitution and understand their applicability and scope.
CO-2. Interpret the meaning and scope of Fundamental rights India vis-àvis their practical implementation onground with case laws along with the restrictions on the freedoms.
CO-3. Learn how the Constitutional Remedies protect against violation of fundamental and legal rights.
CO-4. Recall about different provisions related to Directive Principle of State Policy. And recognise the perspective of fundamental duties and social justice.
CO-5. The students should be able to articulate their independent views over contemporary crucial constitutional issues like Constitutional Supremacy, Rule of law, and Concept of Liberty, organization, Powers and Functions of the various Organs of the Government.

SEMESTER – III

PAPER 1 POLITICAL SCIENCE –III (MAJOR)

Course Outcome

CO-1. Have the knowledge about various Indian political concepts.
CO-2. Understand the connection between Law and Political Science
CO-3. Understand the broad and varied nature of Party System in India
CO-4. Having knowledge of organization, powers and functions of judiciary in the country
CO-5. Develop an understanding of religion, caste, regionalism and language in India

PAPER 2 HISTORY –III (MINOR)

Course Outcome

CO-1. To acquire and have an understanding of the pre independence history
CO-2. To understand the impact of British system on administration, law and justice, economic infrastructure,etc.
CO-3. To analyze the impact of social and religious movements
CO-4. To study the social reforms
CO-5. To have specific knowledge Constitutional development in India

PAPER 3 HINDI LANGUAGE – I

Course outcome

CO-1. Enables other state students to continue their learning Hindi language phase without any disruptions.
CO-2. Through this language they can learn spirituality, social discrimination and grammar techniques
CO-3. Enables them to enhance their Hindi language skills
CO-4. Enables them to develop creative writing in Hindi
CO-5. To learn about the importance of Hindi in freedom movement

PAPER 4 COMPANY LAW

Course Outcome

CO-1. To make the students understand the formation, management and other activities of the companies.
CO-2. To explain the important developments that have taken place in the corporate sector and importantregulations pertaining to the issue of shares and the capital raising have come into force.
CO-3. This course aims to impart the students, the corporate management, control, possible abuses, the remediesand government regulation of corporate business and winding up of companies.

CO-4. Communicate and interact meaningfully with the corporate professionals on the issues relating to regulatory compliances companies have to follow in the Indian corporate business environment.
CO-5. To have a knowledge of various forums meant for the purpose of redressal of company case

PAPER 5 JURISPRUDENCE (LEGAL METHOD, INDIAN LEGAL SYSTEM AND BASIC THEORY)

Course Outcome

CO-1. This course is designed to serve as a general introduction to jurisprudence – the philosophy of law and amix of classic and modern jurisprudential texts.
CO-2. Applying theory to practice, have a series of case studies examining major Supreme Court majority anddissenting opinions that turn on deeper jurisprudential debates.
CO-3. By learning the legal Jurisprudence students will know important questions like, what is law, what are thepurposes of law? The relationship between law and justice and the like and to analyze the legal concepts.
CO-4. Students explain the differences between the major schools of jurisprudence concerning the nature of law;
CO-5. Identify the major and minor premises of legal arguments, invent and defend arguments about therequirements of justice in legal disputes that reference and extend the themes of the course

PAPER 6 FAMILY LAW - I (HINDU LAW)

Course Outcome

CO-1. Students will understand the fundamental principles of Family Law.
CO-2. To acquire knowledge on generally prevailing substantive and procedural rules, principles, institutionsand processes governing the formation of marriage.
CO-3. Understand the concept of various matrimonial reliefs and the procedure thereof.
CO-4. Know the provisions related to adoption, maintenance and intestate succession.
CO-5. Study the various important case laws on the different aspects of family law.

SEMESTER – IV

PAPER – I POLITICAL SCIENCE

Course outcome

CO-1. To understand the minds of various philosophers in different eras
CO-2. To know about the impact of the thinkers on Indian polity
CO-3. To acquire knowledge about the Indian political thinkers like Swami Vivekanand, M.K. Gandhi, B.R.Ambedkar

CO-4. To know the Individualistic and Fascist movements
CO-5. To study the impact of Marxist and socialist thought on the world and Indian scenario

PAPER 2 ECONOMICS

Course outcome

CO-1. Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.
CO-2. Understand the importance, causes of Inflation and deflation in economic development.
CO-3. Grasp the importance of planning undertaken by RBI
CO-4. Have knowledge on difference between internal and International Trade.
CO-5. Understand agriculture as the foundation of economic growth and development, analyse the IBRD (WorldBank) , India IMF and its functions

PAPER 3 HINDI LANGUAGE – II

Course outcome

CO-1. To able to understand the tools of translation
CO-2. To able to understand Hindi words and construction of sentences
CO-3. To able to understand and conduct interviews

PAPER 4 CONSTITUTION – II

Course Outcome

CO-1. To understand the structure of executive, legislature and judiciary
CO-2. To understand philosophy of panchayti raj
CO-3. To understand the autonomous nature of constitutional bodies like public service commission , electioncommission of India.
CO-4. To understand the central and state relation, financial and administrative
CO-5. To acquire concrete knowledge of Proclamation of emergency

PAPER 5 ADMINISTRATIVE LAW

Course Outcome

CO-1. To understand the functioning of administrative authorities
CO-2. Students will learn about the Nature Development of law relating to administration and effective meansof administrative control further they will be
CO-3. The Focus is on their role in protecting the rights of individuals against abuse of administration and
adjudicatory powers of the administration and liability of administrative authorities.
CO-4. Know about the different agencies which keeps a check on administrative authorities and delegation ofpowers to the administrative authorities
CO-5. Know about the informal methods for settlement of administrative disputes.

PAPER 6 FAMILY LAW II (MUSLIM LAW)

Course Outcome

CO-1. Students will be studying codified and uncodified portions of Mohammedan Law.
CO-2. Know the concepts of muslim law. and the sources, schools, institutions, succession
CO-3. Understand the concept of various matrimonial reliefs and the procedure thereof.
CO-4. To know the provisions of the Indian Succession Act vis a vis Muslim Law
CO-5. Know about the various important case laws on the different aspects of Muslim law.

SEMESTER V

PAPER 1 POLITICAL SCIENCE - V (MAJOR)

Course outcome

CO-1. Students will be studying the salient features of British Constitution
CO-2. Know the concepts of Constitution of America
CO-3. Understand the concept federal assembly, federal council, direct democracy of Swiss Constitution
CO-4. To know the provisions of the Constitution of China
CO-5. To have a Comparative study of federal system of America and Switzerland

PAPER 2 ENVIRONMENTAL LAW

Course Outcome

CO-1. To inculcate the sense of responsibility and to respond the needs of environment protection as a part oftheir fundamental duty.
CO-2. Studying the Global conventions and the international environment scenario.
CO-3. Learning the important principles like inter-generation equity, carrying capacity, sustainabledevelopment.
CO-4. Studying important judgments of Supreme Court.
CO-5. Understanding principles relating to environment like precautionary principle, polluter pay principles andthe law in practice.

PAPER 3 LABOUR & INDUSTRIAL LAW – I

Course Outcome

CO-1. To have an effective human resource practice, the knowledge of Labour Legislation is an indispensablepart especially in the Indian scenario.

CO-2. To enable the students to have a good base in Labour Law, and its legal aspects.

CO-3. To know the development and the judicial setup of Labour Laws. To learn the salient features of welfareand wage Legislations.

CO-4. To learn the laws relating to Industrial Relations, Social Security and Working conditions.

CO-5. To understand the laws related to working conditions in different settings and the judicial setupof Labour Laws.

PAPER 4 LAW OF CRIMES - I (INDIAN PENAL CODE)

Course Outcome

CO-1. The objective behind teaching this course is to deal with the basic principles of criminal lawand its associated liability & punishment.
CO-2. To study kinds of crime which are committed in society
CO-3. Understand the system of administration of criminal justice in India
CO-4. To know the definition of various crimes and the prescribed punishment for it.

PAPER 5 INTELLECTUAL PROPERTY

Course Outcome

CO-1. Law student should acquaint himself with the knowledge of intellectual property
CO-2. The knowledge of international scenario , viz., the Berne, Convention, Universal Copyright, Convention,the Paris Convention Trips, the World Intellectual Property Rights Organization (WIPO)
CO-3. Understanding the law relating of copyright, trademarks and patents .
CO-4. To study Copyright protection in computer software and hardware, internet, electronic music andscientific research
CO-5. The processes involved in acquiring IP

SEMESTER – VI

PAPER 1 INTERNATIONAL RELATION AND ORGANIZATION (MAJOR)

Course Outcome

CO-1. Use analytical intellectual tools to examine global issues.
CO-2. To examine international of International Relations, different approaches (Theory of power), Internationalorganization - UNO
CO-3. Critically analyze the meaning and Elements of National power of military force, economic organizationetc.
CO-4. To know about Major problems: North and South Rivalries Indian Ocean
CO-5. To study the importance of Regional organization in International politics.

PAPER 2 LEGAL LANGUAGE AND LEGAL WRITING

Course Outcome

CO-1. Understand the language and literary conventions through various texts
CO-2. Develop analytical and critical thinking through reading, writing and discussion.
CO-3. Acquire competence in translation and re-translation. Learn to use idioms and phrases in legal contexts.
CO-4. Have knowledge of phonetics.
CO-5. Understand legal concept better and also develop ability to write effective propositions in legal context.

PAPER 3 CIVIL PROCEDURE CODE & LIMITATION ACT

Course Outcome

CO-1. This course of C.P.C is designed to Study the importance of procedural law.
CO-2. To acquaint the students with the various stages through which a civil case passes through, and theconnected matters.
CO-3. The course also includes law of limitation. Understand the reason for the existence of civil rules ofpractice, limitation. Given the historical and cultural context in which the rules developed.
CO-4. Understand the preliminary issues involved in civil cases.
CO-5. Identify the order, purpose and content of major pleadings in Magistrate's and High courts and analyzeand evaluate information from statutes, case acts and rules.

PAPER 4 LABOUR & INDUSTRIAL LAW –II

Course Outcome

CO-1. Understand the origin development and effects of social welfare
CO-2. Describe the formation of international Labour organization under the Convention
CO-3. Analyse the provisions related to the benefits of employee under the Payment of Bonus Act and penalconsequences.
CO-4. Understand the procedure to protect women and children under Child Labour (Prohibition and Protection)Act.
CO-5. Illustrate the provisions related to the protection of health, safety and security of Labours in the socialwelfare legislation.

PAPER 5 LAW OF CRIMES – II (CRIMINAL PROCEDURE CODE)

Course Outcome

CO-1. Procedural Law provide for a fair procedure is significant for a just society. To acquaint the student withthe set of criminal courts
CO-2. To know the organization of the functionaries, their power and functions at various stages
CO-3. To understand the procedure according to which these powers and functions are to be exercised under theprovisions of procedural law.
CO-4. To learn about fair trial Processes
CO-5. To learn about Juvenile delinquency

PAPER 6 INTERPRETATION OF STATUES

Course Outcome

CO-1. Interpretation of Statutes is designed to understand the true meaning, intent of the maker of the statute.
CO-2. To familiarize the students with various rules of interpretation.
CO-3. Developing the understanding of students to focus on how legislatures are organized and how they enact statutes into law. Included will be a discussion of the process by which the people themselves may enact statutes by initiative or referendum.
CO-4. To understand the extent to which the courts may review the processes by which legislatures and thepeople enact legislation.
CO-5. Studying the interpretation of statutes by the courts, covering competing normative and descriptive theories of statutory construction
CO-6. Learn about the canons of statutory construction, the use and misuse of legislative history, and the role ofadministrative agencies in the construction of statutes.

SEMESTER – VII

PAPER 1 PROPERTY LAW

Course Outcome

CO-1. To understand the concept of Property, its origin and its kinds.
CO-2. To understand the nature of rights and duties attached with various kinds of properties and howinter vivo transactions of property take place by act of parties.
CO-3. To understand the nature of property disputes and how they arise.
CO-4. To understand the doctrines that forms a systematic and uniform law for transfer of immovableproperty. Helping student understand how it works as a parallel law to the existing laws of testamentary and intestate transfers.
CO-5. To apply the principles of Justice, Equity and Good Conscience as the law is not exhaustive andenable the future advocates to help the aggrieved party in particular and society in general.

PAPER 2 HUMAN RIGHTS LAW & PRACTICE

Course Outcome

CO-1. Human Rights involve skills expected to be gained by a student through studies
CO-2. Support the student in sharpening competence for augmenting contemporary knowledge base, acquiring new learning and skills, identifying with future studies, engaging systematic, extensive, coherent knowledge and understanding of human rights
CO-3. Study human rights as a whole with its links to related disciplinary areas; critical comprehension of theories, principles and concepts; and understanding of emerging issues in human rights law;
CO-4. Acquire procedural knowledge related to the study of human rights, including research and development
CO-5. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development and to foster respect for international obligations for peace and development;to impart education on national and international regime of Human Rights.

PAPER 3 MEDIA AND LAW

Course Outcome

CO-1. Discuss media laws in India and the world

CO-2. To study the Right of Freedom of Speech and reasonable restrictions applicable

CO-3. Have knowledge about media regulation in India

CO-4. Demonstrate an understanding of the nature of ethics and morality in journalism

CO-5. Determine the ethical issues of media with case studies

PAPER 4 BANKING LAW

Course Outcome

CO-1. The course of Banking Law is designed to primarily acquaint the students with operational parameters ofbanking law
CO-2. To study the Evolution of Banking institution in India
CO-3. To teach the general principles of banking law and to develop appreciative faculties of the students instatutory as will as well as case – law in this area.
CO-4. The purpose of this course is to teach the current law and practice in the field of banking law.
CO-5. Specifically emphasizing the role of banking regulators

PAPER 5 FORENSIC SCIENCE (Optional)

Course Outcome

CO-1. Demonstrate competency in the collection, processing, analyses, and evaluation of evidence.
CO-2. Demonstrate competency in the principles of crime scene investigation, including the recognition,collection, identification, preservation, and documentation of physical evidence.
CO-3. Demonstrate an understanding of the scientific method and the use of problem-solving within the field offorensic science.
CO-4. Identify the role of the forensic scientist and physical evidence within the criminal justice system.
CO-5. Demonstrate the ability to document and orally describe crime scenes, physical evidence, and scientificprocesses and Identify and examine current and emerging concepts and practices within the forensic science field.

PAPER 6 INTERNATIONAL ORGANIZATION (OPTIONAL)

Course Outcome

CO-1. To define, understand, and use concepts and terms relevant to the study of international organizations;
CO-2. To apply a body of factual knowledge directly relevant to understanding the impact of internationalorganizations

CO-3. To study relation between domestic and international politics;
CO-4. To apply alternative explanations for the emergence and evolution of international organizations.
CO-5. To know the different United Nation Organizations

PAPER 7 DRAFTING PLEADING AND CONVEYANCING (CLINICAL COURSE)

Course Outcome

CO-1. Legal drafting skills are of utmost importance to all lawyers but are often difficult to master. Despite the challenges of mastering the art, the most effective lawyers are those who actively implement strategies to improve their drafting skills.
CO-2. Drafting requires a host of skills to be effective. This course will help the students to enhance legaldrafting skills.
CO-3. It not only focuses on the theory of effective drafting guidelines but also provides relevant formats to assist in understanding practical application of concepts and develop necessary skills for drafting legal documents.
CO-4. The course is intended to improve the ability to draft quality legal documents.
CO-5. To acquire expertise in both civil and criminal side

SEMESTER – VIII

PAPER 1 LAW OF EVIDENCE

Course Outcome

CO-1. The course is designed to acquaint the students with the rules of evidence in relation to relevancy of factsand proof.
CO-2. Analyse and define the concept and general nature of evidence, and illustrate the different types ofevidence and court procedures relating to evidence.
CO-3. Analyse the rule relating to relevance of evidence and admissibility of evidence before the court.
CO-4. Evaluate the rules relating to dying declaration and admissibility of dying declaration
CO-5. To study the important decisions of Supreme Court

PAPER 2 GENDER JUSTICE & FEMINIST JURISPRUDENCE

Course Outcome

CO-1. To introduce students to key writings, concepts, principles and discourses in feminist jurisprudence.
CO-2. To study the position of Women in Pre- Independence India
CO-3. To acquire knowledge on inequality in different family law in area of women rights
CO-4. To enable the students to critically examine statutes, judgments and discourses on law through thefeminist lens; and
CO-5. To facilitate informed discussions and deliberations among students on law and gender justice in India.

PAPER 3 HEALTH LAW

Course Outcome

CO-1. Explain key legal principles relevant to the fields of health law studied in this course, including principlesof negligence, consent, privacy and confidentiality, and regulation.
CO-2. Apply legal principles to a range of health law problems.
CO-3. Compare and contrast different legal and policy approaches to addressing health law problems.
CO-4. Critique and justify options for law reform to address controversial areas in health law and policy.
CO-5. Apply various case laws to the area of health.

PAPER 4 INVESTMENT & SECURITY LAWS (OPTIONAL)

Course Outcome

CO-1. Students will understand the characteristics of different financial assets such as money marketinstruments, bonds, and stocks, and how to buy and sell these assets in financial markets.
CO-2. Students will understand the benefit of diversification of holding a portfolio of assets, and the importanceplayed by the market portfolio.
CO-3. Students will know how to apply different valuation models to evaluate fixed income securities, stocks,and how to use different derivative securities to manage their investment risks.
CO-4. Acquire knowledge of law relating to investment& security
CO-5. Understand the various judgments relating to investment& security

PAPER 5 CRIMINOLOGY, PENOLOGY, CRIMINAL ADMINISTRATION AND VICTIMOLOGY

Course Outcome

CO-1. Understand the various dimensions of the various aspects of the Indian law related to penology andvictimology;
CO-2. Understand the various aspects of the Indian legal structure like that of the concepts of restorative justiceand compensatory schemes for victims;
CO-3. Demonstrate a thorough and contextual knowledge of penal laws .
CO-4. Study various leading cases particularly in its application to real law problems.

PAPER 6 INTERNATIONAL HUMAN RIGHTS (OPTIONAL)

Course Outcome

CO-1. Human Rights involve skills expected to be gained by a student through studies of various internationaldeclaration and conventions.

CO-2. To study human rights in international prospective as a whole with its links to related disciplinary areas; critical analysis of various commissions and conventions & understanding of emerging issues in International human rights law;
CO-3. Acquire various procedural and theoretical knowledge related to the study of International human rights.

PAPER 7 PROFESSIONAL ETHICS, ACCOUNTABILITY FOR LAWYERS & BAR BENCH RELATION

Course Outcome

CO-1. The course on professional ethics is designed to imbibe students with high ethical values forming the basisof the profession.
CO-2. Identify situations of professional dilemmas
CO-3. Recall and explain the principles of professional ethics
CO-4. Take appropriate decisions when faced with any dilemma of professional ethics.
CO-5. Interview and counsel clients in a professional manner and apply the basic principles of professional accountancy.

SEMESTER – IX

PAPER 1 PRINCIPLES OF TAXATION

Course Outcome

CO-1. To provide students with a working knowledge of the fundamental tax principles and rules that applies tocommonly encountered transactions undertaken by companies and individuals – the compliance objective
CO-2. To instill an awareness in students that taxes can and often do constitute significant costs to businesses andhouseholds and therefore can have a major impact in economic and other decision-making, but that these costs are also potentially controllable through legitimate tax minimization strategies – the planning objective; and
CO-3. to enable students to appreciate the wider economic, social, administrative-compliance and politicalcontexts within which taxes are imposed – the POLICY objective. Traditional tax courses overly emphasize the first objective, i.e. compliance with

PAPER 2 LOCAL SELF GOVERNMENT INCLUDING PANCHYAT ADMINISTRATION

Course Outcome

CO-1. To have a knowledge Local self Government- meaning, evolution
CO-2. To study the Constitution Provisions
CO-3. To understand the concept of The Municipalities and Nagar PalikaAdhiniyam
CO-4. To have a knowledge of the cases pertaining to above.

PAPER 3 DIRECT TAXATION(OPTIONAL)

Course Outcome

CO-1. Utilize the definitions of the various components of income tax law.
CO-2. Complete federal income tax returns, including schedules to the Form 1040, and be able to calculate thecorrect amount of federal income tax
CO-3. Analyze simple fact situations and recognize income tax ramifications
CO-4. Apply basic tax concepts to simple fact situations and communicate potential income tax ramifications inwriting and orally.
CO-4. Apply an understanding of the different ways a case can progress from audit to court.

PAPER 4 PROBATION & PAROLE (OPTIONAL)

Course Outcome

CO-1. Study the History of the development of Criminal Jurisprudence.
CO-2. The student will obtain a basic understanding of community corrections concepts.
CO-3. The student will understand the policy implications of community corrections practice.
CO-4. The student will be able to put community corrections practice in a national context.
CO-5. The student will learn how to think critically about community corrections issues.

PAPER 5 MARITIME LAW (OPTIONAL)

Course Outcome

CO-1. Identify and assess relevant legal scholarly literature in maritime law.

CO-2. Understand and apply advanced legal theory and method in this area.

CO-3. Give and receive comments to ongoing scholarly work in a constructive way.

CO-4. Study United Nations and Convention

CO-5. Ability to use theoretical and methodological tools to analyze key issues of maritime law in a scientificmanner.

PAPER 6 INSURANCE LAW (OPTIONAL)

Course Outcome

CO-1. Understand the basic principles of insurance law;

CO-2. Explain and apply the general principles of insurance law;

CO-3. Understand the legislation that regulates insurance,

CO-4. Provide an overview of the interaction between legislation and the common law relating to insurance;

CO-5. Understand the operation of insurance law in a practical context.

PAPER 7 OFFENCE AGAINST CHILD & JUVENILE (OPTIONAL)

Course Outcome

CO-1. Work efficiently and with critical engagement with various concepts of Criminal law in relation to childprotection, having due regard to the practical implementation of the principles in actual cases
CO-2. Develop coherent, comprehensive and persuasive arguments from an adversarial point of view;
CO-3. Understand the various dimensions of the various aspects of crime and criminal behavior and theimplementation of the law through judicial interpretation, etc;
CO-4. Demonstrate a thorough and contextual knowledge of various offences under the I.P.C, JJ Act 2015 andthe various leading cases, particularly in its application to real life legal scenario.

PAPER 8 PRIVATE INTERNATIONAL LAW (OPTINAL)

Course Outcome

CO-1. To study about the basic theories, including the history of PIL thoughts and views, conflict of laws andconflict rules, general problems arising from the application of conflict rules; personal law
CO-2. To know about the choice of law issues in specific areas, including status, family, succession, property,contracts and torts.
CO-3. Transnational civil litigation including the jurisdiction of adjudication, service and taking evidenceabroad, and recognition and enforcement of foreign judgments.
CO-4. To examine the process of legitimacy and legitimating.
CO-5. To study the judgments relating to it.

PAPER 9ALTERNATIVE DISPUTE RESOLUTION (CLINICAL COURSE)

Course Outcome

CO-1.ADR mechanism and its comparison with traditional litigation.
CO-2. Various ADR techniques in practice and the difference between them.
CO-3. Practical procedures for various ADR techniques.
CO-4. Interface between domestic and international space in context of various ADR techniques.
CO-5. The decisions of various courts.
CO-6. Distinction between “conciliation”, “negotiation”, “meditation”, and “arbitration”,
CO-7. Appointment of conciliator
CO-8. Interaction between conciliator and parties
CO-9. Communication, disclosure and confidentiality Suggestions by parties
CO-10. Resort to judicial proceedings, legal effect
CO-11. Costs and deposit repeal

SEMESTER – X

PAPER 1 PUBLIC INTERNATIONAL LAW

Course Outcome

CO-1. Capacity to identify and analyse the complex drivers of dispute behaviour in the community.
CO-2. Understanding of the theoretical models of dispute resolution and capacity to analyse their operation inboth legal and social contexts.
CO-3. Acquire knowledge of ADR Law Development of basic mediation skills, including communication,analysis, and issue identification.
CO-4. Capacity to engage in simple dispute resolution systems design.
CO-5. Ability to adaptively apply ADR theory in varied practical contexts, including international, industrial,and socio political.

PAPER 2 RIGHT TO INFORMATION – 2005

Course Outcome

CO-1. The course is designed to convince the students how the right to information infuses transparency.
CO-2. To know the provisions under the Constitution of India.
CO-3. To study the dimensions of accountability in governance.
CO-4. To understand the ways to prevent abuse of power.
CO-5. To have insight on the case laws.

PAPER 3 INDIRECT TAXATION(OPTIONAL)

Course Outcome

CO-1.Describe indirect taxes and criticisms of these taxes.
CO-2.Compare and contrast direct tax and indirect tax.
CO-3.Generate examples of indirect taxes.
CO-4.Know the recent amendments.
CO-5.Have knowledge of case laws.

PAPER 3 COMPARATIVE CRIMINAL PROCEDURE (OPTIONAL)

Course Outcome

CO-1. To study some basic types of Criminal Justice Administration, viz. adversarial and inquisitorial.
CO-2. To know about the administration of criminal justice adopted in India
CO-3. The purpose of the comparative study is to find out in what are the procedural distinctions in the investigation, trial and sentencing with respect to the Indian Law making process for administering criminal justice.
CO-4. This course also focuses on the powers and functions of the Police, Prosecutors, Defense Attorneys andJudges in different jurisdictions.
CO-5. To examine the case laws.

PAPER 4 HUMANITARIAN & REFUGEE LAW (OPTIONAL)

Course outcome

CO-1. The Course is designed to give a complete understanding of the concept of human rights, international lawand international humanitarian law.
CO-2. It helps the student to learn different characteristics of human rights and the landmark developments in thearea of human rights.
CO-3. The course focuses on the origin and development of International Law, and makes the students appreciatethe nature and the principles of International Law as a true law.
CO-4. Further, the course deals with the concept, purpose and basic rules of International Humanitarian Law, andstudies contemporary position of Humanitarian Law, Refugee Law and Human Rights.
CO-5. To know the cases in the field.

PAPER 5 INFORMATION TECHNOLOGY LAW (OPTIONAL)

Course outcome

CO-1. Explain, distinguish and apply the fundamental legal principles of information technology law covered inthe course.
CO-2. Select and apply a range of approaches to written and oral communication, and apply the critical thinkingrequired to bring about solutions to complex legal problems in the area of information technology law.
CO-3. Access, use, interpret and apply a range of domestic primary and secondary legal resources to solvecomplex problems.
CO-4. Study the case laws.
CO-5. Understanding the amendments in the field.

PAPER 6 WOMEN AND CRIMINAL LAW (OPTIONAL)

Course outcomes

CO-1. The course women and criminal law designed to Study, what are the legal provisions. enacted toameliorate position of women.
CO-2. what is the scope and shortcomings in the existing legal regime in this regard.
CO-3. The points of discrimination in various laws.
CO-4. To study the NCW.
CO-5. To examine the judgments of the SC.

PAPER 7 INTERNATIONAL ENVIRONMENTAL LAW (OPTIONAL)

Course Outcome

CO-1. To outline the historic development of international environmental law and to identify and describe itsbasic principles and rules
CO-2. To outline the international legal system within which these principles and rules have developed.
CO-3. To consider the role of the concept of sustainable development and its impact on international environmental law in terms of attempts to reconcile developmental and environmental objectives.
CO-4. To consider the adequacy of the international legal system to address substantive regional and globalenvironmental concerns and to enable students to assess critically its effectiveness.

CO-5. To examine critically the relevance of human rights and procedural rights to the development andimplementation of international environmental law.

PAPER 8 MOOT COURT (CLINICAL COURSE)

Course Outcome

CO-1. Possess the knowledge and understanding of substantive law and procedure possess the ability to identifyand understand key legal issues.

CO-2. Apply knowledge and critical thinking skills to perform competent analysis, reasoning and problemsolving in a legal context.

CO-3. Possess communication skills including writing and oral advocacy in a legal context.

CO-4. Possess the knowledge, understanding, and appreciation of ethical responsibilities

CO-5. Apply knowledge and critical thinking skills to perform competent analysis, reasoning and problemsolving in a legal context.

LL.M.

SEMSTER I

PAPER 1 LAW AND SOCIAL TRANSFORMATION IN INDIA.

Course Outcome

CO-1. The student will understand that this course on Law and Social Transformation explains the constitutional orientation and response to social transformation. It describes the aspects of non-discrimination on the ground of language.
CO-2. The student will able to Identify affirmative actions necessary for social transformation
CO-3. The student will develop a spirit of inquiry to explore and exploit law and legal institutions as a means to achieve development within the framework of law
CO-4. Analyze the impact of multiculturalism and ethnicity

PAPER 2 INDIAN CONSTITUTIONAL LAW : THE NEW CHALLENGES

Course Outcome

CO-1. Enable the students to understand the mechanism of judicial process of constitutional interpretation involves a technique of adapting the law to meet changing social needs
CO-2. Understand the system of government and the fundamental principles governing its organization stipulatedunder the Constitution of India

CO-3. To make student understand the working of legal system and processes leads to constitutional developments

CO-4. Comprehend the basic feature of the Constitution of India and the importance of the role of judiciary inensuring checks and balances; and

CO-5. To study about new challenges and perspectives of constitutional developments

PAPER 3 GROUP –B CRIMINAL LAW B 012 COMPARATIVE CRIMINAL PROCEDURE

Course Outcome

CO-1. Students critically analyze and compare basic Criminal Law issues in different jurisdictions;

CO-2. They will be able to generate their own solutions to Criminal Law problems, and also identify and evaluate the political and social implications of their proposed solutions, and compare these solutions to those offered in other legal traditions and cultures;

CO-3. Interpret theories and doctrines, and give recommendations where appropriate.

CO-4. Ability to analyses various aspects of Criminal Law, review, and synthesize knowledge.

CO-5. Students will read academic texts on Comparative Criminal Law deeply; and communicate basic arguments;

PAPER 4 GROUP E: EANVIRONMENT AND LEGAL ORDER E 030 EVNIRONMENT AND DEVELOPMENT: LAW AND POLICY

Course Outcome

CO-1. Students will be able to get the knowledge about Constitutional provisions for the protection of environment.

CO-2. Learning about the significance of developments in international environmental law and the fundamentalprinciples that have emerged

CO-3. Comprehending the statutory and regulatory mechanisms pertaining to environment in India.

CO-4. Knowing about the importance of public participation through Right to information, Public Interest litigation and other remedies in preserving and protecting environment.

CO-5. Studying the role of international/national environmental institutions, NGOs, civil society and communityinvolvement in promoting the cause of environment.

CO-6. Students will get the knowledge about the Environment (protection) Act, powers of central governmentand state government to make laws and Environment Tribunals.

PAPER 5 GROUP-G CONTITUTION AND EGAL ORDER G 042 MASS MEDIA LAW

Course Outcome

CO-1. To discuss and analyze the legal, ethical and regulatory framework governing Media in India.
CO-2. To trace the historical background to the freedom of Press in India.
CO-3. To discuss and analyze the Constitutional framework in relation to freedom of speech and expression,freedom of Press, Right to Privacy.
CO-4. To analyze and evaluate the latest developments and issues in the field of Media Law.
CO-5. To analyze the principles laid down in the judgments of the courts.
CO-6. To explain and discuss the importance and necessity of media ethics and journalistic integrity.

PAPER 6 GROUP J: HUMAN RIGHTS LAWJ 061 Concept and Development of Human Rights

Course Outcome

CO-1. Have an advanced and integrated knowledge of international and domestic legal and institutional frameworks for the protection and promotion of human rights

CO-2. Be able to understand and critically examine the interrelationships between international, regional anddomestic histories, philosophies, policies and practices of human rights law
CO-3. Have an advanced appreciation of the relationship between law and politics, at the international anddomestic levels, in the field of human rights law
CO-4. Have the cognitive and technical skills to independently examine and critically evaluate current issues byreference to international and domestic human rights standards
CO-5. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in thefield of human rights law

PAPER 7 K 068 ADMINISTRATIVE PROCESS AND JUDICAIL CONTROL

Course Outcome

CO-1. Identify the distinction between the Constitutional Law and Administrative Law;
CO-2. Identify the basic rules and principles followed to render administrative justice;
CO-3. Examine the reasons and evolution of delegated legislation and the functioning of the delegated authorities within the ambit of the power conferred;
CO-4. Examine the functioning of the special bodies constituted as alternative means for administering justiceviz., Administrative Tribunals, Ombudsman, Lokayukta, Lokpal;
CO-5. Analyse the remedies available against administrative actions;

SEMESTER II

PAPER 1 JUDICIAL PROCESS

Course Outcome

CO-1. Students will be able to analyse and evaluate the legal process from a broader juristic perspective.
CO-2. Students will study the nature of judicial process as an instrument of social ordering.

CO-3. This paper exposes the intricacies of judicial creativity and the judicial tools and techniques employed inthe process.
CO-4. Understand the major theoretical and empirical approaches to studying judicial decision making, judicialselection, and judicial behavior
CO-5. It familiarize the students with various theories, different aspects and alternative ways, of attaining justice.

PAPER 2 04 GROUP –B CRIMINAL LAW B 013 PENOLOGY: TREATMENT OF OFFENDERS

Course Outcome

CO-1. Student will be able to know about, The significance of Penology and The features of Traditional andmodern Penological approaches
CO-2. This course deals with various theories of crime causation, theories of punishment, juvenile justice and thereleasing the offenders on probation.
CO-3. Students will be able to Demonstrate the ability to analyses the complex legal, moral and philosophicalissues raised by the concept of punishment\
CO-4. Demonstrate an understanding of substantive sentencing principles and related theoretical debates
CO-5. It also provides student the knowledge about the treatment of the offenders under imprisonment andalternative to imprisonment.

PAPER 3 B 014 PRIVILEGED CLASS DEVIANCE

Course Outcome

CO-1. Student will be able to understand the concepts of "Criminality of the 'Privileged classes" and the relation between privilege power and deviant behaviour.
CO-2. Able to differentiate between The traditional approaches which highlight "white collar offences", "Socioeconomic offences" or "Crime of the powerful" deal mainly with the deviance of the economically resourceful. The dimension of deviance associated with bureaucracy, the new rich (nouveau riche),religious leaders, and organizations, professional classes and the higher bourgeoisie are not fully captured here.
CO-3. Understand the construction of model so understanding the reality of middle and upper; middle class deviance criminality in India;
CO-4. Critical analyses of legal system responses and Issues and dilemmas in penal and sentencing policies.
CO-5. Analyse dispelling of the commonly held belief that deviance crime is usually associated with the impoverished or improvident

PAPER 4 GROUP-G CONSTITUTION AND EGAL ORDER G 043 PUBLIC UTILITIES LAW

Course Outcome

CO-1. Students will be able to understand that public utilities are government monopolies, which are services rather than commercial enterprises

CO-2. All government policy in regard to such utilities in general and to each utility in particular,

CO-3. Regarding the growth and evolution of the public utilities;

CO-4. Regarding patters of the laws of incorporation and Students will also know the powers,functions andliabilities of the public utilities vis-a-vis their employees, consumers and others.

PAPER 5 G 044 UNION –STATE FINANACIAL RELATIONS

Course Outcome

CO-1. Student will be able to discuss the different forms of government and explain the features and thedistinction between them.

CO-2. To understand the Legislative relations, Administrative and financial relations between the Centre andStates.

CO-3. To understand the various principles of interpretation of lists

CO-4. To understand the various services under union and the states.

CO-5. Will able to know the relations of Centre and states during emergency.

PAPER 6 GROUP J: HUMAN RIGHTS LAW J 062 Human Rights and International Order

Course Outcome

CO-1. Have an advanced and integrated knowledge of international and domestic legal and institutional frameworks for the protection and promotion of human rights

CO-2. Be able to understand and critically examine the interrelationships between international, regional and domestic histories, philosophies, policies and practices of human rights law

CO-3. Be able to analyse, interpret and assess the challenges posed to the implementation of international human rights obligations in the context of globalisation, particularly the increased threat to human rights presented by non-state actors and efforts to develop and strengthen accountability protocols and other mechanisms

CO-4. Synthesize interdisciplinary approaches and contributions to topics such as gender, race, poverty, violence and post-colonialism within a human rights framework.

CO-5. Reflectively evaluate the effectiveness of human rights practice on local, national or international humanitarian efforts.

PAPER 7 J 063 Protection and Enforcement of Human Rights In India

Course Outcome

CO-1. Demonstrate a good understanding of the provision under the constitution of India dealing with human rights
CO-2. Display a good understanding of the nature and scope of special legislation dealing with protection of human rights of marginalized and vulnerable sections.
CO-3. Able to demonstrate a good understanding of the practical application of human rights law to specific human rights problem in India
CO-4. Also able to analyze complex human rights problem and apply relevant provisions of human rights law in India to a hypothetical situation/case study and a theoretical knowledge of the underpinnings of human rights framework in India, its operation and issues associated with its implementation.
CO-5. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in the field of human rights law.

PAPER 8 GROUP K: ADMINISTRATIVE LAW K 068 ADMINISTRATIVE PROCESS AND JUDICAIL CONTROL

Course Outcome

CO-1. Student will be able to know that the procedural fairness is the key to good administrative decision and thevarious remedies rendered in judicial process clear the way for achieving administrative justice.
CO-2. Understand that the historical evolution of the judicial agencies reviewing administrative procedures, jurisdictional aspects of administrative decision making subjected to review, the grounds on which decisions are challenged, the scope of review of delegated legislation and the limitations on the judicial review of administrative action.
CO-3. Understand the key principles of judicial review
CO-4. Able to critically analyse the relationship between the various grounds of judicial review and process-based issues such as locus standi and the public/private divide
CO-5. understand and offer a critical analysis of non-court-based forms of control of governmental action

PAPER 9 K 069 PUBLIC AUTHORIETS: LIABILITY

CO-1. Understand and Identify their understanding of the shape of, and trends in, modern tort law;
CO-2. Explain and able to critically examine and apply the principles of negligence, especially in their particularapplication to governments and public authorities
CO-3. Understand and able to discuss various contractual liability.
CO-4. Understand and able to discuss Accountability under consumer law

SEMESTER III

Paper –1 Practical Legal Education and Research Methodology

Course outcome

CO-1. Students will be equipped to appreciate the rationale behind understanding of research and its conceptualaspects.

CO-2. Enables the students to analyze the logical steps involved in conducting the research and take it aheadmethodically one step at a time.

CO-3. Enables the students to understand the practical implication of conducting the research .

CO-4. Students will get a grip of collection of data and the most effective utilization of the same to harness theoutcome of research.

CO-5. Enables the students to draft the often required legal documents for professionals.

Paper 2 04 LEGAL EDUCATION AND RESEARCH METHODOLOGY

Course Outcome

CO-1. A post-graduate student of law should get an insight into the objectives of legal education. He should havean exposure to programmes like organization of seminars, publication of law journals and holding of legal aid clinics.

CO-2. To understand how and why Legal Education was Introduced in India and to be enable to know and explain the Importance of Legal Education

CO-3. Students will know and understand Ethics in legal profession and also to know what are Challenges to Legal Profession

CO-4. Law is taught in different ways in different countries. The LL.M. course, being intended also to produce lawyers with better competence and expertise, it is imperative that the student should familiarise himself with the different systems of legal education.

CO-5. The lecture method both at LL.B. level and LL.M. level has many demerits. The existing lacunae can be eliminated by following other methods of learning such as case methods, problem method, discussion method, seminar method and a combination of all these methods. The student has to be exposed to these methods so as to develop his skills.

Paper 3 GROUP –B CRIMINAL LAW B 015 DRUG ADDICTION, CRIMINAL JUSTICE AND HUMAN RIGHTS

Course Outcome

CO-1. Describe the behavioral, psychological, physical health and social effects of psychoactive substances onthe person using, and significant others

CO-2. Understand the problem of juvenile drug use and legal approaches to them

CO-3. Provide culturally relevant formal and informal education programs that raise awareness and supportsubstance abuse prevention and the recovery process.

CO-4. Able to understand the various social characteristics of drug users, eg age, gender, family status, occupation etc

CO-5. Describe principles and philosophy of prevention, treatment and recovery

Paper 4 B 016 JUVENILE DELINQUENCY

Course Outcome

CO-1. Comparison and analysis of the theoretical explanations of the causes, dynamics, and consequences ofjuvenile delinquency
CO-2. Differentiate between the various theories of delinquency and discuss how culture, diversity, socialstratification, families, schools, neighborhoods and peers may play a role in delinquent behavior.
CO-3. Examination of the environmental influences on delinquency, as well as prevention of juveniledelinquency
CO-4. Have an increased understanding of the issues of law enforcement related to juvenile delinquency
CO-5. Examine the juvenile court system and its handling of cases, as well as other methods of treatment ofchildren and adolescents

Paper 5 GROUP-G CONTITUTION AND LEGAL ORDERG 045 CONSTITUTIONALISM : PLURALISM AND FEDERALISM

Course Outcome

CO-1. Understand the nature of federalism and its various types.
CO-3. Students will get an exposure to various models of pluralism and forms of constitutional governments and federal structures.
CO-4. Recognize the source of judicial review, as well as federal legislative and executive powers in differing areas, as well as principles of federalism Diversity and pluralism create a structure of polyarchy (power in the hands of many), which is the social equivalent of the principle of checks and balances in a democratic constitution.
CO-5. In a plural society, where different religious as well as linguistic groups have to live together, various rulesof accommodation and mutual recognition are incorporated in the Constitution
CO-6. To know ancient India, where the king was supposed to act according to dharma. He was not absolute in the sense in which John Austin defined sovereignty

Paper 6 G 046 HUMAN RIGHT

Course Outcome

CO-1. An advanced and integrated knowledge of international and domestic legal and institutional frameworksfor the protection and promotion of human rights;
CO-2. An advanced appreciation of the relationship between law, politics and society, at the international anddomestic levels, in the field of human rights law; and

CO-3. Make a sophisticated as sessment of the practical effectiveness of different mechanisms for implementingor enforcing human rights, including domestic courts, national human rights institutions, human rights treaty bodies, international institutions, specialized agencies and non-governmental organizations;
CO-4. Critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies
CO-5. Demonstrate autonomy, expert judgment and responsibility as advocate in the field of human rights law.

Paper 7 GROUP J: HUMAN RIGHTS LAW J 064 HUMAN RIGHTS OF DISADVANTAGED GROUPS: PROBLEMS AND IS SUES IN THE PROTECTION AND ENFORCEMENT

Course Outcome

CO-1. Acquire an understanding of the principles and institutions of human rights law including their origins,assumptions, contents, limits and potential;
CO-2. Identify and evaluate the historical, philosophical, political and cultural developments establishing human rights as a set of global norms, agreements, and procedures.
CO-3. Have the cognitive and technical skills to independently examine and critically evaluate current issues byreference to international and domestic human rights standards
CO-4. Be able to demonstrate autonomy, expert judgment and responsibility as a practitioner and advocate in thefield of human rights law of disadvantage group.
CO-5. Indicate ways of extending human rights practice and apply human rights theory to quickly evolvingsituations.

Paper 8 K 071 LOCAL SLEF –GOVERNMENT LAW

Course Outcome

CO-1. Student gets an insight in to the introductory aspects, the historical and philosophical background of thelocal self-government

CO-2. Students will familiarise about the constitutional scheme for the local self-government

CO-3. Student will understand the structure, powers and functions of the rural local self-government

CO-4. Student aims an understanding about the structure, powers and functions of the urban local self-government

CO-5. Students will be able to understand the modern dimensions of local self-government.

SEMESTER IV

PAPER 1 Theory Paper (Dissertation)

Course Outcome

CO-1. students will be able to enhance their research, analytical and writing skills.

CO-2. Analyse the foundational principles of their chosen thesis topic in law, undertake legal research withprimary and secondary materials, and evaluate legal information.

CO-3. Apply the law to complex issues, and critique the operation of the law from a policy perspective, individually.

CO-4. Conduct and analyse legal research, and write, individually.

CO-5. Analyse the impact of law from policy perspectives, and in the context of social and cultural diversity.

PAPER 2 CONSTITUTION AND LEGAL ORDER G07 NATIONAL SECURITY, PUBLIC ORDER, AND RULE OF LAW

Course outcome

CO-1. Extensively able to understand and focus on issues related to national security, public order and rule oflaw.
CO-2. Develop an understanding on preventive detention & Indian Constitution
CO-3. Understand and critically examine the various emergencies (1962,1965&1970)Emergencies
CO-4. Focus on mature understanding on various legislations(COFEPOSA,TADA etc)
CO-5. Develop an understanding for various provisions of martial laws under English lawand under

PAPER 3 HUMAN RIGHTS LAW J 066 SCIENCE, TECHNOLOGY AND HUMAN RIGHTS

Course Outcome

CO-1. Understand the historical growth of the idea of human rights
CO-2. Demonstrate an awareness of the international context of human rights
CO-3. Able to understand and develop the interrelationship of science, technology and human rights
CO-4. Understand and develop an interrelation & critical thinking for medical and the law; experiment on humanbeings & Euthanasia.
CO-5. develop Scientific and Technological Development in Human Rights Ethics; sex determination test,induced abortion, cloning, artificial insemination

Department of PG Studies and Research in BACHELOR OF LIBRARY AND INFORMATION SCIENCE

Programme Offered

1. **B.Lib**
2. **M.Lib**

Bachelor of library Science B.Lib

PROGRAMME OBJECTIVES

1. To develop in students potential for critical thinking particularly concerting goals of Library and Information centers.
2. To train students for a professional career in Library and Information Services.
3. To train students in handling information resources (Print and non-print) to facilitate access and provision of information sources.
4. To train students in using information technology tools and techniques in information access, service, management and archival activities.
5. To further the state of the art in library and information science through extension, research and publication.

SEMESTER I

Paper 1 BLC 101 Foundation of Library and Information Science

COURSE OBJECTIVE

The Objective of teaching this paper is

- **CO-1.** To develop an Understanding of Role and Importance of libraries, in society
- **CO-2.** To teach the different types of libraries and their functions.
- **CO-3.** To provide an Understanding of laws related to libraries and information.
- **CO-4.** To know the role of national and international library association and organizations.
- **CO-5.** To provide an Understanding of various library promoters at the national and international level.
- **CO-6.** To know the librarianship as a profession.

Paper 2 BLC 102 Knowledge Organization, Information Processing & Retrieval

COURSE OUTCOME

After studying this paper, students shall be able to 5

CO-1. Explain the nature and attributes of universe of knowledge.
CO-2. Elaborate meaning and types of subjects and modes of subject formation
CO-3. Understand the salient features of major classification schemes
CO-4. Understand the main and added entries of library catalogue
CO-5. Understand and various approaches of deriving subject headings
CO-6. Explain the normative principles and current trends in library cataloguing
CO-7. Know the standards for bibliographic interchange and communication

Paper 3 BLC 103 Document Processing: Practice (DDC and AACR-2R)

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Construct class number for documents with simple, compound and complex subjects
CO-2. Synthesize class numbers by using the DDC – 19th ed.
CO-3. Be able to use schedule, tables and index of the classification scheme.
CO-4. The student will get knowledge of how to use relative index in classification scheme
CO-5. Knowledge of the catalogue codes and standards and create library catalogue
CO-6. Prepare catalogue entries for various types of information sources
CO-7. Derive subject headings using sear's list of subject headin

Paper 4 BLC 104 Information Technology: Basic (Theory)

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the structure of computer and functions of its various units
CO-2. Plan and implement automation in library housekeeping operations and services
CO-3. Evaluate various library management software's . 7
CO-4. Identify and state the features of telecommunication channels, modes, media, modulation, standards andprotocols.
CO-5. Highlight the nature and components of computer networks and their protocols and standards
CO-6. Discuss of internet, search engines and network security. Examine the concept of library networks andhighlight the types and importance

Paper 5 BLE 101 Project Work

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the functions and routine work of a library and information centre

CO-2. Understand the establishment and management of a library system.

Paper 6 BLE 102 Data Analysis (Practical)

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand to create effective spreadsheet.
CO-2. Create dynamic report with excels.
CO-3. Manage sets of data. UNIT 1st Introduction to data analysis using spreadsheet

Paper 6 BLS 101Skill Development Personality Development & Soft Skills

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Demonstrate a set of basic skills in Personality Development & Soft Skills.
CO-2. Display an ability to understanding of change processes and be able to think critically about obstacles tochange.
CO-3. Display an ability to express one self fairly, clearly and correctly.
CO-4. Students will understand and be able to use a process for decision making.
CO-5. The student will be trained in such a way that he will develop life-long learning abilities to cope with theobjectives of his concern throughout his life

SEMESTER II

Paper 1 BLC 201 Management of Library and Information Centers

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the Fundamentals of Management.
CO-2. Understanding the policies and Process of Libraries, routine activities of libraries.
CO-3. Assimilate the concept of Financial Management and Human Resource Management.
CO-4. To make the Students understand the Management technique in organisation of library and informationcenters

Paper 2 BLC 202 Information Sources, Products and Services

COURSE OUTCOME

After studying this paper, The student will acquire the knowledge of

CO-1. Different types of information sources, e-books, databases and institutional repositories.
CO-2. Evaluation various types of information sources
CO-3. Access to the electronic resources
CO-4. Nature and functions of various national and international information systems and networks
CO-5. Concept of library resource sharing and consorti

Paper 3 BLC 203 Document Processing: Practice (CC and CCC)

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Construct class number for documents with simple, compound and complex subject
CO-2. Synthesize class numbers by using the CC6th revised edition.
CO-3. Be able to use schedule, tables and index of the classification scheme.
CO-4. The student will get practical knowledge of CCC.
CO-5. Knowledge of the catalogue codes and standards and create library catalogue 6. Prepare catalogue entriesfor various types of information sources

Paper 4 BLC 204 Information Technology

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the structure of computer and functions of its various units
CO-2. Plan and implement automation in library housekeeping operations and services
CO-3. Evaluate various library management software's
CO-4. Identify and state the features of telecommunication channels, modes, media, modulation, standards andprotocols.
CO-5. Highlight the nature and components of computer networks and their protocols and standards 6. Examinethe concept of library networks and highlight the types and importance

Paper 5 BLC 205 Internship Programme

COURSE OUTCOME

After studying this paper, students shall be able to

CO-1. Understand the real working environment of libraries.
CO-2. Understand the various technical functions done in library
CO-3. tackle the practical problems providing various library and information services

M.Lib

PROGRAMME OBJECTIVES

CO-1. To familiarize students with basic concepts of information and its communication in society.

CO-2. To learn advanced information processing techniques and develop capability in retrieving information byapplying different search techniques.

CO-3. To acquaint students with the activities and services of different information systems and introduce the repackaging and consolidation techniques.

CO-4. To facilitate research in the field of Library and Information Science.

CO-5. To identify and learn the major issues in the development of new technology in the libraries.

CO-6. To develop skills in using computer and communication technology; and

CO-7. To introduce modern management techniques to students to manage Libraries and Information Centreseffectively.

SEMESTER I

PAPER 1 INFORMATION AND COMMUNICATION

COURSE OUTCOME

CO-1. Information ; characteristics ,Nature ,Value, and Use of Information
CO-2. Conceptual difference between Data ,Information and Knowledge
CO-3. Communication of Information : Information Generation
CO-4. Communication channels ,models and barriers
CO-5. Trends in scientific Communication

PAPER 2 INFORMATION ANALYSIS, REPACKAGING AND CONSOLIDATION

COURSE OUTCOME

CO-1. Information Products, Design and Development of information Products, Marketing

PAPER 3 INFORMATION RETRIEVAL

COURSE OUTCOME

CO-1. Cataloguing & Subject Indexing: Principles and Practices
CO-2. Principles of Subject Cataloguing: Assigning Subject Headings, Library of Congress Subject Headings andSears List of Subject Headings
CO-3. Models –Assigning and Derived

PAPER 4 RESEARCH METHODS AND STATISTICAL TECHNIQUES

COURSE OUTCOME

CO-1. Concepts, Meaning, Need and process of Research Types of Research –Fundamental and Applied including inter disciplinary and multidisciplinary approach Research and development of Scholarship

PAPER 5 INFORMATION TECHNOLOGY: APPLICATION

COURSE OUTCOME

CO-1. Planning and implementation and library automation, Automation, In House operations- Acquisition, Cataloguing, Circulation Serial Control, OPAC, Library Management, Multilingual Bibliographic Databases, Library Automation Software Packages: Their study and Composition

PAPER 6 INFORMATION TECHNOLOGY: APPLICATION (PRACTICE)

COURSE OUTCOME

CO-1. Creation and maintenance of databases by SOUL and others

PAPER 7 KNOWLEDGE ORGANIZATION & INFORMATION PROCESSING

COURSE OUTCOME

CO-1. Classification of Documents by Universal Decimal Classification

PAPER 8 ACADEMIC LIBRARY INFORMATION SYSTEMS

COURSE OUTCOME

CO-1. Academic Libraries. Meaning, Objectives and Functions.Types of academic Libraries.Role of UGC in academic Library development. Collection development and collection management – Book selection principles and policies, procedures and problems.

Department of PG Studies and Research in Mathematics& computer science

Programme Offered

- **M.Sc. Mathematics**
- **M.Sc. Computer Science**
- **Ph.D Mathematics**
- **Ph.D Computer Science**

M.Sc. Mathematics

PROGRAMME OBJECTIVES

The M.Sc. Mathematics programme's main objectives are

- To inculcate and develop mathematical aptitude and the ability to think abstractly in the student.
- To develop computational abilities and programming skills.
- To develop in the student the ability to read, follow and appreciate mathematical text.
- Train students to communicate mathematical ideas in a lucid and effective manner.
- To train students to apply their theoretical knowledge to solve problems.
- To encourage the use of relevant software such as MATLAB and MATHEMATICAL

PROGRAMME SPECIFIC OUTCOMES

On successful completion of the M.Sc. Mathematics programme a student will

PSO-1. Have a strong foundation in core areas of Mathematics, both pure and applied.

PSO-2. Be able to apply mathematical skills and logical reasoning for problem solving.

PSO-3. Communicate mathematical ideas effectively, in writing as well as orally.

PSO-4. Have sound knowledgeof mathematical modeling, programming and computational techniques as required for employment in industry.

SEMESTER I

PAPER 1 ADVANCED ABSTRACT ALGEBRA –I

Course Outcomes

CO-1. After studying this course the student will be able to
CO-2. proveSchreier's refinement theorem and Jordan−Holder theorem and also to prove fundamentaltheorem of arithmetic using Jordan−Holder theorem.
CO-3. count the number of elements, subgroups and able to find the normalizer and centralizer in a group.
CO-4. identify and construct examples of fields, distinguish between algebraic and transcendental extensions, characterize normal extensions in terms of splitting fields and prove the existence of algebraic closure of a field.
CO-5. characterize perfect fields using separable extensions, construct examples of automorphism group of a field and Galois extensions as well as prove Artin's theorem and the fundamental theorem of Galois theory.
CO-6. classify finite fields using roots of unity and Galois theory and prove that every finite separable extension is simple.

PAPER 2 COMPLEX ANALYSIS (MTC-102)

Course Outcomes

After studying this course the student will be able to

CO-1. understand analytic function as a mapping on the plane, Mobius transformation and branch of logarithm.
CO-2. understand Cauchy's theorems and integral formulas on open subsets of the plane.
CO-3. understand how to count the number of zeros of analytic function, open mapping theorem and Goursattheorem as a converse of Cauchy's theorem.
CO-4. know about the kind of singularities of meromorphic functions which helps in residue theory andcontour integrations.
CO-5. handle integration of meromorphic function with zeros and poles leading to the argument principle andRouche's theorem.
CO-6. know different versions of the maximum principle as well as the Schwarz's lemma representing analyticfunction on a disk as fractional mappings.

PAPER 3 REAL ANALYSIS (MTC -103)

Course Outcomes

After studying this course the student will be able to

CO-1. to check whether the given function is inferable or not.

CO-2. check the convergence and uniform convergence of the given sequence or series of functions

CO-3. differentiate the functions of several variables and also compute the higher order derivatives of functionsof several variables

PAPER 4 TOPOLOGY (MTC -104)

Course Outcomes

After studying this course the student will be able to

CO-1. determine interior, closure, boundary, limit points of subsets projections, subspace topology, order topology, basisand subbasis of topological spaces.

CO-2. check whether a collection of subsets is a basis for a given topological spaces or not, and determine the topologygenerated by a given basis.

CO-3. identify the continuous maps between two spaces and maps from a space into product space and determinecommon topological property of given two spaces.

CO-4. determine the connectedness and path connectedness of the product of an arbitrary family of spaces.

CO-5. determine the metric topology, metriziable space, several standard metrics and the topology generated by them.

CO-6. identify the connectedness, path connectedness and solve the problems concerning the properties of connectedness

CO-7. determine the compact spaces, and learn about the product of compact spaces, the tube lemma, separation axiomsand countable spaces.

PAPER 5 C-Language

Course Outcomes

After studying this course the student will be able to

CO-1. read, understand and trace the execution of programs written in C language.

CO-2. write the C code for a given algorithm.

CO-3. write programs that perform operations using derived data types.

CO-4. solve an algebraic or transcendental equation using an appropriate numerical method.

CO-6. solve a linear system of equations using an appropriate numerical method.

CO-7. perform an error analysis for a given numerical method.

PAPER 6 Numerical Analysis

Course Outcomes

After studying this course the student will be able to

CO-1. compute the piecewise, spline and bivariate interpolation and approximation by several methods

CO-2. solve the ordinary differential equations using extrapolation methods.

CO-3. solve the boundary value problems by shooting method.

CO-4. interpolate the function with two variables using finite difference and finite element methods.

SEMESTER II

Paper 1 Applied Functional Analysis

Course Outcomes

After studying this course the student will be able to

CO-1. identify the Hilbert space and perform the operations of Cartesian and Tensor products on it.
CO-2. Check the weak convergence, weak compactness and apply several theorems concerning the concept.
CO-3. identify spectrum, particularly point spectrum and resolvent of standard operators like shifts andmultiplication and to understand the spectral theorem for bounded linear operators.
CO-4. understand the basic properties of bounded linear operators on normed, Banach and Hilbert spaces andapply these properties to solve simple problems. Understand
CO-5. the concepts of compactness, self-adjointness and positivity of bounded linear operators.

Paper 2 Divergent Series

Course Outcomes

After studying this course the student will be able to

CO-1. understand the big O, little o and asymptotic relations.
CO-2. check for the regularity and consistency of the given method for summing the divergent series**.**
CO-3. check whether the given series is summable by Holder's method, Cesaro's method or by Abel'smethod and also establish the relation between Cesaro and Abel's summability.
CO-5. understand the Limitation theorem, Tauberian theorems and Littlewood's extension of Tauber'stheorem.

Paper 3 Theory of Linear operators

Course 4 Outcomes

After studying this course the student will be able to

CO-1. identify spectrum, particularly point spectrum and resolvent of standard operators like shifts andmultiplication and to understand the spectral theorem for bounded linear operators.
CO-2. understand the basic properties of bounded linear operators on normed, Banach and Hilbert spaces andapply these properties to solve simple problems.
CO-3. understand the concepts of compactness, self-adjointness and positivity of bounded linear operators.

Paper 4 Simplicial Homology Theory

Course Outcomes

After studying this course student will be able to

CO-1. identifyhyperplanes, simplexes and finite simplicial complexes as subsets of a Euclidean space.
CO-2. learn the idea of compact triangulable spaces as geometric carriers of finite simplicial complexes (polyhedra).
CO-3. learn the use of homological algebra to associate simplicial homology groups with triangulable spaces and illustrate it by computing simplicial homology groups of some well-known compact polyhedral.
CO-4. understand the topological invariance of simplicial homology groups (up to homotopy).
CO-5. prove important applications of simplicial homology theory like invariance of dimension, Euler'sformula, Lefschetz and Brouwer's fixed point theorems, etc.

Paper 5 Approximation Theory

Course Learning Outcomes

After studying this course the student will be able to

CO-1. deal with the linear operators and understand the properties of some specific linear operators asBernstein Polynomial, Fourier series operator.
CO-2. useBohman and Korovkin's theorem to check whether the given operator provides uniformapproximation or not.
CO-3. verify the existence of polynomial for best approximation, and study the characteristics of thepolynomial for best approximation.
CO-4. use the Chebyshev system, algebraic polynomials and trigonometric polynomials forinterpolation.

Paper 6 Operator Theory on Banach Algebra

Course Outcom

After studying this course the student will be able to

CO-1. useBanach algebra techniques to solve problems in mathematics, applied mathematics andmathematical physics.
CO-2. demonstrate understanding of the properties of bounded linear operators on Hilbert spaces.
CO-3. demonstrate understanding of compact and Fredholm operators.
CO-4. solve problems involving infinite matrices and concrete operators in function spaces

Paper 7 Special Functions

Course Outcomes

After studying this course the student will be able to

CO-1. understand integral calculus and special functions of various engineering problem and to knownthe application of some basic mathematical methods via all these special functions.
CO-2. explain the applications and the usefulness of these special functions.
CO-3. classify and explain the functions of different types of differential equations.
CO-4. understand purpose and functions of the gamma and beta functions, Fourier series andTransformation.
CO-5. use the gamma function, beta function and special functions to: evaluate different types of integralcalculus problems and Fourier series to solve differential equations.

Paper 8 Spherical Trigonometry and Astronomy

Course Outcomes

After studying this course the student will be able to

CO-1. to explain and learn fundamental of Spherical Trigonometry
CO-2. to explain properties of right angle triangle and solution
CO-3. to explain relation between sides & angles of a Spherical triangle.
CO-4. to explain application of Spherical triangle & Examples.

Paper 9 MATLAB

Course Outcomes

After studying this course the student will be able to

CO-1. able to use Matlab for interactive computations.
CO-2. familiar with memory and file management in Matlab.
CO-3. able to generate plots and export this for use in reports and presentations.
CO-4. able to program scripts and functions using the Matlab development environment.
CO-5. able to use basic flow controls (if-else, for, while).
CO-6. familiar with strings and matrices and their use.

Paper 10 Linear Programming

Course Outcomes

After studying this course the student will be able to

CO-1. formulate and solve a linear programming problem.
CO-2. convert standard business problems into linear programming problems and can solve using simplex algorithm.
CO-3. formulate and solve transportation problems.
CO-4. formulate and solve the Assignment problem.

SEMESTER III

Paper 1 Algebraic Topology

Course Outcomes

After completing this course a student will be able to
CO-1. grasp the basics of Algebraic Topology.
CO-2. determine fundamental groups of some standard spaces like Euclidean paces and spheres.

CO-3. understand proofs of some beautiful results such as Fundamental theorem of Algebra, Monodromy theorem, Lifting theorem etc.

Paper 2 Fuzzy Sets and their Applications

Course Outcomes

After studying this course the student will be able to

CO-1. Construct fuzzy sets with the required membership function.
CO-2. Compute the α-cut and strong α-cut.
CO-3. perform the standard operations on fuzzy sets and study their properties.

CO-4. Apply the extension principle, perform the operation of arbitrary intersection and arbitrary union of fuzzysets
CO-5. Use the intuitionistic fuzzy sets when the condition of non-membership is given.

Paper 3 Infinite Matrix and Divergent Series

Course Outcomes

After studying this course the student will be able to

CO-1. solve all the problems concerning the matrices whatever the order of the matrix may be.
CO-2. find the reciprocal of the given matrix easily, and will be equipped with many other properties which easethe solution of matrices.
CO-3. do the analysis of the divergent series.

Paper 4 Spline Theory

Course Outcomes

After studying this course the student will be able to

CO-1. Find polynomial interpolation of the given data.
CO-2. Understand piecewise interpolation and broken line interpolation.
CO-3. find parabolic spline interpolation and know the existence and uniqueness of the parabolic splineinterpolation.
CO-4. Understand the basic properties and theory of B-splines and implement basic algorithms for B-splines.

Paper 5 Abstract Harmonic Analysis

Course Outcomes

After studying this course the student will

CO-1. be familiar with Banach algebras and their representations.
CO-2. have studied relations between representations of locally compact groupsand representations of group algebras.
CO-3. have studied representation theory of compact groups.
CO-4. know the notions of orthonormal basis of space of square integrable functionson compact groups.
CO-5. know positive definite functions, Bochner theorem, semi direct product of groupsand their representation.

Paper 6 Integration Theory

Course Outcomes

On completion of the course, the student should be able to

CO-1. use the concepts of measurable set and measurable function.
CO-2. state and explain the construction of the Lebesgue integral and use it.
CO-3. apply the theorems of monotone and dominated convergence and Fatou's lemma.
CO-4. describe the construction of product measure and to apply Fubini's theorem.
CO-5. state and explain properties of L^pspaces
CO-6. define absolute continuity and singularity of measures.
CO-7. applyLebesgue decomposition and the Radon-Nikodym theorem.

Paper 7 Sobolev Spaces

Course Outcomes

After studying this course the student will be able to

CO-1. understand the use of distribution and test functions**.**
CO-2. compute the convolutions, Fourier transform and perform other computations using them
CO-3. apply the ReimannLebesgue theorem, Plancheral theorem, Holder's inequality, Minkowski's inequality insolving problems.

Paper 8 Wavelets Analysis

Course Outcomes

After studying this course the student will be able to

CO-1. explain the applications of wavelets in the construction of orthonormal bases by wavelets.
CO-2.understand approximation of functions (signal) by frame theory.
CO-3. understand the properties of various scaling functions and their wavelets.
CO-4. understand the properties of multiresolution analysis.
CO-5. construct the scaling functions using infinite product formula and iterative procedure.
CO-6. implement wavelets in various problems like image compression, denoising*etc*.

Paper 9 Mathematical modeling

Course Outcomes

After studying this course the student will be able to

CO-1. create mathematical models of empirical or theoretical phenomena in domains such as the physical,natural, or social sciences;
CO-2. create variables and other abstractions to solve college-level mathematical problems in conjunction withpreviously-learned fundamental mathematical skills such as algebra;3.

CO-3. draw inferences from models using college-level mathematical techniques including problem solving,quantitative reasoning, and exploration using multiple representations such as equations, tables, and graphs

Paper 10 Elective Paper

Course Outcomes

After studying this course the student will be able to

CO-1. demonstrate understanding the random variable, expectation, variance and distributions.
CO-2. explain the large sample properties of sample mean.
CO-3. understand the concept of the sampling distribution of a statistic, and in particular describe the behaviorof the sample mean.
CO-4. analyze the correlated data and fit the linear regression models.
CO-5. demonstrate understanding the estimation of mean and variance and respective one sample and two-sample hypothesis tests.

Paper 11 Operations Research

Course Outcomes

After studying this course the student will be able to

CO-1. formulate and solve problems as networks and graphs.
CO-2. construct linear integer programming models and discuss the solution techniques.
CO-3. set up decision models and use some solution methods for nonlinear optimization problems.
CO-4. propose the best strategy using decision making methods under uncertainty and game theory.
CO-5. solve multi-level decision problems using dynamic programming method.
CO-6. prepare a team-based project about heuristics /meta-heuristics algorithms used to solve integer ornonlinear programming problems.

1. **M.A. (Philosophy)**
2. **Ph.D. Philosophy**

M.A. (Philosophy)

First Semester

PROGRAMME OBJECTIVES

The objective of this course is to engage the students in a participative framework to critically and creatively look at the dialogical and pluralistic epistemological traditions within the mosaic of what is called the Indian Philosophical Textual Depository. The primary focus will be on the three sources of knowledge and cognitive activity: perception, inference and verbal testimony.

PROGRAMME SPECIFIC OUTCOMES

After having done this course, the student is expected to have mastered the art of philosophically reading the given textual excerpts and to understand the issues hermeneutically afresh, keeping in mind the dialogical and pluralistic nuances employed in the epistemic enterprise.

SEMESTER I

PAPRE 1

Course Outcomes

CO-1. This course facilitates a comprehension of early Greek tradition. A comprehensive understanding of it is like a foundation course in the Classics.
CO-2. The two great classical traditions, viz., Greek and Indian have lefta rich legacy of philosophic knowledge that can be pragmatically and scholastically contextualized in the present day times.
CO-3. Students of University read Indian Philosophy; this course in Greek Philosophycomplements it fairly well for understanding of the classics.

PAPRE 2

Course Outcomes

CO-1. Formal logic enhances the reasoning skills and develops ground for rejecting the wrong arguments on the basis of sound inferences.
CO-2. It creates ground for eliminating superstitious beliefs and creates ways for strong arguments.
CO-3. This paper helps in good score that provides better rank in form of results.
CO-4. It trains the student to construct good arguments and also provides valid ground to reject the wrong ones.

PAPRE 3

Course Outcomes

CO-1. To equip the students with tools and techniques for handling socio political issues that affect them on individual / collective basis.

CO-2. Larger awareness of public issues and empathy with marginalised issues in society.

CO-3. 3.Inculcates a sense of ethical responsibility and a vision to challenge the existing norms in need of change.

PAPRE 4

Course Outcomes

CO-1. To introduce yoga education, its principles and practices for holistic growth of students

CO-2. To create yoga experts with in-depth knowledge based on yogic texts.

CO-3. To establish holistic health, social harmony and world peace by training them to be good citizens who canoffer social wellbeing.

PAPRE 5

Course Outcomes

CO-1. Indian Intellectual Traditions through basic concepts such as Shruti (agama) and Smriti(Nigama), Karma, Jnana and Bhakti, Indian Idealism vs. Indian Materialism, Preyas, Shreyas and Nihsreyasetc
CO-2. Students will appreciate the Indian Metaphysics of various ancient Indian schools such as Charvaka, Buddhism, Jainaism, Samkhya,Mimamsa and Vedanta. They will become aware of the Metaphysics of various schools which will help them to understand the society at large.
CO-3. In the unit III, students will gain familiarity with the epistemology of Jaina and Nyaya -Vaishesika system.Unit II and Unit III are interrelated in the sense that epistemology of a particular school can be understood through its metaphysics and vice-versa.
CO-4. Students will learn to develop scientific, logical and rational inquiry for understanding the systems. Students will be able to do a comparative analysis of all systems which will further enhance their debatingskills. Students will develop the ability to think critically and to read and analyze scientific literature.
CO-5. Students will develop strong oral and written communication skills through the effective presentation of Projects, Quiz as well as through Seminars

SEMESTER II

PAPRE 1

Course Outcomes

This paper seeks to do three things

CO-1. it will enable students to witness how philosophers who were either predecessors or contemporaries evaluated the theories of others, thus will advise them in distinguishing good arguments from badarguments.
CO-2. It will enable students to have a better understanding of how a man thinks and what goes on into the making of human thought.
CO-3. It will also make students aware that there is no place for superficial approach to the complex questions in life.

PAPRE 2

Course Outcomes

CO-1. This course helps in learning the various principles and methods of basic as well as higher logic.
CO-2. Through the development of its special symbols, this course (advanced logic) helps as an instrument for analysis and deduction.
CO-3. It helps in examining more complex arguments for deriving clear rational conclusions.
CO-4. This paper helps in good score that provides better rank in form of results.
CO-5. This is an appropriate paper for applying the logical/mathematical skill and to make use of artificial intelligence effectively.

PAPRE 3

Course Outcomes

CO-1. The students after having run through basic ethical theories gain a better orientation from the ethical perspective.
CO-2. This course helps to understand and interpret events with a more rational basis.

PAPRE 4

Course Outcomes

On completion of this course, the students will have

CO-1. Critical understanding of the Evolution of Yoga based on the classical texts
CO-2. Understanding the basic theories and practices of Shad-Darshan.
CO-3. Knowledge of the concepts of Jnana, Bhakti and karma Yoga.
CO-4. Understanding of different Schools of Yoga.

SEMESTER III

PAPRE 1

Course Outcomes

The course in Contemporary Western Philosophy is designed keeping in view the following learning outcomes

CO-1. Introducing students to the primary thinkers of one of the most important and influential school of thoughtin Western Philosophy.
CO-2. Acquainting students with the complex set of interconnected sub-traditions that Analytic Philosophyramified into and which became equally influential in the twentieth century.
CO-3. Inculcating young minds with the basic training associated with the tradition, such that it is prepared toengage in critical and reflective thinking.
CO-4. Enabling students to reduce complex issues into simpler components that will facilitate clearerunderstanding

PAPRE 2

Course Outcomes

CO-1. To make students a better citizens.
CO-2. To know rights of Individuals and communities.
CO-3. To learn to live in cohesive manner in a multicultural setup.

PAPRE 3

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues.
CO-2. They will learn to think critically about religious issues.

SEMESTER III

PAPRE 1

Course Outcomes

The course in Contemporary Western Philosophy is designed keeping in view the following learning outcomes

CO-1. Introducing students to the primary thinkers of one of the most important and influential school of thoughtin Western Philosophy.
CO-2. Acquainting students with the complex set of interconnected sub-traditions that Analytic Philosophyramified into and which became equally influential in the twentieth century.
CO-3. Inculcating young minds with the basic training associated with the tradition, such that it is prepared toengage in critical and reflective thinking.
CO-4. Enabling students to reduce complex issues into simpler components that will facilitate clearerunderstanding

PAPRE 2

Course Outcomes

CO-1. To make students a better citizens.
CO-2. To know rights of Individuals and communities.
CO-3. To learn to live in cohesive manner in a multicultural setup

PAPRE 3

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues.
CO-2. They will learn to think critically about religious issues

PAPRE 4

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues .
CO-2. They will learn to think critically about religious issues.

PAPRE 5

Course Outcomes

CO-1. Finally it will give a holistic development of their personality.

PAPRE 6

Course Outcomes

CO-1. This course is designed to make students philosophically competent about their own decisions, to achieve clarity, develop comprehension skills and reach precision in arguments with reasons.
CO-2. A spectrum of issuesranging from morality, environment, real life situations, moral dilemmas and ongoing philosophical examination of the crisis in the field of artificial intelligence are a part of this course curriculum.

SEMESTER IV

PAPRE 1

Course Outcomes

CO-1. The idea is to encourage the students towards a comparative trajectory where they probe the similarities and differences between the Western and non-Western stands of thought. Hence, one of the key learning outcomes would be and should be to develop comparative skills.
CO-2. Most Western philosophers were also the patriarch of modern statecraft. They imbued moral and ethical considerations quite heavily in their philosophical teachings. Thus, by focusing on individual philosophical thought from original texts, the students would be capable of differentiating betweenpositive and normative worldview.
CO-3. Since Philosophy, whether Western or Oriental, is all about values and rational thinking, the students would develop skills to place any public issue on the edifice of ethical foundations and provide moral weightage to their arguments.

PAPRE 2

Course Outcomes

CO-1. To make students a better citizens.
CO-2. To know rights of Individuals and communities.
CO-3. To learn to live in cohesive manner in a multicultural setup

PAPRE 3

Course Outcomes

CO-1. The students will acquire a general understanding of religious issues .
CO-2. They will learn to think critically about philosophical issues pertaining to various religions.

PAPRE 4

Course Outcomes

CO-1. Finally it will give a holistic development of their personality.

PAPRE 5

Course Outcomes

CO-1. This course helps to understand and interpret events with a more rational basis.

Department of PG Studies and Research in Physical EducationProgramme Offered

1. **B.P.E.S.**
2. **B.P.Ed.**
3. **M.P.Ed.**
4. **Ph.D. Physical Education**

Name of the Programme - B.P.E.S

Programme Outcomes

The graduates and postgraduates of the courses have a wide range of opportunity in different fields. Post Graduate

and Ph.Ds are qualified to be appointed as Teachers and Sports officer in Universities Colleges and Physical Education teachers inSchools.

- Other than these academic opportunities they will also be qualified for appointment as District Sports Officer / Regional sports officer and other administrative post in sports department in Central and Stateundertakings.

- These students are also eligible to join different Forces, for examples, Army, Police, B.S.Fetc.

- They are also eligible to undertake the higher studies i.e. M.Phill, Ph.D and D.Lit. in the field of Physical Education and Sports Sciences.

- Pass out students can also become health / fitness experts in health clubs and hospitability industry and they can start their own health clubs.

PROGRAMME SPECIFIC OUTCOMES

PSO-1. Improve knowledge about Physical Education
PSO-2. To define and acquaint training preparation of Game/Sports
PSO-3. Develop proficiency in Games &Sports.
PSO-4. To employ the rules and regulation of Game/Sport
PSO-5. Gain knowledge of the Game/Sport.
PSO-6. Learn the layout and marking for the Game/Sport.
PSO-7. Demonstrate various drills & lead up activities related to Game/Sport.
PSO-8. Develop the skills to teach rules, fundamentals and strategies of Game/Sport.
PSO-9. Provides opportunity to join different Forces, for examples, Army,Police,
PSO-10. B.S.F etc.
PSO-11. Develops leadershipquality.

SEMESTER I

PAPRE 1 Basic and Systemic Anatomy – I

Course Outcomes

CO-1. The student will be oriented with the basic structure and function of human body by identifying,comparing and relating different systems, organs and their functional and structural units.
CO-2. He would be able to Relate and interpret the role of exercise on body systems and its relation to wellbeing, through literature reviews and physical conditioning exercises.
CO-3. Adapt the art to apply the knowledge of anatomy and physiology in physical activity classes at schoollevel.
CO-4. Construct anatomy and physiology related pedagogical materials exploring their creative imaginationswhile working in group and using technology.

PAPRE 2 PRINCIPLES OF PHYSICAL EDUCATION– I

Course Outcomes

CO-1. Students will develop competency in many movement activities.

CO-2. Students will understand *how* and *why* they move in a variety of situations and use this information toenhance their own skills.

CO-3. Students will achieve and maintain a health-enhancing level of physical fitness.

CO-4. Students will exhibit a physically active lifestyle and will understand that physical activity providesopportunities for enjoyment, challenge and self-expression.

CO-5. Students will demonstrate responsible personal behavior while participating in movement activities.

CO-6. Students will demonstrate responsible social behavior while participating in movementactivities. Students will understand the importance of respect for others.

CO-7. Students will understand the relationship between history, culture and games.

PAPRE 3 ENGLISH- I

Course Outcomes

CO-1. The course will develop fundamental knowledge of English Language.

CO-2. The literary texts shall enable students to inculcate creative & aesthetic sensitivity and criticallycomprehend, appreciate and analyze it.

CO-3. The students will be familiarized with the basics of language and its structure

SEMESTER II

PAPRE 1

Course Outcomes

CO-1. The student will be oriented with the basic structure and function of human body by identifying,comparing and relating different systems, organs and their functional and structural units.

CO-2. He would be able to Relate and interpret the role of exercise on body systems and its relation to wellbeing, through literature reviews and physical conditioning exercises.

CO-3. Adapt the art to apply the knowledge of anatomy and physiology in physical activity classes at schoollevel.

CO-4. Construct anatomy and physiology related pedagogical materials exploring their creative imaginationswhile working in group and using technology.

PAPRE 2 HISTORY OF PHYSICAL EDUCATION – II

Course Outcomes

CO-1. The pass out would be able to compare the relationship between general education and physical education.

CO-2. He would be able to identify and relate with the History of Physical Education.

CO-3. He would be able to comprehend the relationship between Philosophy, Education and Physical Education.

CO-4. He would able to identify the works of Philosophers of Education and Physical Education.

CO-5. He would know recent developments and academic foundation of Physical Education.

SEMESTER – III

PAPRE 1 PHYSIOLOGY AND PHYSIOLOGY OF EXERCISE

Course Outcomes

CO-1. The student would be empowered with the applicable knowledge of physiology in physical activity andsports.
CO-2. The learner would be able to incorporate this knowledge in the training and coaching programme for thebetterment of his trainee's performance.

PAPRE 2 EDUCATIONAL PSYCHOLOGY

Course Outcomes

CO-1. The study would orient the student in basic concepts of psychology.
CO-2. The student would be oriented in identifying factors determining one's overall personality.
CO-3. He would understand various laws of learning and their relevance in teaching learning process.
CO-4. The study would orient him in getting through with the psychology of sports person.

SEMESTER – IV

PAPRE 1 KINESIOLOGY

Course Outcomes

CO-1. The student would be Oriented with the skeletal structure of human body by identifying the origin andinsertion of various muscles.
CO-2. Orient the students in basic structure and functions of primary joints of the body.
CO-3. Relate and interpret the role of various mechanical principles in human movement.

PAPRE 2 BASICS OF SPORTS TRAINING

Course Outcomes

CO-1. The learners will be able to identify the fundamental concepts, theories and principles of human bodytraining related to sports performance.
CO-2. The learners will be able to demonstrate the skills to train different fitness components and relatedplanning.
CO-3. The learners will be able to understand the organization to achieve high performance in sports.

PAPRE 3 HEALTH EDUCATION

Course Outcomes

CO-1. The student will be able to identify and synthesize the factors that influence health.
CO-2. The student will be able to recognize the health related challenges in current time and able to apply thepreventive measures.
CO-3. The student will be able to identify the role of peers, community and media in health promotion andprotection.
CO-4. The student will be able to demonstrate the expertise in above stated domains in a school setup.
CO-4. The student will be able to value the knowledge and skills required to preserve community health andwell-being.

SEMESTER V

PAPRE 1 Management of Physical Education

Course Outcomes

CO-1. The student would understand the importance of management of Physical Education.

CO-2. He shall gain knowledge regarding management of Physical Education and Sports at different level.
CO-3. He will be able to organize various Physical Education program.
CO-4. He would know about various schemes and policies of State &Central Government.
CO-5. He would know about planning of facility and financial management.

PAPRE 2 GYM MANAGEMENT AND FITNESS TRAINING

Course Outcomes

CO-1. Will develop skills to establish daily caloric requirement and to design the diet plan.
CO-2. Will acquaint student with principles of sports nutrition.
CO-3. Will orient the student to the role of food on Physical performance.
CO-4. Would make the student understand and prepare weight management plans.

SEMESTER VI

PAPRE 1 TEST AND MEASUREMENT IN PHYSICAL EDUCATION

Course Outcomes

CO-1. The students will be able to recognize and relate the concept of test, measurement and evaluation in the context of Physical Education.
CO-2. The students will be able to construct and conduct the physical fitness and sports skill test.
CO-3. The students will be able to implement the criteria of test selection. The syllabus would orient the studentsin the art of applications of test, measurement and evaluation in physical and sports activities with simultaneous development of practical competency in conducting physical fitness and sports skill tests.

PAPRE 2 CORRECTIVES AND REHABILITATION IN PHYSICAL EDUCATION

Course Outcomes

CO-1. He would understand the Prevention, Treatment and Rehabilitation of Athletic Injuries

B. P. Ed.

SEMESTER I

PROGRAMME OBJECTIVES

- The graduates and postgraduates of the courses have a wide range of opportunity in different fields. Post Graduate and Ph.Ds are qualified to be appointed as Teachers and Sports officer in Universities Colleges and Physical Education teachers inSchools.

- Other than these academic opportunities they will also be qualified for appointment as District Sports Officer / Regional sports officer and other administrative post in sports department in Central and Stateundertakings.
- These students are also eligible to join different Forces, for examples, Army, Police, B.S.Fetc.
- They are also eligible to undertake the higher studies i.e. M.Phill, Ph.D and D.Lit. in the field of Physical Education and Sports Sciences.
- Pass out students can also become health / fitness experts in health clubs and hospitability industry and they can start their own health clubs.

PROGRAMME SPECIFIC OUTCOMES

PSO-1. Improve knowledge about Physical Education

PSO-2. To employ the rules and regulation of Game/Sport

PSO-3. Able to develop exercise.

PSO-4. Provides opportunity to join different Forces, for examples, Army,Police, B.S.F etc.

PSO-5. Develop the skills to teach rules, fundamentals and strategies of Game/Sport.

PSO-6. Develops leadershipquality.

PSO-7. Classify and Identify the Olympic values and apply the same to the society.

PSO-8. programme is a professional programme meant for preparing teachers of physical education in classes VI to X and for conducting physical education and sports activities inclasses XI and XII.

PAPRE 1 CC-101 HISTORICAL FOUNDATION OF PHYSICAL EDUCATION

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the concept of physical education.
CO-2. Understand the historical development of physical education in India and abroad.
CO-3. Describe the different Olympic games and its committees.
CO-4. Classify and Identify the Olympic values and apply the same to the society.
CO-5. Apply the concept of Olympics in organizing various sports activities.
CO-6. Recognize and distinguish the functional operations of national and international Olympic federations.

PAPRE-2 CC-102 ANATOMY

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the different systems of human body.

CO-2. Identify and describe the different organs of the human body and its regulation.
CO-3. Understand the effects of the exercise on different systems of human body.
CO-4. Measure the bodily functions such as blood pressure, pulse/heart rate, different lung volume, gaseousexchange, capacity, amount of lactic acid etc.

PAPRE 3 CC-103 HEALTH EDUCATION AND ENVIRONMENTAL STUDIES

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand about the concept of health and health education.
CO-2. Understand the health problems in India.
CO-3. Understand about hygiene, nutritional aspects and prevention and control of communicable and noncommunicable diseases.
CO-4. Apply the comprehensive knowledge of the concept of health education, school health services and prevention of the environment related problems.
CO-5. Realize the value of environmental science.
CO-6. To look at the natural resources and related environmental issues.
CO-7. Develop an understanding about the environment.

PAPRE 4 EC-101 ADAPTIVE PHYSICAL EDUCATION (ELECTIVE)

Course Outcomes

After completing this course, the students will be able to

CO-1. Understand the concept and mechanism of officiating and coaching.
CO-2. Describe the duties of coaches and officials.
CO-3. Know the ethics and philosophy of coaching and officiating.
CO-4. Realize the qualities and qualification of coach and officials.
CO-5. Apply the concept of coaching and officiating.

PAPRE 5 CC-201 YOGA EDUCATION

Course Outcomes

After completing this course, the students will be able to – work

CO-1. Understand the yoga and its historical development.
CO-2. Differentiate between various stages of astanga yoga.
CO-3. Demonstrate different asanas, pranayamas and kriyas.
CO-4. Apply and demonstrate various benefits of yoga to be applied in the field of sports.
CO-5. Relate yoga with health and wellness.
CO-6. Develop yogic programs/schedules.

SEMESTER II

PAPRE 1 CC-202 EDUCATIONAL TECHNOLOGY AND METHODS OF PHYSICAL EDUCATION

Course Outcomes

After completing this course, the students will be able to-work

CO-1. Understand the concept of educational technology and methods teaching.
CO-2. Describe and use various teaching methods according to suitability.
CO-3. Construct the lesson plans for various physical education activities.
CO-4. Classify the types of presentation, techniques and technical preparations required for physicaleducation lessons.
CO-5. Understand the principal of class management and factors affecting class management.
CO-6. Effectively utilize various teaching aids for conduct of physical education program.

PAPRE 2 CC-203 PHYSIOLOGY

Course Outcomes

CO-1. Describe and apply the fundamental and advanced concepts of exercise physiology.
CO-2. Define and describe the term exercise physiology
CO-3. Recognize the energy system for aerobic and anaerobic components of exercise.
CO-4. Summarize the underlying physiological basis of physical fitness, physical training, health and wellness.
CO-5. Discover the nutritional aspect of fitness and performance.
CO-6. Comprehend the physiological changes and adaptations during exercise in different environmental conditions

PAPRE 3 EC-201 COMPUTER APPLICATIONS IN PHYSICAL EDUCATION

Course Outcomes

CO-1. Correlate the of ICT& Education Technology in Physical Education and Sports concepts with the sportsand athlete specific situations
CO-2. Integrate the knowledge about Communication Process and Teaching for learner.
CO-3. List down the Information Technology utilized in the field of sports.
CO-4. Analyze the issues related to Internet, Networking, E-learning and Cyber Security.

PAPRE 4 EC-202 SPORTS NUTRITION AND WEIGHT MANAGEMENT (ELECTIVE)

Course Outcomes

CO-1. Understand the concept of holistic health through fitness and wellness
CO-2. Explain the concept of physical fitness , health related and motor fitness

CO-3. Evaluate primary health status
CO-4. Prepare fitness schedules& evaluate fitness

PAPRE 5 CC-301 PRINCIPLES OF SPORTS TRAINING

Course Outcomes

After completing this course, the students will be able to – work

CO-1. Understand the modern concept of sports training.
CO-2. Describe the principles of sports training.
CO-3. Evaluate and Develop system of sports training – basic performance, intermediate performanceand high performance training.
CO-4. Plan training sessions.
CO-5. Realise and apply the Methods of Technique Training.
CO-6. Design different training program for Training Components.
CO-7. Explain periodization and its types.
CO-8. Identify talents.

SEMESTER III

PAPRE 1 CC-302 SPORTS MANAGEMENT
Course Outcomes

CO-1. To describe organization and administration of sports programmes.
CO-2. To analyze and interpret sports philosophy, sports sociology, business systems, sports management, publicadministration and marketing techniques.
CO-3. To develop opportunities to construct & design the curriculum of PE in broader aspects realizing the agegroup, gender consideration and physiological basis

PAPRE 2 CC-303 SPORTS PSYCHOLOGY AND SOCIOLOGY
Course Outcomes

CO-1. Correlate the psychological concepts with the sports and athlete specific situations
CO-2. Integrate the knowledge about personality, motor learning for behavior modification of athletes
CO-3. Relate different theories of motor learning with its influence on motor perception and related cognitiveabilities of athletes.
CO-4. List down the strategies for motivation utilized in the field of sports.
CO-5. Analyze the issues related to social behavior based on physiological structure and function

PAPRE 3 EC-301 SPORTS MEDICINE, PHYSIOTHERAPY AND REHANLITATION (ELECTIVE)

Course Outcomes

CO-1. To apprise the students about heintro ductionto AthleticCare & Rehabilitation
CO-2. To synthe sizea ba sicconcept of sportsinj urie sand rehabilitation.

CO-3. To appraise the varied ther apeutica spects of exercise.
CO-4. Toappraisetheunderstandingofthepreventiveandcurativeaspectsofsportsinjuries.
CO-5. To explain the under standing of there ha bilit ationa spects of sport sinjuries
CO-6. To descry be the knowled geein the fieldofpositiveli festyle.

M.P.ED.

PROGRAMMER OUTCOMES

- The graduates and postgraduates of the courses have a wide range of opportunity in different fields. Post Graduate and Ph.Ds are qualified to be appointed as Teachers and Sports officer in Universities Colleges and Physical Education teachers inSchools.

- Other than these academic opportunities they will also be qualified for appointment as District Sports Officer / Regional sports officer and other administrative post in sports department in Central and Stateundertakings.

- These students are also eligible to join different Forces, for examples, Army, Police, B.S.Fetc.

- They are also eligible to undertake the higher studies i.e. M.Phill, Ph.D and D.Lit. in the field of Physical Education and Sports Sciences.

- Pass out students can also become health / fitness experts in health clubs and hospitability industry and they can start their own health clubs.

PROGRAMME SPECIFIC OUTCOMES

Develops specialized knowledge in skills of games.

PSO-1. Development of knowledge in health.
PSO-2. Develops effective communication in Physical education.
PSO-3. Able to develop exercise.
PSO-4. Preparation for competitive examination other than physicaleducation.

PSO-5. Develops specialized knowledge in skills of games.
PSO-6. Development of knowledge in health.
PSO-7. Develops effective communication in Physical education.
PSO-8. Able to develop exercise.
PSO-9. Preparation for competitive examination other than physicaleducation.
PSO-10. Improves Globalizeinformation.
PSO-11. Develops leadershipquality.
PSO-12. Understand the concept of physical education.
PSO-13. Understand the historical development of physical education in India and abroad.

PSO-12. Describe the different Olympic games and its committees.
PSO-13. Classify and Identify the Olympic values and apply the same to the society.
PSO-14. Apply the concept of Olympics in organizing various sports activities.
PSO-15. Recognize and distinguish the functional operations of national and international Olympic federations.

हिंदी एवं भाषाविज्ञान विभाग रानी दुर्गावती

विश्वविद्यालय,जबलपुर म.प्र

एम.ए. हिंदी पाठ्यक्रम

हिंदी साहित्य में स्नातकोत्तर पाठ्यक्रम के उद्देश्य

हिंदी साहित्य में स्नातकोत्तर पाठ्यक्रम कार्यक्रम का उद्देश्य है–

ज्ञान के विविध आयामों का स्पष्टीकरण, परिपक्व मस्तिष्क का निर्माण, कौशल विकास, वृहद् दृष्टिकोण, अध्ययन के द्वारा प्राप्त तथा अर्जित जीवन मूल्यों का अपने जीवन तथा व्यवहार में सम्मिश्रण, व्यक्तित्व का संपूर्ण विकास एवं समाज तथा राष्ट्रोपयोगी नागरिक तैयार करना है, जिन्हें निम्नांकित बिंदुओं में और अधिक स्पष्ट किया जा सकता है–

1. विद्यार्थियों को संवेदनशील नागरिक बनाना।
2. एक कुशल वक्ता तथा आकर्षक स्वावलंबी व्यक्तित्व का निर्माण करना।
3. समाज और समुदाय के प्रति संवेदनशील दृष्टि का विकास करना।
4. राष्ट्रीय चेतना का विकास करना।

मानवीय मूल्यों के प्रति स्वस्थ दृष्टिकोण विकसित करना।
6. साहित्य में राष्ट्र और राष्ट्रवाद के सही अर्थों को बताना।
7. मूलभूत कौशल जैसे लेखन, श्रवण और अभिव्यक्ति का विकास करना
8. स्थानीय से लेकर वैश्विक स्तर तक के विशिष्ट साहित्य से परिचित कराना।
9. भाषा संबंधी कौशल का विकास करना।
10. उच्चारण, वर्तनी और लिपि का सही–सही ज्ञान कराना।
11. समाज के विभिन्न समुदायों के प्रति सहिष्णुता की भावना का विकास करना।
12. विभिन्न साहित्यिक विधाओं की जानकारी देना।

कार्यक्रम अधिगम परिणाम

हिंदी साहित्य में स्नातकोत्तर उपाधि से संबद्ध अधिगम परिणाम इस प्रकार है–

PSO-1. साहित्य संप्रेषण के आधार बिंदुओं की जानकारी देना ताकि साहित्य के संबंध में एक स्पष्ट समझ विकसित हो सके।

PSO-2. हिंदी साहित्य और भाषा का व्यवस्थित और तर्कसंगत ज्ञान कराना ताकि उसके सैद्धांतिक पक्ष और साहित्यिक विकास के संबंध में पर्याप्त जानकारी मिल सके।

PSO-3. साहित्य की विभिन्न विधाओं को पढ़ने और समझने की योग्यता का विकास करना।

PSO-4. साहित्य लेखन की विविध शैली और समीक्षात्मक दृष्टि का विकास करना।

PSO-5. स्थानीय, राष्ट्रीय और वैश्विक एकता के वृहद संजाल के बारे में जानकारी देना ताकि विद्यार्थी में साहित्यिक मूल्यांकन की योग्यता विकसित हो सके।

PSO-6. समीच्य दृष्टि और व्यवस्थित वैचारिकी का प्रदर्शन करना जिससे कि हिंदी साहित्य के अध्ययन के प्रति जिज्ञासा और प्रश्न उत्पन्न हो सके।

PSO-7. आधुनिक संदर्भों में तकनीकी संसाधनों को इस्तेमाल करते हुए हिंदी भाषा और उसकी प्रयोजनीयता की जानकारी देना।

PSO-8. प्रत्येक स्तर पर जीवन मूल्यों और साहित्यिक मूल्यों का निर्धारण करने की क्षमता और ज्ञान का विकास करना।

PSO-9. विद्यार्थी में लेखन, वाचन और श्रवण के साथ–साथ कल्पनाशक्ति का विकास करना जिससे कि उसके समग्र व्यक्तित्व में निखार आ सके।

PSO-10. साहित्य के अध्ययन के बाद रोजगार के विभिन्न क्षेत्रों की पहचान करते हुए रोजगार के नए मार्ग तलाशना।

PSO-11. वर्तमान युग सूचना क्रांति का युग है जिसमें अभिव्यक्ति की प्रधानता है, ऐसे में तकनीकी के विकास ने साहित्य संचरण को अत्यंत सुगम बना दिया है। इसी परिप्रेक्ष्य में हिंदी भाषा के साहित्य लेखन और अनुवाद का अवसर प्रदान करना जिसका उपयोग कर जनसंचार से लेकर व्यक्तित्व विकास तक में विद्यार्थी निष्णात हो सके। विद्यार्थी की रुचियों को एक व्यवस्थित रूप देना और उन्हें विभिन्न विधाओं में से चयन की स्वतंत्रता प्रदान करना ताकि वे स्नातकोत्तर कार्यक्रम के पूर्ण होने के बाद खुद ही साहित्य के विभिन्न क्षेत्रों में से अपनी रुचि के अनुसार चयन कर सकें।

PSO-12. भारत के साहित्यिक, सांस्कृतिक और भाषाई विविधता को जानने के प्रति जागरुकता पैदा करना भी हिंदी साहित्य के अध्ययन का प्रमुख उद्देश्य है।

प्रथम सेमेस्टर

प्रथम प्रश्नपत्र . हिंदी साहित्य का इतिहास

उद्देश्य

CO. हिंदी साहित्य का इतिहास पूर्व काल की विभिन्न परिस्थितियों का शाश्वत् दस्तावेज है। जिससे तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थिति की जानकारी प्राप्त होती है। समय और विभिन्न कालों के अनुसार साहित्य की विभिन्न प्रवृत्तियों में होने वाले परिवर्तन का अध्ययन किया जा सकता है। इस प्रश्नपत्र में साहित्य के साथ तत्कालीन समाज का अध्ययन अपेक्षित है।

प्रश्नपत्र द्वितीय प्राचीन एवं मध्यकालीन काव्य

उद्देश्य

CO. प्राचीन एवं मध्यकालीन कवियों ने आदिकाल और भक्तिकाल दोनों में शौर्य, श्रृंगार एवं भक्ति का सुंदर समन्वय तो हुआ है, साथ ही निर्गुण भक्तिधारा को आगे बढ़ाने एवं सूफी प्रेम की पीर को हर छात्र को समझाया है। रासो काव्य की भी अपनी विशिष्टता है।

प्रश्नपत्र तृतीय हिंदी भाषा का व्याकरण उद्देश्य

CO. हिंदी भाषा के उद्भव और विकास के साथ भारत में व्याकरण का विकास एवं प्रमुख व्याकरणाचार्यों का परिचय देते हुए, हिंदी में शब्द निर्माण करने के लिए व्याकरण आदि को समझना आवश्यक है।

निर्धारित पाठ्यक्रम चतुर्थ प्रश्नपत्र अनुवाद विज्ञान उद्देश्य

CO. हिंदी को रोजगारपरक बनाने के लिए कंप्यूटर प्रोग्रामिंग की जानकारी देने के साथ अनुवाद के सिद्धांत एवं व्यवहार कला का ज्ञान प्रदान करना है।

द्वितीय सेमेस्टर

प्रथम प्रश्नपत्र . हिंदी साहित्य का इतिहास (आधुनिक काल) उद्देश्य

CO. गद्य एवं गद्य की प्रमुख विधाओं का विकास आधुनिक काल अर्थात् 19वीं शताब्दी में हुआ। आधुनिक काल की राजनीतिक, सामाजिक परिस्थितियों का अध्ययन। आधुनिक काव्य की विभिन्न प्रवृत्तियों का अध्ययन।

द्वितीय प्रश्नपत्र . हिंदी उपन्यास एवं लघु कथा साहित्य CO.

उद्देश्य
CO. हिंदी उपन्यास, उपन्यासकारों की रचनाओं की विशेषताएँ। लघु कथा की विशेषताएँ और लघु कथाकारों का परिचय कराना प्रमुख उद्देश्य है।

तृतीय प्रश्नपत्र . भारतीय एवं पाश्चात्य साहित्यशास्त्र

उद्देश्य
CO. साहित्य को तैयार करने में या लिखने में कौन कौन से नियम और सिद्धांत का प्रयोग किया जाना चाहिए इसकी समझ पैदा करना और सीखना ताकी छात्र स्वयं भी लेखन की ओर प्रवृत्त हो तो उसे भारतीय साहित्य शास्त्र के अलावा पाश्चात्य सिद्धांत का ज्ञान हो।

चतुर्थ प्रश्नपत्र . हिंदी की उत्पत्ति, विकास और संरचना उद्देश्य
CO. हिंदी भाषा के आधुनिकीकरण एवं मानकीकरण की जानकारी के साथ उसके व्याकरण को समझना अति आवश्यक है विशेषकर व्याकरणिक कोटियों को जानना और उसके अनुसार शुद्ध वाक्य की संरचना करना। हिंदी भाषा की लिपि देवनागरी का ज्ञान, साथ ही तकनीकी की मांग के आधार पर हिंदी में कंप्यूटर प्रणाली का ज्ञान, और केंद्र शासन एवं राज्य शासन के कार्यालयों के लिए रोजगारोंन्मुखी राजभाषा संबंधी ज्ञान प्रदान करना।

तृतीय सेमेस्टर

प्रथम प्रश्नपत्र – आधुनिक हिंदी कवि और उनके काव्य (छायावादी काव्य)

उद्देश्य
CO. आधुनिक काल के प्रारंभिक चरण अर्थात् भारतेन्दु युग से द्विवेदी एवं छायावदी युग की कविता की प्रवृत्तियाँ, प्रमुख कवि और युगीन सामाजिक, आर्थिक व राजनीतिक परिस्थितियों की जानकारी देकर कविता को युगीन संदर्भों से जोड़कर अध्ययन कराना।

द्वितीय प्रश्नपत्र– भाषाविज्ञान

उद्देश्य
CO. हिंदी की लिपि देवनागरी है उसके प्रयोग के लिए जिसकी व्यवस्था अर्थात् स्वन, रूप, वाक्य, अर्थ और प्रोक्ति को समझना आवश्यक है। भाषाविज्ञान के ये अंग कहलाते हैं इनके ज्ञान से ही भाषा एवं उसकी व्यवस्था का सम्यक् ज्ञान दिलाया जा सकता।

तृतीय प्रश्नपत्र– नाटक, निबंध और एकांकी

उद्देश्य

CO. भरत मुनि की नाट्य परंपरा, आधुनिक युग तक आते हुए कई पड़ावों को पार कर नए परिवेश और समाज के साथ जुड़ते हुए दृश्य माध्यम तक रंगमंच पर प्रदर्शित किया जाने लगा। इस प्रश्नपत्र के माध्यम से विद्यार्थियों को उस अतीत के आदर्श का परिज्ञान कराना तथा वर्तमान को समृद्ध बनाने की प्रेरणा देना पाठ्यक्रम का उद्देश्य है।

चतुर्थ प्रश्नपत्र– लोक साहित्य

उद्देश्य

CO. लोक संस्कृति का इतिहास, परंपरा बताते हुए लोक संस्कृति से राष्ट्रवाद का ज्ञान कराना। लोक साहित्य का अन्य सामाजिक विज्ञानों के बीच संबंध बताना तथा रंगमंच पर लोक नाट्यों के प्रभाव का अध्ययन कराना।

चतुर्थ सेमेस्टर प्रथम

प्रश्नपत्र–उत्तर छायावाद का इतिहास और काव्य

उद्देश्य

CO. प्रयोगवाद के पुरोधा अज्ञेय ने कविता को ही कवि का परम वक्तव्य माना है। 'तारसप्तक' के संपादक अज्ञेय को पाठ्यक्रम में रखने का उद्देश्य न सिर्फ उनकी कविताओं का बल्कि उस युग चेतना को समझाना। फैंटेसी शैली के साथ हालावाद, प्रगतिवाद, नई कविता, अकविता तथा जनवादी कविता और उनके रचना शिल्प को समझाना प्रमुख उद्देश्य है।

द्वितीय प्रश्नपत्र–पत्रकारिता

उद्देश्य

CO. हिंदी को रोजगारपरक बनाने के लिए पत्रकारिता और जनसंचार के अंतर्गत संपादन कला और इसके विविध आधारभूत प्रकारों का वैज्ञानिक प्रशिक्षण देना।

तृतीय प्रश्नपत्र –वर्तमान विमर्श और हिंदी साहित्य उद्देश्य

CO. वर्तमान साहित्य में चल रहे विमर्श का ज्ञान कराना, साहित्यकारों के पत्रों की जानकारी पत्र साहित्य ओर डायरी विधा के साथ रेखाचित्र संस्मरण को समझना व उसके लिए प्रेरित करना ही इसका उद्देश्य है।

Department of PG Studies and Research in History

Programme Offered

1. **M.A. (History)**
2. **Ph.D. (History)**

PROGRAMME OUTCOMES :

The objective of this paper is to inculcate in the researchers, the positivist Indian thought and also learn from the life and works of great Indian souls. Thus in this paper the students study would begin from the Vedic Upnishadic thoughts to the Gita, then the six schools of Indian Philosophy; Buddhism, Jainism, Manu and Kautilya. They would learn about Bhakti Saints and thought. Also Sufism and Sufi Saints. The study of modern Indian thought would include the renaissance reformers, and the freedom fighters. This would be a comprehensive study work In which the ideas of most of modern day thinkers including Pt. Dindayal Upadhyaya and Dr APJ Abdul Kalam would be studied

PROGRAMME SPECIFIC OUTCOMES :

While doing PhD the researchers encounter so many problems. The basic aim of this paper is to acquaint them all the methodology of writing research papers, dissertations and of course, thesis. They would come to know all the finer aspects of research work such as differentiating primary and secondary data and to retrieve and utilize it.

SEMESTER I

PAPER 1 HISTORIOGRAPHY, CONCEPT, METHOD AND TOOLS, HSC101

Course Outcomes

The whole study of this paper would establish the student's strong command over the discipline history, would lay a firm foundation for doing research in future and make his writings more mature and objective.

PAPER 2 INDIAN HISTORY

Course Outcomes

On learning the views of different schools of thought on history, the students may make their own appreciation for the good points for all of them. The students will also learn how India was functioning viably at the time of British advent. Then how the British took advantage of disunity among us and gradually nibbled whole of India. However the students would also know about polity, constitutional development and the diplomacy, the British gave to us Indians.

PAPER 3 20TH CENTURY WORLD HSC

Course Outcomes

From this paper the students would get aware towards liberalism and democracy. They will also understand how the people of the world fought against dictatorship, imperialism and exploitation, liberated and strengthened their nations

PAPER 4 WORLD HISTORY 18TH AND 19TH CENTURIES)

Course Outcomes

On studying this paper the students will come to know how Europeans began to relinquish blind faith in religion and started thinking and acting reasonably and scientifically. Later how the findings of renaissance led to inventions of machines that caused industrial revolution. Then the ideas of revolutionary France, which are a beacon light to the oppressed classes of the world to date. Then they will learn lessons from the study of rise and fall of Napoleon. Also how the world powers began to sit on meeting tables and solve their differences, instead of using sword. The students will come to know the growth and the good values of democracy

SEMESTER II

PAPER 1 HISTORIOGRAPHY, CONCEPT, METHOD AND TOOLS

Course Outcomes

In this paper the students will get advanced knowledge of historiography which they studied in Semester I. Course content of this paper aims that the history students become objective researchers at the PhD level and later contribute to the existing knowledge of history discipline, when they become academicians.

PAPER 2 INDIAN HISTORY (1757-1857 AD),

Course Outcomes

The students will learn about the socio economic policies of British in India and how the country moved towards modernity through the development of railways, Posts and Telegraphs and new urban centers. They will also come to know about the development of education and renaissance. They will also know what lessons the Indians learnt from the first war of independence.

PAPER 3 20TH CENTURY WORLD

Course Outcomes

From this paper the students will learn how the differences between communism and capitalism culminated into cold war and associated international tensions. They will also learn how Pt Nehru, Marshal Tito and President Nasser gave able leadership to third world countries in such a scenario. Then the problems in communism, which led to its fall. They will also come to know what the new world order is and how its science and technology is.

PAPER 4 WORLD HISTORY 18TH AND 19TH CENTURIES

Course Outcomes

This paper takes a world view in the referred period. The various nationalist struggles in Europe and America. How capitalism, imperialism and colonialism are interrelated. The students will also know about the resurgence East Asian powers in 18th and 19th centuries.

SEMESTER III

PAPER 1 HISTORY OF MARATHAS 1627-1818 AD

Course Outcomes

This paper teaches about Hindu resurgence against the later decadent Mughals, the resurgence, which was led by the brave Shivaji and Marathas. The beginning of consolidation of Maratha empire under Peshwa Balaji Vishwanath would also be discussed

PAPER 2 HISTORY OF MODERN INDIA 1858-1975

Course Outcomes

This paper will teach the students, the consolidation of British rule and its socio-economic impact upon us. The students will also learn, how India evolved constitutionally.

PAPER 3 WOMEN IN INDIAN HISTORY

Course Outcomes

This paper intends for gender sensitization of all students so that they become more civilized citizens of India. The students will be taught the Liberal, Marxist, Socialist, Radical and Post-Modernist approaches towards the women's studies. They will also know the women's status in ancient, mediaeval and modern India; the work done by ancient learned women, mediaeval saints and modern Indian renaissance leaders. Conditions of tribal women and rights of women in general will also be discussed.

PAPER 4 HISTORICAL APPLICATION IN TOURISM

Course Outcomes

This paper intends to make the student, aware and well informed of the rich cultural heritage of India. Some units of this paper are so designed that if a student wants to join any section of tourism business, he has some background of it in mind.

SEMESTER IV

PAPER 1 HISTORY OF MARATHAS 1627-1818

Course Outcomes

This paper will teach the students, the Maratha history from the period of Peshwa Baji Rao I to the third Anglo Maratha war and the fall of Maratha confederacy in 1818. The students would learn about aspects of feudalism that developed in the Maratha confederacy with the passage of time.

PAPER 2 HISTORY OF MODERN INDIA 1858-1975

Course Outcomes

In this paper the students will learn about the Indian nationalism which emerged in the late 19^{th} century (However it necessary to note here that Indian nationalism was not a bye product of the British rule but is as ancient as the Indus Valley civilization and the Aryan Culture). Then the students will learn about the Gandhian movements and the greatness of this Mahatma. The students will also be taught about the contributions of the revolutionaries, including Netaji Subhas Chandra Bose. By making them aware of the communal politics, it is hoped that the students would not fall prey to divisive forces around them. About the post-independence history; land question, industrial policy, women's empowerment and scientific and technological developments will be taught. India's role in liberation and integration of Goa will also be explained.

PAPER 3 WOMEN IN INDIAN HISTORY

Course Outcomes

This paper is continuation of the same titled paper in Semester III. It traces, women's empowerment through ancient, mediaeval and modern times. Also their role in the revolutionary and national movements. Women's cultural achievements will also be discussed.

PAPER 4 HISTORICAL APPLICATION IN TOURISM

Course Outcomes

In this paper the students would learn much about the Indian culture, including the folk culture. Also all the aspects of guiding skills. All this would be much beneficial to them, if they decide to join the tourism business.

Department of Yoga

Programme Offered

1. **M.A. (Yoga)**
2. **Ph,D (Yoga)**

M.A. (Yoga)

PROGRAMME OUTCOMES :

The PG programs in Yoga education aims to achieve a sound grounding in understanding the basic concepts of Yoga with sufficient content of topics from modern and contemporary areas of exciting developments in yoga philosophy to ignite the young minds. The curricula and syllabi designed in such a way that the basic connection between theory and practice and its importance in understanding yogic concept will be apparent to the students. The course is two-year duration spread over four semesters after the under graduation level course.

PROGRAMME SPECIFIC OUTCOMES :

PSO-1. Promotion of positive awareness for the healthy body and healthy mind.

PSO-2. To inculcate the teaching ability for conducting yoga sessions and offer various techniques to promotehealthy living.

PSO-3. To create yoga professionals of high caliber who know the concepts, techniques and can do the needful forthe social wellbeing.

PSO-4. To create yoga experts with in-depth knowledge based on yogic texts.

PSO-5. To establish holistic health, social harmony and world peace by training them to be good citizens

who canoffer yogic way of right living.

Semester I

PAPER 1 FUNDAMENTALS OF YOGIC SCIENCE

Course outcomes

On completion of this course, the students will have:

CO-1. Critical understanding of the Evolution of Yoga based on the classical texts
CO-2. Understanding the basic theories and practices of Shad-Darshan.
CO-3. Knowledge of the concepts of Jnana, Bhakti and karma Yoga.
CO-4. Understanding of different Schools of Yoga.

PAPER 2 HUMAN CONSCIOUSNESSES AND YOGIC SCIENCE

Course outcomes

Following the completion of this course, students shall be able to

CO-1. understand the altered states of consciousness.
CO-2. know the science of behavior.
CO-3. can understand and develop a complete personality.
CO-4. can define various types of cognitive aspects.
CO-5. learn the management of common mental disorders.

PAPER 4 SKILL DEVELOPMENT

Course outcomes

CO-1. To equip the students with tools and techniques for handling socio political issues that affect them onindividual / collective basis.
CO-2. Larger awareness of public issues and empathy with marginalised issues in society.
CO-3. Inculcate a sense of ethical responsibility and a vision to challenge the existing norms in need of change.

SEMESTER II

PAPER 1 FUNDAMENTALS OF HATHA YOGA

Course outcomes

On completion of this course, the students will have:

CO-1. Knowledge of various Traditional Hatha Yoga Texts.

CO-2. Understanding of the concept and practice of Shodhana Kriyas with specific principles.

CO-3. Conceptual and practical understanding of Asana with its benefits and contra-indications.

CO-4. Conceptual and practical understanding of Pranayama with its benefits and contra-indications.

CO-5. Conceptual and practical understanding of Mudra and Bandha.

PAPER 2 SCIENCE, SOCIETY AND YOGIC SCIENCE

Course outcomes

CO-1. Teach the yoga practices in a scientific interpretation.
CO-2. Help to build up a complete personality with physical health, mental well-being.
CO-3. Develop understanding of different yogic techniques.

PAPER 4 SKILL DEVELOPMENT

Course outcomes

This course is designed to make students philosophically competent about their own decisions, to achieve clarity, develop comprehension skills and reach precision in arguments with reasons. A spectrum of issues ranging from morality, environment, real life situations, moral dilemmas and ongoing philosophical examination of the crisis in the field of artificial intelligence are a part of this course curriculum.

SEMESTER III

PAPER 1 ANATOMY, PHYSIOLOGY AND HEALTH

Course outcomes

On completion of this course, the students will be able to:

CO-1. Understand of Human Anatomy and Physiology.

CO-2. Know different levels of structural complexity.
CO-3. Know the effect of yogic techniques on different systems in the human body.
CO-4. Develop the understanding of hormones.

PAPER 2 YOGA PSYCHOLOGY

Course outcomes

Following the completion of this course, students shall be able to

CO-1. understand the altered states of consciousness.
CO-2. know the science of behavior.
CO-3. can understand and develop a complete personality.
CO-4. can define various types of cognitive aspects.
CO-5. learn the management of common mental disorders.

SEMESTER IV

PAPER 1 YOGA IN ANCIENT LITERATURE

Course outcomes

Following the completion of this course, students shall be able to

CO-1. understand the different techniques of Dhyana practice.
CO-2. know the meaning and methods of Pranayama practice.
CO-3. understand different limbs of Yoga.
CO-4. define various branches of Yoga.
CO-5. learn the yogic management of life style to attain perfection in life.

PAPER 2 RESEARCH METHODOLOGY IN YOGIC SCIENCE

Course outcomes

Following the completion of this course, students shall be able to

CO-1. Understand the meaning and definition of Research.
CO-2. Know the nature and different types of Hypothesis.
CO-3. Understand the scientific methods of Observations and Experiments.
CO-4. Define nature of Variable and Sampling.
CO-6. Learn the Graphical representation of Research data.
CO-7S. Become aware of measures of Central Tendency and Variability.

संस्कृत,पालि एवं प्राकृत विभाग रानी

दुर्गावती विश्वविद्यालय,जबलपुर म.प्र

एम.ए. संस्कृत

संस्कृत साहित्य में स्नातकोत्तर पाठ्यक्रम के उद्देय

संस्कृत साहित्य में स्नातकोत्तर पाठ्यक्रम कार्यक्रम का उद्दे''य है– ज्ञान के विविध आयामों का स्पश्टीकरण, परिपक्व मस्तिश्क का निर्माण, कौ''ाल विकास, बृहद् दृश्टिकोण, अध्ययन के द्वारा प्राप्त तथा अर्जित जीवन मूल्यों का अपने जीवन तथा व्यवहार में सम्मिश्रण, व्यक्तित्व का संपूर्ण विकास एवं समाज तथा राश्ट्रोपयोगी नागरिक तैयार करना है,

जिन्हें निम्नांकित बिंदुओं में और अधिक स्पश्ट किया जा सकता है–

1. विद्यार्थियों को संवेदनशील नागरिक बनाना।
2. एक कुशल वक्ता तथा आकर्शक स्वावलंबी व्यक्तित्व का निर्माण करना।
3. समाज और समुदाय के प्रति संवेदनशील दृष्टि का विकास करना।
4. राष्ट्रीय चेतना का विकास करना।
5. मानवीय मूल्यों के प्रति स्वस्थ दृष्टिकोण विकसित करना।
6. साहित्य में राष्ट्र और राष्ट्रवाद के सही अर्थों को बताना।
7. मूलभूत कौशल जैसे लेखन, श्रवण और अभिव्यक्ति का विकास करना
8. स्थानीय से लेकर वैश्विक स्तर तक के विशिष्ट साहित्य से परिचित कराना।
9. भाषा संबंधी कौशल का विकास करना।
10. उच्चारण, वर्तनी और लिपि का सही–सही ज्ञान कराना।
11. समाज के विभिन्न समुदायों के प्रति सहिष्णुता की भावना का विकास करना।
12. विभिन्न साहित्यिक विधाओं की जानकारी देना।

कार्यक्रम अधिगम परिणाम

संस्कृत साहित्य में स्नातकोत्तर उपाधि से संबद्ध अधिगम परिणाम इस प्रकार है–

PSO-1. साहित्य संप्रेषण के आधार बिंदुओं की जानकारी देना ताकि साहित्य के संबंध में एक स्पष्ट समझ विकसित हो सके।

PSO-2. संस्कृत साहित्य और भाषा का व्यवस्थित और तर्कसंगत ज्ञान कराना ताकि उसके सैद्धांतिक पक्ष और साहित्यिक विकास के संबंध में पर्याप्त जानकारी मिल सके।

PSO-3. साहित्य की विभिन्न विधाओं को पढ़ने और समझने की योग्यता का विकास करना।

PSO-4. साहित्य लेखन की विविध शैली और समीक्षात्मक दृष्टि का विकास करना।

PSO-5. स्थानीय, राष्ट्रीय और वैश्विक सांस्कृतिकता के वृहद संजाल के बारे में जानकारी देना ताकि विद्यार्थी में साहित्यिक मूल्यांकन की योग्यता विकसित हो सके।

PSO-6. समीच्य दृष्टि और व्यवस्थित वैचारिकी का प्रदर्शन करना जिससे कि संस्कृत साहित्य के अध्ययन के प्रति जिज्ञासा और प्रश्न उत्पन्न हो सके।

PSO-7. आधुनिक संदर्भों में तकनीकी संसाधनों को इस्तेमाल करते हुए संस्कृत साहित्य की जानकारी देना।

PSO-8. प्रत्येक स्तर पर जीवन मूल्यों और साहित्यिक मूल्यों का निर्धारण करने की क्षमता और ज्ञान का विकास करना।

PSO-9. विद्यार्थी में लेखन, वाचन और श्रवण के साथ–साथ कल्पनाशक्ति का विकास करना जिससे कि उसके समग्र व्यक्तित्व में निखार आ सके।

PSO-10. साहित्य के अध्ययन के बाद रोजगार के विभिन्न क्षेत्रों की पहचान करते हुए रोजगार के नए मार्ग तलाशना।

PSO-11. वर्तमान युग सूचना क्रांति का युग है जिसमें अभिव्यक्ति की प्रधानता है, ऐसे में तकनीकी के विकास ने साहित्य संचरण को अत्यंत सुगम बना दिया है। इसी परिप्रेक्ष्य में संस्कृत साहित्य लेखन और अनुवाद का मंच प्रदान करना जिसका उपयोग कर जनसंचार से लेकर व्यक्तित्व विकास तक में विद्यार्थी निष्णात हो सके। विद्यार्थी की रुचियों को एक व्यवस्थित रूप देना और उन्हें विभिन्न विधाओं में से चयन की स्वतंत्रता प्रदान करना ताकि वे स्नातकोत्तर कार्यक्रम के पूर्ण होने के बाद खुद ही साहित्य के विभिन्न क्षेत्रों में से अपनी रुचि के अनुसार चयन कर सकें।

PSO-1. भारत के साहित्यिक, सांस्कृतिक और भाषाई विविधता को जानने के प्रति जागरुकता पैदा करना भी हिंदी साहित्य के अध्ययन का प्रमुख उद्देश्य है।

प्रथम सेमेस्टर

प्रश्नपत्र प्रथम वेद

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को वैदिक साहित्य का व्यापक परिचय देना है जिससे छात्र प्राचीन भारतीय ज्ञान तथा पूर्वजों की इस महानतम संस्कृति से परिचित हो सकें। इस प्रश्नपत्र में कुछ वैदिक देवताओं का विशेष अध्ययन है जो विशेषतः सृष्टि उत्पत्ति विषयक एवं समाज की उन्नति तथा सुधार विषयक है। वैदिक साहित्य का इतिहास हमारी संस्कृति तथा वैदिक वाङ्मय के प्रति छात्रों की रुचि जाग्रत करना है।

प्रश्नपत्र द्वितीय वेदाङ्ग

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को ऋग्वेद से लेकर वेदांग, निरुक्त तक वैदिक साहित्य का व्यापक परिचय देना है।इसमें वैदिक देवताओं को जानने तथा परिचय प्राप्त करने हेतु ऋग्वेद के कुछ महत्त्वपूर्ण छंद भी सम्मिलित हैं। निरूक्त के कुछ अंशों के अध्ययन से शब्दों की वैदिक व्युत्पत्ति को समझने में सहायता मिलती है जबकि वैदिक व्याकरण वैदिक भाषा की विशिष्टता की व्याख्या करता है।

प्रश्नपत्र तृतीय पालि, प्राकृत एवं भाषा विज्ञान

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भाषा शास्त्र और आधुनिक भाषाविज्ञान की कुछ महत्त्वपूर्ण अवधारणाओं और सिद्धान्तों से परिचित कराना है। इन अवधारणाओं और सिद्धान्तों के प्रकाश में संस्कृत भाषा के सिंहावलोकन एवं विश्लेषण में मदद करना है।

प्रश्नपत्र चतुर्थ भारतीय दर्शन

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भारतीय दर्शन के कुछ महत्त्वपूर्ण मूलभूत सिद्धान्तों के व्यापक और गहन अध्ययन द्वारा सशक्त विचारशक्ति को हासिल करने में सक्षम बनाना है।

प्रश्नपत्र पञ्चम भारतीय नीतिशास्त्र (दर्शन विभाग)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य नीतिशास्त्र के ज्ञान द्वारा छात्रों में नैतिकता का विकास करना है। सत्य, पुरुषार्थ एवं योग के सम्यक ज्ञान द्वारा छात्रों में जीवनोपयोगी कौशल तथा समाजोपयोगी उचित व्यवहार की शिक्षा देना है। समकालीन भारतीय नीतिशास्त्रीयों के विशेष नीति–गुणों से परिचित कराना है।

द्वितीय सेमेस्टर

प्रश्नपत्र प्रथम सांख्य एवं मीमांसा

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को भारतीय दर्शन के दो प्रमुख ग्रन्थों सांख्यकारिका एवं अर्थसंग्रह के अध्ययन–अध्यापन से सांख्य एवं मीमांसा की मूलभूत अवधारणाओं तथा सिद्धान्तों से परिचित कराना है।

प्रश्नपत्र द्वितीय काव्यशास्त्र

उद्देश्य –

CO. मम्मट का काव्यप्रकाश संस्कृत साहित्य में काव्यशास्त्रीय ग्रन्थ है जिसमें काव्य लक्षण, रस, ध्वनि, गुण–दोष, रीति और अलंकार की वैचारिक चर्चा पर एक संतुलित दृष्टिकोण प्राप्त होता है। इस पाठ्यक्रम का उद्देश्य शिक्षार्थियों को काव्यप्रकाश के माध्यम से काव्य के विभिन्न आयामों अर्थात् प्रयोजन, लक्षण और काव्य भेदों का परिचय प्राप्त कराना है।

प्रश्नपत्र तृतीय भारतीय संस्कृति एवं पर्यावरण

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को संस्कृत साहित्य में संरक्षित भारतीय संस्कृति के ज्ञान से परिचित कराना। वैदिक तथा लौकिक संस्कृति के महत्त्व से छात्रों अवगत होंगे। पर्यावरण के अध्ययन से छात्रों में पर्यावरण के प्रति चेतना को जाग्रत करना तथा पर्यावरण संरक्षण के प्रति जागरुकता उत्पन्न करना। प्राचीन भारतीय संस्कृति में धर्म के अर्थ एवं वैशिष्ट्य से परिचित कराना।

प्रश्नपत्र चतुर्थ काव्य (मेघदूत एवं कुमारसंभव)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य कालिदास की विशिष्ट रचनाओं के सौन्दर्य से छात्रों को अवगत कराना है। कालिदास की कालजयी रचनाओं के भाषा–शिल्प, अलंकारों तथा उपमा प्रयोग के वैशिष्ट्य से छात्रों को परिचित कराना है।

प्रश्नपत्र पञ्चम काव्य (कर्पूरमंजरी एवं विद्धशालभंजिका)

उद्देश्य –

CO. महाकवि राजशेखर की प्राकृत भाषा में निबद्ध दो अनुपम कृतियों के साहित्यिक सौन्दर्य से छात्रों को परिचित कराना एवं रचनाओं में चित्रित तात्कालिक सामाजिक एवं राजनीतिक परिस्थितियों से परिचित कराना।

तृतीय सेमेस्टर

प्रश्नपत्र प्रथम महाकाव्य

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य पद्य काव्य विधाओं में सर्वाधिक महत्त्वपूर्ण एवं महाकवियों द्वारा सर्वाधिक प्रयुक्त काव्यविधा महाकाव्य से परिचित कराना तथा बृहत्त्रयी एवं लघुत्रयी में परिगणित महाकवि माघ एवं कालिदास कृत रचनाओं में क्रमशः प्रौढ़ी एवं समासोक्ति जन्य काव्य सौन्दर्य को प्रस्फुटित करना है।

प्रश्नपत्र द्वितीय नाट्यशास्त्र

उद्देश्य –

CO. पाठ्यक्रम का उद्देश्य विद्यार्थियों को नाट्यशास्त्रीय कथानक, अभिनेता, रस जैसे विभिन्न नाट्य तत्त्वों से परिचित कराना है। नाट्य के विभिन्न भेदों से परिचित कराते हुये नाट्य संरचना में छात्रों को सक्षम बनाना है।

प्रश्नपत्र तृतीय संस्कृत वाङ्मय एवं आधुनिक विश्व

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य प्राचीन भारतीय धर्मशास्त्रों से परिचित कराना है, तथा धर्म के प्रमुख आधार–स्तंभ स्मृतियों से अवगत कराना है।

प्रश्नपत्र चतुर्थ साहित्यशास्त्र (काव्यालङ्कार एवं काव्यप्रकाश)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य भारतीय काव्यशास्त्र के आचार्य मम्मट द्वारा विरचित काव्यप्रकाश के संपूर्ण अध्यापन द्वारा छात्रों में काव्यशास्त्रीय प्रतिभा का विकास करना है जिससे वह भी उत्तम काव्य रचना में सक्षम हो सकें। साथ ही भामह जैसे अलंकारशास्त्री के ग्रन्थ के अध्ययन द्वारा भी काव्य में अलंकार तत्त्वों की उपयोगिता तथा अनिवार्यता से अवगत कराना है। छात्रों में विभिन्न प्रकार के काव्य–दोष, काव्यगुण और काव्य अलंकारों के ज्ञान से परिपुष्ट करना भी इस पाठ्यक्रम का प्रमुख उद्देश्य है।

प्रश्नपत्र पञ्चाँच साहित्यशास्त्र

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य भारतीय काव्यशास्त्र के विविध आयामों एवं मार्गों के प्रणेता महाकवि दण्डी तथा महाकवि राजशेखर के काव्यशास्त्रीय चिंतन से अवगत कराना है।

चतुर्थ सेमेस्टर

प्रश्नपत्र प्रथम रूपक

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को महत्त्वपूर्ण साहित्यिक रचनाओं के अध्ययन के माध्यम से संस्कृत साहित्य की समृद्ध परंपराओं से

अवगत कराना।

प्रश्नपत्र द्वितीय गद्य, पद्य तथा चम्पू

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य श्रव्य काव्य की समस्त विधाओं को सांगोपांग बोध कराना एवं प्रतिनिधि ग्रन्थों से अवगत कराना है।

प्रश्नपत्र तृतीय व्याकरण, अनुवाद एवं निबन्ध

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य छात्रों को संस्कृत निबंध लेखन और अन्य भाषाओं से संस्कृत मे अनुवाद की कला में प्रशिक्षित करना है। लघुसिद्धान्तकौमुदी के पाठ से व्याकरण के कुछ अनुप्रयुक्त भागों को भी छात्रों में संस्कृत भाषा के कौशल को विकसित करने के उद्देश्य से पढ़ाया जायेगा जो संस्कृत भाषा में अच्छा निबंध लिखने और अनुवाद करने की क्षमता को बढ़ायेगा।

प्रश्नपत्र चतुर्थ विशेषकवि (कालिदास)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य कालिदास की विभिन्न कृतियों के सौन्दर्य तथा चारुता से अवगत कराना है जिससे छात्रों में संस्कृतसाहित्य के प्रति रुचि जाग्रत हो।

प्रश्नपत्र पञ्चम विशेषकवि (भवभूति)

उद्देश्य –

CO. इस पाठ्यक्रम का उद्देश्य नाट्य शास्त्रीय लक्षणों से इतर दृश्य काव्य के प्रयोग पर बल देना है। नाट्य शास्त्र से इतर होने पर भी रसान्वित दृश्य काव्य पर बल देना है तथा नवीन कवि कल्पनाओं को उकेरना है।

Department of PG Studies and Research in Economics

Programme Offered

1. **M. A. (Economics)**
2. **Ph. D (Economics)**

MA Economics

PROGRAMME OUTCOMES :

PO-1. The Master of Arts programme in Economics has been designed with the objective to develop in-depth knowledge of students in frontier areas of economic theory and methods, so that they are able to use the

knowledge to study real world economic problems. The course has a strong focus on theoretical and quantitative skills and train students in the collection and analysis of the data using their software skills. The programme offers specialized optional courses, which allow student to pursue their studies in their area of interest. The students are required to submit report and present their findings of field-study. Besides, to hone the student's writing and analytical skills they are required to submit a term paper on current economic problem. Thus, the Masters in Economics programme seek to:

PO-2 Prepare students to develop critical thinking to carry out investigation about various socio-economicissues objectively while bridging the gap between theory and practice.

PO-3 Equip the student with skills to analyse problems, formulate an hypothesis, evaluate and validate resultsand draw reasonable conclusions thereof.

PO-4 Prepare students for pursuing research or careers that provide employment through entrepreneurship and innovative methods. Because today's unemployment problem can also be solved by developing the microand small entrepreneurship

PO-5 Prepare students to develop own thinking /opinion regarding current national or international policies andissues

PO-6 Create awareness to become a rational and an enlightened citizen so that they can take the responsibility tospread the governments' initiatives/schemes to the rural areas for the upliftment of the poor or vulnerable section of the society for inclusive growth

PROGRAMME SPECIFIC OUTCOMES :

PSO-1. To impart in depth knowledge to students about economic theory regarding utilization and allocation ofresources including labour, natural resources and capital.

PSO-2. To develop students understanding about how market for goods and services function and how income isgenerated and distributed.

PSO-3. To give students in depth knowledge into special fields of choice like agricultural economics, industrial economics, financial market, development economics, international trade, urban economics econometrics,mathematical economics etc.

PSO-4. To make students familiar with economic theories and their relevance, econometrics, quantitativetechniques and applied research in a wide variety of fields within economics.

PSO-5. Students would know how the economy is influenced by economic policy, technological advances anddemographic conditions

SEMESTER I

PAPER 1 MICRO ECONOMIC ANALYSIS

Course outcomes

CO. After completing this paper student will be able to understand Introduction and Basic Concepts Demand Analysis, Theory of Production and Costs Production function, Price and Output Determination, Alternative Theories of the Firm, Welfare Economics, General Equilibrium, Economics of Uncertaintyand to analyse the issues in individual decision making units in economics.

PAPER 2 MACRO ECONOMIC ANALYSIS

Course outcomes

CO. The paper entitled “Macro Economic Analysis” equips the students at the postgraduate level to understandsystemic facts and latest theoretical developments for empirical analysis.

PAPER 3 QUANTITATIVE METHODS

Course outcomes

CO. The paper also deals with simple tools and techniques, which will help a student in data collection,presentation, analysis and drawing inferences about various statistical hypotheses.

PAPER 4 PUBLIC ECONOMICS

Course outcomes

CO. This paper combines a thorough understanding of fiscal institutions with a careful analysis of the issueswhich underline budgetary policies in general and Indian experience in particular.

PAPER 5 INDIAN ECONOMIC POLICY

Course outcomes

CO. The emphasis of the paper is on overall social, political and economic environment influencing policydecisions. To develop all these themes, the course is divided into specific modules.

PAPER 6 ECONOMICS OF GROWTH AND DEVELOPMENT

Course outcomes

CO.`Modules incorporated in this paper are devoted to the theories of growth and development, social and institutional aspects of development, importance of agriculture, and the rationale and pattern of industrialization in developing countries. The other important issues in the context of development such as infrastructure-linkages, role of international trade, importance of domestic macroeconomic policies, investment criteria, and relevance of planning have been included in the modules of this paper.

PAPER 7 INTERNATIONAL TRADE AND FINANCE

Course outcomes

CO. The study of the paper under the present era of globalization will train the students about the likely consequences on income, employment and social standards and possible policy solutions as the world will move into the 21st century.

PAPER 8 INDUSTRIAL ECONOMICS

Course outcomes

CO. This course intends to provide knowledge to the students on the basic issues such as productivity, efficiency, capacity utilization and debates involved in the industrial development in India.

PAPER 9 LABOUR ECONOMICS

Course outcomes

CO. This Paper exposes students to theoretical as well as empirical issues relating to the labour market withspecial reference to India.

PAPER 10 MATHEMATICAL ECONOMICS

Course outcomes

CO. This course is designed to equip students to understand the economic concepts and theories which use mathematical tools and techniques to refine the verbal logic. The use of calculus has permitted formulation of economic problems in multivariable mode and yield valuable insight about optimizing human behaviour. Modern algebraic tools allow convenient handling of simultaneous equations in the context of linear programming, game theory and input-output analysis.

PAPER 11 ECONOMETRICS

Course outcomes

CO. This paper accordingly is devoted to equip the students with basic theory of econometrics and relevant applications of the methods. The topics covered in the course include various problems faced in estimationof both single equations and simultaneous equations models.

PAPER 12 DEMOGRAPHY

Course outcomes

CO. The paper exposes the students to sources of population and related characteristics as also to the rationale, need and evolution of population policy.

PAPER 13 AGRICULTURAL ECONOMICS

Course outcomes

CO. The paper exposes the student's understanding about Agriculture and Economic Development, Diversification of Rural Economic Activities, Agricultural Production and Productivity, Land Reformsand Land Policy, Rural Labour Market Rural labour, Rural Finance, Agricultural Prices, Agricultural Growth in India, Agriculture and External Sector.

PAPER 14 ECONOMICS OF GENDER AND DEVELOPMENT

Course outcomes

CO. The modules incorporated in this course provide an analysis of issues at the theoretical level and also withregard to specificity of issues prevailing in the Indian context.

PAPER 15 FINANCIAL INSTITUTIONS AND MARKETS

Course outcomes

CO. The modules incorporated in this course. therefore, essential that the student of economics should be wellconversant with the theory and practice of different financial institutions and markets to understand and analyse the interconnection between the monetary forces and real forces, their developmental role and limitations in shaping and influencing the monetary and related policies both at the national and international levels.

PAPER 16 ECONOMICS OF INFRASTRUCTURE

Course outcomes

CO. The contents of the paper 'Economics of Infrastructure' exposes the student wholly to issues involved indevelopment of infrastructure in developing countries like India.

PAPER 17 COMPUTER APPLICATION IN ECONOMIC ANALYSIS

Course outcomes

CO. The contents of the paper "Computer Application In Economic Analysis" therefore, exposes the future economists must be equipped with skills and tools based on computers, which this course shall provide to them. This will not only enhance their employability but also prepare them for the challenges of the future.

PAPER 18 ECONOMICS AND LAW

Course outcomes

CO. In order to meet this requirement, this course is essential and has been designed in a way that the students of economics would be able to comprehend the basic economic issues affecting the economy along with the related legal provisions. This would enable the economists to frame their models that are closer to reality, besides making them understand the consequences of legal rules, primarily as an exercise in applied microeconomics, macroeconomics, industrial and international economics.

PAPER 19 HISTORY OF MODERN ECONOMIC ANALYSIS (Contribution of Nobel Laureates in Economics)

Course outcomes

CO. The paper "History of Modern Economic Analysis" is an attempt to make the student of economics acquainted with the ideas and works of economists and thinkers who received Nobel Memorial Prize in Economics. The development of ideas by the Nobel Laureates in Economics is breathtaking and covers almost all areas of economic analysis, a relatively new branch.

PAPER 20 WELFARE ECONOMICS

Course outcomes

CO. In order to meet this requirement, this course is essential and has been designed in a way that the students of economics would be able to comprehend the basic economic issues affecting the economy along with the related welfare aspects.

PAPER 21 ECONOMICS OF INSURANCE

Course outcomes

CO. This course on Insurance Economics attempts to give a fairly comprehensive view of the subject to the postgraduate students in Economics and pave the way for possible future expansion of the teaching of an important branch of economics.

PAPER 22 ECONOMICS OF SOCIAL SECTOR AND ENVIRONMENT

Course outcomes

CO. Modules incorporated in this paper are devoted to issues of environmental economics, environmental and social services and the problem of valuation of these services, and designing of instruments and institutions for the management of environment. The models of optimal use of natural resources, macroeconomic issues, sustainable development, environmental resource problems in India and the economics of health and education constitute the other areas of the modules of this paper.

Department of PG Studies and Research in Geography

Programme Offered

1. **MA (Geography)**
2. **Ph.D (Geography)**

PROGRAMME OUTCOMES :

Program learning outcomes (POs) are specific types of knowledge and skills that students are expected to acquire in the program and to be able to demonstrate upon completion. The Department expects that students who major in geography will be skilled in disciplinary theories, methodologies, and content. These expectations ground the

following learning goals and objectives for undergraduate and graduate majors.

PO-1 Upon completion of the Master of Arts in Geography, students will be able to demonstrate the following:
PO-2 Compare and contrast the theories, philosophies, and concepts in the discipline of geography, including unifying themes of spatial patterns and structures, the interrelationship between people and places, and the interactions between nature and society.
PO-3 Demonstrate an advanced understanding of and ability to differentiate among the various methodologiesused in geographic research.
PO-4 Acquire, analyse, evaluate, interpret and critique geographic data and/or research.
PO-5 Communicate mastery of geographic data, theories, philosophies, and concepts in oral, written, and visualforms, with ethical engagement and respect for diversity of individuals, groups, and cultures.
PO-6 Identify and assess how geographic concepts apply in the workplace and in everyday life to solve real-world problems.

PROGRAMME SPECIFIC OUTCOMES :

PSO-1. Establish the position of Geography as a subject and its importance and interrelationships that reiterate andvalidate the Man Environment relationship.
PSO-2. In the course of field surveys, students acquire a greater understanding of the socio-economic and culturaldimensions of the populations with greater focus on marginalized section of society.
PSO-3. Physical field surveys enable the students to understand the landforms, geomorphic process and associatedhazards.
PSO-4. Provide training to students in handling modern instruments and methods like Aerial Photographs,Satellite Imagery, Total Station and Meteorological instruments.
PSO-5. Computer-based techniques (RS & GIS) are incorporated in the syllabus which prepares the students forfurther analytical studies.
PSO-6. The students are directed towards problem analysis so that they can design and conduct independentresearch.
PSO-7. The comprehensive syllabus promotes and develops a thorough knowledge of concepts, methods andtheory.
PSO-8. The Ability Enhancement Course strives to develop communication powers in the student, both writtenand oral.
PSO-9. The Dissertations written by the students prepare them to examine social and environmental issues alongwith the causes, consequences and remedial measures emerging at local and national levels.
PSO-10. The syllabus is oriented towards emerging job opportunities and future prospects for the students.
PSO-11. Assistance is given to students in preparing for various competitive exams like NET, SET, SSC etc.

M.A. (Geography)

SEMESTER I

PAPER 1 GEOMORPHOLOGY

Course outcomes

CO. Gain in depth knowledge on the influence of various types of Rocks on the development and evolution ofland foms, hydroponic characteristics of an opeir channel flow- the opef channet llow tne produce erosional and depositional land forms: form process Instnrctfon in the land fbrnr development,

PAPER 2 ECONORNIC GCOGRAPHY

Course outcomes

CO-1. Acquire knowledge ofthe trndamental and Moderl issues ih pconomic Geography.
CO-2. Develop knowledge on Geographicalaspects of economy.

PAPER 3 GEOGRAPHY OF INDIA : PHYSICAL & RESOURLCES

Course outcomes

CO-1. Understand about the physiographic division on India.
CO-2. Understand the cliniatic variation itt India and climatic Region of India.

PAPER 4 HISTORY OF GEOGRNPHICAL THOUGHT

Course outcomes

CO. Acquire basic concepts irr geographical thought ancient, Recenttrends and explanatiot1 irr Geography.

SEMESTER II

PAPER 1 CLIRNATOLOGY

Course outcomes

CO. Acquire clear concepts of climatology. Greater understanding of tilp natwe and scope of clin-ratology.Ocean atmospheric interaction, climate and its impact.

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PAPER 2 RESOURCE GEOGRAPLIY

Course outcomes

CO. Student would be able to develop awareness towards judicious use of Resources and their conse1ation. Sfudent will critically think abollt sustainable de{velopment and how it will solve the problem ofdepletion ofresources and global ecologicdl crises

PAPER 3 GEOGRAPHY OF INDIA : ECONOTRTY AND RE[IONS

Course outcomes

CO. Students will get an Introduction to the main uniqueness and similarities. Shrdent will be exposed socialand physical characteristics of India. I I of rhe Indih interirns of both their to historidal, economic, cultural, regions

PAPER 4 GEOGRAPHY OF ENVIRONRNENT

Course outcomes

CO. Students will Acquire an understanding of and appreciation fo{ the relationship between Geography andenvironment student Will have general understhnding human impaCts on the Environment.

SEMESTER III

PAPER 1 OCEANOGRAPHY

Course outcomes

CO. Ability to analyze sea surface temperature fluctuation and its impact on Southern oscillation.

PAPER 2 URBAN GEOGRAPHY

Course outcomes

CO. Develop the practical concepts of urban geography lelated to spatial analysis of geographicaldatamorphology ofUrban area'

PAPER 2 URBAN GEOGRAPHY

Course outcomes

CO. Develop the practical concepts of urban geography related fo snatial analysis of geographicaldatamorphology ofUrban area.

PAPER 3 GEOGRAPHY OF TOURISRN

Course outcomes

CO. Will be able to evaluate the human and cultural geographic resourcse and classes of tourism.

PAPER 4 COMPULSORY

Course outcomes

CO. Understand about the agriculture, nature, scope, significance and development of agriculture geography,study approaches appliedin agriculture

SEMESTER IV

PAPER 1 RESEARCH METH ODOLOGY IN GEOGRAPHY

Course outcomes

CO. Demonstrate the abirity to choose methods appropriate to Resecarsh aims and objective. understand thelimitations ofpafiicurar Re se aich r,ethods.

PAPER 2 GEOGRAPHY OF POPULATION

Course outcomes

CO. Acquire clear concepts ofpopulation Geography and demographic studies Assessment of vital stati sticsof population data.

PAPER 3 REGIONAL PLANNING & DEVELOPMENT

Course outcomes

CO. Delineation of fonnal and functional regiotr Identity the best measures of inequality and variousindicators ofRegional development.

PAPER 3 BIOGEOGRAPHY

Course outcomes

CO. This course will provide to student an advanced knowledge on Bifdiversity and spatial patternsofbiological diversity and understand critically human impdcts on specles.

Department of communication Studies and ResearchProgramme Offered

1. **B.A. (Hons) Mass Communication**
2. **B.J.C.**
3. **M.A. (Journalism)**
4. **M.J.C.**
5. **Ph.D (Journalism)**

B.A. (HONS) IN MASS COMMUNICATION

PROGRAMME OUTCOMES :

The overall objectives of the Mass communication & Journalism are:

- To impart the basic knowledge of Mass communication & Journalism and related areas of studies.
- To develop the learner into competent and efficient Media & Entertainment Industryready professionals.
- To empower learners by communication, professional and life skills.
- To impart Information Communication Technologies (ICTs) skills, including digital and media literacy and competencies.
- To imbibe the culture of research, innovation, entrepreneurship and incubation.
- To inculcate professional ethics, values of Indian and global culture.
- To prepare socially responsible media academicians, researchers, professionals with global vision.

PROGRAMME SPECIFIC OUTCOMES :

The key outcomes planned in this undergraduate programme in Mass communication & Journalism are underpinned as follows:

After completing this undergraduate programme, a learner:

PSO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
PSO-2. Shall acquire the knowledge related to media and its impact.
PSO-3. Shall be competent enough to undertake professional job as per demands and requirements of M & EIndustry.
PSO-4. Shall empower themselves by communication, professional and life skills.
PSO-5. Shall be able to enhance the ability of leadership.
PSO-6. Shall become socially responsible citizen with global vision
PSO-7. Shall be equipped with ICTs competencies including digital literacy.
PSO-8. Shall become ethically committed media professionals and entrepreneurs adhering to the human values,the Indian culture and the Global culture.
PSO-9. Shall have an understanding of acquiring knowledge throughout life.
PSO-10. Shall acquire the primary research skills, understand the importance of innovation, entrepreneurship andincubation abilities.

Paper 1: ENGLISH

Course Outcomes

CO-1. Students would be able to create linguistic skills.
CO-2. Students would be able to impart knowledge about advanced vocabulary for effective communication.
CO-3. Students would be able to understand the societal cultural perspectives.
CO-4. Students would be able to inculcate the knowledge of compositional and comprehension skills.
CO-5. Students would be able to develop the knowledge of various forms of English literature.

Paper 2: HINDI

Course Outcomes

CO-1. Students would be able to strengthen oral communication skills in Hindi/ Regional Language.
CO-2. Student would be able to develop the knowledge of writing in Hindi/ Regional Language.
CO-3. Students would be able to improve vocabulary in Hindi/ Regional Language.

CO-4. Students would be able to enrich the knowledge of synonyms, antonyms, idioms and phrases.
CO-5. Students would be able to inculcate the knowledge of grammar in Hindi/ Regional Language

Paper 3: Introduction to Mass Communication

Course Outcomes

CO-1. Students would be able to introduce themselves to the theories of Communication.
CO-2. Students would be able to inculcate the knowledge of Communication models.
CO-3. Students would be able to develop the knowledge of basic elements of Communication.
CO-4. Students would be able to acquaint themselves with the various types of Communication.
CO-5. Students would be able to strengthen the 5Cs of Communication.

Paper 4: History of Media

Course Outcomes

CO-1. Students would be able to acquaint themselves with the glorious journey of journalism.
CO-2. Students would be able to enhance understanding of the origin and of the print, electronic and web media.
CO-3. Students would be able to inculcate the knowledge of growth of print, electronic and web media.
CO-4. Students would be able to acquaint themselves with technological advancements in print, electronic and web media.
CO-5. Students would be able to throw light on the present status of various mass media.

Semester: 2

Paper 1: Writing For Mass Media

Course Outcomes

CO-1. Students know about the basics of news writing.
CO-2. Students will be having the knowledge of the theory, methods, and practice of gathering information and writingnews.
CO-3. Students would be able to understand different writing techniques.
CO-4. Students will have the knowledge of web writing.
CO-5. Students will be having the knowledge of news and background.

Paper 2: Computer Application for Mass Media

Course Outcomes

CO-1. Students will learn about computer.
CO-2. Students will be able to understand Software and Operating System.
CO-3. Students will have the knowledge of IT Communication.
CO-4. Students will learn about Office Automation Package.
CO-5. Students will learn about Document, creation, manipulation and storage of Chart and Slide Show Package.

Paper 3: ECONOMIC DEVELOPMENT & PLANNING IN INDIA

Course Outcomes

CO-1. Students will be able to identify the back regions problems and write articles concerning the problems.
CO-2. Students will be able to ascertain and understand characteristics of underdevelopment.
CO-3. Students can analyse the rural economy, Budget state and central and manufacturing industries.
CO-4. Students will capable of developing ability to examine the rule of international bodies such as World Bank, IMF,WHO, United Nations, UNESCO, SAARC, G-20, and other importance bodies.
CO-5. Students will be competent to analyse issues of poverty, social justice, SDGs

Paper 4: PUBLIC ADMINISTRATION, SOCIETY AND MEDIA

Course outcome

CO-1. Students will get to know about administration and its composition.
CO-2. Student will learn about freedom of press.
CO-3. Students will get knowledge about public administration in India and their law and orders

Semester 3

Paper 1: REPORTING

Course Outcomes

CO-1. Students would be able to understand the basics of reporting.
CO-2. Students would be able to familiarize themselves with different types of reporting.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to develop the general understanding of art culture and sports reporting.
CO-5. Students would be able to know about crime reportin

Paper 2: EDITING

Course Outcomes

CO-1. Students would be able to familiarize themselves with the basics of editing.
CO-2. Students would be able to understand the process of editing for various platforms.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to understand about the dummy, printing and layout.
CO-5. Students would be able to develop the knowledge of photograph

Paper 3: Photo Journalism

Course Outcomes

CO-1. Learner would learn the concepts and importance of photography.
CO-2. Learner would be able to understand photo coverage and photo Journalism.
CO-3. Learner would be to ready to join any media organization as photo Journalist.
CO-4. Learner would know the importance of photo features.
CO-5. Learner would know different branches of photography and may be self-employed.

Paper 4: Indian Government, Politics and International Relations

Course Outcomes

CO-1. Students will be able to have understanding of the world in historical and contemporary context.
CO-2. Students will be having the understanding of the world politics and economics.
CO-3. Students would have the knowledge of writing on global issues.
CO-4. Students would have the knowledge of international developments.
CO-5. Students will know about India's foreign policy.

Semester: 4

Paper 1: Advance Reporting

Course Outcomes

CO-1. Students would be able to understand the basics of advance reporting.
CO-2. Students would be able to familiarize themselves with different types of advance reporting.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to develop the general understanding of art culture and sports Reporting and rural reporting.
CO-5. Students would be able to know about crime reporting, parliamentary reporting and the coverage

Paper 2: Advance Editing

Course Outcomes

CO-1. Students would be able to familiarize themselves with the basics of advance editing.
CO-2. Students would be able to understand the process of advance editing for various platforms.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to understand about the dummy, printing and layout.
CO-5. Students would be able to develop the knowledge of photography and photo feature.

Paper 3: Advance Editing Credit – 05

Course Outcomes

CO-1. Students would be able to familiarize themselves with the basics of advance editing.
CO-2. Students would be able to understand the process of advance editing for various platforms.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to understand about the dummy, printing and layout.
CO-5. Students would be able to develop the knowledge of photography and photo feature

Paper 4: DESIGN & GRAPHICS

Course outcomes

CO-1. The students will get with proper knowledge of principles of design and layout.
CO-2. To understand the history of printing
CO-3. To create understanding of kinds of printing courses.

CO-4. To inculcate the knowledge of dummy page makeup, printing and layout.
CO-5. To develop the knowledge of photography, their editing, screen printing and leaflets and handbills

Paper 5: INDIAN CONSTITUTION & MEDIA LAW

Course Outcomes

CO-1. Shall have understandingof our Indian Constitution.
CO-2. Shall get aware to legal aspects of the media and its values.
CO-3. Shall have an overview of recent changes and future challenges of media regulation
CO-4. Shall have understanding of media ethics.
CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment.

Semester 5

Paper 1: Advertising

Course Outcomes

CO-1. Students would learn development of advertising and basic concepts.
CO-2. Students would be able to know about role and importance of advertising in media.
CO-3. Learner will have the knowledge of self-employment.
CO-4. Students would know about advertising agencies.
CO-5. Learner would know about the advertising industry and its functioning.

Paper 2: PUBLIC RELATIONS

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, Propaganda, advertising ande-PR.
CO-2. Students would know the difference between public relations and corporate communications, public relations andadvertising, public relations and propaganda, public relations and publicity, propaganda and publicity.
CO-3. Students would gain knowledge about the tools of public relations.
CO-4. Students would learn the basics of public relations writings.
CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 3: CURRENT AFFAIRS

Course Outcomes

CO-1. Students would be able to impart the extensive knowledge about general knowledge, general awareness andcontemporary activities at local, regional, national and international level about socio –economic issues.
CO-2. Students would be able to develop the extensive knowledge about general knowledge, general awareness andcontemporary activities at local, regional, national and international level about political issues
CO-3. Students would be able to inculcate the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about educational and cultural issues.

CO-4. Students would be able to impart the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about religious and spiritual issues.
CO-5. Students would be able to develop the extensive knowledge about general knowledge, general awareness andcontemporary activities at local, regional, national and international level about media related issues.

Paper 4: INTRODUCTION TO AUDIO-VISUAL MEDIA

Course Outcomes

CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
CO-3. Students will anchor, present and able to produce television news bulletin
CO-4. Students will acquire skills and techniques of television media production
CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.
CO-6. Students will be able to cover events using mobile phones and right radio news stories
CO-7. Students will be able to interview, make radio promos and jingles
CO-8. Students will be able to apply radio production techniques.
CO-9. Students will be able to undertake radio programme production in different formats

Semester 6

Paper 1: DEVELOPMENT COMMUNICATION

Course Outcomes

CO-1. Students would learn the concepts meaning and model shop the development
CO-2. Students would be able to understand the problems and hurdles in development communication.
CO-3. Learner would understand the working of government and administration in development.
CO-4. Students would know different programmes and policies of the development.
CO-5. Learner would know the rural India and its problems he also will understands the communication gap

Paper 2: FILM JOURNALISM

Course outcomes

CO-1. It will provide proper and depth knowledge of cinema and its birth.
CO-2. Students will get knowledge about trend setter film directors.
CO-3. This provide knowledge about film as an art.
CO-4. Student will learn film language and grammar

Paper 3: EDITORIAL & FEATURE WRITING

Course outcomes

CO-1. Student will get knowledge about editorial policies, content of editorial page and style of writing.
CO-2. Students will learn ethics of editorial writing and feature writing.
CO-3. Student will know importance of human interest in features.

Paper 4: NEWSPAPER MANAGEMENT

Course outcomes

CO-1. This course provides all detailed information about management and its importance for newspaper industry.
CO-2. Student will learn newspaper as an industrial product and its unique features.
CO-3. It will provide the concept of ownership and newspaper printing department.
CO-4. Student will learn about language of newspaper.

MASTER OF ARTS IN MASS COMMUNICATION M.A.M.C

Programme Outcomes

- 1.The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for Mass communication & Journalism degree are:
- To empower learners by communication, professional and life skills.
- To impart the basic and advance knowledge of Mass communication & Journalism and related areas of studies.
- To prepare socially responsible media academicians, researchers, professionals with global vision. 8. To develop the learner into competent and efficient Media & Entertainment Industryready professionals.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

PSO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
PSO-2. Shall acquire the knowledge related to media and its impact.
PSO-3. Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.
PSO-4. Shall empower themselves by communication, professional and life skills.
PSO-5. Shall be able to enhance the ability of leadership.
PSO-6. Shall become socially responsible citizen with global vision
PSO-7. Shall be equipped with ICTs competencies including digital literacy.
PSO-8. Shall become ethically committed media professionals and entrepreneurs adhering to the human values, the Indianculture and the Global culture. 58
PSO-9. Shall have an understanding of acquiring knowledge throughout life.

Semester 1

Paper 1: Communication Theories

Course outcomes

CO-1. Students would learn the concepts meaning and model shop the development
CO-2. Students would be able to understand the problems and hurdles in development communication.
CO-3. Learner would understand the working of government and administration in development.
CO-4. Students would know different programmes and policies of the development.
CO-5. Learner would know the rural India and its problems he also will understands the communication gap.

Paper 2: Print Media (Specialized Reporting)

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.
CO-2. Students would be able to familiarize themselves with the basics of writing of print media.
CO-3. Students would be able to create understanding of various print media content.
CO-4. Students would be able to develop the knowledge of news agency.
CO-5. Students would be able to inculcate the knowledge of book editing.

Paper 3: Publc Relations

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, propaganda, advertising ande-PR.
CO-2. Students would know the difference between public relations and corporate communications, public relations andadvertising, public relations and propaganda, public relations and publicity, propaganda and publicity.
CO-3. Students would gain knowledge about the tools of public relations.
CO-4. Students would learn the basics of public relations writings.
CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 4 : Advertising

Course Outcomes

CO-1. Students would learn development of advertising and basic concepts.
CO-2. Students would be able to know about role and importance of advertising in media.
CO-3. Learner will have the knowledge of self-employment.
CO-4. Students would know about advertising agencies.
CO-5. Learner would know about the advertising industry and its functioning.

Paper 5 : Advertising & Marketing Research

Course outcomes:

CO-1. Student will learn evolution of advertising , effective functions and role of advertising.
CO-2. It will provide knowledge about copy writing, layout and visualization and creativity in advertising.
CO-3. Students will learn slogans, trademarks, about brand names etc.
CO-4. They will get knowledge about legal and ethical aspects of advertising, role of consumer forums

Semester- 2

Paper 1 : International Communication

Course outcomes:

CO-1. It will provide detailed knowledge of cultural dimensions of international communication, political and economic.
CO-2. It will provide information about communication as human right and UNO-s Universal declaration of human rights.

CO-3. Students will get knowledge about new communication technology and its impact on news flow satellite.
CO-4. Students will learn writing and coverage of issues in international communication.

Paper 2: Communication Research

Course Outcomes

CO-1. Students would learn the definitions and basic concepts of research, communication research, media research andsocial research.
CO-2. Students would know the difference between communication research, media research and social research.
CO-3. Students would gain knowledge about the need, role importance, functions and ethics of research.
CO-4. Students would learn the concept of each element of research and the interrelations between elements.
CO-5. Students would learn the various types of research.

Paper 3: Electronics Communication

Course Outcomes

CO-1. Students will be able to understand the working pattern of electronic media platform.
CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.
CO-3. Students will be able to have understanding of electronic media content creation.
CO-4. Students will be having the knowledge of script writing.
CO-5. Students will be having the knowledge of online journalism.

Paper 4: Media Development Laws & Ethics

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.
CO-2. Shall get aware to legal aspects of the media and its values.
CO-3. Shall have an overview of recent changes and future challenges of media regulation
CO-4. 4.Shall have understanding of media ethics.
CO-5. 5.Shall know how media laws and ethics empower media practitioners to perform their duties with commitment.

Paper 5: Media Laws & Ethics

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.
CO-2. Shall get aware to legal aspects of the media and its values.
CO-3. Shall have an overview of recent changes and future challenges of media regulation
CO-4. Shall have understanding of media ethics.
CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment

Semester-3

Paper 1: Media Management

Course outcomes

CO-1. It will provide all depth knowledge about media management and their significance.
CO-2. Students will learn ownership patterns of mass media in india.
CO-3. It will give full information about economics of print and electronic media,budgeting and finance, business andlegal aspects.
CO-4. It will provide knowledge about programme production and about foreign equity in Indian media

Paper 2: Editing, Photo Jorunalism & Computer Application

Course outcomes

CO-1. Students would be able to understand the process of editing for various platforms.
CO-2. Students would be able to familiarize themselves with the basics of editing.
CO-3. Students would be able to create understanding of specialized reporting .
CO-4. Students would be able to understand about the dummy , printing and layout.
CO-5. Students would be able to develop the knowledge of photography.
CO-6. Students will learn about computer
CO-7. Students will be able to understand Software and Operating System
CO-8. Students will have the knowledge of IT Communication
CO-9. Learner would be to ready to join any media organization as photo Journalist.
CO-10. Learner would know the importance of photo features.
CO-11. Learner would know different branches of photography and may be self-employed.

Paper3 : Inter Culture Communication

Course Odutcomes

CO-1. This course provides knowledge about cultural communication, value systems and cultural symbols in verbal andnon verbal communication.
CO-2. Students will learn perception of the world, varied eastern concepts and retention of information.
CO-3. Students will get knowledge about modern mass media as vehicle of intercultural communication and its barriers,impact of new technology on culture

Paper 4 : Television Journalism

Course Outcomes

CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.2
CO-3. Students will anchor, present and able to produce television news bulletin
CO-4. Students will acquire skills and techniques of television media production
CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares

Paper 5 : Radio Journalism

Course Outcomes

CO-1. Students will be able to cover events using mobile phones and right radio news stories
CO-2. Students can produce radio news bulletin
CO-3. Students will be able to interview, make radio promos and jingles
CO-4. Students will be able to apply radio production techniques.
CO-5. Students will be able to undertake radio programme production in different formats

Semester-4

Paper 1 : New Media Application

Course outcomes

CO-1. Learner will gain basic understanding of communication technology.
CO-2. Learner will have the basic knowledge of various audio editing tools.
CO-3. Learner will have hands on experience on video editing techniques.
CO-4. Learner will be able to create content on various platforms.
CO-5. Learner will be able to communicate on social media effectively.
CO-6. Learner will gain basic understanding of communication technology.
CO-7. Learner will have the basic knowledge of various audio editing tools.
CO-8. Learner will have hands on experience on video editing techniques.
CO-9. Learner will be able to create content on various platforms.
CO-10. Learner will be able to communicate on social media effectively

Paper 2: Corporate Communication

Course outcomes

CO-1. It will build students communication skill and provides knowledge of corporate communication.
CO-2. Students will learn the tools of building corporate identity, image management and brand equity.
CO-3. They will learn about how to deal or manage crisis management, crises handling theories.
CO-4. They will learn about new trends in corporate communication

Paper 3: Specialized Paper – Print

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.
CO-2. Students would be able to familiarize themselves with the basics of writing of print media.
CO-3. Students would be able to create understanding of various print media content.
CO-4. Students would be able to develop the knowledge of news agency.
CO-5. Students would be able to inculcate the knowledge of book editing.
CO-6. Student will learn research techniques and learn about data analysis

Paper 4: Specialized Paper – Electronic

Course Outcomes

CO-1. Students will be able to understand the working pattern of electronic media platform.
CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.
CO-3. Students will be able to have understanding of electronic media content creation.
CO-4. Students will be having the knowledge of script writing.
CO-5. Students will be having the knowledge of online journalism.

Masters of Journalism & Communication (M.J.C)

Programme Outcomes

CO-1. The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for Mass communication& Journalism degree are:
CO-2. To empower learners by communication, professional and life skills.
CO-3. To impart the basic and advance knowledge of Mass communication & Journalism and related areas of studies.
CO-4. To prepare socially responsible media academicians, researchers, professionals with global vision.
CO-5. To develop the learner into competent and efficient Media & Entertainment Industryready professionals.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

CO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
CO-2. Shall enhance the ability of leadership.
CO-3. Shall become socially responsible citizen with global vision
CO-4. Shall be equipped with ICTs competencies including digital literacy.
CO-5. Shall become ethically committed media professionals and entrepreneurs adhering to the human values, the Indianculture and the Global culture. 100
CO-6. Shall have an understanding of acquiring knowledge throughout lifeacquire the knowledge related to media and itsimpact.
CO-7. Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.
CO-8. Shall empower themselves by communication, professional and life skills.
CO-9. Shall be able to

Semester-1

Course outcomes

CO-1. Students would learn the concepts meaning and model of the communication and development
CO-2. Students would be able to understand the problems and hurdles in development communication.
CO-3. Learner would understand the working of government and administration in development.

CO-4. Students would know different programmes and policies of the development.
CO-5. Learner would know the rural India and its problems he also will understands the communication gap.

Paper 2: Print Media (Specialized Reporting)

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.
CO-2. Students would be able to familiarize themselves with the basics of writing of print media.
CO-3. Students would be able to create understanding of various print media content.
CO-4. Students would be able to develop the knowledge of news agency.
CO-5. Students would be able to inculcate the knowledge of book editing

Paper 3: Publc Relations

Course Outcomes

CO-1. Students would learn about the definitions and concepts of public relations, publicity, propaganda, advertising ande-PR.
CO-2. Students would know the difference between public relations and corporate communications, public relations andadvertising, public relations and propaganda, public relations and publicity, propaganda and publicity.
CO-3. Students would gain knowledge about the tools of public relations.
CO-4. Students would learn the basics of public relations writings.
CO-5. Students would gain knowledge about the basic ethics and laws of public relations.

Paper 4 : Advertising

Course Outcomes

CO-1. Students would learn development of advertising and basic concepts.
CO-2. Students would be able to know about role and importance of advertising in media.
CO-3. Learner will have the knowledge of self-employment.
CO-4. Students would know about advertising agencies.
CO-5. Learner would know about the advertising industry and its functioning.

Paper 5 : Advertising & Marketing Research

Course outcomes

CO-1. Student will learn evolution of advertising , effective functions and role of advertising.
CO-2. It will provide knowledge about copy writing, layout and visualization and creativity in advertising.
CO-3. Students will learn slogans, trademarks, about brand names etc.
CO-4. They will get knowledge about legal and ethical aspects of advertising, role of consumer forums.

Semester-2

Paper 1 : International Communication

Course outcomes

CO-1. It will provide detailed knowledge of cultural dimensions of international communication, political and economic.
CO-2. It will provide information about communication as human right and UNO-s Universal declaration of human rights.
CO-3. Students will get knowledge about new communication technology and its impact on news flow satellite.
CO-4. Students will learn writing and coverage of issues in international communication.

Paper 2: Communication Research

Course Outcomes

CO-1. Students would learn the definitions and basic concepts of research, communication research, media research andsocial research.
CO-2. Students would know the difference between communication research, media research and social research.
CO-3. Students would gain knowledge about the need, role importance, functions and ethics of research.
CO-4. Students would learn the concept of each element of research and the interrelations between elements.
CO-5. Students would learn the various types of research.

Paper 3 : Electronics Communication

Course Outcomes

CO-1. Students will be able to understand the working pattern of electronic media platform.
CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.
CO-3. Students will be able to have understanding of electronic media content creation.
CO-4. Students will be having the knowledge of script writing.
CO-5. Students will be having the knowledge of online journalism

Paper 4: Media Development

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.
CO-2. Shall get aware to legal aspects of the media and its values.
CO-3. Shall have an overview of recent changes and future challenges of media regulation
CO-4. Shall have understanding of media ethics.
CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment

Paper 5: Media Laws & Ethics

Course Outcomes

CO-1. Shall have understanding of our Indian Constitution.
CO-2. Shall get aware to legal aspects of the media and its values.
CO-3. Shall have an overview of recent changes and future challenges of media regulation
CO-4. Shall have understanding of media ethics.
CO-5. Shall know how media laws and ethics empower media practitioners to perform their duties with commitment

Semester-3

Paper 1: Media Management

Course outcomes:

CO-1. It will provide all depth knowledge about media management and their significance.
CO-2. Students will learn ownership patterns of mass media in india.
CO-3. It will give full information about economics of print and electronic media,budgeting and finance, business andlegal aspects.
CO-4. It will provide knowledge about programme production and about foreign equity in Indian media.

Paper 2: Editing, Photo Jorunalism & Computer Application

Course outcomes:

CO-1. Students would be able to understand the process of editing for various platforms.
CO-2. Students would be able to familiarize themselves with the basics of editing.
CO-3. Students would be able to create understanding of specialized reporting .
CO-4. Students would be able to understand about the dummy , printing and layout.
CO-5. Students would be able to develop the knowledge of photography.
CO-6. Students will learn about computer
CO-7. Students will be able to understand Software and Operating System
CO-8. Students will have the knowledge of IT Communication
CO-9. Learner would be to ready to join any media organization as photo Journalist.
CO-10. Learner would know the importance of photo features.
CO-11. Learner would know different branches of photography and may be self-employed

Paper 3: Inter Culture Communication

Course outcomes:

CO-1. This course provides knowledge about cultural communication, value systems and cultural symbols in verbal andnon verbal communication.
CO-2. Students will learn perception of the world, varied eastern concepts and retention of information.
CO-3. Students will get knowledge about modern mass media as vehicle of intercultural communication and its barriers,impact of new technology on culture.

Paper 4 : Television Journalism

Course Outcomes

CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
CO-3. Students will anchor, present and able to produce television news bulletin
CO-4. Students will acquire skills and techniques of television media production
CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.

Paper 5 : Radio Journalism

Course Outcomes

CO-1. Students will be able to cover events using mobile phones and right radio news stories
CO-2. Students can produce radio news bulletin
CO-3. Students will be able to interview, make radio promos and jingles
CO-4. Students will be able to apply radio production techniques.
CO-5. Students will be able to undertake radio programme production in different formats

Semester- 4

Paper 1: New Media Application

Course outcomes:

CO-1. Learner will gain basic understanding of communication technology.
CO-2. Learner will have the basic knowledge of various audio editing tools.
CO-3. Learner will have hands on experience on video editing techniques.
CO-4. Learner will be able to create content on various platforms.
CO-5. Learner will be able to communicate on social media effectively.
CO-6. Learner will gain basic understanding of communication technology.
CO-7. Learner will have the basic knowledge of various audio editing tools.
CO-8. Learner will have hands on experience on video editing techniques.
CO-9. Learner will be able to create content on various platforms.
CO-10. Learner will be able to communicate on social media effectively.

Paper 2: Corporate Communication

Course outcomes:

CO-1. It will build students communication skill and provides knowledge of corporate communication.
CO-2. Students will learn the tools of building corporate identity, image management and brand equity.
CO-3. They will learn about how to deal or manage crisis management, crises handling theories.
CO-4. They will learn about new trends in corporate communication

Paper 3: Specialized Paper – Print

Course Outcomes

CO-1. Students would able to understand the working pattern of various print media platform.
CO-2. Students would be able to familiarize themselves with the basics of writing of print media.

CO-3. Students would be able to create understanding of various print media content.
CO-4. Students would be able to develop the knowledge of news agency.
CO-5. Students would be able to inculcate the knowledge of book editing.
CO-6. Student will learn research techniques and learn about data analysis.

Paper 4: Specialized Paper – Electronic

Course Outcomes

CO-1. Students will be able to understand the working pattern of electronic media platform.
CO-2. Students will able to familiarize the students with the basic techniques of broadcasting.
CO-3. Students will be able to have understanding of electronic media content creation.
CO-4. Students will be having the knowledge of script writing.
CO-5. Students will be having the knowledge of online journalism

Bachelor of Journalism & Communication (B.J.C)

Programme Outcomes

The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for Mass communication & Journalism degree are:

CO-1. To empower learners by communication, professional and life skills.
CO-2. To impart the basic and advance knowledge of Mass communication & Journalism and related areas of studies.
CO-3. To prepare socially responsible media academicians, researchers, professionals with global vision. 8. Todevelop the learner into competent and efficient Media & Entertainment Industry-ready professionals.

Programme Specific Outcomes

The key outcomes planned in this postgraduate programme in Mass communication & Journalism are underpinned as follows: After completing this postgraduate programme, a learner:

PSO-1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
PSO-2. Shall acquire the knowledge related to media and its impact.
PSO-3. Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.
PSO-4. Shall empower themselves by communication, professional and life skills.
PSO-5. Shall be able to enhance the ability of leadership.
PSO-6. Shall become socially responsible citizen with global vision
PSO-7. Shall be equipped with ICTs competencies including digital literacy.
PSO-8. Shall become ethically committed media professionals and entrepreneurs adhering to the human values, the Indianculture and the Global culture. 141 9. Shall have an understanding of acquiring knowledge throughout life.

Semester – I

Paper 1: History Of Media & Press Laws

Course outcomes:

CO-1. Student would get depth knowledge about journalism and its origin and growth.
CO-2. Students would learn about the role of Indian journalism in freedom struggle.
CO-3. They will enhance their knowledge through practical work and assignments.
CO-4. They would build their communication skill through field work.

Paper 2: Introduction Of Mass Communication & Theories

Course outcomes:

CO-1. Students would be able to introduce themselves to the theories of Communication.
CO-2. Students would be able to inculcate the knowledge of Communication models.
CO-3. Students would be able to develop the knowledge of basic elements of Communication.
CO-4. Students would be able to acquaint themselves with the various types of Communication and social media.
CO-5. Students would be able to strengthen the 5Cs of Communication

Paper 3: Reporting, Feature Writing And News Agency

Course outcomes:

CO-1. Students would be able to understand the basics of reporting.
CO-2. Students would be able to familiarize themselves with different types of reporting.
CO-3. Students would be able to create understanding of specialized reporting.
CO-4. Students would be able to develop the general understanding of art culture and sports reporting, and feature writing.
CO-5. Students would be able to know about crime reporting and news agencies and their functions.

Paper 4 : Editing Production And Computer Applicatons

Course outcomes:

CO-1. Students would be able to understand the process of editing for various platforms.
CO-2. Students would be able to familiarize themselves with the basics of editing.
CO-3. Students would be able to create understanding of specialized reporting .
CO-4. Students would be able to understand about the dummy , printing and layout
CO-5. Students would be able to develop the knowledge of photography.
CO-6. Students will learn about computer
CO-7. Students will be able to understand Software and Operating System
CO-8. Students will have the knowledge of IT Communication
CO-9. Learner would be to ready to join any media organization as photo Journalist.
CO-10. Learner would know the importance of photo features.
CO-11. Learner would know different branches of photography and may be self-employed.

Semester-2

Paper 1: Principles Of Advertising & Public Relations

Course Outcomes

CO-1. Students would learn development of advertising and basic concepts.
CO-2. Students would be able to know about role and importance of advertising in media.
CO-3. Learner will have the knowledge of self-employment.
CO-4. Students would know about advertising agencies.
CO-5. Learner would know about the advertising industry and its functioning.
CO-6. Students would learn about the definitions and concepts of public relations, publicity, Propaganda, advertising ande-PR.
CO-7. Students would know the difference between public relations and corporate communications, public relations andadvertising, public relations and propaganda, public relations and publicity, propaganda and publicity.

Paper 2: Audio-Visual Communication (Film, Tv, Radio, Satellite, Video Communication)

Course outcomes:

CO-1. Students will be able to write scripts of television news stories, special stories and on the spot reporting
CO-2. Students will be able to cover events and news based stories using mobile phones, video cameras.
CO-3. Students will anchor, present and able to produce television news bulletin
CO-4. Students will acquire skills and techniques of television media production
CO-5. Students will be able to do the editing both offline and online programme of television with using the softwares.
CO-6. Students will be able to understand the working pattern of electronic media platform.
CO-7. Students will able to familiarize the students with the basic techniques of broadcasting.
CO-8. Students will be able to have understanding of electronic media content creation.

Paper 3- Development Communication

Course outcomes :

CO-1. Students would learn the concepts meaning and model shop the development
CO-2. Students would be able to understand the problems and hurdles in development communication.
CO-3. Learner would understand the working of government and administration in development.
CO-4. Students would know different programmes and policies of the development.
CO-5. Learner would know the rural India and its problems he also will understands the communication gap.

University Institute Of Computer Science And Application

Programme Offered

1. **B.C.A. (Bachelor of Computer Application)**
2. **M.Sc. (Cyber Security)**
3. **M.C.A. (Master of Computer Application Lateral entry)**

Bachelor of Computer Applications (BCA)

Programme Outcomes

Develop theoretical foundations in computer science.
CO-1. Develop expertise in programming skills using high level programming languages.
CO-2. Develop skills to design, implement and document the solutions for computational problems.
CO-3. Develop soft skills to work effectively in a team to solve a problem.
CO-4. Develop the ability to use state of the art technologies.

Programme Specific Outcomes

PS0-1. Ability to analyze a problem, and identify and define the computing requirements appropriate to itssolution.
PS0-2. Ability to design, implements, and evaluate a computer-based system, process, component, or program tosolve the given problem.
PS0-3. Ability to communicate effectively through oral and written means.
PS0-4. Ability to work in a team to achieve a common goal

Semester-1

Paper 1: Fundamentals Of Computer And Programming

Course Outcomes

On successful completion of this course, a student will be able to:
CO-1. Handle a computer system for day to day use.
CO-2. Enumerate different types of input/ output devices and types of memory.
CO-3. Perform basic arithmetic operations using different number systems including binary arithmetic.
CO-4. Differentiate between system and application software.
CO-5. Prepare documents /spreadsheets/power point presentation
CO-6. Computers programming language concepts
CO-7. Generations of programming language.

Paper 2: Operating Systems (Dos, Windows And Unix)

Course Outcomes

CO-1. Describe the important computer system resources and the role of operating system in their managementpolicies and algorithms.
CO-2. To understand various functions, structures and history of operating systems and should be able to specifyobjectives of modern operating systems and describe how operating systems have evolved over time.
CO-3. Understanding of design issues associated with operating systems.
CO-4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
CO-5. To have a basic knowledge about multithreading.
CO-6. To understand concepts of memory management including virtual memory.
CO-7. To understand issues related to file system interface and implementation, disk management.
CO-8. To understand and identify potential threats to operating systems and the
CO-9. security features design to guard against them.
CO-10. To have sound knowledge of various types of operating systems including UNIX and Android.
CO-11. Describe the functions of a contemporary operating system with respect to convenience, efficiency, andthe ability to evolve.

Paper 3: Mathematical Foundation

Course Outcomes

CO-1. Demonstrate their understanding of and apply methods of discrete mathematics in CS to subsequent courses inalgorithm design and analysis, automata theory and computability, information systems, computer networks.
CO-2. Use logical notation to define fundamental mathematical concepts such as sets & operations on sets, Booleanalgebra, relations, functions and various algebraic structures, reason mathematically using such structures,
CO-3. Evaluate arguments that use such structures. - model and analyze a computation or communication process andconstruct elementary proofs based on such structures.
CO-4. Evaluate elementary differentiation, elementary integration and partial differentiation

Paper 4: Programming In C

Course Outcomes

CO-1. Identify situations where computational methods and computers would be useful.
CO-2. Given a computational problem, identify and abstractthe programming task involved.
CO-3. Approach the programming tasks using techniques learned and write pseudo-code.
CO-4. Choose the right data representation formats based on the requirements of the problem.
CO-5. Use the comparisons and limitations of the various programming constructs and choose the right one for thetask in hand.
CO-6. Write the program on a computer, edit, compile, debug, correct, recompile and run it.
CO-7. Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, andhence use computers effectively to solve the task.

Paper 5: Communicative English

Course Outcomes

CO-1. Develop English language skills in listening, speaking, reading and writing by having learners engage in a range of communicative tasks and activities from Canadian Language Benchmarks levels 4 to 9.
CO-2. Encourage the use of strategies, such as contextualization of new vocabulary, use of previewing, skimming andscanning techniques, and knowledge of text organization and discourse markers, to aid the comprehension of written and spoken language.
CO-3. Expand the learner's use of grammatically correct and situationally and culturally appropriate language in speaking and writing for effective communication in a variety of interpersonal and academic situations.
CO-4. Create awareness about learning styles and college resources, encourage the adoption of study skills, and increase competence in the use of technology so that learners may more effectively achieve academic goals.

CO-5. Build cross-cultural understanding and confidence in using language through collaboration with classmates, increased participation in college activities, and increased interaction within the college andthe larger community in order to complete class assignments such as surveys, reports and presentations.

Semester-2

Paper 1: Computer System Architecture

Course Outcomes

CO-1. To make students understand the basic structure, operation and characteristics of digital computer.
CO-2. To familiarize the students with arithmetic and logic unit as well as the concept of the concept ofpipelining.
CO-3. To familiarize the students with hierarchical memory system including cache memories and virtual memory.
CO-4. To make students know the different ways of communicating with I/O devices and standard I/O interfaces.

Paper 2 : Internet Concepts And Web Design

Course Outcome

CO-1. HTML is highly flexible and supported on all browsers.
CO-2. User friendly and an open technology.
CO-3. CSS provides powerful control over the presentation of an HTML document.
CO-4. CSS saves many times as it can be reused in many HTML pages.
CO-5. CSS can be used to make responsive web pages, which are compatible on multiple devices.
CO-6. It can be used to allow the web pages to display differently depending on the screen
CO-7. size or device on which it is being viewed.

Paper 3 : Data Structure & Algorithms

Course Learning Outcomes

CO-1. Implement and empirically analyse linear and non-linear data structures like Arrays,Stacks,Queues, Lists,
Trees, Heaps and Hash tables as abstract data structures.
CO-2. Write a program, choosing a data structure, best suited for the application at hand.
CO-3. Re-write a given program that uses one data structure, using a more appropriate/efficient data Structure.
CO-4. Write programs using recursion for simple problems.
CO-5. Explain the advantages and disadvantages of recursion.
CO-6. Identify Ethical Dilemmas.

Paper 4 : CYBER SECURITY

Course Learning Outcomes

CO-1. Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniquesused today.
CO-2. Develop an understanding of security policies (such as authentication, integrity and confidentiality).
CO-3. Develop an understanding of Cryptography and Network Security.
CO-4. Identify some of the factors driving the need for Cyber security
CO-5. Identify and classify particular examples of attacks
CO-6. Define the terms vulnerability, threat and attack
CO-7. Identify physical points of vulnerability in simple networks

Paper 5: Discrete Mathematics

Course Learning Outcomes

CO-1. Upon completion of the course, the student will be able to use logical notation
CO-2. Perform logical proofs
CO-3. Apply recursive functions and solve recurrence relations
CO-4. Determine equivalent logic expressions
CO-5. Describe useful standard library functions, create functions, and declare parameters
CO-6. Use graphs and trees
CO-7. Apply basic and advanced principles of counting
CO-8. Define sets and sequences
CO-9. And calculate discrete probabilities.
CO-10. Design and evaluate Euler and Hamilton circuits

Semester-3

Paper 1: Data Base Management System

Course Outcomes

CO-1. Differentiate between database systems and file systems.
CO-2. Describe the features of database management systems.
CO-3. Analyses the problem and arrive at an information model in the form of an ER diagram.
CO-4. Normalize a database.
CO-5. Transform an ER model into a relational database schema.
CO-6. Use SQL for query and data update operations.

Paper 2: OOPS IN C ++

Course Outcomes

CO-1. Learn the concepts of data, abstraction and encapsulation
CO-2. Be able to write programs using classes and objects, packages.
CO-3. Understand conceptually principles of Inheritance and Polymorphism and their use and program levelimplementation.
CO-4. Learn exception and basic event handling mechanisms in a program
CO-5. To learn typical object-oriented constructs of specific object oriented programming language

Paper3: E-Commerce Security

Course Outcomes

CO-1. Understand the basic concepts and technologies used in the field of management information systems;
CO-2. Have the knowledge of the different types of management information systems.
CO-3. Understand the processes of developing and implementing information systems.
CO-4. Create a marketing plan and promotional plan for an ecommerce site.
CO-5. Create a strategy for the different, non-traditional areas surrounding ecommerce.
CO-6. Implement, in simulation or authentically, an ecommerce site. Evaluate a payment system for a site.
CO-7. Be aware of the ethical, social, and security issues of information systems.

Paper 4: Principles Of Management

Course Outcomes

CO-1. Understand the nature of management and describe the functions of management.
CO-2. Understand the Information presentation and reporting
CO-3. Principles and Types of report MIS.
CO-4. Develop understanding of different approaches to designing organizational structures.
CO-5. Understand the role of personality, learning and emotions at work.

CO-6. Discover and understand the concept of motivation, leadership, power and conflict.
CO-7. Understand the foundations of group behaviour and the framework for organizational change and development.

Paper 5- El-1: Internet Of Things

Course Outcomes

CO-1. Able to understand the application areas of IOT.
CO-2. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.
CO-3. Able to understand building blocks of Internet of Things and characteristics.

Paper 6- El-2: Digital Image Processing

Course Outcomes

CO-1. Describe and explain basic principles of digital image processing.
CO-2. Design and implement algorithms that perform basic image processing (e.g. noise removal and imageenhancement).
CO-3. Design and implement algorithms for advanced image analysis (e.g. image compression, image segmentation).
CO-4. Assess the performance of image processing algorithms and systems.

Paper 7- El-3: Cloud Computing

Course Outcomes

CO-1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about,the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
CO-2. Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost.
CO-3. Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outlinetheir role in managing infrastructure in cloud computing.
CO-4. Analyze various cloud programming models and apply them to solve problems on the cloud.

Paper 8- El-4: Client-Server Computing

Course Outcomes

Understand how new systems can be built to work effectively with today's capabilities and at the same time can be based on a technical architecture that will allow them to take advantage of future technologies.

Semester-4

Paper 1: Programming With Vb.Net

Course Outcomes

CO-1. Understand the programming algorithm, process, and structure
CO-2. Understand and identify the fundamental concepts of object-oriented programming
CO-3. Understand .NET Framework and describe some of the major enhancements to the new version of VisualBasic.
CO-4. Describe the basic structure of a Visual Basic.NET project and use main features of the integrateddevelopment environment (IDE)
CO-6. Create applications using Microsoft Window forms
CO-7. The course also introduces how to access databases using ADO.NET and illustrates how to build userinterfaces using Windows Forms.
CO-8. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop realcompetency.

Paper 2: Financial Accounting And Tally

Course Outcomes

CO-1. This course helps students to work with well-known accounting software i.e. Tally ERP.9

CO-2. Student will learn to create company, enter accounting voucher entries including advance voucher entries, do reconcile bank statement, do accrual adjustments, and also print financial statements, etc. inTally ERP.9 software

CO-3. Accounting with Tally certificate course is not just theoretical program, but it also includes continuouspractice, to make students ready with required skill for

CO-4. employability in the job market.

Paper 3: Theory Of Operating Systems

Course Outcomes

CO-1. Describe the important computer system resources and the role of operating system in their managementpolicies and algorithms.

CO-2. To understand various functions, structures and history of operating systems and should be able to specifyobjectives of modern operating systems and describe how operating systems have evolved overtime.

CO-3. Understanding of design issues associated with operating systems.

CO-4. Understand various process management concepts including scheduling, synchronization, and deadlocks.

CO-5. To have a basic knowledge about multithreading.

CO-6. To understand concepts of memory management including virtual memory.

CO-7. To understand issues related to file system interface and implementation, disk management.

CO-8. To understand and identify potential threats to operating systems and the security features design to guardagainst them.

CO-9. To have sound knowledge of various types of operating systems including Unix and Android.

CO-10. Describe the functions of a contemporary operating system with respect to convenience, efficiency, andthe ability to evolve

Paper4: Software Engineering

Course Outcomes

CO-1. Basic knowledge and understanding of the analysis and design of complex systems.

CO-2. Ability to apply software engineering principles and techniques.

CO-3. To produce efficient, reliable, robust and cost-effective software solutions.

CO-4. Ability to work as an effective member or leader of software engineering teams.

CO-5. To manage time, processes and resources effectively by prioritizing competing demands

CO-6. To achieve personal and team goals

CO-7. Identify and analyzes the common threats in each domain**.**

Paper 5 - El-1: System Analysis And Design Management Information System (Sad/Mis)

Course Outcomes

CO-1. This module aims to as to introduce variety of new software used by analysts, designers to manageprojects, analyze and document systems, design new systems and implement their plans.

CO-2. It introduces also a recent coverage of UML, wireless technologies and ERP; web based systems for e-commerce and expanded coverage on RAD and GUI design.

CO-3. Translate the role of information systems in organizations, the strategic management processes, with theimplications for the management.

Paper 6- El-2: E-Mobile Technology

Course Outcomes

CO-1. Understand cellular concepts like frequency reuse, hand-off and Interference.

CO-2. Apply knowledge of reflection, diffraction and scattering to calculate link budget using path loss models.

CO-3 Understand the importance of Equalization and different diversity techniques.

CO-4. Know fundamentals of GSM. viz., channels, coding techniques, data transmission, services.

CO-5. Know fundamentals of CDMA. viz., channels, coding techniques, data transmission, services.

Paper 7- EL-3: PHP and My-SQL

Course Outcomes

CO-1. This course is specially designed for students who are interested in learning the hottest programming language PHP and specially those who are interested in Web development with minimum entry requirements.

CO-2. Students who don't have any programming experience or programming knowledge in using object oriented techniques are encouraged to attend this course.

CO-3. Write PHP code to produce outcomes and solve problems.

CO-4. Display and insert data using PHP and MySQL.

CO-5. Test, debug, and deploy web pages containing PHP and MySQL.

Paper 8- El-4: Python Programming

Course Outcomes

CO-1. Improve programming skills

CO-2. To develop console application in python

CO-3. To develop database application in python

CO-4. Appreciate Python Programming Paradigm

CO-5. Hands on Regular Expression

CO-6. Ability to Text Processing scripts

CO-7. Write to file handling scripts

Semester-5

Paper 1 : Computer Network

Course Outcomes

CO-1. Understand the structure of Data Communications System and its components.

CO-2. Be familiarize with different network terminologies.

CO-3. Familiarize with contemporary issues in network technologies.

CO-4. Know the layered model approach explained in OSI and TCP/IP network models.

CO-5. Identify different types of network devices and their functions within a network.

CO-6. Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.

CO-7. Familiarize with IP and TCP Internet protocols.

CO-8. To understand major concepts involved in design of WAN, LAN and wireless networks.

CO-9. Learn basics of network configuration and maintenance.

CO-10. Know the fundamentals of network security issues

Paper 2: Asp.Net With C# Programming

Course Outcomes

CO-1. Introduce to .NET IDE Component Framework.

CO-2. Programming concepts in .NET Framework.

CO-3. Creating website using ASP.NET Controls.

CO-4. ASP.NET is a server-side scripting language introduced by the Microsoft for building dynamic web pages.

CO-5. Create user interactive web pages using ASP.Net.

CO-6. Create simple data binding applications using ADO.Net connectivity.

CO-7. Performing Database operations for Windows Form and web applications.

Paper 3: Java Programming

Course Outcomes

CO-1. Develop software in the Java programming language,
CO-2. Identify classes, objects, members of a class and relationships among them needed for a specific problem
CO-3. Use the Java programming language for various programming technologies
CO-4. Knowledge of object-oriented paradigm in the Java programming language.
CO-5. Evaluate user requirements for software functionality required to decide whether the Java programminglanguage can meet user requirement

Paper 4 : Data Mining Concepts

Course Outcomes

CO-1. Learn the concepts of database technology evolutionary path which has led to the need for data miningand its applications.
CO-2. Examine the types of the data to be mined and present a general classification of tasks and primitives tointegrate a data mining system.
CO-3. Apply preprocessing statistical methods for any given raw data.
CO-4. Explore DWH and OLAP, and devise efficient & cost effective methods for maintaining DWHs.

Paper 5- El-1: Software Testing And Quality Assurance

Course Outcomes

CO-1. Design and develop the bug free software systems using basic concepts of software testing.
CO-2. Identify, formulate, review, estimate and analyze complex engineering problems of software testing usingprinciples of mathematics.
CO-3. Create, select and apply appropriate techniques, modern engineering concepts and IT tools for softwaretesting.
CO-4. Apply verification, validation activities, static, dynamic testing, debugging tools and techniques andimportance of working in teams.
CO-5. Implement concepts of object oriented testing, web testing and regression testing.

Paper 6- El-2: Open Source Technology

Course Outcomes

CO-1. Leaned the need of open source technology, open source development model, application of open sources,aspects of open source movement
CO-2. The students will be aware about the problems with traditional commercial software.
CO-3. The student will be familiar with basis syntax of PHP, common PHP scripts elements.
CO-4. The student will be familiar with creating of the server side scripting using PHP.
CO-5. Implement PHP database connectivity, perform operation on database and open source database management system.
CO-6. The students will be familiar with Working of different web Servers.
CO-7. The students will be aware about the software tool and process like Eclipse IDE, Selenium ID.

Paper 7- El-3: System Programming Using Linux

Course Outcomes

CO-1. Grasp the concepts and principles, and be familiar with the approaches and methods of developingsystem-level software (e.g., compiler, and networking software);
CO-2. Apply the knowledge and techniques learnt to develop solutions to realworld problems;
CO-3. Select and make use of the OS kernel functions and their APIs, standard programming languages, and utility tools;
CO-4. Organize and manage software built for deployment and demonstration;
CO-5. Students will be able to create file systems and directories and operate them.
CO-6. To develop the basic skills required to write network programs using sockets.
CO-7. To Develop the skills the necessary for systems programming including file system programming, processand signal management and interprocess communication

Paper 8- El-4: Advanced Database Management System

Course Outcomes

CO-1. Create Stored Database Procedures for writing consistent, well-tuned backend code.
CO-2. Develop database application using XML data model.
CO-3. Understand developments in database technologies.
CO-4. Understand developments NOSQL.

M.Sc. (Cyber Security)

Programme Outcomes (PO)

- This course is aimed at graduates with a computing background and provides a detailed coverage of the key concepts and challenges in cyber security. It provides in-depth understanding of core concepts with major thrust on functional competencies related to real life situations. The goal of this course is for students to maintain an appropriate level of awareness, knowledge and skill on the disciplines of technology, cyber law to allow them to minimize the occurrence and severity of information security incidents.
- Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer networks in an Organization. The students will learn techniques used to detect, respond to, and prevent network intrusions.
- Practice with an expertise in academics to design and implement security solutions.
- Understand key terms and concepts in Cryptography, Governance and Compliance.
- Develop cyber security strategies and policies.
- Understand principles of web security and to guarantee a secure network by monitoring and analyzing the nature of attacks through cyber/computer forensics software/tools.

Programme Specific Outcomes (PSO)

Upon successful completion of the programme, candidates expertise with cyber security landscapes and able to Analyze and evaluate the cyber security needs of an organization. Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools.

Semester-1

Paper 1: Microprocessor Architecture & Assembly Language Programming

Course Outcomes

CO-1. Describe the architecture of 8085.
CO-2. Illustrate the organization of registers and memory in microprocessors.
CO-3. Differentiate Minimum and Maximum Mode bus cycle.
CO-4. Identify the addressing mode of an instruction.
CO-5. Develop programming skills in assembly language.
CO-6. Explain the need for different interfacing devices.
CO-7. Compare the concepts of CISC and RISC processors.
CO-8. Outline the architecture of ARM processor and PIC microcontroller

Paper 2 : Operating System Design Principle

Course Outcomes

Describe the important computer system resources and the role of operating system in their management policies and algorithms.

CO-1. To understand various functions, structures and history of operating systems and should be able to specifyobjectives of modern operating systems and describe how operating systems have evolved overtime.

CO-2. Understanding of design issues associated with operating systems.

CO-3. Understand various process management concepts including scheduling, synchronization, and deadlocks.

CO-4. To have a basic knowledge about multithreading.

CO-5. To understand concepts of memory management including virtual memory.

CO-6. To understand issues related to file system interface and implementation, disk management.

CO-7. To understand and identify potential threats to operating systems and the security features design to guardagainst them.

CO-8. To have sound knowledge of various types of operating systems including UNIX and Android.

CO-9. Describe the functions of a contemporary operating system with respect to convenience, efficiency, andthe ability to evolve.

Paper 3 : Fundamentals Of Information Security

Course Outcomes

CO-1. Develop an understanding of information assurance as practiced in computer operating systems, distributed systems, networks and representative applications.

CO-2. Gain familiarity with prevalent network and distributed system attacks, defenses against them, and forensics to investigate the aftermath.

CO-3. Develop a basic understanding of cryptography, how it has evolved, and some key encryption techniquesused today.

CO-4. Develop an understanding of security policies (such as authentication, integrity and confidentiality), aswell as protocols to implement such policies in the form of message exchanges.

CO-5. Develop an understanding of Firewalls, Improving Security through Firewalls.

Paper 4: Compiler Design

Course Outcomes

CO-1. After completion of this course each student will implement a compiler for a small programming language.

CO-2. Define the phases of a typical compiler, including the front- and backend.

CO-3. Identify tokens of a typical high-level programming language; define regular expressions for tokens anddesign; implement a lexical analyzer using a typical scanner generator.

CO-4. Explain the role of a parser in a compiler and relate the yield of a parse tree to a grammar derivation;design and implement a parser using a typical parser generator.

CO-5. Apply an algorithm for a top-down or a bottom-up parser construction; construct a parser for a smallcontext-free grammar.

CO-6. Explain the role of a semantic analyzer and type checking; create a syntax-directed definition and anannotated parse tree; describe the purpose of a syntax tree.

CO-7. Explain the role of different types of runtime environments and memory organization for implementationof typical programming languages.

CO-8. Describe the purpose of translating to intermediate code in the compilation process.

CO-9. Design and implement an intermediate code generator based on given code patterns.

CO-10. Understand the major phases of compilation and to understand the knowledge of Lex tool & YAAC tool.

CO-11. Lexical analyzer implementation, Parse tree construction, Compute FIRST and FOLLOW set, implementsymbol table construction, etc.

CO-12. Apply for various optimization techniques for dataflow analysis.

Semester-2

Paper 1: Internals Of Operating Systems

Course Outcomes

CO-1. Describe the basic concepts of operating systems, including development and achievements,functionalities and objectives, structure and components

CO-2. Explain how memory, I/O devices, files, processes and threads are managed, and evaluate the performance of various scheduling algorithms

CO-3. Explain the concepts covered in concurrency control, including mutual exclusion and synchronization,deadlock and starvation

CO-4. Develop software using multi process and multithread programming techniques

CO-5. Analyze the relationship between the operating system and the hardware environment in which it runs

CO-6. Develop the role of operating systems in a wider context, e.g., extending OS services via system calls.

Paper 2: Computer Networks

Course Outcomes

CO-1. Understand the structure of Data Communications System and its components. Be familiarize with different network terminologies.

CO-2. Familiarize with contemporary issues in network technologies.

CO-3. Know the layered model approach explained in OSI and TCP/IP network models.

CO-4. Identify different types of network devices and their functions within a network.

CO-5. Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.

CO-6. Familiarize with IP and TCP Internet protocols.

CO-7. To understand major concepts involved in design of WAN, LAN and wireless networks.

CO-8. Learn basics of network configuration and maintenance.

CO-9. Know the fundamentals of network security issues.

Paper 3: DIGITAL FORENSICS AND TOOLS

Course Outcomes

CO-1. Explain the origins of forensic science

CO-2. Understand and utilize the fundamental concept of computers and digital forensics

CO-3. Students shall be prepared for various technologies/tools to combat and investigate computer and cybercrimes.

CO-4. The first part deals with fundamentals of computer architecture, importance of hardware , software , input output devices, processor, memory, storage devices, then make you learn about various file systems and encoding and decoding in computers.

CO-5. The second half of the syllabus is dedicated to various types of cyber-crimes and its investigation and finally we would understand some of the challenges faced in present scenario.

CO-6. Explain the role of digital forensics and the relationship of digital forensics to traditional forensic science, traditional science and the appropriate use of scientific methods

CO-7. Outline a range of situations where digital forensics may be applicable.

Paper 4-El-1: Advanced Data Structures

Course Outcomes

CO-1. To be familiar with fundamental data structures and with the manner in which these data

CO-2. structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles

CO-3. To have knowledge of complexity of basic operations like insert, delete, search on these data structures.

CO-4. Ability to choose a data structure to suitably model any data used in computer applications.

CO-5. Design programs using various data structures including hash tables, Binary and general search trees,heaps, graphs etc.

CO-6. Ability to assess efficiency tradeoffs among different data structure implementations.

CO-7. Implement and know the applications of algorithms for sorting, pattern.

Paper 5-El- 2: Mathematical Foundations Of Information Security

Course Outcomes

CO-1. Effectively express the concepts and results of Number Theory.

CO-2. Understand basic concepts of various algebraic structures and theorems like Euler's theorem for

CO-3. Designing security algorithm.

CO-4. Understand coding theory which will be useful for data compression, information hiding.

CO-5. Illustrate various pseudorandom number generation used for designing security protocols and for itsanalysis.

Paper 6-El-3: Python Programming

Course Outcomes

CO-1. Develop and execute simple Python programs.

CO-2. Structure a Python program into functions.

CO-3. Using Python lists, tuples to represent compound data

CO-4. Develop Python Programs for file processing

Semester-3

Paper 1: Secure Software Engineering

Course Outcomes

CO-1. Basic knowledge and understanding of the analysis and design of complex systems.

CO-2. Ability to apply software engineering principles and techniques.

CO-3. To produce efficient, reliable, robust and cost-effective software solutions.

CO-4. Ability to work as an effective member or leader of software engineering teams.

CO-5. To manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain**.**

Paper 2: Computer Forensics Analysis And Investigations

Course Outcomes

CO-1. Understand and utilize the fundamental concept of computers and digital forensics.

CO-2. Students shall be prepared for various technologies/tools to combat and investigate computer and cybercrimes.

CO-3. Dedicated to various types of cyber-crimes and its investigation and finally we would understand some ofthe challenges faced in present scenario.

CO-4. Outline a range of situations where digital forensics may be applicable.

CO-5. Determining what data to collect and analyze.

CO-6. Understanding vector Graphics.

CO-7. Performing live acquisition.

CO-8. Exploring the role of email investigation.

CO-9. Developing standard procedures for network forensics.

CO-10. Understanding mobile device forensics.

Paper 3: Cryptography & Network Security

Course Outcomes

CO-1. Learn fundamentals of cryptography and its application to network security.

CO-2. Understand network security threats, security services, and countermeasures.

CO-3. Acquire background on well-known network security protocols such as IPSec, SSL, and WEP.

CO-4. Understand vulnerability analysis of network security.

CO-5. Acquire background on hash functions; authentication; firewalls; intrusion detection techniques.

CO-6. Know the fundamentals of network security issues.

CO-7. Learn Basic Encryption and decryption techniques.

Paper 4- El-1: E-Commerce Security

Course Outcomes

CO-1. Understand the basics of E-commerce, current and emerging business models.
CO-2. Familiarize with basic business operations such as sales, marketing, HR etc. on the web.
CO-3. Enhance the students' skills for designing and developing website.
CO-4. Identify the emerging modes of e-payment.
CO-5. Understand the importance of security, privacy, ethical and legal issues of e-commerce.

Paper 5-El-2: Artificial Intelligence

Course Outcomes

CO-1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.
CO-2. Identify problems that are amenable to solution by AI methods, and which AI methods may be suited tosolving a given problem.
CO-3. Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem,as a constraint satisfaction problem, as a planning problem, etc).
CO-4. Identify appropriate AI technique for the problem at hand
CO-5. Compare strengths and weaknesses of different artificial Intelligence techniques.
CO-6. Represent knowledge in Prolog and write code for drawing inferences.
CO-7. Sensitive towards development of responsible Artificial Intelligence
CO-8. Explain the limitations of current Artificial Intelligence techniques.

Paper 6-El-3: Machine Learning

Course Outcomes

CO-1. Differentiate between supervised, unsupervised machine learning approaches
CO-2. Ability to choose appropriate machine learning algorithm for solving a problem
CO-3. Design and adapt existing machine learning algorithms to suit applications
CO-4. Understand the underlying mathematical relationships across various machine learning algorithms
CO-5. Design and implement machine learning algorithms to real world applications.

Semester-4

Paper 1 : Ethical Hacking

Course Outcomes

CO-1. Learn the difference between a vulnerability assessment and a penetration test
CO-2. Learn about the different tools and techniques that hackers—including ethical hackers—employ
CO-3. Discover the elements of a four-phase penetration test and how the four phases help a successful test
CO-4. Knowledge: Students will learn the underlying principles and techniques associated with the cybersecurity practice known as penetration testing or ethical hacking. They will become familiar with the entire penetration testing process including planning, reconnaissance, scanning, exploitation, post-exploitation and result reporting.
CO-5. Skills: For every offensive penetration technique the students will learn the corresponding remedial technique. By this, the students will develop a practical understanding of the current cybersecurity issues and the ways how the errors made by users, administrators, or programmers can lead to exploitable insecurities.

Paper 2: Cyber Laws And Information Security

Course Outcomes

CO-1. Understand the constraints of cyber law and security concern.
CO-2. Understand the importance of information security and how can manage the security of network as well asdata.
CO-3. Know the working of security models and applied algorithms.

Master of Computer Applications (MCA)

Programme Outcomes

- **Computational Knowledge:** Apply knowledge of computing fundamentals and domain knowledge.
- **Problem Analysis:** Identify, formulate and solve complex computing problems reaching substantiated conclusions.
- **Development of Solutions:** Design and evaluate solutions for complex computing problems with appropriate consideration.
- **Investigations of complex Computing problems:** Use research-based knowledge and research methods for analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **Modern Tool Usage:** Create, identify and apply appropriate techniques, resources, and modern computing tools to complex computing activities.
- **Professional Ethics:** Understand and commit to professional ethics and cyber regulations for professional computing practices.
- **Life-long Learning:** Identify the need and have the ability, to engage in independent learning as a computing professional.
- **Project management and finance:** Understand and apply computing, management principles to manage multidisciplinary projects.
- **Communication Efficacy:** Communicate effectively with the computing community, and with society.
- **Individual and Team Work:** Function effectively in diverse teams and in multidisciplinary environments.
- **Innovation and Entrepreneurship:** Identify a timely opportunity and using innovation to pursue that opportunity.

Programme Specific Outcomes

PSO-1. The students will be able to improve their technical skill, research, innovations in computer Science andInformation Technology for significant contribution to the globalized technical society, industry and nation.

PSO-2. Apply the knowledge of computer application to find solutions for real-life application.

PSO-3. Ability to analyze, design, develops and maintains the software application with latest technologies.

PSO-4. Utilize skills and knowledge for computing practice with commitment on social, ethical, cyber and legalvalues.

PSO-5. Inculcate employability and entrepreneur skills among students who can develop customized solutions forsmall to large Enterprises.

Semester-1

Paper 1: Object Oriented Programming In C++

Course Outcomes

CO-1. Learn the concepts of data, abstraction and encapsulation.

CO-2. Be able to write programs using classes and objects, packages.

CO-3. Understand conceptually principles of Inheritance and Polymorphism and their use and program levelimplementation.

CO-4. Learn exception and basic event handling mechanisms in a program.

CO-5. To learn typical object-oriented constructs of specific object oriented programming language.

Paper 2: Relational data base management system (sql prog. using oracle)

Course Outcomes

CO-1. Gain knowledge of database systems and database management systems software.

CO-2. Ability to model data in applications using conceptual modelling tools such as ER Diagrams and designdata base schemas based on the model.

CO-3. Formulate, using SQL, solutions to a broad range of query and data update problems.

CO-4. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization ofa database.

CO-5. Be acquainted with the basics of transaction processing and concurrency control.

CO-6. Familiarity with database storage structures and access techniques.

CO-7. Compare, contrast and analyse the various emerging technologies for database systems such as SQL.

CO-8. Analyse strengths and weaknesses of the applications of database technologies to various subject areas.

Paper 3: Computer Network

Course Outcomes

CO-1. Understand the structure of Data Communications System and its components. Be familiarizing withdifferent network terminologies.

CO-2. Familiarize with contemporary issues in network technologies.

CO-3. Know the layered model approach explained in OSI and TCP/IP network models.

CO-4. Identify different types of network devices and their functions within a network.

CO-5. Learn basic routing mechanisms, IP addressing scheme and internetworking concepts.

CO-6. Familiarize with IP and TCP Internet protocols.

CO-7. To understand major concepts involved in design of WAN, LAN and wireless networks.

CO-8. Learn basics of network configuration and maintenance.

CO-9. Know the fundamentals of network security issues.

Paper 4: Operational Research

Course Outcomes

CO-1. Analyze any real life system with limited constraints and depict it in a model form.

CO-2. Convert the problem into a mathematical model.

CO-3. Explain the concepts of linear programming problem

CO-4. Solve the linear programming problem by using Simplex method. Computational steps of Big-m-Method.Write the dual of the given linear programming problem.

CO-5. Find the initial basic feasible solution to the given Assignment problems.

CO-6. Describe the computational procedure of optimality test in a transportation table.

CO-7. Understand variety of problems such as Game theory and Sequencing problems.

CO-8. Describe the problem of replacement of items whose maintains cost increase with time.

CO-9. Derive an expression of the average annual cost of an item over a period of n years.

CO-10. Solve Dynamic programming problem by using Linear programming problem.

Paper 5: Operating System Concepts

Course Outcomes

CO-1. Describe the important computer system resources and the role of operating system in their managementpolicies and algorithms.

CO-2. To understand various functions, structures and history of operating systems and should be able to specifyobjectives of modern operating systems and describe how operating systems have evolved over time.

CO-3. Understanding of design issues associated with operating systems.

CO-4. Understand various process management concepts including scheduling, synchronization, and deadlocks.

CO-5. To have a basic knowledge about multithreading.

CO-6. To understand concepts of memory management including virtual memory.

CO-7. To understand issues related to file system interface and implementation, disk management.
CO-8. To understand and identify potential threats to operating systems and the security features design to guardagainst them.
CO-9. To have sound knowledge of various types of operating systems including Unix and Android.
CO-10. Describe the functions of a contemporary operating system with respect to convenience, efficiency, andthe ability to evolve.

Semester-2

Paper 1: Object Oriented Analysis & Design

Course Outcomes

CO-1. Basic knowledge and understanding of the analysis and design of complex systems.
CO-2. Ability to apply software engineering principles and techniques.
CO-3. To produce efficient, reliable, robust and cost-effective software solutions.
CO-4. Ability to work as an effective member or leader of software engineering teams.
CO-5. To manage time, processes and resources effectively by prioritizing competing demands to achievepersonal and team goals Identify and analyzes the common threats in each domain.

Paper 2: .Net Technologies

Course Outcomes

CO-1. Use .NET framework architecture, various tools, and Validation techniques,
CO-2. Use of different templates available in Visual Studio.
CO-3. Implementation and testing strategies in real time applications.
CO-4. Use advanced concepts related to Web Services, WCF, and WPF in project development.
CO-5. Understand the programming algorithm, process, and structure
CO-6. Create user interactive web pages using ASP.NET
CO-7. Using C#.NET Programming and VB.NET.
CO-8. Understand and identify the fundamental concepts of object-oriented programming
CO-9. Create simple data binding applications using ADO.NET connectivity.
CO-10. Advance design concepts of Patterns, Roles and Relationships.
CO-11. Introduction to Language-Integrated Query.
CO-12. Performing Database operations for Windows Form and web applications.
CO-13. We will introduce the students to Web Service development and .NET remoting.
CO-14. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop realcompetency.

Paper 3: Java Programming

Course Outcomes

CO-1. Knowledge of the structure and model of the Java programming language,
CO-2. Use the Java programming language for various programming technologies
CO-3. Develop software in the Java programming language,
CO-4. Evaluate user requirements for software functionality required to decide whether the Java programminglanguage can meet user requirements
CO-5. Identify Java code utilities in applets, awt, I/O, Java packages, and classes.

Paper 4: Theory Of Computation

Course Outcomes

CO-1. Demonstrate advanced knowledge of formal computation and its relationship to languages.
CO-2. Distinguish different computing languages and classify their respective types.
CO-3. Recognize and comprehend formal reasoning about languages.
CO-4. Design a finite automaton, pushdown automaton or a Turing machine for a problem at hand.

CO-5. Apply pumping lemma to prove that a language is non-regular/non-context-free.
CO-6. Describe limitations of a computing machine.
CO-7. Show a competent understanding of the basic concepts of complexity theory.

Paper 5: Computer Graphics With Multimedia
Course Outcomes
CO-1. Acquire familiarity with the concepts and relevant mathematics of computer graphics.
CO-2. Ability to implement various algorithms to scan, convert the basic geometrical primitives, transformations,area filling, clipping.
CO-3. Describe the importance of viewing and projections.
CO-4. Ability to design basic graphics application programs.
CO-5. Familiarize with fundamentals of animation and Virtual reality technologies
CO-6. Be able to design applications that display graphic images to given specifications.
CO-7. To understand a typical graphics pipeline.

Paper 6-El-3: Advanced Data Structures
Course Outcomes
CO-1. To be familiar with fundamental data structures and with the manner in which these data structures canbest be implemented; become accustomed to the description of algorithms in both functional and procedural styles
CO-2. To have knowledge of complexity of basic operations like insert, delete, search on these data structures.
CO-3. Ability to choose a data structure to suitably model any data used in computer applications.
CO-4. Design programs using various data structures including hash tables, Binary and general search trees,heaps, graphs etc.
CO-5. Ability to assess efficiency tradeoffs among different data structure implementations.
CO-6. Implement and know the applications of algorithms for sorting, pattern.

Paper 7: Software Engineering
Course Outcomes
CO-1. Students will get foundation of software engineering, various process models and can apply the newmodels in development process.
CO-2. Students will have effective communication and interaction skills for requirement engineering tasks.
CO-3. Students can apply design principles for various types of software and designing object oriented softwareusing UML tools.
CO-4. Students can implement testing strategies thoroughly using testing tools.
CO-5. Students will understand the need of lifelong learning and adapt to new software engineering concepts.

Paper 8: Open Source Software Development
Course Outcomes
Ability to install and run open-source operating systems. Ability to gather information about Free and Open Source Software projects from software releases and from sites on the internet. Ability to build and modify one or more Free and Open Source Software packages. Ability to use a version control system and to interface with version control systems used by development communities. Ability to contribute software to and interact with Free and Open Source Software development projects**.**

Paper 9: Unix Administration & Shell Scripting
Course Outcomes
CO-1. Describe the architecture and features of UNIX Operating System and distinguish it from other OperatingSystem
CO-2. Demonstrate UNIX commands for file handling and process control

CO-3. Write Regular expressions for pattern matching and apply them to various filters for a specific task
CO-4. Analyze a given problem and apply requisite facets of SHELL programming in order to devise a SHELLscript to solve the problem.

Semester-3

Paper 1: Digital Forensics

Course Outcomes

CO-1. Explain the origins of forensic science
CO-2. Understand and utilize the fundamental concept of computers and digital forensics
CO-3. Students shall be prepared for various technologies/tools to combat and investigate computer andcybercrimes.
CO-4. The first part deals with fundamentals of computer architecture, importance of hardware , software , input/output devices, processor, memory, storage devices, then make you learn about various file systemsand encoding and decoding in computers.
CO-5. The second half of the syllabus is dedicated to various types of cyber-crimes and its investigation andfinally we would understand some of the challenges faced in present scenario.
CO-6. Explain the role of digital forensics and the relationship of digital forensics to traditional forensic science,traditional science and the appropriate use of scientific methods
CO-7. Outline a range of situations where digital forensics may be applicable.

Paper 2 : Python Programming

Course Outcomes

CO-1. Develop and execute simple Python programs.
CO-2. Structure a Python program into functions.
CO-3. Using Python lists, tuples to represent compound data
CO-4. Develop Python Programs for file processing

Paper 3: Cloud Computing

Course Outcomes

CO-1. Analyze the trade-offs between deploying applications in the cloud and over the local infrastructure.
CO-2. Compare the advantages and disadvantages of various cloud computing platforms.
CO-3. Deploy applications over commercial cloud computing infrastructures such as Amazon Web Services,Windows Azure, and Google App Engine.
CO-4. Program data intensive parallel applications in the cloud.
CO-5. Analyze the performance, scalability, and availability of the underlying cloud technologies and software.
CO-6. Identify security and privacy issues in cloud computing.
CO-7. Explain recent research results in cloud computing and identify their pros and cons.
CO-8. Solve a real-world problem using cloud computing through group collaboration.

Paper 4-El-1: Data Warehousing & Data Mining

Course Outcomes

CO-1. Understand data mining principles and techniques: Introduce DM as a cutting edge business intelligencemethod and acquaint the students with the DM techniques for building competitive advantage through proactive analysis, predictive modelling, and identifying new trends and behaviors. Learning objectives include.
CO-2. Building basic terminology.
CO-3. Learning how to gather and analyze large sets of data to gain useful business understanding.
CO-4. Learning how to produce a quantitative analysis report/memo with the necessary information to makedecisions.

CO-5. Describing and demonstrating basic data mining algorithms, methods, and tools
CO-6. Identifying business applications of data mining
CO-7. Overview of the developing areas - web mining, text mining, and ethical aspects of data mining.

Paper 5: Machine Learning

Course Outcomes

CO-1. Differentiate between supervised, unsupervised machine learning approaches
CO-2. Ability to choose appropriate machine learning algorithm for solving a problem
CO-3. Design and adapt existing machine learning algorithms to suit applications
CO-4. Understand the underlying mathematical relationships across various machine learning algorithms
CO-5. Design and implement machine learning algorithms to real world applications.

Paper 6-El-3: Big Data Hadoop

Course Outcomes

CO-1. Ability to identify the characteristics of datasets and compare the trivial data and big data for variousapplications.
CO-2. Ability to select and implement machine learning techniques and computing environment that are suitablefor the applications under consideration.
CO-3. Ability to solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues.
CO-4. Ability to understand and apply scaling up machine learning techniques and associated computingtechniques and technologies.
CO-5. Ability to recognize and implement various ways of selecting suitable model parameters for differentmachine learning techniques.
CO-6. Ability to integrate machine learning libraries and mathematical and statistical tools with moderntechnologies like hadoop and map reduce.

Paper 7-El-4: Computer Vision & Digital Image Processing

Course Outcomes

CO-1. Describe general terminology of Digital Image Processing and the roles of image processing systems in avariety of applications.
CO-2. Describe the basic issues and the scope (or principal applications) of image processing.
CO-3. Explain representation and manipulation of digital images, image acquisition, reading, writing,enhancement, displaying and segmentation and image Fourier transform.
CO-4. Various types of images, intensity transformations and spatial filtering.
CO-5. Understand the basic theory and algorithms that are widely used in digital image processing.
CO-6. Understand image analysis algorithms.
CO-7. Understand current applications in the field of Image Processing.
CO-8. Develop hands-on experience in using computers to process images.

Paper 8-El-1: Compiler Design

Course Outcomes

CO-1. After completion of this course each student will implement a compiler for a small programming language.
CO-2. Define the phases of a typical compiler, including the front- and backend.
CO-3. Identify tokens of a typical high-level programming language; define regular expressions for tokens anddesign; implement a lexical analyzer using a typical scanner generator.
CO-4. Explain the role of a parser in a compiler and relate the yield of a parse tree to a grammar derivation;design and implement a parser using a typical parser generator.
CO-5. Apply an algorithm for a top-down or a bottom-up parser construction; construct a parser for a smallcontext-free grammar.

CO-6. Explain the role of a semantic analyzer and type checking; create a syntax-directed definition and anannotated parse tree; describe the purpose of a syntax tree.
CO-7. Explain the role of different types of runtime environments and memory organization for implementationof typical programming languages.
CO-8. Describe the purpose of translating to intermediate code in the compilation process.
CO-9. Design and implement an intermediate code generator based on given code patterns.
CO-10. Understand the major phases of compilation and to understand the knowledge of Lex tool & YAAC tool.
CO-11. Lexical analyzer implementation, Parse tree construction, Compute FIRST and FOLLOW set, implementsymbol table construction, etc.
CO-12. Apply for various optimization techniques for dataflow analysis.

Paper 4-El-2: Artificial Intelligence
Course Outcomes

CO-1. Explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence.
CO-2. Identify problems that are amenable to solution by AI methods, and which AI methods may be suited tosolving a given problem.
CO-3. Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem,as a constraint satisfaction problem, as a planning problem, etc).
CO-4. Identify appropriate AI technique for the problem at hand.
CO-5. Compare strengths and weaknesses of different artificial Intelligence techniques.
CO-6. Represent knowledge in Prolog and write code for drawing inferences.
CO-7. Sensitive towards development of responsible Artificial Intelligence and limitations of current ArtificialIntelligence techniques.

Paper 5-El-3: Cyber Laws And Information Security
Course Outcomes

CO-1. Understand the constraints of cyber law and security concern.
CO-2. Understand the importance of information security and how can manage the security of network as well asdata.
CO-3. Know the working of security models and applied algorithms.

Paper 6-El-4: Bioinformatics
Course Outcomes

With a working knowledge of the practical and theoretical concepts of bioinformatics, you will be well qualified to progress onto advanced graduate study. The portfolio of skills developed on the programme is also suited to academic research or work within the bioinformatics industry as well as range of commercial settings.

Department of PG Studies and Research in Physics And Electronics

Programme Offered

1. **M.Sc. Physics**
2. **M.Sc. Electronics**
3. **Ph.D. Physics & Electronics**

Semester-1

Paper 1 Mathematical Methods

Course Outcomes

CO-1. Learn about the concept and uses of Tensors and Tensor algebra (Null tensor, addition, subtraction, innerproduct, outer product).

CO-2. Familiarized with different special functions like Associated Legendre Polynomials, Laguerre's Polynomials, etc. and their solutions in solving different physical problems.

CO-3. To obtain knowledge of Fourier and Laplace Transforms in solving different problems of Mechanics andElectronics etc.

CO-4. Know about Green Function and its application in solving non homogeneous differential equations.

CO-5. Solve different physical problems which contain complex variables and implementation of complex variable for calculation of integrals, and also able to expand functions in Taylor's and Laurent's series. Knowledge of theorems of residues and contour integration.

CO-6. Obtain the basic knowledge of Group theory and its applications. This theory is also used to describe the crystal symmetry and electronic structure of crystals

Paper 2 Classical Mechanics

Course Outcomes

CO-1. Newtonian mechanics, Virtual work, DÁlembert's principle, Formulation of Lagrangian mechanics and problem solving with the help of it. Compare the formulation of Hamiltonian and Lagrangian mechanics and solve the problems of classical and relativistic mechanics

CO-2. Generating function, canonical transformation & Poisson brackets.

CO-3. Kepler problem, Legendre Transformations, Hamilton's equation, Canonical transformations and generating functions. Properties of Poisson's bracket.

CO-4. Understanding small oscillations, Solve the equations of coupled oscillator and to examine the twocoupled pendulums, and double pendulum related problems. Understanding rotating coordinate system, coriolis force and Eulerian coordinate system

CO-5. Understand space and time symmetries, covariant and four-dimensional formulation, covariant

CO-6. Lagrangian and Hamiltonian with examples.

Paper 3 Electronic Devices

Course Outcomes

CO-1. Understand working of Different Semiconductor devices like JFET, BJT, MOSFET & MESFET (Construction, Working Principles and V-I characteristics) and their applications.

CO-2. Understand photonic devices like LDR, LED and Diode Lasers along with their applications.

CO-3. Develop a comprehensive understanding of contemporary integrated circuits both saturated and unsaturated logic families like RTL, DTL, TTL TTC, ECL etc. Operational amplifier design and applications like adder, subtractor, differentiator function generator etc.

CO-4. Develop an insight into the physics and technology that go into the development of various memory devices using semiconductors and other electronic devices using elctro-acoustomagneto-optic effects. LCD. Piezoelectric effect based devices.

CO-5. Enjoy the new and stimulating ideas behind the future novel devices and also appreciate the link

CO-6. between electronics and the quantum effects that come into play.

Paper 4 Computational Methods And Programming

Course Outcomes

CO-1. Understand the basics of computer and BASIC programming. Estimate errors while solving equations and effectively use methods like matrix inversion, Gauss elimination and LU decomposition to solve linear equations.

CO-2. Understand the methods of linear and non-linear algebraic equations, simultaneous linear equations

CO-3. Enrich a given set of data points using interpolation methods, Newton's divided difference, etc.

CO-4. Numerically differentiate and integrate expressions and solve equations from physics.

CO-5. Enriched with various computational methods like Euler, Newton-Raphson and Runge-Kutta etc.to solveproblems. Idea of random variables and Monte Carlo evaluation

Paper 5 Physics of electronics devices & fabrication of Intergrated circuits and systems

Course Outcomes

CO-1. Understand the basic concepts of various Inorganic and Organic Semiconductor materials for electronicdevice applications in modern electronic industry.
CO-2. Understand the carrier transport in semiconductors. Drift, Diffusion, Conductivity measurement, Directand Indirect Band gap semiconductors.
CO-3. Analyze various junction devices: p-n junction, Schottky and MOS devices..
CO-4. Understand fabrication techniques of integrated devices such as thin film, vapor deposition, etching,lithography ,sputtering etc.
CO-5. Evaluate and understand behavior of semiconductor Electronics and their applications in design of variouscircuitry.

Semester-2

Paper 1 Quantum Mechanics- I

Course Outcomes

CO-1. To understand and apply principles of Quantum mechanics for understanding the physical systems inquantum realm.
CO-2. Importance of quantum mechanics compared to classical mechanics at microscopic level.
CO-3. To formulate the Heisenberg & Dirac formulation of quantum mechanics
CO-4. To solve the linear harmonic oscillator and hydrogen-like atom problems using Dirac formulation
CO-5. To demonstrate angular momentum operators associated with spherical and symmetrical systems andvarious tools to calculate Eigen values and total angular momentum of particles.

Paper 2 Statistical Mechanics

Course Outcomes

CO-1. To use various ensemble theories to calculate the thermodynamic properties of different systems.
CO-2. To compute properties of systems behaving as ideal Fermi gas or ideal Bose gas.
CO-3. To describe the features and examples of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics.
CO-4. The student should be able to know Cluster expansion, Viril equation, Ising model and Landau theory.
CO-5. Understand the thermodynamic fluctuations, Langevin theory, Fokker-Planck and Onsager relations.

Paper 3 Electrodynamics And Plasma Physics

Course Outcomes

CO-1. Understand and apply the laws of electromagnetism and Maxwell's equations. Basics of electrostatics andmagneto statics Solve the electric and magnetic fields problems for different configurations.
CO-2. Radiations by moving charges and retarded potentials. Fields of accelerated charged particle with differentvelocity. Angular distribution of radiated power. Abrahm- Lorentz method.
CO-3. Understand 4Vectors and Lorentz transformation in 4- dimensional space, relativistic transformation properties of E and H.
CO-4. Understand the plasma oscillations and its limit, Debye screening.
CO-5. Know Magneto hydrodynamic equations, magnetic diffusion, MHD flow, Pinch effect MHD waves.

Paper 4 Condensed Matter Physics

Course Outcomes

CO-1. Able to understand the X-ray diffraction and its use in crystal structure, Concept of reciprocal lattice,defects in solids and their observation.
CO-2. Able to understand the electronic properties of solids and understand the difference in the classical freeelectron theory, quantum free electron theory and the nearly free electron model.
CO-3. Able to understand types of polarizabilities, Hall effect and quantum hall effect.Superconductivity

andhigh Tc superconductors.

CO-4. Able to understand ferromagnetism and its theory, Curie-Weiss law, magnetic order.

CO-5. Able to understand optical properties, Kramer-Kronig relations, cyclotron resonance, Raman effect

Paper 5 Informatics

Course Outcomes

CO-1. Use Fourier series and transformations as an aid for analyzing experimental data.

CO-2. Understand the principles of fiber optics communication in different media

CO-3. Intended to enrich the learner about transmission types, codes and communication. Modems and Transmission media.

CO-4. Introduction to UNIX/ LINUX, Programme with the C/ C++, Data types, Functions and Program structures.

CO-5. Able to know Object oriented concepts, the languages used to delivered web enabling technologies.

Semester-3

Paper 1 Quantum Mechanics – II

Course Outcomes

CO-1. Understand Approximation methods for bound states.

CO-2. Understand the Time Independent Perturbation Theory and its application.

CO-3. Understand theory of scattering, Born approximation and partial waves, Scattering by rigid sphere andspherically symmetric potential, Pauli spin matrices.

CO-4. Understand the central concept and principles of relativistic Quantum Mechanics.

CO-5. Understand Klein- Gordon equation, Dirac's relativistic equation, Zitterbewegung Dirac relativistic equation.

Paper 2 Nuclear And Particle Physics

Course Outcomes

CO-1. The method and analysis of Scattering process & understand structure and properties of nuclei, radioactivedecay, and different types of nuclear reactions.

CO-2. Compare various nuclear models and properties of the nucleus & to study the nuclear structure properties.

CO-3. Various nuclear radiation detectors like Betatron and Synchrotron & describe various types of nuclearreactions and their properties.

CO-4. Nuclear decay processes and theory for beta and gamma decay.

CO-5. The nature, interaction etc. of the elementary particles and origin, nature of Cosmic rays. Bhabha-Heitlertheory.

Paper 3 Condensed Matter Physics – I

Course Outcomes

CO-1. Mechanism of plastic deformation, Dislocations and their stress and strain fields, Multiplication, Dislocations in different types of lattices.

CO-2. Concept of Dislocation interaction and partial dislocations, Demonstrate techniques of microscopy fortheir observation. About elementary concepts of surface crystallography.

CO-3. Idea about thin films, their surface topography & electrical properties of thin films.

CO-4. Optical properties of solids, direct and indirect transitions, phonon absorption, skin effect.

CO-5. Able to define the concepts of Phonons and to understand the lattice dynamics of mono and diatomiclattices, Debye-Waller factor, UmKlapp process, interaction of electron and phonons with photon.

Paper 4 Electronics - I

Course Outcomes

CO-1. Know the basic phenomenon of communication, modulation and demodulation and their types.Knowledge of microwave transmission and parameters affecting along with Satellite communication and geostationary system.

CO-2. Gain knowledge about working, design and application of microwave devices and systems. Idea of Radar and Antenna system and related parameters.

CO-3. Enrich the learner about Microwave transmission lines and waveguides. Through it students would be able to understand the propagation of microwave through transmission lines and Waveguides.
CO-4. Get knowledge of 8085 microprocessor architecture and its functioning and ability to understand and design the microcontroller and microprocessor based systems.
CO-5. Know the principle and working concepts of Interfacing devices like 8155/8255 and 8257 DMA and 8279 systems. Methods for digital and analog conversions.

Paper 5 Materials Science – I
Course Outcomes

CO-1. Able to qualitatively describe the bonding scheme and its general physical properties, as well as possibleapplications.
CO-2. Given a binary phase diagram, what microstructures can be obtained by suitable thermal treatments?examples for near-equilibrium and far-from-equilibrium processing.
CO-3. Able to identify phases (and their abundance), phase rule, and invariant reactions, as well as identifysimple microstructures that can occur (including possible effects on mechanical response).
CO-4. Demonstrate techniques of microscopy for investigation on the nanometer and atomic scales
CO-5. Ability to know the basic instruments in materials science and engineering to characterize the structuralproperties.

Paper 6 Computational Physics – I
Course Outcomes

CO-1. General concepts and structure of C++ programming for developing computational methods.
CO-2. Review of instruments and related electronics used in computer controlled instrumentation. Idea of 8085 and 8086 based microcomputer system their programming and interface.
CO-3. Computation and the evolution of phase space as various parameters are changed.
CO-4. Solving problems related to propagation of elastic waves in solids, Phase trajectory of chaotic pendulum, Poincare section etc. Using computational techniques.
CO-5. To explore application of computational physics in frontier areas of Electronics such as electromagnetic oscillation in LC circuit, Fourier analysis in harmonic waves, circuits having LCR, acceleration of charged particle in cyclotron etc.

Semester-4

Paper 1 Atomic And Molecular Physics
Course Outcomes

CO-1. Able to deal with problems related to Hydrogen-like atomic spectra and alkali metals.
CO-2. Understand coupling schemes and hyperfine structures.
CO-3. Able to know the features of molecular quantum mechanics such as Thomas Fermi model, Hartree andHartree-Fock methods.
CO-4. Able to understand the basics of microwave spectroscopy with rotation of diatomic molecules.
CO-5. Able to understand the basics of IR spectroscopy with vibrating diatomic molecules and vibrating – rotatormolecule.
CO-6. Understand the behavior of atomic and molecular spectra with UV, Visible, Raman, Photoelectron, Photo-coustic, NMR and Mossbauer spectroscopies.

Paper 2 Physics Of Lasers Its Applications
Course Outcomes

CO-1. Evaluate conditions for lasing phenomenon and properties of the laser.
CO-2. To understand various types of Lasers and their applications.
CO-3. To know about Laser fluorescence and Raman scattering and their applications.
CO-4. To understand the Optical fibers and use of Lasers in light wave communication along with the engineering and medical applications.

CO-5. To understand the basics of crystal optics and propagation of light ,electro- optical effects, laser inducedmultiphoton processes, parametric generation, optical stability etc.

Paper 3 Nonlinear Dynamics

Course Outcomes

CO-1. Understand basic knowledge of nonlinear dynamical systems, their equations, bifurcations, Poincare section.

CO-2. Understand dissipative systems, noninvertible maps, attractors, intermittency, Lyapunov exponents, Henon map and Fractals and their geometry.

CO-3. Learn skills by solving problems on solving nonlinear problems using numerical methods.

CO-4. Understand Hamiltonian Systems, Integrability, Liouvill's theorem, perturbation techniques, Concept ofChaos and stochasticity.

CO-5. Understand advanced topics like Solitons, Sine Gordon and Kartweg devries, Baclund transformation,magnetic monopole and Vortex solitons.

Paper 4 Physics Of Nanomaterials

Course Outcomes

CO-1. Understand concept of quantum confinement, electron confinement in deep square well and two and threedimensions, idea of quantum well, dot and wires.

CO-2. Understand quantum well and super lattices, techniques of fabrication of MQW and SL structures.Acquire knowledge of basic approaches like Bottom up and Top down to synthesize inorganic colloidalnanoparticles and their self-assembly in solution and surfaces, Physical properties of nanoparticles.

CO-3. Understand and describe the use of unique optical properties of nanoscale metallic structures usingLuminescence and Raman scattering.

CO-4. Understand electrical properties, magnetic materials and stability of nano structures, Various applicationsand perspectives of nanotechnology in the development of value added new products and devices.

Paper 5 Condensed Matter Physics – II

Course Outcomes

CO-1. Able to differentiate between type-I and type-II superconductors and their theories and explain the behavior of superconductors, applications and high temperature superconductivity.

CO-2. Understand the point defects, shallow impurity states and color centers.

CO-3. Understand structure and symmetries of liquid crystals, quasi crystals, Penrose lattice.

CO-4. Understand the physical and chemical properties of carbon nanotubes, methods of synthesis of nanostructures, quantum size effect.

CO-5. Understand the crystalline, non- crystalline materials, disorder in condensed matter, atomic correlation,glasses and liquids, Anderson model, and amorphous semiconductors

Paper 6 Electroincs – II

Course Outcomes

CO-1. Understand digital communication systems such as PM, PAM, PCM, Delta modulations.

CO-2. Understand digital modulation techniques like BPSK, DPSK, QPSK, PSK FSK etc.

CO-3. Understand noise in pulse code and delta modulation systems, various noise parameters, signal to noiseratio.

CO-4. Understand computer communication systems, types of networks, design of networks, mobile and satellitenetwork.

CO-5. Understand 8086 architecture and functioning, its assembly language programming, 8086 connectiontimings, Interrupts, digital and analog interfacing, elementary idea of Pentium processors

Paper 7 Materials Science – II

Course Outcomes

CO-1. To understand various mechanical properties and mechanism responsible for it. Failure of materials.

CO-2. To understand the dielectric behavior and polarization mechanism of materials.

CO-3. To understand the Polymer electrets and their applications, mechanism like Poole Frenkel, Richardson

Schottky, tunneling and hopping inside the materials.
CO-4. To understand piezo, pyro, and ferro electric materials and their applications, to know about thin films, their deposition techniques, and electrical conduction, their magnetic and optical properties.
CO-5. To understand ceramics, glasses, and modern materials, their preparation and applications, modern materials like, liquid and quasi crystals, fullerenes, GMR materials, composite materials, bio polymers and conducting polymers.

Paper 8 Computational Physics – II
Course Outcomes
CO-1. Get a wide knowledge of Mathematica programming, its commands, numerical calculations like Factorial,exponential etc. Factorial, exponential & polynomials, Plots of data functions.
CO-2. To solve quantum mechanical problems in computational methods, like Schrodinger equations
CO-3. Solve propagation of free waves and through one dimensional well.
CO-4. Use computational methods to simulate phonon dispersion, density of states, two dimensional free electrons.
CO-5. Use simulation techniques to solve molecular dynamics with random oscillations, Monte Carlo and Isingmodel, magnetic susceptibility.

M. Sc. Electronics

Programme Outcomes
- Cater to the expanding demand for skilled manpower, which is equipped with an understanding of modern research, protocols and ethics involving related to Electronics and Communication Electronics.
- Apply broad understanding of impact of electronics technology in a global, economic, environmental and societal context and demonstrate the knowledge of, and need for sustainable development.
- Able to conduct experiments using a variety of scientific equipment with minimum guidance and design a circuits for a specific application.
- Build, manage and lead a team to successfully complete a project andcommunicate across teams and organizations to achieve professional objectives.
- Communicate effectively on complex electronics technology related activities with the scientific community in particular and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Programme Specific Outcomes

PSO-1. Students are expected to acquire deep knowledge of electronics to design a variety of components and systems for applications including signal processing, image processing, communication, networking, embedded systems, VLSI and control system.
PSO-2. Have fundamental and advanced level knowledge in Electronics so as to handle the computational tools andScientific software.
PSO-3. Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics andCommunication Electronics problems.
PSO-4. Have necessary skills and expertise in field of research and development and be able to apply experimentalexpertise in basic as well as advanced areas of Electronics.
PSO-5. Students will be capable of oral and written scientific communication and will prove that they can think criticallyand work independently

Semester-1

Paper 1 Electromagnetic Fields And Waves
Course Outcomes
CO-1. About basic phenomenon like electric field intensity, Gauss law and its applications, Divergence theorem etc.
CO-2. To obtain knowledge of boundary value problems and obtain their solution using keys like Laplace's and Poission's equations, Bio savert law, Stokes theorem, Scalar and magnetic vector potential and multi pole expansion.

CO-3. To understand Maxwell's equations, their integral form and uniform plane wave, basic knowledge about groups and types, skin effect and standing wave ratio.
CO-4. To obtain information about Transmission lines and electromagnetic radiations for accelerated charge and angular distribution of power radiation.
CO-5. To develop an understanding of relativistic electrodynamics by discussing transformation properties, Four vector and Lagrangian and Hamiltonian.

Paper 2 Properties Of Electronic Materials

Course Outcomes

CO-1. Conductivity, reflection and absorption properties, dielectric constant and polarizability, phase transition,piezoelectricity.
CO-2. Optical constant and their physical significance, Kramer kronig relations, colour of material, properties ofnano materials.
CO-3. Various theories related to types of magnetism, adiabatic demagnetization, magnetic domains.
CO-4. Electron and hole transport in semiconductor, experimental methods to study the electrical parameters,intrinsic and extrinsic semiconductors.
CO-5. Construction and working of semiconductor devices, JFET, MOSFET, negative conductance devices,IMPATT and TRAPATT and quantum well structure.

Paper 3 Signals And Systems

Course Outcomes

CO-1. Discuss the signal models, types, and functions, representation of systems, properties, stability andimpulse response of a fixed linear system.
CO-2. Develop a comprehensive understanding of Fourier series and Transforms, Transfer functions, distortionless systems, Frequency translation, modulation, convolution etc., window functions and Gibbs phenomenon.
CO-3. Develop an insight into Laplace transform, various theorems related to transform of derivatives, integral,Laplace transform of convolution of two signals, network theorems (Thevenin and Norton's), Loop and node analysis.
CO-4. To understand and apply transfer function and frequency response of system for linear lumped stablesystems, asymptotic and marginal stability, RouthHurwitz criterion, Bode plots etc.
CO-5. Evaluate and understand the behavior of discrete time signals and systems, analog to digital conversion,state variable concept, Frequency domain solution of state equations for discrete time systems, related examples, inverse Z transformation by the immersion signal.

Paper 4 Computational Methods in Electronics

Course Outcomes

CO-1. Know the various operating systems like DOS, OSII, GUI in general also multitasking UNIXshell, text processingin UNIX environment.
CO-2. Aware the elementary idea about compilers, interpreters, assignments and functions.
CO-3. Understand the interative methods, Matrix inversion, Eigen values and Eigen vectors of matrices.
CO-4. Enriched with numerical solution of ordinary Differential Equation, predictor and corrector methods.
CO-5. Understand the basic of oscillations in LC, RC and LCR circuits, Harmonic waves, charging and discharging incircuit with inductor capacitor and registers.

Paper 5 Digital Design And Applications

Course Outcomes

CO-1. Have an idea about number systems, logic gate characteristics and construction. Working and characteristics oflogic families for several applications.
CO-2. Numerically understand the Boolean Algebra, simplification of K- map and applications designing of variousdevices.
CO-3. Analyze various arithmetic circuits like Half adder, digital comparator, parity generator/ checker etc.
CO-4. Understand fabrication techniques of sequential circuits like flip flop counters and types.
CO-5. Evaluate and understand behaviour of shift registers and their types and applicability in electronic circuits.

Semester-2

Paper 1 Analog And Digital Circuits

Course Outcomes

CO-1. Understand the construction and working of Operational Amplifier including all parameters and specifications.
CO-2. Know the linear applications of Operational Amplifier and general idea about instrumentation amplifier and filters.
CO-3. Discuss and analyze the nonlinear applications of OP-AMP in the form of various devices.
CO-4. Formulate the Boolean functions, simplification of k map and generalization of combinational circuits
CO-5. Discuss the synchronous sequential machines, Mealy and Moore model machines, state table and transition diagrametc.

Paper 2 Optical And Quantum Electronics

Course Outcomes

CO-1. To know the general mechanism of photoconductivity devices like photodetectors, phtotransducer, photomultipliertubes, impulse and frequency response etc.
CO-2. Know the mechanism of Luminescence, various models like configuration, coordinate and energy band model.
CO-3. To understand the outcomes of various effects discuss the mechanism related with laser.
CO-4. To understand the construction and working of types of LASER. Q switching.
CO-5. Understand the various applications of laser and applicability of nonlinear optics.

Paper 3 Network Analysis And Synthesis

Course Outcomes

CO-1. Understand the star and delta conversion, source transformation. Mesh and node analysis of electric circuits andnetwork theorems.
CO-2. Know the coupled circuit's waveform, synthesis using functions their types and concept of network graph andnetwork transformation.
CO-3. To explore application of network functions and time domain behaviour from the plots and understand the Nyquiststability criterion.
CO-4. To gain knowledge on two port network analysis with the use of parameters and their relationship.
CO-5. Solve the problems related with network synthesis by LCR and R-C cauers forms

Paper 4 Microprocessor and Object Oriented Programming

Course Outcomes

CO-1. Microprocessor architecture and its operation, memory interfacing ,writing assembly language programs.
CO-2. Basic interfacing concepts, interfacing about displays and input devices and Programmable interrupt.
CO-3. Pin description, operation modes of resistors and internal architecture of 8086 and 8088 microprocessor, segmentregister and memory segmentation.
CO-4. Instruction set of 8085/8086 various data transfer instructions.
CO-5. Introduction to C++ and object oriented programming, data Hiding and encapsulation ,stack and queues.

Paper 5 Microwave Electronics

Course Outcomes

CO-1. Learn about the concept and uses of Microwave, generation of microwave by conventional vacuum tube.
CO-2. Know about bipolar and field effect transistor, gun oscillator and IMPATT and TRAPTT mode of operation.
CO-3. To obtain the basic knowledge of integrated circuit design, substrate materials, conductor and dielectric.
CO-4. To impart understanding of waveguide, Impedance Matching , element ,tees and magic tees.
CO-5. Develop a comprehensive understanding of microwave measurement techniques and devices.

Semester-3

Paper 1 Integrated Circuit Technology

Course Outcomes

CO-1. Purification : Different techniques, redistribution of dopants and oxidation, induced defects ,general idea ofdiffusion mechanism.

CO-2. The method of metallization, selectivity and control rate of eatch rate and edge profile.
CO-3. Basic Monolithic integrated circuits, layout making and etching, packing and characteristics of integrated circuitcomponents.
CO-4. Construction and characteristics of Differential and Operational amplifier, calculation of Operational Amplifierparameters, slew rate and methods of improvising slew rate.
CO-5. Op-Amp working modes, linear and nonlinear circuits using Operational Amplifier and their analysis.

Paper 2 Microwave And Digital Communications
Course Outcomes

CO-1. Ground space wave, Sky wave propagation, advantage and disadvantage of microwave transmission satellite systemetc.
CO-2. Principle and operation of klystron, magnetrons travelling wavetube Impatt diode. Gun & Trapatt diode.
CO-3. Microwave system, repeater system, microwave antennas, Radar system and Satellite system.
CO-4. Pulse modulation system, sampling, Companding noise in system and various types of modulation.
CO-5. Various digital modulation techniques including BPSK, DPSK, QPSK, QASK and BFSK, internet and ATMnetwork, Bluetooth and mobile computing

Paper 3 Control Systems
Course Outcomes

CO-1. Familiarized with the loop control Servo mechanism mathematical methods of physical system.
CO-2. Standard test signals, types of feedback, control system, design specification, effect of adding a system zero to asystem.
CO-3. Routh- Hurwitz stability criterion, Routh array construction rules, all pass and minimum phase systems.
CO-4. Stability criterion assessment of relative stability gain margin and phase margin closed-loop frequency response.
CO-5. The design problem tuning of PID controller feedback compensation behaviour of nonlinear system, phase planemethod, general idea of analysis.

Paper 4 Electronics Instrumentation & Measurements
Course Outcomes

CO-1. Able to understand the concept of measuring concept of measurement error in measurement type of errorsspecification and testing of dynamic response.
CO-2. Able to know the working types and characteristics of transducers, measurement of velocity, force, strength, speed,flow, humidity and thickness etc.
CO-3. Understand the principle working and basic characteristics of digital instruments like DC amplifier isolationamplifiers and Signal Processing circuits i.e., peak detectors, RMS converter UPS.
CO-4. Acquire knowledge of basic approaches of Advanced measuring instruments like digital multimeter frequencymetre and electrometer etc.
CO-5. Understand and describe the use of Biomedical electronic instruments and measurements like biochemicaltransducers cardiovascular and pacemakers.

Paper 5 VHDL
Course Outcomes

CO-1. Know hardware abstraction, entity declaration, configuration and package declaration.
CO-2. Understand the operators identifiers resolution functions.
CO-3. Get familiarized with modeling state, behavioral modeling and data flow modeling etc.
CO-4. Explain why configuration architecture configuration subprograms and overloading.
CO-5. Discuss read-only memory and Programmable Logic devices.

Semester-4

Paper 1 Microcontroller And Embedded Systems
Course Outcomes

CO-1. Understand architecture, specialties applications of embedded system, examples and categories of embeddedsystems challenges and issue in embedded software, memory advance hardware, etc
CO-2. Gain knowledge about Assembly language programming, concept of arithmetic and logic instructions jump loopand call instructions

CO-3. To understand architecture internal structure programming and addressing modes board controller 8279, interfacingof 8-bit A/D and D/ A converters.
CO-4. To know interrupt programming types of interrupt, Stepper Motors, traffic light control system with software development.
CO-5. To able to know registors, resistor file structure, features of a RISC and CISC architecture, comparison andadvantages.

Paper 2 Cellular And Satellite Communication
Course Outcomes

CO-1. Understand basic knowledge of mobile and personal computers instrumentation for lab testing
CO-2. Learn skills by solving problems on pseudo noise sequence, hopping systems, carrier to noise and carrier tointerference ratio.
CO-3. Know specialized MAC multiple access with collision avoidance avoidance and mobile services
CO-4. Understand principle of satellite communication, satellite link module handover, Earth station configuration etc.
CO-5. Illustrate condition of INTELSAT, VSAT ,MAST, lower earth orbit satellite personal communication networks.

Paper 3 Digital Signal Processing
Course Outcomes

CO-1. The digital signals and their processing, sampling of continuous time signals Z transform of finite length sequence,right side left sided and both sided multiplication and convolution of sequences.
CO-2. Representation of periodic sequences, sampling the z transform, linear convolution using DFT, general introductionof FET, Goertzel algorithm , FET with different radix.
CO-3. Metric representation of digital networks, networks for linear phase FIR systems, parameter. quantization effects.
CO-4. Design examples of digital filters using impulse invariance and bilinear transformations, computer-aided design ofIIR digital filters, properties of FIR/nonrecursive digital filters comparison of IIR and FIR filters.
CO-5. Speech signals, analysis, compression and coding voice privacy application to radar and image processingcontinuous discrete wavelet transform.

Paper 4 Internet, Web Technology And Management
Course Outcomes

CO-1. Understand the network system, Topology, Modems Routers Gateways.
CO-2. Evaluate the server and client connectivity, world-wide-web(www) , FTP and Telent, ATM virtual and privatenetworks.
CO-3. Understand Ethernet basics, Token passing protocols, Netware protocols, NOVEL Netware, simple networkmanagement protocol.
CO-4. Know the mechanism and features of URL's, DHTML, JAVA scripts interpreter plug-ins protocols.
CO-5. Analyze and discuss simple JavaScript and HTML, active page, working with images working in Frames the JAVAScript URL.

Paper 5 Nano-Electronics
Course Outcomes

CO-1. Understand the emergence of NanoTechnology, concept of quantum confinement, top-down and bottom-upapproaches for preparation of Nano structures.
CO-2. Know the tunneling structure, modulation doping of hetrostructures, carrier excition dynamics, ballistic transport,spintronics.
CO-3. Learn about various of heterojunctions FETs, three terminal electronic devices, multiple QW laser.
CO-4. Understand Nano grained structure, polymer nanocrystals. AC power electroluminescence and display devices.
CO-5. Illustrate doping of Si oxidation of silicon, methods of organic layers in BIOMEMS, Plasma sparying.

University Institute of Management

Programme Offered

1. **B.Com. (Hons)**
2. **M.B.A. (Marketting Management)**
3. **M.B.A. (Core Subjects)**
4. **Ph.D.**

B.Com. (Hons)

Semester-1

Paper 1 F.C.I (MoralValues &Languages)
Course Outcomes
Students will gain knowledge on thefollowing topics:-

- **CO-1.** Moral values and language
- **CO-2.** Learning from context
- **CO-3.** Language skills

Paper 2 F.C.II (Development of Entrepreneurship)
Course Outcomes
Students will gain knowledge on the following topics: -

- **CO-1.** Entrepreneurship
- **CO-2.** Motivation
- **CO-3.** Project report evaluation
- **CO-4.** Economic management
- **CO-5.** Production management
- **CO-6.** Regulatory institutions

Paper 3 Environmental Studies
Course Outcomes
Students will gain knowledge on the following topics: -

- **CO-1.** Ecosystem
- **CO-2.** Naturalr esources
- **CO-3.** Biodiversity
- **CO-4.** Environmental pollution
- **CO-5.** Social issue related to environment

Paper 4 Financial Accounting
Course Outcomes
Students will gain knowledge on the following topics: -

- **CO-1.** Accounting
- **CO-2.** Final accounts
- **CO-3.** Hire purchase
- **CO-4.** Branch Accounting
- **CO-5.** Department Accounting

CO-6. Partnership Accounting

Paper 5 Business Law

Course Outcomes

CO-1. Students will gain knowledge on the following topics: -

CO-2. Indian Contract Act 1872

- Types of agreement and contract
- Specific Contracts
- Sale of Good Act
- Partnership laws
- Negotiable instrument sAct

Paper 6 Business Organisations

Course Outcomes

Studentswill gain knowledge on the following topics:-

CO-1. Concept of business
CO-2. Forms of business organization
CO-3. Choice of form of organization
CO-4. Plant location
CO-5. Business combination

Paper 7 Micro Economics

Course Outcomes

Students will gain knowledge on the following topics:-

CO-1. Concept of business
CO-2. Forms of business organization
CO-3. Choice of form of organization
CO-4. Plant location
CO-5. Business combination

Semester-2

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gaink nowledge on the following topics: -•
Moral values and language

CO-1. Language skills
CO-2. Reading skills
CO-3. Grammar and usage

Paper 2 F.C. II (Development of Entrepreneurship)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Entrepreneurship
CO-2. Motivation
CO-3. Communication skills
CO-4. Project report evaluation
CO-5. Forms of organization
CO-6. Production management
CO-7. Institutional roles

Paper 3 Business Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Communication
CO-2. Business Correspondence
CO-3. Report writing business report
CO-4. Effective listening
CO-5. Vocabulary

Paper 4 Management Principles and Application

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Managerial functions

CO-2. Detail study of

1. Planning
2. Organizing
3. Staffing
4. Leading
5. Controlling

Paper 5 Corporate Laws

Course Outcomes

Students will gain knowledge on the following topics: -• Study on Company

CO-1. Documents study–

1. Memorandum of association
2. Article of association
3. Doctrine of constructive notice

CO-2. Management

CO-3. Dividend

CO-4. Audit

Paper 6 Business Statistics

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Statistics introduction

CO-2. Measure of Central Tendency

CO-3. Measure of variation

CO-4. Correlation analysis

CO-5. Index number

Semester-3

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Moral values and language

CO-2. Language skills

CO-3. Grammar

Paper 2 F.C. II (Environmental Studies)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Environmental study

CO-2. Environmental pollution

CO-3. Nature conservation by mankind as-

1. Sustainable development
2. Energy problem
3. Water conservation
4. Food resources
5. Energy resources

• Environmental conservation laws

Paper 3 Business Mathematics

Course Outcomes

Students will gain knowledge on the following topics :-

CO-1. Equations in two variables

CO-2. Arithmetic mathematics –

a) Percentage
b) Profit and loss
c) Ratio and proportion
d) Commission
e) Interest

CO-3. Logarithms and antilogarithms

Paper 4 Income Tax law & Practice

Course Outcomes

Students will gain knowledge on the following topics; -

CO-1. Introduction to Income tax Act
CO-2. Income from salary
CO-3. Income from house property
CO-4. Set off and carry forward
CO-5. Assessment procedure

Paper 5 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Human resource management
CO-2. Acquisition of human resource
CO-3. Training and development
CO-4. Performance appraisal
CO-5. Maintenance

Paper 6 Macro Economics

Course Outcomes

Students will gain knowledge on the following topics :-

CO-1. Introduction to Macro economics
CO-2. Economy
CO-3. Inflation
CO-4. Open economy
CO-5. Investment

Paper 7 E-Commerce

Course Outcomes

Students will gain knowledge on the following topics :-

CO-1. Introduction to E Commerce

CO-2. Online business –

1. Planning
2. Technology
3. Mechanism
4. Application

Semester-4

Paper 1 F.C.I (Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Moral values and language
CO-2. Narrative skills
CO-3. Grammar

Paper 2 F.C. II (Environmental Studies)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Problem on natural resources –
1. Water resources
2. Forest resources
3. Land resources

CO-2. Biodiversity
CO-3. Human pollution effect on environment
CO-4. Ecology
CO-5. Ecosystem
CO-6. Environmental wealth

Paper 3 Indirect Tax
Course Outcomes
Students will gain knowledge on the following topics: -

CO-1. Knowledge on -
1. Central excise duty
2. Custom duty
3. Central sales tax
4. MP Value added tax
5. Service Tax

Paper 4 Corporate Accounting
Course Outcomes
Students will gain knowledge on the following topics: -

CO-1. Accounting for share capital
CO-2. Final accounts
CO-3. Valuation of Goodwill
CO-4. Valuation of Shares
CO-5. Amalgamation
CO-6. Accounting for holding companies

Paper 5 Indian Economy Performance and Policies.
Course Outcomes
Students will gain knowledge on the following topics: &

CO-1. Issue in economic development
CO-2. Features of Indian economy
CO-3. Policy regime
CO-4. Growth and development
CO-5. Structural Change
CO-. Agriculture

Paper 6 Entrepreneurship
Course Outcomes
Students will gain knowledge on the following topics: -

CO-1. Entrepreneurship
CO-2. Enterprise
CO-3. Finance
CO-4. Source of business ideas
CO-5. Women entrepreneurship

Semester-5

Paper 1 F.C.I(Moral Values & Language)
Course Outcomes
Students will gain knowledge on the following topics: -

CO-1. Moral values and language
CO-2. Writing skills
CO-3. Grammar

Paper 2 F.C.II(Basics of computer & Information Technology-I

Course Outcomes

Students will gain knowledge on the following topics; -

- **CO-1.** Introduction to Computer
- **CO-2.** Types of computing device
- **CO-3.** Memory
- **CO-4.** Peripheral devices
- **CO-5.** Storage devices
- **CO-6.** Operating system
- **CO-7.** Reading and editing software

Paper 3 Cost Accounting

Course Outcomes

Students will gain knowledge on the following topics: -

- **CO-1.** Cost
- **CO-2.** Cost accounting
- **CO-3.** Unit costing
- **CO-4.** Process costing
- **CO-5.** Contract costing

Paper 4 Principles of Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- **CO-1.** Concept of marketing
- **CO-2.** Market selection
- **CO-3.** Market segmentation
- **CO-4.** 4P's –
    1. Product
    2. Price
    3. Promotion
    4. Place
- **CO-5.** Distribution
- **CO-6.** Retailing

Paper 5 Financial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

- **CO-1.** Business finance
- **CO-2.** Capitalization
- **CO-3.** Time value of money
- **CO-4.** Cost of capital
- **CO-5.** Working capital management

Paper 6 Computer app. In Business

Course Outcomes

Students will gain knowledge on the following topics: -

- **CO-1.** Word processing
- **CO-2.** Presentation
- **CO-3.** Spreadsheet and business
- **CO-4.** Database management system

Paper 7 Fin. Markets inst.& fin. serv.

Course Outcomes

Students will gain knowledge on the following topics –

- **CO-.** Introduction to

1. Financial system
2. Financial markets
3. Financial institutions
4. Financial services industry
5. Leasing and higher purchase

Paper 8 Corporate Tax Planning

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Tax planning with reference to: -

1. Management
2. Evasion
3. Set new business
4. Specific management
5. Employees
6. Amalgamation

CO-2. Special provisions

Paper 9 Advertising

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Introduction to Advertising
CO-2. Media decision
CO-3. Mortgage development
CO-4. Measuring advertising
CO-5. Advertising agency

Paper 10 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Organisational behaviour
CO-2. Group decision making
CO-3. Motivation
CO-4. Leadership
CO-5. Organisational culture

Semester-6

Paper 1 F.C.I(Moral Values & Language)

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Moral values and language
CO-2. Translation skills
CO-3. Grammar

Paper 2 F.C.II(Basics of computer & Information Technology-II)

Course Outcomes

Students will gain knowledge on the following topics: -

• **CO-1.** PowerPoint

1. Creating slides
2. Working with slides
3. Formatting slides
4. Printing slides
5. Inserting slodes
6. Connecting slides

CO-2. Ms Excel
CO-3. Internet

CO-4. Web services
CO-5. Cyber ethics

Paper 3 Auditing

Course Outcomes

Students will gain knowledge on the following topics: -
Auditing introduction

CO-1. Audit process
CO-2. Internal check system
CO-3. Vouching
CO-4. Company audit
CO-5. Investigation

Paper 4 Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Introduction to research
CO-2. Selection process
CO-3. Formulation of research problem
CO-4. Hypotheses
CO-5. Data collection
CO-6. Research report

Paper 4 Fundamentals of Investment

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Investment environment
CO-2. Fixed income securities
CO-3. Equity analysis
CO-4. Portfolio analysis
CO-5. Investor protection

Paper 5 Business tax Pro. & Mang.

Course Outcomes

Students will gain knowledge on the following topics; -

CO-1. Advance tax payment
CO-2. Assessment
CO-3. Appeal
CO-4. Penalties
CO-5. Different transaction types
CO-6. Information technology
CO-7. Tax administration

Paper 6 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. International marketing
CO-2. Business environment
CO-3. Product decisions
CO-4. Promotion
CO-5. Export finance

Paper 7 Consumer Affairs and Custom. Care

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Consumer and markets

CO-2. Consumer protection act 1986
CO-3. Consumer protection in India
CO-4. Competition Act 2002

M.B.A. (Marketting Management)

Semester-1

Paper 1 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. An understanding of the individual and group behaviour both-1.Inside the organisation
2.Outside the organisation.
CO-2. Skill enhancement for increasing the effectiveness in –1.Understanding Individuals
2.Appreciating Individuals
3.Interpersonal Process
4.Group process.

Paper 2 Principles & Practices of Management

Course Outcomes

Students will gain knowledge on the following topics.: -

CO-1. Basic concepts of Management.
CO-2. Students to gain appreciation field of management for -1)Emerging ideas of Management.
2)Techniques.
3)Procedure and Practices.

Paper 3 Accounting for Managers

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with basic knowledge of –1.Accounting Principles 2.Accounting Conventions 3.Accounting Concepts.
CO-2. Awareness of –
1.Financial reporting system.
2.Techniques of financial analyzing.
CO-3. Managerial decision making and control.

Paper 4 Managerial Economics

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with the Analytical Tools of Economics and application of the same
CO-2. Develop Economic way of dealing with practical business problems and challenges

Paper 5 Computer Application in Management

Course Outcomes

Students will gain knowledge on the following topics; -

CO-1. Familiarize with Hardware and Software Application
CO-2. Data and File Management and it’s share through Internet

Paper 6 Quantitative Techniques for Managers

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Basic Statistical tools and techniques

CO-2. Application of the above in

1. Business decision making process
2. Management of the organization both inside and outside

Paper 7 Legal Aspects of Business

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Exposure towards Mercantile Law

CO-2. Basic knowledge of Company Law

Paper 8 Economic Environment of Business

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Acquaint knowledge towards overall business environment within which organization functions.

CO-2. Application of the above for decision making in organization.

Semester-2

Paper 1 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics; -

CO-1. Management of People in terms of

1. Knowledge
2. Skills
3. Competencies

Along with the organisation asset as

1. Capital
2. Material
3. Information
4. Knowledge

CO-2. Effectiveness of Human Resource Management wrt

1. Perception
2. Assumption
3. Belief

Paper 2 Corporate Finance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Conceptual framework of Finance

CO-2. Acquaint for Financial Decisions the

1. Tools of financial management
2. Techniques of financial management
3. Process of financial management

Paper 3 Marketing Mangement

Course Outcomes

Students will gain knowledge on the following topics: -

CO-. Management of Marketing Operations to promote it's

1. Understanding
2. Concepts
3. Process
4. Philosophies
5. Techniques

Paper 4 Production and Operation Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Explore the interrelationship between Operation and Supply Chain Management

CO-2. Provision of the concept s and solutions in

1. Design of supply chain
2. Operation of supply chain
3. Control of supply chain
4. Management of supply chain

Paper 5 Business Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with Philosophy as well as Practical Aspect of research

CO-2. Insight about various research concepts for dealing various business decision situation

Paper 6 Managerial Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Personality development of the learner

CO-2. Acquaint with the following to transform communication abilities

1. Fundamentals of Communication
2. Learning various forms of communication

Paper 7 Management Science

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Application of mathematical tools and techniques

CO-2. Application of research tools and techniques

Paper 8 Retail Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Fundamentals of Retail business

CO-2. Exposure to multi dimensions of field

CO-3. Provide insight of the emerging Retail World.

Semester-3

Paper 1 Entrepreneurship Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Overview of an entrepreneur

CO-2. Competencies in relation to becoming an entrepreneur

CO-3. Aims to the following in relation to a new venture:

1. Challenges
2. Investigate
3. Understand
4. Internalize

Paper 2 Business Ethics and Corporate Governance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Create mindset among future managers.

CO-2. Ensure with core aspirations of all humans i.e. happiness and prosperity

Paper 3 Sales & Distribution Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Theory of managing sales

CO-2. Practice of managing sales

CO-3. Inculcate personal selling skills

Paper 4 Advertising and Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Acquaint with

1. Concepts of advertising program
2. Techniques for developing advertising program
3. Application for effective advertising program

Paper 4 Consumer Behaviour And Market Research

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding about consumer decision making process

CO-2. Application of consumer decision making process

CO-3. Marketing functions

Paper 5 Marketing Strategies

Course Outcomes

Students will gain knowledge on the following topics: -

CO-. Understanding of Marketing Strategy

Paper 6 Event Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of Event Marketing

Paper 7 Supply Chain Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of supply chain management

Paper 8 Strategic Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Introduction to approaches to brand equity.

CO-2. Conceptual framework for providing brand strategically

CO-3. Emphasize on –

1. Role of brands
2. Concept of brand equity
3. Advantages of creating strong brands

CO-4. Provide insight to create profitable brand strategies

CO-5. Measuring and managing brand equity

Paper 9 Customer Relationship Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Concepts of CRM Paradigm

CO-2. Emphasize CRM as business strategy

CO-3. Highlight appropriate business process

CO-4. Technology management capabilities

CO-5. Managing customer relationship

CO-6. Create profitable brand strategy

1. Building brand equity
2. Measuring brand equity
3. Managing brand equity

CO-7. Help understand organizational context

Semester-4

Paper 1 Strategic Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Incorporate strategic management concept

CO-2. Providing academic training

CO-3. Giving a global vision through general business policies

Paper 2 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Conceptual knowledge on marketing management

1. Problems
2. Techniques
3. Strategies

CO-2. Incorporate Marketing Concepts

Paper 3 Rural and Industrial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Concept of industrial marketing

CO-2. Developing sound marketing policies

Paper 4 Marketing of Service

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding of service and service marketing

CO-2. Emphasis on aspects of service marketing

Paper 5 Managements of Public Relation Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of public relations concept

Paper 6 Marketing Models

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of Marketing models

Paper 7 Logistic Managemnt

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of logistic management

Paper 8 E-Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Marketing concept in electronic marketing context

CO-2. Insight into aspects of E Marketing

Paper 9 Tourism Marketing -II

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding of Marketing in relation to Tourism

CO-2. Overview of marketing strategy in context to Tourism

M.B.A. (Core Subjects)

Paper 1 Organisational Behaviour

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. An understanding of the individual and group behaviour both-1.Inside the organisation
2.Outside the organisation.

CO-2. Skill enhancement for increasing the effectiveness in –1.Understanding Individuals
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4.Group process.

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2.Techniques of financial analyzing.

CO-3. Managerial decision making and control.

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CO-2. Develop Economic way of dealing with practical business problems and challenges

Paper 5 Computer Application in Management

Course Outcomes

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CO-1. Familiarize with Hardware and Software Application

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CO-2. Application of the above in

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Course Outcomes

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CO-2. Basic knowledge of Company Law

Paper 8 Economic Environment of Business

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Acquaint knowledge towards overall business environment within which organization functions.

CO-2. Application of the above for decision making in organization.

Semester-2

Paper 1 Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics; -

CO-1. Management of People in terms of

1.Knowledge
2.Skills
3.Competencies

CO-2. Along with the organisation asset as1.Capital
2.Material
3.Information
4.Knowledge

CO-3. Effectiveness of Human Resource Management wrt1.Perception
2.Assumption
3.Belief

Paper 2 Corporate Finance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Conceptual framework of Finance

CO-2. Acquaint for Financial Decisions the 1.Tools of financial management
2.Techniques of financial management
3.Process of financial management

Paper 3 Marketing Mangement

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Management of Marketing Operations to promote it's1.Understanding
2.Concepts
3.Process
4.Philosophies
5.Techniques

Paper 4 Production and Operation Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Explore the interrelationship between Operation and Supply Chain Management

CO-2. Provision of the concept s and
3.Control of supply chain
4.Management of supply chain

Paper 5 Business Research Methodology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Equip with Philosophy as well as Practical Aspect of research

CO-2. Insight about various research concepts for dealing various business decision situation

Paper 6 Managerial Communication

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Personality development of the learner

CO-2. Acquaint with the following to transform communication abilities1.Fundamentals of Communication

2.Learning various forms of communication

Paper 7 Management Science

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Application of mathematical tools and techniques

CO-2. Application of research tools and techniques

Paper 8 Retail Management

Course Outcomes

Students will gain knowledge on the following topics –

CO-1. Fundamentals of Retail business

CO-2. Exposure to multi dimensions of field

CO-3. Provide insight of the emerging Retail World.

Semester-3

Paper 1 Entrepreneurship Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Basics of an Entrepreneur

CO-2. Acquainting with challenges of starting new ventures

CO-3. The process of setting up a business as

1. To investigate
2. To understand
3. To internalize

Paper 2 Ethics and Corporate Governance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Creating valuable mindset of the learners

CO-2. Appreciation of essential complementarily between Values and Skills

Paper 3 Organisational Development

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Theoretical as well as Practical understanding of the subject

CO-2. Be ready and adopt the dynamic changing environment

Paper 3 Industrial Psychology

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Theoretical as well as Practical understanding of the subject

CO-2. Be ready and adopt the dynamic changing environment

Paper 4 Industrial Relations and Labour Welfare

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Awareness about aspects of Industrial Relations

CO-2. Equip the learners to deal with the subject with

1. Objectivity
2. Understandings

Paper 5 Management of Financial Institutions and Services

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Familiarizing the learners with

1. Objectives of financial services
2. Strategies of financial services
3. Policies of financial services
4. Practices of financial services

Paper 6 International Financial Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Familiarize with international financial environment

CO. Decision variables emphasizing on finance function on MNCs.

Paper 7 Tax Planning and Management

Course Outcomes

Students will gain knowledge on the following topics: -

1. Basic knowledge about the following concepts in relation to tax
2. Principles of business tax
3. Problems
4. Structure of different business taxes
5. Relevance in business decision

Paper 8 Distribution Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Theoretical and practical knowledge of

1. Managing Sales
2. Inculcate personal selling skills

Paper 9 Advertising and Brand Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Acquaint the learners with the subject with respect to

1. Concepts
2. Techniques
3. Experience in applications

Paper 10 Consumer Behaviour And Market Research

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Theoretical and practical approach to Consumer decision making process

Paper 11 Business Decision & Management Systems

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Providing learners, the knowledge of Information System as in

1. Tools and techniques
2. Planning
3. Analyzing
4. Designing
5. Implementing
6. Maintaining

Paper 12 Data Base Management and Integrity

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Make students attain certain level of expertise in creating and handling database

Paper 13 Data Communication & Network

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Detailed discussion of Computer Network and Network Models

Semester-4

Paper 1 Strategic Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Incorporate strategic management concept

CO-2. Provide academic training to learners

CO-3. Giving global vision to the learner

CO-4. Undertaking general business policies

Paper 2 Human Resource Development

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Awareness of

1. Concepts of HRD
2. Techniques of HRD
3. Practices of HRD

CO-2. Making capable of Principles and Techniques as professional for development of HRD

Paper 3 Strategic Human Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. ToolsandTechniques important for strategic contribution to HRM

Paper 4 Total Quality Management

Course Outcomes

Outcome- Students will gain knowledge on the following topics: -

CO-1. Concept of TQM

CO-2. Principles and tools to achieve TQM

Paper 4 Risk Management & Insurance

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Developing mindset regarding Risk

CO-2. Measurement of Risk

CO-3. Tranfer of Risk

CO-4. Insurance business and it's environment

Paper 5 Investment Analysis and Portfolio Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Exposure in field of security analysis and portfolio management wet

1. Concepts
2. Tools
3. Techniques

Paper 6 Project Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Knowledge of learners in management of Projects

CO-2. Emphasis on Project formulation

CO-3. Tools and techniques of Project Appraisal

CO-4. Evaluation of worth of projects

Paper 7 International Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Focus on marketing management to incorporate the Marketing

1. Concepts
2. Problems
3. Techniques
4. Strategies

Paper 8 Rural and Industrial Marketing

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding various concepts of Industrial Marketing

Paper 9 Marketing of Service

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Understanding of services and service marketing with emphasis on aspects of services marketing

Paper 10 System Analysis & Design

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Developing skills for analysis and design of the Information System

Paper 11 E-Business Technology & Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO. Concept and Application of E-business in the world

Paper 12 Enterprise Resource Management

Course Outcomes

Students will gain knowledge on the following topics: -

CO-1. Understanding issues involved in implementation of ERP system

CO-2. Focus on

1. Cross functional processes
2. Integration of events across different functional areas

Department of PG Studies and Research in Sociology & Social work

Programmes Offered

1. M.A. Sociology
2. M.S.W.
3. Ph.D. Sociology and Social work

M.A. Sociology

Programme Outcomes

- Think critically about the Different social Processes
- Display the ability to engage in social interactions across the board
- Engage, design and evaluate research in an Interdisciplinary way
- Understand their individual responsibility towards civic and sustainability related issues
- Participate in policy engagement and advocacy

Programme specific outcomes

PSO-1. Explain and apply the major theoretical perspectives in sociology they will enable to see the world from others'perspective also

PSO-2. Design and evaluate sociological research with Interdisciplinary Manner.

PSO-3. To understand the central concepts developed by the theorists to analyse the social world

PSO-4. To understand the application of the scientific method to understand 'social realities 'with critical approach

PSO-5. They can understand their Responsibility towards civic, Policy Engagement and Sustainability

Semester-1

Paper 1 Sociological Theories & perspective I

Course Outcomes

CO-1. The course deal with sociological tradition enable theories to know and understand essence of Sociology and issociety.

CO-2. The course with it theoretical frame demonstrates utility of the knowledge and equips the learners with 2ociologicalskill.

CO-3. The course with equips the learners with methodological insight.

CO-4. The course generate curiosity to know more about latest dimensions of social dynamics and also the manifest one.

Paper 2 Methodology of Social Research

Course Outcomes

CO-1. The course is designed to discuss and to make learners acquainted with basics of research methodology.

CO-2. The course integrated theoretical, psychological and behavioural aspects of research.

CO-3. The course explains types and there to prepare learners to determine and to proper method while conducting surveyresearch.

CO-4. The course prepares student to me their maximum and to choose a proper design of research.

Paper 3 Rural Society

Course Outcomes

CO-1. The course discusses the nature and nature and scope of a major branch of sociological knowledge –Rural sociologyto develop conceptual understanding of rural society to the learners.

CO-2. IT is designed to make learners equipped with theoretical knowledge of rural institutions and changing scenario.

CO-3. This course integrates traditional social institution which generate cooperation, wesictence and interdependency ofpeople in rural society.

CO-4. It also discusses problems of rural population due to negative constructions and exogenous factors.

Paper 4 Urban Sociology

Course Outcomes

CO-1. This course is designed to develop knowledge and understanding about urban with a sociological lens.

CO-2. The course makes lens understand the growth and development of urban centres and their types and nature for bathsskills to explore the problems.

CO-3. The course explains differences between social institutions of various levels of habitation.

CO-4. The course equips the learners with theoretical explanation of dynamics of society and also make then acquaintedwith emerging deviation and problems to tackle them.

Paper 5 Sociology of Kinship, Marriage & Family

Course Outcomes

CO-1. Dealing with the basic social institutions of ‘’Mankind” the course enables the learners to understand the importance of Family Marriage and Kinship which are under threat by modern forces.

CO-2. The course develops understanding among learners about evolution/ development of these basic institution which isnot known to others.

CO-3. The course provides a better understanding of human groupings and their importance which are being challenged bymodern ideologies.

CO-4. The course makes learner understand and provides skills to counter evil practices involved in family and individualdisorganization.

Paper 6 Political Sociology

Course Outcomes

CO-1. The course is designed to develop sociological perspective of political behaviour and institution.

CO-2. It makes learners acquainted with various concept scheme and their implication in society.

CO-3. It equips the learners understanding of various political processes and their social determinates to grow them inpresent scenario.

CO-4. It provides an elaborated knowledge about political culture and their implication in society.

Semester-2

Paper 1 Sociological Theories & Perspective

Course Outcomes

CO-1. This course is an extension of first paper of semester I (course no-soc 101) which demonstrate advanced theoreticalframe work and orientation for extensive understanding of subject.

CO-2. The course demonstrates the utility of sociological and equips the learner with requisite sociological skills.

CO-3. The course enables the learner to develop as a strong advocate of sociological knowledge.

CO-4. The course develops the learners an efficient social engineer.

Paper 2 Methodology of Social Research

Course Outcomes

CO-1. IN continuation of the course No. –Soc-102 the course demonstrates detail knowledge of Research Method andTechniques.

CO-2. It demonstrates basic statistical knowledge and skill of data analysis.

CO-3. Its course enables the learner to be skilled serious researcher to explore and add new knowledge for bettermentof society as such.

CO-4. This course demonstrates various techniques relevant to various to sectors, generic, skill and global competencies.

Paper 3 Rural Sociology

Course Outcomes

CO-1. The course demonstrates the dynamics of rural society after independency enabling the learner to understandprocess of change in relation to relation development.

CO-2. The course equips the learner with requisite knowledge about and mechanism for proper implementation of variousprogrammes.

CO-3. The course demonstrates various agencies of rural development and role of leadership grow the learner development agents.

CO-4. The course develops demonstrable professional behaviour and skills and job requirements in various levels of work.

Paper 4 Urban Sociology

Course Outcomes

CO-1. The course enables the learners to understand social structure of various types of town

CO-2. The course demonstrate negative aspects / problems of urbanization and mechanism of resettlement, develops thelearners to be an effective and efficient agent of urban development.

CO-3. The course provides updated knowledge and specific understanding of important urban issues, develops the skills tocounter them and insursafeurbn life.

CO-4. Urban development is an important and inevitable question the course demonstrates the improved understanding tothe students.

Paper 5 Sociology of Kinship, Marriage & Family

Course Outcomes

CO-1. The course enables students to understand various dimension of marriage and family in India, develops student'sambassador of studies.

CO-2. It demonstrates generic knowledge to process and factors of chance in fundamental human institution for a betterunderstanding of Indian society.

CO-3. The course describes the utility and supremacy of basic Indian social institutions and need of conformity requiredfor homogeneous Indian society

CO-4. The course also updates the young learners with the adequate knowledge about emerging trends in family structure.

Paper 6 Political Sociology

Course Outcomes

CO-1. The course integrates political system with social system to assess various explanations of socio-political linkages inpresent India.

CO-2. The course with its theoretical frame demonstrates the facets and problems of modernization, enables the learners tounderstand the emerging trends in socio-political scenario and their long-term effects.

CO-3. The course enables the learner to grow as leaders and proof them a suitable candidate in political recruitmentprocess.

CO-4. The course updates the learner with adequate knowledge of socio-psychological processes involved in politicalprocedures.

Semester-3

Paper 1 Indian Society & Culture

Course Outcomes

CO-1. The course demonstrates theoretical different theoretical perspectives for a proper understanding of Indian societyand culture.

CO-2. The course integrates indological and field view including recent streams to prepare learners to negative ideologiesfactor by deviants.

CO-3. The course grounded in theoretical framework which enriched learners with proper understanding and skill topreserve Indian culture.

CO-4. The course demonstrates utility of Indian social philosophers' views on Indian perspective of

CO-5. "Bhartiya Mode" of self-dependency and nationalism.

Paper 2 Sociology of Change & Development

Course Outcomes

CO-1. The course demonstrates theoretical framework of the concepts of social change and Development, necessary for in-depth understanding of present world.

CO-2. The course enables learners to understand multidimensional impact of the process of change.

CO-3. The course enables learners to understand the dynamics of the concept of development; from progress to sustainabledevelopment.

Paper 3 Sociology of Tribes

Course Outcomes

CO-1. The course enables learners to understand the most important section of population – 'Tribes'

CO-2. The course demonstrates the importance of the study of Tribal community in changing world.

CO-3. The course integrates knowledge about vanishing cultures of small groups with main body knowledge.

CO-4. The course enables learners to discard the concept of deprivation but to consider this large number of small group's culture as important illustrations of various social process and cultural heritage of India.

Paper 4 Social Psychology

Course Outcomes

CO-1. The course demonstrates conceptional and theoretical understanding of social psychological process influencinghuman behaviour in society.

CO-2. The course enables learners to understand psychological construed of individual and group and to prepare learnersto work with various groups in real situations.

CO-3. The course grounded in theoretical framework enables learners for intensive correlating social processes with grouppsychology and emergency /decay of new / established response system.

Paper 5 Criminology and Penology

Course Outcomes

CO-1. The course demonstrates the utility of a special stream of sociological study for human life.

CO-2. The course enables one to understand concept, course and consequence of social behaviour need intensive study.

CO-3. The course integrates social realities and theoretical knowledge of criminality of human.

CO-4. The course enables the learners to understand the process and procedure of punishment and to work in probationsector.

Paper 5 Social Pathology

Course Outcomes

CO-1. The course demonstrates theoretical knowledge of social pathology and social disorganization emerging due tonegative pressure of social structure.

CO-2. The course enables students to know and practice sociological knowledge in countering different forms of socialdisorganization.

CO-3. The course equips learners with requisite sociological knowledge and out social problems faced by vulnerablemembers of family (society) and to suggest proper measures to eradicate.

CO-4. The course enables learners to make recommendations for social welfare.

Semester-4

Paper 1 Indian Society & Culture

Course Outcomes

CO-1. This course is an extension of course No.-SOC 301, demonstrate acquisition of in-depth knowledge of demographic, cultural and structural aspects of Indian society and culture.

CO-2. It enables learners to understand historical moorings and changes taking place their in.

CO-3. The course demonstrates the utility of in-depth knowledge for Indian society and equips the students withsociological understanding to disseminate the fact about Indian culture.

CO-4. The course also demonstrates the utility of relevant knowledge to understand negative impact of exogenousideology, attributes and models on Indian society.

Paper 2 Sociology of Change & Development

Course Outcomes

CO-1. In continuation of the course 302, this course demonstrates detailed knowledge of sustainable development and itsrelation with Indian culture.

CO-2. The course with it theoretical understanding provides learners a capacity to address various problems of development.

CO-3. The course enables learners to formulate social policies and programmes for regional development.

Paper 3 Sociology of Tribes

Course Outcomes

CO-1. This course is an extension of course no. 303 enables students to understand Economic and political structure of thetribal communities.

CO-2. This course integrates knowledge of traditional tribal political system with main stream system and identifiesproblems of political modernization.

CO-3. This course enables one to understand tribal situation and problems which generate unrests and movements.

CO-4. The course demonstrates relevant disciplinary knowledge and skill that enable learners to undertake studies / projectin this unique field and prepare the as potential job seeker.

CO-5. Includes materials on tribal culture and society of Madhya Pradesh also.

Paper 4 Social Psychology

Course Outcomes

CO-1. The course demonstrates detailed knowledge of dynamics of social behaviour.

CO-2. It enables students to understand leadership traits and emergence.

CO-3. The course enables to develop demonstrable ability to use social psychological principles to solve wide range ofsocial problems.

CO-4. Enables students to understand actual psycho-social processes and factors of warm full attitude and provocativeintension.

Paper 5 Criminology and Penology

Course Outcomes

CO-1. The course with its theoretical framework (traditions) enables students to improve disciplinary knowledge.

CO-2. Demonstrate improved understanding of major (some) social problems and mechanism to solve them.

CO-3. Develop understanding of the violence/ crime against women and legal provisions.

CO-4. To develop knowledge about facilities in Madhya Pradesh.

Paper 6 Social Pathology

Course Outcomes

CO-1. Demonstrate the utility of sociological knowledge for solving real and urban problems.

CO-2. Enables learners to suggest measures to address delinquency and crime.

CO-3. The course enables the learners for further research work.

Master in Social Work (M.S.W.)

Programme Outcome

- **1.**Acquisition of post graduate attributes and descriptors with demonstrated abilities through Field worktraining.
- **2.**To enable students to understand history, philosophy, values, ethics and functions Of social workprofession and its linkages with other social science disciplines.
- **3.**To equip students with knowledge on core and ancillary methods of professional social Work and itspractice base.

- **4.**Skill development and Entrepreneurship abilities to be taught at postgraduate levels.
- **5.**Development of research and analytical abilities through dissertation as a separate paper.
- 6.Responding to dynamic socio-cultural milieu, restructuring of discipline specific papers for students.
- **7.**Field work has been made an integral part of the syllabus, giving an opportunity to the Students forpractice in diverse settings.
- **8.**To develop young professionals with good communication skills and quest for a selfmotivated life-longlearning, focusing on skilling and re-skilling in their respective field of social work.

Programme Specific Outcome

PSO-1. Awareness of the social context, policies and programmes directed towards social development; understanding ofsocial problems, social legislations and the rights-based Approach.
PSO-2.understand and appreciate diversity (caste, ethnicity, gender and marginalization), values and beliefs of multiplecultures in a global perspective, managing diversity, use of an inclusive approach to the extent possible.
PSO-3. Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on thepart of a group and or a team in the interests of a common cause and work efficiently as a player.
PSO-4. Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of problemsby stepping out of comfort zones and taking up challenges in unforeseen challenges.

Semester-1

Paper 1 Introduction to Social Work

Course Outcomes

To introduce all student about the process by which marginalized section will be helped. This subject include various philosophy of social work, historical background of social work and the field on which it is important to apply social work to uplift the society.

Paper 2 Research Methods

Course Outcomes

To develop research aptitude among the students. To introduce the scientific method and related researchdimension like value neutrality, objectivity etc. it also includes methods like social survey, sampling and quantitative element involved in statistics like mean, median and mode.

Paper 3 Human Growth & Development

Course Outcomes

To give insight about various elements of growth and development and why it is necessary for any society. This include the development of personality, impact of intelligence on development, how learning contributes on development and how the particular perception leads to development or act as a constraint.

Paper 4 Process of Social Work

Course Outcomes

To educate all the students how the process of social work initiated. It covers the various social process of west and India, various theories of social case work ad importance of various basic elements like assumption, principles, and worker relationship in social work. It also introduces various theories of social case work and interview technique.

Paper 5 Social Pathology

Course Outcomes

To look at the anti-social element as a diseased condition and treat these diseases separately. These diseased could be alcoholism, drug abuse, juvenile and delinquency etc. this subject aims to lean these elements so that students can develop problem solving capacity for the society.

Paper 6 Social Problems in India

Course Outcomes

To give information about various perpetuating social problem in India and how these linked with social structure like casteism, communalism, regionalism etc. it also aims to introduce various social problem related with women (trafficking); rural India, urban society and new problem which introduced by the changing society.

Semester-2

Paper 1 Social Welfare and Social Work

Course Outcomes

To give insight about new social welfare can be initiated and performed with the help of social work. It includes various ideas like Sarvodaya, Gandhian principles etc. it also include the Indian concept o welfare state, how planning can be linked with social welfare, pre and post independent periods social planning.

Paper 2 Research Methods and Elementary Statistics Course Outcomes

Course Outcomes

To introduce various concept of data collection like observation, interview, questionnaire etc. and quantitative element of research linked with statistics like measurement of dispersion, correlation analysis etc. it also aims to give in depth knowledge about primary and secondary data and the case study technique.

Paper 3 Abnormal and Social Psychology

Course Outcomes

To acknowledge about social psychology and its relation with abnormalities in the society. It covers the element like mental health, anxiety, stress and how conflict emerged due to these elements. It also covers the importance of communication in social psychology and the ethical component like sympathy, suggestion etc.

Paper 4 Process of Social Work

Course Outcomes

To introduced the various element which are important in process of social work like the role of individual and community in social welfare process. It also includes the various dimension of social group work like History, Nature, Philosophy, what are the skill needed to be a social group worker and how the various practice and model are important for efficient social work.

Paper 5 Social Pathology

Course Outcomes

It explains about various social disease like poverty, unemployment, beggary, Drug paddling, smuggling etc. in society. With the help of various sociological perspective. It also explains about white color crime, suicide (durkhiem theory), and other associated crime. This subject also aims to suggest measures to eradicate the element.

Paper 6 Social Problems in India

Course Outcomes

To give information about various social problems pertaining to Indian society. It includes some diseased element like Alcoholism, drug addiction, white color crime, Juvenile delinquency. It also includes problem related to same particular section like SC, ST, and Backward caste. It includes some women's related issue like domestic violence, sex determining test.

Semester-3

Paper 1 Social Policy and Planning

Course Outcomes

To capture all the importance of policy and planning inn macro-social system. This subject includes various element of social policy like characteristics, objective, principles etc. and how the social policy develop like between economic and social development. It also includes various types of planning like capitalist, socialist etc. and how planning developed in per and post independent India.

Paper 2 Social Welfare and Agency Administration

Course Outcomes

To give in-depth knowledge about administration and why it is important for social welfare. It include various theoretical concept of welfare administration, meaning, scope, function of administration, private administration and associated issue like accountability, integrity and problems.

Paper 3 Rural Sociology

Course Outcomes

To give in-depth knowledge about rural society of India by explaining about various institutions like Marriage, Caste, Family. To give knowledge about economic system of present and the economic system of ancient time like Jajmani, Raiyatwari, Mahalwari system. It also aims to explain problems of rural society like Migration, Untouchability etc. so that students can develop solution for these problems.

Paper 4 Urban Sociology

Course Outcomes

To acknowledge the student about urbanization and its trends like industrialization, population growth etc. so that they can understand the urban society and their institutions like family, marriage etc. to explain the student about urban problems so that they can realize the importance of urban planning, management and the role of urban administration.

Paper 5 Industrial Sociology

Course Outcomes

To give information to students about industrialization and how it impacts on social structure in India. It includes the history if industrialization and various issue related to labors like labor's wage, grievance and redressal, migration, indeptness etc.it also include the role of social work through trade union, labour welfare

Paper 6 Labour legislation and Labour welfare

Course Outcomes

To give information about various labour laws of India, which are made for the welfare of labour like wage law, maternity benefit, compensation, factory act etc. it also covers various institution which work for labour like ILO, Trade union etc.

Semester-4

Paper 1 Development & Planning

Course Outcomes

To develop insight about the relation between development and planning in society. It includes various govt. organization like NHRC, Planning commission etc. it also cover various aspects of development in Indian society like role of youth, importance of development project and center-state relation in with respect to development

Paper 2 Social Policy and Social Legislations

Course Outcomes

To educate all the students about how policies and legislation are in relation by give information about policies like Education policy, Housing policy and Legislation like Untouchability Act, Marriage Act etc. it covers the various community or group related legislation and policies.

Paper 3 Rural Sociology

Course Outcomes

To give knowledge about various development activities in rural society like development of Panchati Raj Institution (PRI), NGO, SHG, Cooperatives. This subjects also include various issue and strategies of rural development and how rural leadership influence the rural society. It also aims to explain the various process of social change like sanskritization, modernization etc.

Paper 4 Urban Sociology

Course Outcomes

To explain the students about the present working trends in urban society. It includes the concepts Indian cities; the problems like slum, sanitation, hygiene etc.; and the changing occupational structure of the urban society. It also aims to explain the decentralized urban government and various issues like crime, environment problem, drug abuse, women issue etc.

Paper 5 Industrial Relation and Labour Organization

Course Outcomes

To acknowledge the student about industrial sector and hoe labour organization play a pivotal role in industries like negotiation, mediation etc. it covers the trade union and its function, workers participation, ILO etc. it also covers the history of trade union in India.

Paper 6 Personal Management and Industrial Psychology

Course Outcomes

To give knowledge about psychology of industry in relation to various personnel working in it so that industry can achieve maximum growth. This subject includes various personnel management like recruitment, promotion etc. grievance and discipline related issue. In psychology dimension it includes motivation, incentives, moral efficiency and it also include role of industrial psychologist.

INSTITUTE OF AGRICULTURAL SCIENCES

Programmes Offered

1. Bachelor of science (hons) Agriculture

Bachelor of science (hons) Agriculture

Programme Outcome

PO-1. To gain knowledge of different streams of agriculture like agronomy, entomology, plant breeding, plant pathology,soil science etc. in practice.
PO-2. To study the competent professionally with ethical responsibility as an individual as well as in multidisciplinaryteams with positive attitude.
PO-3. To devise communication and extension methodologies for transfer of Agricultural Technologies.
PO-4. To identify, critically analyzes, formulate and solve agriculture economics and marketing problems to benefitfarmers.
PO-5. To able to design a system and process to meet desired needs of food and nutrition with the knowledge of protectedcultivation and Post-Harvest Technology.

Programme Specific Outcome

PSO-1. Agriculture programme is designed to prepare graduates to attain the following outcomes:

PSO-2. An ability to apply knowledge of different streams of agriculture in practice. An ability to critically analyzes andsolve marketing problems.
PSO-3. An ability to design a system to meet desired needs of food and nutrition.
PSO-4. An ability to devise and conduct experiments, interpret data and provide well informed conclusions.
PSO-5. An ability to understand the practical problems faced by farmers and to find a proper solution for it.

Semester-1

Paper 1 Fundamentals of Horticulture

Course Outcomes

CO-1. Be able to develop commercially nursery andorchard.
CO-2. Be able to develop new plant through training, pruning, tree formfunction

Paper 2 Fundamentals of Plant Biochemistry and Biotechnology

Course Outcomes

CO-1. Knowledge of production of micro-propagation and DNA finger printing.
CO-2. Knowledge of concepts and applications of plant biotechnology.
CO-3. Clear understanding of structures ofMonosaccharides

Paper 3 Fundamentals of Soil Science

Course Outcomes

CO-1. Knowledge of soil profile in field, taxonomy, classification of soils of India.
CO-2. Knowledge of soil sampling tools and collection and storage of the representative sample for soil testing.
CO-3. Determination of soil reaction which include pH, EC and OC.
CO-4. Estimation of soil physical properties, soil texture, structure, density, porosity, soil colour, consistency and plasticity
CO-5. Knowledge of soil problems like acidic, saline and alkaline.

Paper 4 Fundamentals of Plant Biochemistry and Biotechnology

Course Outcomes

CO-1. Gain knowledge of treespecies.
CO-2. Knowledge of nursery lay-out forforestry.
CO-3. Maintenance of forestproducts.

Paper 5 Comprehension & Communication Skill In English

Course Outcomes

CO-1. Importance of professionalwriting.
CO-2. Knowledge about oral presentation ofreports.
CO-3. Understanding readingskills.

Paper 6 Fundamentals of Agronomy C

Course Outcomes

CO-1. Basic knowledge of branches ofagriculture.
CO-2. Basic elements of climate and weather required for cropproduction.
CO-3. Understanding of cultivation process of crops likewise plantgeometry.

Paper 7 Elementary Mathematics

Course Outcomes

CO-1. To able to calculate and analysis date for statisticalanalysis.
CO-2. To able the Addition Subtraction, Multiplication andTranspose.
CO-3. To study Straight lines and slope-point form of equation of line also.

Paper 7 Introductory Biology

Course Outcomes

CO-1. Gain knowledge living organism their origin, evolution & diversity
CO-2. Knowledge of Functions of cell, Seed & important plant kingdom families of flowering plants.

Paper 8 Agricultural Heritage Credits

Course Outcomes

CO-1. Knowledge of crop scenery in India and world
CO-2. Knowledge of national agriculture setup in India.

Paper 9 Rural Sociology &Educational Psychology
Course Outcomes

CO-1. To understand the different programmeof AgricultureExtension
CO-2. Tostudy the Sociology and Rural Sociology understand the social structure and social groups.
CO-3. To understand the ruralleadership.
CO-4. To understand the Psychology and Educational Psychology.

Paper 10 Rural Sociology &Educational Psychology
Course Outcomes

CO-1. After completing this module, the students will inculcate various human values and professional ethics.
CO-2. Student will be able to take better decisions and lead a happy and successful life.

Semester-2

Paper 1 Fundamentals of Genetics

Course Outcomes

CO-1. Familiarity with Quantitative traits and Qualitative traits. Knowledge improvement of Cytoplasmic inheritance.
CO-2. Basic understanding of chromosome structure, morphology, Karyotype and Idiogram.
CO-3. Understanding the numerical chromosomal aberrations (Polyploidy) and evolution.
CO-4. Knowledge of Gene expression regulation and differential gene activation.

Paper 2 Agricultural Microbiology

Course Outcomes

CO-1. Information about soilmicrobiology.
CO-2. Understanding plant microbeinteractions.
CO-3. Metabolism and nutrition inbacteria.
CO-4. Knowledge of foodpreservation.

Paper 3 Soil and Water Conservation Engineering

Course Outcomes

CO. To understand different types ofsoil and water conservation methods.

Paper 4 Fundamentals of Crop Physiology

Course Outcomes

CO-1. To understand seed structure and seedphysiology.
CO-2. To understand the seed germination and purity percentage of seed

Paper 5 Fundamentals of Agricultural Economics

Course Outcomes

CO-1. To understand different types of activity of Economics & AgriculturalEconomics.
CO-2. To understand the importance & scope of Agricultural Economics
CO-3. Find the cost of cultivation & cost ofproduction
CO-4. To obtain information on Indian Agricultural Economics.

Paper 6 Fundamentals of Plant Pathology

Course Outcomes

CO-1. To get Knowledge about various types of plant pathogens.
CO-2. Information on pathogenicity, pathogenesis and infection, its related symptoms.

Paper 7 Fundamentals of Entomology

Course Outcomes

CO-1. Be able to relationship of biotic and a biotic factor in insect lifecycle
CO-2. Be able to design basic statistical analyses and evaluate statistical information of insect forecasting
CO-3. Be able to apply and judge the scientific method of pest control in the laboratory and in the field
CO-4. To understanding of the primary literature in entomology and be able to critically evaluate information in primaryresearch articles.
CO-5. Be able to apply actual doses of insecticides to maintain pesticides hazards, environmental pollutions and soilpollutions.
CO-6. To be able to examine insects deeply within a biological level of analysis and compare strategies used by differentgroups.

Paper 8 Communication Skills and Personality Development Credits

Course Outcomes

CO-1. After completing this course, the students will develop excellent verbal and non-verbal communication skills, andwill be having an effective personality full of confidence to face the challenges of life.
CO-2. Developing effective personality personal communication skills.

Paper 9 Fundamentals of Agricultural Extension Education

Course Outcomes

CO-1. To understand the different programmesof Agriculture Extension.
CO-2. To study the Rural Sociology and understand the social structure and social groups.
CO-3. To understand the ruralleadership.

Semester-3

Paper 1 Crop Production Technology-I (Kharif Crops)

Course Outcomes

CO-1. Knowledge of economic and geographical distribution of field crops.
CO-2. Knowledge of cultivation practices of field crops.
CO-3. Knowledge about best practices of cultivation.

Paper 2 Fundamentals of Plant Breeding

Course Outcomes

CO-1. Understand the various genetic principles and procedures of cropimprovement.
CO-2. Knowledge gained about modes of reproduction for deciding various genetic improvement aspects of cropspecies.
CO-3. Be familiar with the principles and methods of various plant breedingmethods.
CO-4. Gaining knowledge about various plant geneticresources.
CO-5. Knowledge gained about evaluate the economic importance of various crops with plantbreeding point ofview.

Paper 3 Agricultural Finance and Co-Operation
Course Outcomes

CO-1. Clear understanding agril. finance &credit
CO-2. Knowledge the different commercial banks, RRB & NABARD bank activity.
CO-3. Understanding the need & classification ofcredit
Clear understand the different types of credit & credit analysis like 3"R", 5 „C" &7P"s
CO-4. Knowledge the nationalization of commercialbank.
CO-5. To understand the higher finacing agencies such as RBI, ADB (Asian development bank), Word bank, insurance

Paper 4 Agricultural Informatics

Course Outcomes

CO-1. Basic knowledge of computer and agriculturalinformatics.
CO-2. Perfection in practicing WINDOWS Operating Systems and other agriculture informatics software and devices.

Paper 5 Farm Machinery and Power

Course Outcomes

CO-1. Knowledge of agricultural machineries.
CO-2. Knowledge of equipments in used in organic and inorganic farming.

Paper 6 Production Technology for Vegetable and Spices

Course Outcomes

CO-1. To give knowledge about the production technology of spices, medicinal and aromatic plants.
CO-2. To give knowledge about the site selection of nursery and their management.

Paper 7 Environmental Studies and Disaster Management

Course Outcomes

CO-1. Knowledge about management of flood, earth quack, cycloneand land slides.
CO-2. To knowledge about how to control the pollution.

Paper 8 Statistical Methods

Course Outcomes

CO-1. Enhanced Collection of Statistical Data. Formation of Frequency Distribution.
CO-2. Improvement in the Information about Sampling, Sampling Distribution and Standard Error.
CO-3. Enhanced Knowledge of Sample Surveys in Agriculture.

Paper 9 Livestock & Poultry Management

Course Outcomes

After study of this subject the students will be able to differentiate between various breeds of livestock and poultry and will be able to manage livestock and poultry units professionally.

Semester-4

Paper 1 Crop Production Technology-Ii (Rabi Crops)

Course Outcomes

CO-1. To knowledge the best cultivation uses in cultivation enics and animals' roles in agriculture.
CO-2. To able cost-effective crops for increase economic level of India Enhanced Knowledge of Sample Surveys inAgriculture.
CO-3. To calculate the accurate doses of herbicides and pesticide an application in crops.
CO-4. To knowledge about the NUE increase in rabi season crops.

Paper 2 Production Technology for Ornamental Crops, Maps and Landscaping

Course Outcomes

CO-1. Be able to develop gardens different types of mughal, Japanese, Persian through gardening.
CO-2. Be able to develop landscaping different style of formal, free, wild and informal garden through gardening.
CO-3. To able to develop lawn for recreation and garden beautification feeling a natural way.
CO-4. To give knowledge about the production technology of medicinal and aromatic plants.
CO-5. To give knowledge about the site selection of nursery and their management.

Paper 3 Renewable Energy and Green Technology

Course Outcomes

CO-1. Knowledge of production of Liquid bio fuel.
CO-2. Knowledge of wind energy and their mills.
CO-3. Clear understanding of principles of agricultural wastes.

Paper 4 Problematic Soils and Their Management

Course Outcomes

CO-1. Knowledge gained about soil quality and health.
CO-2. Learnt about quality of irrigation water.
CO-3. Received knowledge about Flooded and polluted soil.

Paper 5 Production Technology for Fruit and Plantation Crops

Course Outcomes

CO-1. Be able to higher production using high yielding variety through high innovative practices.
CO-2. Be able to handling and utilization of tropical and subtropical fruits through preservation and drying.
CO-3. Be able to develop new variety and new species through propagation methods, selection and hybridation.

Paper 6 Principles of Seed Technology

Course Outcomes

CO-1. Knowledge on Seed Production and Seedquality.
CO-2. Production of nucleus & breeder‟s seed, Foundation and certified seedproduction.
CO-3. Familiarize with Seed Act and Seed Act enforcement.
CO-4. Informed about Intellectual Property Rights, Patenting, WTO, Plant Breeders Rights.
CO-5. General principles of seed storage.
CO-6. Understand Seed marketing structure and marketing organization.

Paper 7 Farming System and Sustainable Agriculture

Course Outcomes

CO-1. An ability to know the techniques for agricultures ustain ability.
CO-2. To know the problem Soil, acid, Salt affected and calcareous Soil characteristics, and Nutrient availabilities.
CO-3. Tounderstandthedifferenttypesofmethod ofreclamation of mechanical, chemical and biological method.
CO-4. To know the soil fertilizer application & recoup.

Paper 8 Agricultural Marketing Trade & Prices
Course Outcomes

CO-1. Understanding of uncertainty and risk in marketing.
CO-2. Knowledge of agricultural marketing, cooperative marketing.

Paper 9 Introductory Agro Meteorology &Climate Change
Course Outcomes

CO-1. Understanding of bad effects of climatic change.
CO-2. Knowledge of weather fore casting.
CO-3. Knowledge about determination of vapor pressure and relative humidity.
CO-4. Knowledge of measurement, tabulation and analysis of rain.

Paper 10 Biopesticides & Biofertilizers
Course Outcomes

CO-1. History and concept of bio pesticides.
CO-2. Importance, scope and potential of bio pesticides.

Semester-5

Paper 1 Principles of Integrated Pest and Disease Management
Course Outcomes

CO-1. Gain knowledge of agro-ecosystem dynamics of insectpests&Diseases.
CO-2. Integrated management of insect pests &diseases.
CO-3. Identification of bio-control agents, different predators and natural enemies.

Paper 2 Manures, Fertilizers and Soil Fertility Management

Course Outcomes

CO-1. Gained knowledge about fertilizers classifications and manufacturing.
CO-2. Understand the complex fertilize, secondary and micro nutrient fertilizers.
CO-3. Gained knowledge about mechanism of nutrient & transport to plant.
CO-4. Learnt preparation methods of organic manures.

Paper 3 Pests of Crops and Stored Grain and Their Management

Course Outcomes

CO-1. Distribution and biology of agricultural insectpest.
CO-2. Knowledge of stored grainpests.

Paper 4 Diseases of Field & Horticultural Crops & Their Management-I

Course Outcomes

CO-1. Knowledge of field crops diseases of Rice, Maize, Sorghum, Bajra, and Ground nut.
CO-2. Knowledge of horticulture crops disease of Guava, Banana, and Papaya.

CO-3. Knowledge of Cruciferous vegetables crops disease.

Paper 5 Crop Improvement-I (Kharif Crops)

Course Outcomes

CO-1. Knowledge of crop improvement aspects inKharif Crops.
CO-2. Learnings of climate resilient crop varieties considering global warming.

Paper 6 Entrepreneurship Development and Business Communication

Course Outcomes

After completing this course, the students will develop excellent verbal and non-verbal communication skills, and will be having an effective personality full of confidence to face the challenges of life

Paper 7 Geoinformatics And Nano-Technology and Precision Farming

Course Outcomes

CO-1. Better knowledge for the cultivation of precision agriculture.
CO-2. To identify the remote sensing concepts and application in agriculture.
CO-3. To knowledge the basic elements of crop production and their role in agricultural economy.
CO-4. To knowledge the nano-technology techniques.

Paper 8 Intellectual Property Rights

Course Outcomes

CO-1. Knowledge of intellectualproperty.
CO-2. Knowledge of legislations covering IPRinIndia.
CO-3. Clear understanding of breeders, researcher and farmersrights.

Paper 9 Applied Hi-Tech Horticulture

Course Outcomes

CO-1. Give basic knowledge nursery management and theirmechanization.
CO-2. Give basic knowledge Micro irrigation systems, canopy management and high density orcharding.
CO-3. To give the basic knowledge mechanized harvesting ofproduce.
CO-4. To give the knowledge based on Remote Sensing, Geographical Information System.

Paper 10 Crop Production-I (Kharif Crops)

Course Outcomes

CO-1. To study best cultivation, use in cultivation ofrabicrops
CO-2. To import knowledge on Eugenics and animals' roles ina griculture.
CO-3. To able cost-effective crops for increase economic level of India.
CO-4. To calculate the accurate doses of herbicides and pesticide application in crops.
CO-5. To study about the NUE increase in rabies as on crops

Semester-6

Paper 1 Rainfed Agriculture &Watershed Management

Course Outcomes

CO-1. Knowledge about mulching and its effects on soil moistures conservation.
CO-2. Knowledge about new water harvestingtechniques.
CO-3. To solve the problems of dry land agriculture related to climate, soil, technological and socio-economic conditions.

Paper 2 Protected Cultivation and Secondary Agriculture

Course Outcomes

CO-1. Knowledge about low cost green houses equipments.
CO-2. Awareness of irrigation systems used in greenhouses.
CO-3. Understanding of drying and dehydration, air cleaner and grain dryer.

Paper 3 Diseases of Field & Horticultural Crops & Their Management

Course Outcomes

CO-1. Knowledge of disease cycle and management of field crops.
CO-2. Knowledge of symptoms, disease cycles of horticulture crops.

Paper 4 Post-Harvest Managementand Value Addition of Fruits and Vegetables

Course Outcomes

CO-1. The acquired knowledge about the value addition (fruit & vegetablepreservation).
CO-2. The get knowledge about the post harvest technology of fruit and vegetables.
CO-3. The get knowledge about fermented and non-fermented beverages.

Paper 5 Management of Beneficial Insects

Course Outcomes

CO-1. Gain the knowledge of beneficial insects and their economicimportance.
CO-2. Knowledge of method and use soft he equipmentsfor rearing and production of the honey, silk and lac.
CO-3. Identified of the different beneficial insects.

Paper 6 Crop Improvement (Rabi Crops)

Course Outcomes

CO-1. Acquired knowledge about improvement of various crops.
CO-2. To get knowledge about the hybrid seed production.
CO-3. To Acquired knowledge about the seed production technology.

Paper 7 Crop Production (Rabi Crops)
Course Outcomes

CO-1. To knowledge the field preparation, fertilizer application and sowing methods.
CO-2. To awareness moisture conservation nmethods.
CO-3. To understanding the hoeing and weeding methods.

Paper 8 Principles of Organic Farming
Course Outcomes

CO-1. To study the concept of organicfarming.
CO-2. To basis study of certification process and standards of organic farming.
CO-3. To study about processing, leveling, economic considerations and viability, marketing and export potential oforganic products.

Paper 9 Farm Management & Resource Economics
Course Outcomes

CO-1. Clear understanding crop and live stock enterprises.
CO-2. Knowledge of different types of farms.
CO-3. Knowledge of farm inventory and factor-product relationship.
CO-4. Determination of least cost combination of inputs.

Paper 10 Principles of Food Science and Nutrition
Course Outcomes

CO-1. Explain the chemistry underlying the properties of various food components.
CO-2. Knowledge the major chemical reactions that occur during food preparation and storage.
CO-3. Knowledge the important pathogens and spoilage micro organisms in foods.

Paper 11 Agri Business Management
Course Outcomes

CO-1. To study practical knowledge of agro based industries
CO-2. To study about working structure of agribusiness management.

Semester-7

Paper 12 Educational Tour
Course Outcomes

CO-1. Knowledge of rural setting in relation to agriculture and allied activities.
CO-2. Acquaintance of socio-economic conditions of farmers and theirproblems.
CO-3. Communication skills using extension teaching methods in transfer of technology.
CO-4. Development o f confidence and competence to solve agricultural problems.

Semester-8

Paper 12 Experiential Learning Programme/ HOT)

Course Outcomes

CO-1. Professional skills and knowledge.
CO-2. Confidence and working in project mode.
CO-3. Knowledge of enterprise management capabilities