Jaywanti Haksar Government Post Graduate College, Betul,

Madhya Pradesh

Academic Session: 2020-2021

Program Outcomes, Program Specific Outcome and Course Outcomes

Jaywanti Haksar Government Post Graduate College, Betul,

Madhya Pradesh

Department of Mathematics

Programme Outcomes

Knowledge Outcomes: After completing M.Sc. (Mathematics) Programme students will:

- Will get advanced knowledge of principles, methods and clear perception of innumerous power of mathematical ideas and tools.
- will be able to apply their skills and knowledge, that is translate information presented verbally into Mathematical form select and use appropriate mathematical formulae or techniques in order to process the information and draw relevant conclusion
- Will be able to find out or analyze scientific reasoning for various things.
- Student will get knowledge about both pure as well as applied mathematics branches.

Skill Outcomes: After completing B.Sc. (Mathematics) Programme students will:

- get adequate exposure to global and local concerns that explore them many aspects of Mathematical sciences
- get a relational understanding of mathematical concepts and concerned structures
- Communicate scientific information in a clear and concise manner both orally and in writing or through audio video presentations

Generic Outcomes: Students will

- Develop a positive attitude towards mathematics as an interesting and valuable subject of study
- Develop capacity of critical reasoning, theoretical applied and communication skills.
- Develop abilities for logical thinking and problem solving.

B.Sc. (Mathematics)

Programme Outcomes

PO1- Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

PO2- A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.

PO3- Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.

PO4- Introduction to various courses like group theory, ring theory, field theory, metric spaces, number theory.

PO5- Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

PO6- Ability to pursue advanced studies and research in pure and applied mathematical science.

Programme Specific Outcome of B.Sc. Mathematics

PSO1- Think in a critical manner.

PSO2- Know when there is a need for information, to be able to identify, locate, Evaluate, and effectively use that information for the issue or problem at hand.

PSO3- Formulate and develop mathematical arguments in a logical manner.

PSO4- Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.

PSO5- Understand, formulate and use quantitative models arising in social science, Business and other contexts.

Course Outcomes

B. Sc. First Year (Mathematics)

Course Title: (Paper-I) Algebra and Trigonometry

Course Outcomes: After the completion of the course, Students will be able to:

CO1- Understand the transformation of matrix which is useful to find rank of matrix. Learn to find the determinant of a product of square matrices, of the transpose of a square matrix, and of the inverse of an invertible matrix. Learn to find the characteristic equation, Eigen values and corresponding eigenvectors of a given matrix.

CO2- Learn to solve the matrix equation Ax = b using row operations and matrix operations. Learn to find the determinant of a product of square matrices, of the transpose of a square matrix, and of the inverse of an invertible matrix. Learn to find the characteristic equation, Eigen values and corresponding eigenvectors of a given matrix. Learn to solve system of linear equation.

CO3- Learn to find roots of polynomial, relation between the roots and coefficients of polynomials. Learn to transformation of equations, Reciprocal equations and Descartes rule of signs.

CO4- Learn to evaluate trigonometric and inverse trigonometric functions. Learn to solve trigonometric equations and applications. Learn to apply and prove trigonometric identities.

CO5- Learn to use truth tables and laws of identity, distributive, commutative, and domination. Learn to simplify and prove Boolean expressions. Learn to compute sum of products and product of sum expansions. Learn to convert Boolean expressions to logic gates and vice-versa.

Course Title: (Paper-II) Calculus and Differential equations

Course Outcomes: Students would have:

CO1- Knowledge of Successive differentiation, Maclaurins, and Taylors Theorem.
CO2- Knowledge of curvature, concavity and convexity, point of inflexion, multiple points, curve tracing.
CO3- Knowledge of integration of transcendental function, reduction formula.
CO4- Knowledge offers order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases. Knowledge of Linear differential equation, Claimants equation and singular solution. Solve second order and higher order linear differential equations.
CO5- Knowledge of the complete solution of a no homogeneous differential equation as a linear combination of the complementary function and a particular solution. Knowledge to solve linear differential equation of second order, method of variation of parameter

Course Title: (Paper-III) Vector Analysis and Geometry

Course Outcomes: After the completion of the course, Students will be able to:

CO1- Get knowledge of scalar and vector product of three and four vectors.
CO2- Understand gradient, divergence, curl and vector identities.
CO3- Understand General Equation of second degree, tracing of conics.
CO4- Find equation of cone with given base, equation of cylinder and its properties.
CO5- Get an idea of central conicoid, parabola, plane section of conicoid.

B. Sc. Second Year (Mathematics)

Course Title: (Paper-I) Abstract Algebra

Course Outcomes: After the completion of the course, Students will be able to

CO1- Understand the importance of algebraic properties with regard to working within various number systems. The students will understand the basic concepts of group and their applications.
CO2- Learn the significance of the notions of Cosets, Normal Subgroup, and factor groups.

CO3- Get knowledge of homomorphism and isomorphism, Fundamental theorems of homomorphism. Extend group structure to finite permutation groups. Generate groups given specific conditions. Get knowledge of Cayley's theorem.

CO4- Get knowledge of Automorphism, Inner Automorphism, Conjugacy relation, Centralizer, Normalizer, Counting principle, Class equation, and Cauchy's theorem.

CO5- Know the fundamental concepts in ring theory such as the concepts of ideals, quotient rings, integral domains, and fields.

Course Title :- (Paper-II) Advanced Calculus

Course Outcomes: Students would be able to:

CO1- Knowledge of fundamental concepts of real numbers. Demonstrate an understanding of limits and how they are used in sequences, series.

CO2- Learn to check function is continuous understand the consequences of the intermediate value theorem for continuous functions. Geometrical representation and problem solving on MVT and Rolle's Theorem.

CO3- Determine the existence of, estimate numerically and graphically, and find algebraically the limits of functions of two variables

CO4- Describe the concepts of curvature, evolutes and envelopes of certain curves and understand the proper and improper integrations and evaluate Beta, Gamma functions.

CO5- Use the knowledge of double and triple integrals for finding area and volume

Course Title: (Paper-III) Differential Equations

Course Outcomes: Students would be able to:

CO1- Acquire the idea of series solution of differential equations, Power series method, Bessel's and Legendre's equation, Bessel's and Legendre's function.

CO2- Knowledge of Laplace Transforms and its properties.

CO3- Knowledge of Inverse Laplace Transforms, its properties and its application.

CO4- Understand partial differential equation of first order, Charpits general method, Lagrange's solution.

CO5- Recognize the major classification of PDEs and the qualitative differences between the classes of equations.Solves the linear partial differential equations with constant coefficients. Solves the non-homogeneous linear partial differential equations with constant coefficients

B. Sc. Third Year (Mathematics)

Course Title: (Paper-I) Linear Algebra and Numerical Analysis

Course Outcomes: After the completion of the course, Students will be able to

CO1- Familiar with vector space, basis and dimension of vector space. Recognize the concepts of the terms span, linear independence, basis, dimension, and apply these concepts to various vector spaces and subspaces.

CO2- Understand the concept of linear transformations, their properties, their representation as matrices.

CO3- Understand the concept of inner product spaces and determine orthogonality in inner product spaces.

CO4- Understand approximations, solution of equations and Interpolation.
Solve Linear equations and Numerical Differentiation.

CO5- Get an idea of solve ordinary differential equation, numerical integration with their derivation. Using appropriate numerical methods determine approximate solution of ODE and system of linear equation.

Course Title: (Paper-II) Real and Complex Analysis

Course Outcomes: After the completion of the course, Students will be able to:

CO1- Understand the concept of Riemann integral. Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.

CO2- To study different tests for solving improper integrals of first and second kind.

CO3- Understand the concept of metric space, open & close sets, closure, interior, Boundary points, continuity, connectedness, compactness, Cauchy's sequence, dense subset, separable, first and second countable space, contraction principle, uniform continuity.

CO4- Determine whether the given complex function is Continuous/ differentiable / analytic, and find the derivative of a function. Use Cauchy's integral theorem and formula to compute line integrals.

CO5- Find the Taylor's series and Laurent's series of a function and determine its circle or annulus of convergence. Classify singularities, examine the theory, compute the residue of a function and able to apply the concepts of the calculus of residues in the evaluation of integrals.

Course Title: (Paper-III) Discrete Mathematics

Course Outcomes: Students would be able to:

CO1- Knowledge of Boolean algebra and Boolean functions- DNF & CNF.

CO2- Describe the concepts of partially ordered sets, lattices and their types, Hasse diagram.

CO3- Understand how graph theory have been. To understand the concept of vertex connectivity and edge connectivity in graphs. Assimilate various graph theoretic

concepts and familiarize with their applications. To understand the concept of Euler digraphs and Hamiltonian digraphs.

CO4- Understand the concept of matrices in graphs like Incidence matrix, Adjacency matrix and cutest and its properties, planner graphs etc.

CO5- Understand the idea of Trees and its properties, types of trees. Knowledge of Kruskal's Algorithm and Prim's Algorithm.

M.Sc. (Mathematics)

Programme Outcome

PO1- Inculcate critical thinking to carry out scientific investigation objectively without being biased with preconceived notions.

PO2- Equip the student with skills to analyze problems, formulate a hypothesis, evaluate and validate results, and draw reasonable conclusions thereof.

PO3- Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields

PO4- Imbibe effective scientific and/or technical communication in both oral and writing.

PO5- Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences.

PO6- Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.

Programme Specific Outcomes

PSO1- Understanding of the fundamental axioms in mathematics and capability of developing ideas based on them.

PSO2- Inculcate mathematical reasoning.

PSO3- Prepare and motivate students for research studies in mathematics and related fields.

PSO4- Provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains.

PSO5- Provide advanced knowledge on topics in pure mathematics, empowering the students to pursue higher degrees at reputed academic institutions.

PSO6- Strong foundation on topology and representation theory which have strong links and application in theoretical physics, in particular string theory.

PSO7- Nurture problem solving skills, thinking, creativity through assignments, project work.

PSO8- Assist students in preparing (personal guidance, books) for competitive exams e.g. NET, GATE, etc.

M. Sc. I Semester (Mathematics)

Course Title :- (Paper-I) Advanced Abstract Algebra-I

Course Outcomes: Students would be able to:

- CO1- To understand the concept of groups and class equations, Cauchy theorem. Determine the application of Sylow's theorems.
- CO2- Describe various types of series of group and Jordan holder theorem.
- CO3- Understand the concept of Solvable group and Nilpotent group in detail.
- CO4- Describe the notion of fields. Study Algebraic and transcendental extension& roots of polynomials.
- CO5- Describe various important aspects of field, Separable and inseparable extension.

Course Title :- (Paper-II) Real Analysis

Course Outcomes: After the completion of the course, students will be able to:

- CO1- Determine the Riemann-Stieltjes integrability of a bounded function and prove a selection of theorems concerning
- CO2- Determine the integration of vector valued functions. Learn rearrangement of terms of series. To study the rectifiable curve.
- CO3- Recognize the difference between point wise and uniform convergence of a sequence of functions. Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and integrability, andIllustrate the convergence properties of power series.
- CO4- Understand the concept of functions of several variable, linear transformation, derivatives in R^n, Chain rule, Partial derivatives, Inverse function theorem.
- CO5- Understand the concept of Jacobians, extremum problems, Lagrange's multiplier, and differentiation of integrals, Implicit function theorem and Stoke's theorem.

Course Title :- (Paper-III) Topology-I

Course Outcomes: Students would be able to:

- CO1- To understand the concept of Countable and uncountable sets. Infinite sets and the Axiom of Choice Cardinal number and its arithmetic. Schroeder-Bernstein theorem. Cantor's theorem and the continuum hypothesis. Zorn's lemma. Well-ordering theorem.
- CO2- To understand the concept of Definition and example of topological spaces. Closed sets. Closure. Dense subsets. Neighborhoods. Interior exterior and boundary of sets. Accumulation points and derived set. Bases and sub-bases for topology. Subspace and relative topology.

CO3- To understand the concept of Alternate methods of defining a topology in terms of Kuratowski Closure Operation and Neighborhood Systems. Continuous functions and homeomorphism.

CO4- To learn and describe first and second Countable spaces. Lindeiof's theorems. Separable spaces. Second Countability and Separability.

CO5- To understand the concept of Path – connectedness, connected spaces. Connectedness on Real line Components, locally connected spaces.

Course Title :- (Paper-IV) Complex Analysis-I

Course Outcomes: Students would be able to:

CO1- To understand the Complex integration, Cauchy Goursat theorem, integral formula, Higher order derivatives.

CO2- Describe Morera's theorem, Cauchy's inequality, Liouville's theorem, The fundamental theorem of algebra, Taylor's theorem.

CO3- To understand the concept of the maximum modulus principle. Schwarz lemma. Laurent series. Isolated singularities. Meromorphic functions. The argument principle. Rouche's theorem. Inverse function theorem.

CO4- To understand the concept of Residues Cauchy's residue theorem. Evaluation of integrals. Branches of many valued functions with special reference to $\arg z$, $\log z$.

CO5- To understand the concept of bilinear transformations, their properties and classification. Definitions and of conformal mappings.

Course Title :- (Paper-V) Advanced Discrete Mathematics-I

Course Outcomes: Students would be able to:

CO1- Understand the concept of Semi groups, Monodies, Homomorphism and isomorphism**.**

CO2- Interpret Lattices, Lattices as partially ordered sets & their properties

CO3- To learn and revise Boolean algebra, Karnaugh map, Switching Circuits.

CO4- Understand various definitions in graph theory and study their properties. Also, understand the shortest path problem and apply to a network.

CO5- To understand the theory and techniques of trees and its uses.

M.Sc. II Semester (Mathematics)

Course Title :- (Paper-I) Advanced Abstract Algebra-II

Course Outcomes: Students would be able to:

CO1- To understand the concept of Galois Theory, Fundamental Theorem of Galois Theorem and fixed field.
CO2- Describe the concept of Module and its types with example in detail.
CO3- Determine Simple module, Semi-simple module and free module.
CO4- To learn Noetherian and Artinian modules and Noetherian and Artinian rings and their example in detail.
CO5- Explain Fundamental structure theorem of finitely generated modules and its application to finitely generated abelian groups

Course Title :- (Paper-II) Lebesgue Measure & Integration

Course Outcomes: At the end of this module students should be able to:

CO1- Understand the construction and properties of Lebesgue measure, including the notion and properties of null set. Describe the notion of extended real valued and complex measures. Apply the notion of measurable functions and sets.
CO2- Describe the notion of integration of non-negative functions, the general integral and integration of series.
CO3- Understand the construction of the Lebesgue integral and know its key properties.Compute Lebesgue integrals using the Fundamental Theorem of Calculus, Lebesgue monotone and dominated convergence theorems and Fatou'sLemma.
CO4- Describe the notion of convex set and convex function. Describe and apply Jenson's, Hölder's and Minkowski's inequalities and, Riesz representation theorem.
CO5- Describe the notion of Dual space, Convergence in measure, Uniform convergence, almost everywhere convergence, Almost Uniform convergence.

Course Title :- (Paper-III) Topology-II

Course Outcomes: Students would be able to:

CO1- Understand the Separation axioms, their Characterizations and basic properties. Urysohn's lemma, Tietze extension theorem.
CO2- Understand the Compactness. Continuous functions and compact sets. Basic properties of compactness. Compactness and finite intersection property. Sequentially and countably compact sets, Local compactness and one point compactification. Stone cech compactification. Compactness in metric spaces, Countable, compactness and sequential compactness in metric spaces, Connected, spaces. Connectedness on the real line, Components, Locally connected spaces.
CO3- Describe Tychonoff product topology in terms of standard sub-base and its characterizations, Projection maps, Separation axioms and product spaces, Connectedness and product spaces, Compactness and product spaces (Tychonoff's theorem) Countability and product spaces

CO4- To Learn and revise the concept of Embedding and metrization, Embedding lemma and Tychonoff embedding, The Urysohn metrization theorem, Local Finiteness , Nagata Smirnov Metrization theorem , Para compactness'

CO5- To Learn and revise the concept of Net and Filters, Topology and convergence of nets Hausdorffness and nets, Compactness and nets. Filters and their convergence. Canonical way of converting nets to filters and vice-versa .Ultra - filters and Compactness.

Course Title :- (Paper-IV) Complex Analysis-II

Course Outcomes: Students would be able to:

CO1- To understand the concept of Weierstrass factorization theorem, Gamma and its properties, Riemann Zeta function, Riemann's functional equation.

CO1- Describe and proof Runge's Theorem, Mittag-Leffler's theorem, Analytic continuation, Uniqueness of direct analytic continuation, Uniqueness of analytic continuation along a curve, Power series method of analytic continuation

CO2- To understand the concepts of Schwartz reflection principle, Monodromy theorem and its consequences, Harmonic function on a disc.

CO3- To learn to recognize Harnax inequality and theorem, Dirichlet problem, Green's function, Canonical products, Jenson's formula, Hadamard's three circles theorem, Order of an entire function, Exponent of convergence, Borel's theorem, Hadamard's factorization theorem.

CO4- To understand the concept of the range of an analytic function, Bloch's theorem, The little Picard theorem, Schottky's theorem, Montel Caratheodary and great Picard theorem, Univalent function, Bieberbach conjecture and the 4-theorem.

Course Title :- (Paper-V) Advanced Discrete Mathematics-I

Course Outcomes: Students would be able to:

CO1- To understand the concepts of Directed graphs, in degree and out degree of a vertex, weighted undirected algorithm, strong connectivity and algorithm of directed trees, search trees, tree traversals.

CO2- To understand the concept computability theory-Finite State Machines and their Transition Table Diagrams, Equivalence of Finite State Machines. Reduced Machines. Homomorphism. Finite Automata. Acceptors

CO3- Describe the notion of Non-deterministic Finite Automata and equivalence of its power to that of Deterministic Finite Automata. Moore and Mealy Machines.

CO4- Describe the notion of Turing Machine and Partial Recursive Functions, Grammars and Languages Phrase-Structure Grammars, Rewriting Rules. Derivations.

CO5- To learn to recognize Sentential Forms, Language generated by grammar, Regular, Context-Free, and Context Sensitive Grammars and Languages, Regular sets, Regular Expressions and the Pumping Notions of Syntax Analysis, Polish Notations, Conversion of Infix Expressions to Polish Notations, The Reverse Polish Notation.

M.Sc. III Semester (Mathematics)

Course Title: (Paper-I) Functional Analysis

Course Outcomes: Students would be able:

CO1- To understand the concepts of convergence, completeness, continuous mappings, uniform continuity and space of continuous mapping. To be acquainted with the statement of the Baire's Theorem, Cantor's intersection theorem and its corollaries

CO2- To learn to recognize the fundamental properties of normed spaces and of the transformations between them. To be acquainted with the statement of the Hahn-Banach theorem and its corollaries. To understand the notions of dot product and Hilbert space.

CO3- Understand the concepts of Banachspaces, Hilbert spaces and conjugate spaces and to learn to classify the standard examples. In particular, spaces of sequences and functions. Understand the concepts ofReflexive space and Natural embeddings.

CO4- To learn to use properly the specific techniques for bounded operators over normed and Hilbert spaces.

CO5- To prove Cauchy's,Hölder's and Minkowski's inequalities, Open mapping theorem, Closed graph theorem, Uniform boundedness principle, Riesz, representation theorem.

Course Title :- (Paper-II) Advanced Graph Theory-I

Course Outcomes: Students would be able to:

CO1- To understand the concept of graph theoretic preliminaries, Operations on graphs, Graph Isomorphism disconnected graph and their Components, Traveling salesman problem, round table problem.

CO2- Describe Eulerian and Hamiltonian Paths and circuits..

CO3- To understand the concept of trees, Distance center, radius, diameter eccentricity and related theorems, Graph as metric space Rooted and binary trees.

CO4- To understand the concept of Labelled graph and trees spanning tree, weighted spanning tree, Shortest path

CO5- To understand the concept of fundamental cut sets, Rank and nullity, cut sets and cut vertices, fundamental cut sets.

Course Title: (Paper-III) Fuzzy Sets & Their Applications-I

Course Outcomes: Students would be able to:

CO1- Idea of fuzzy set and membership function, Definition of a fuzzy set, membership function, representation of membership function, General definitions and properties of fuzzy sets. Support, height, equality of two fuzzy sets, containment, examples.

CO2- To understand the concept of Union and Intersection of two fuzzy sets, Complement of a fuzzy set , normal fuzzy set , α cut set of a fuzzy set , strong α - cut , convex fuzzy set , a necessary and sufficient condition for convexity of a fuzzy set (Theorem 1), Decomposition of fuzzy sets , Degree of subset hood . Level set of a fuzzy set. Cardinality, fuzzy cardinality , examples

CO3- Describe the Other important operations on fuzzy sets, Product of two fuzzy sets, Product of a fuzzy set with a crisp number , Power of a fuzzy set . Difference of two fuzzy sets, Disjunctive sum of two fuzzy sets, example.

CO4- To understand the concept of General properties of operations on fuzzy sets , Commutativity, associativity, distributivity, Idempotent law, identities for operations, Transitivity, involution, Demorgans laws , proofs and examples , Some important theorems on fuzzy sets , set inclusion of fuzzy sets and corresponding α - cuts and strong α - cuts (Theorem 1) .

CO5- To describe comparison of α - cut and strong α –cut, Order relation of scalars a is inversely preserved by set inclusion of corresponding α-cuts and strong α-cuts , α- cut of union and intersection of two fuzzy sets , α- cut of complement of a fuzzy set (Theorem 2) . Examples , α- cuts and strong α- cuts of union and intersection of arbitrary collection of fuzzy sets

Course Title : (Paper-IV) Operations Research-I

Course Outcomes: Students would be able to:

CO1- Comprehend the Origin and Development of Operational Research, Characteristics of Operational Research

CO2- To understand the Phase of Operational Research, Uses and Limitations of Operation Research.

CO3- Design a LPP in real world objective and evaluate an optimal solution for linear programming problem by Graphical Method, Graphical solution of property behaved L.P. problems,

CO4- Frame and solve Linear Programming Problem by Simplex Method, artificial variable techniques: Big M Method, two phase Method and problem of degeneracy.

CO5- Correlate Linear Programming Problem to its corresponding dual LPP, General rules for converting any primal into dual, Fundamental theorem of duality.

Course Title :- (Paper-V) Integral Transform-I

Course Outcomes: Students would be able to:

CO1- Describe the notion of Laplace Transform, simultaneous ordinary differential equation and application of Laplace Transform in Differential Equation.

CO2- To understand the concept of two and three-dimensional Laplace's Equation and related problems.

CO3- Describe the notion of wave equation and learn the concept of two and three-dimensional wave equation.

CO4- Explain the Definition of Integral equation and problems related to integral equation.

CO5- Describe the notion of heat equation and learn the concept of one and two dimensional heat conduction equation.

M.Sc. IV Semester (Mathematics)

Course Title :- (Paper-I) Applied Functional Analysis

Course Outcomes: Students would be able to:

CO1- Understand the concepts of Cartesian and Tensor product of Hilbert spaces, Projection and Projection on a cone.

CO2- Understand the concepts of Weak convergence, Weak compactness properties, Weak semi continuity and continuous linear functional.

CO3- To apply the spectral analysis of compact self-adjoint operators to the resolution of integral equations.To apply the spectral theorem to the resolution of integral equations.

CO4- Understand the concepts ofConvex sets and Convex Programming, Support functional, Minkowski functional and Support mapping.

CO5- To understand how to use the main properties of compact operators.

Course Title :- (Paper-II) Advanced Graph Theory-II

Course Outcomes: Students would be able to:

CO1- To understand the concept of Connectivity and separability in graphs Abstract graphs geometric graphs planar graphs, Kurtowski two graphs embedding and regions of a planar graphs, Detection of planarity

CO2- To understand the concept of Geometric dual and combination dual.

CO3- To Learn and revise the concept of Coloring and covering of graphs, Chromatic, Polynomial chromatic partitioning Dimmer problem Domination sets independent sets, Four color conjecture.

CO4- To Learn and revise the concept of Digraph and types of digraphs. Digraph and binary relation Equivalence relation in a graph Directed path walk circuit and connectedness Euler and digraph, arborescence matrices A, B and C of digraphs.

CO5- To understand the concept of Adjacency metric of a digraph, Algorithms, Kruskal algorithm, Prism algorithm, Dijkastra Algorithm.

Course Title :- (Paper-III) Fuzzy Sets & Their Applications-II

Course Outcomes: Students would be abe to:

CO1- To Learn and revise the concept of Fuzzy sets, Basic Definitions , - level sets, Convex fuzzy set, Basic operations on fuzzy sets, types of fuzzy sets, Extensions: Types of fuzzy sets, Further operations on fuzzy sets. Cartesian product, Algebraic products, Bounded sum and Difference, t-norm and t-conorm.

CO2- To Learn and revise the concept of Extension principle and applications, Zadeh extension principle, images and inverse image of fuzzy sets, fuzzy numbers, algebraic operations with fuzzy number, extended operation and its properties, Special extended operation, addition, subtraction, product and division of fuzzy
numbers.

CO3- To understand the concept of Fuzzy relations on fuzzy sets, The union and intersections of fuzzy relations, Composition of fuzzy relation, max-* and max-product compositions , min-max composition and its properties, reflexivity, symmetry, transitivity and their examples, special fuzzy relations, similarity relation

CO4- To understand the concept of Fuzzy graphs: Definition and Examples, Fuzzy sub-graph , Spanning sub-graph, path in a fuzzy graph, strength and length of a path, -length and –distances, connected nodes, fuzzy forest, fuzzy tree, Examples, Fuzzy Analysis: Fuzzy functions on fuzzy sets, classical function, fuzzy function, Examples.

CO5- To Learn and revise the concept of Fuzzy Logic: classical logic an overview, multi-valued logic, Fuzzy proposition unconditional and unqualified proposition, unconditional and qualified propositions, conditional and unqualified proposition, conditional and qualified proposition, Fuzzy qualifiers, Linguistics hedges An overview of classical logic. Its connectives, Tautologies, Contradiction Fuzzy.

Course Title :- (Paper-IV) Operations Research-II

Course Outcomes: Students would be able to:

CO1- Analyze and evaluate replacement problem
CO2- Formulate, apply and solve assignment problems so that cost is minimized.
CO3- Frame and solve transportation problem.
CO4- Develop a working knowledge of concepts and methods related to designing of networks, CPM-PERT, Design, manage and complete projects in optimal time
CO5- Deduce the practicality of game theory and implement the techniques in real life perspective.

Course Title :- (Paper-V) Integral Transform-II

Course Outcomes: Students would be able to:

CO1- To Learn and revise the concept of Laplace transform and study its application to Boundary Value Problems.
CO2- To solve Electric circuits problems, heat conduction and wave equation, and application to Beams.
CO3- To understand the concept of Fourier Transform.
CO4- To learn various properties of Fourier, Transform and Parseval's Identity.
CO5- Describe Fourier Transform of the derivative, Finite Fourier Sine and Cosine Transform in detail.

Department of Physics

B.Sc. (Physics)

Programme specific outcomes

At the end of the program:

PSO1 Understand the core concept of Physics subjects and acquire analytical and logical skill for higher Education.
PSO2 Students will demonstrate proficiency in mathematical concepts needed for a proper understanding of physics.
PSO3 Students will demonstrate knowledge of classical mechanics, optics, thermodynamics, electromagnetism, quantum physics, solid state physics, spectroscopy, and modern physics, and apply this knowledge to analyze a variety of physical phenomenon.
PSO4 Students learned laboratory skills, organizational skills and working in group.
PSO5 Students get acquainted with techniques which are useful in industry and get conceptual knowledge of entrepreneurships through the co-curricular activities

Programme outcomes

At the end of the program:

PO1 The students will develop a strong analytical skill and will be able to study critically a physics problem.
PO2 They will develop a good communication skill such that they can explain complicated physics technical terminologies in simple manner
PO3 They will be able to carry out experiments to understand the laws and concepts of Physics.
PO4 They will be aware of their ethical and moral values and not practice fabrication and plagiarism.
PO5 They will know of their responsibility of preserving our environment and society.

B. Sc. First Year (Physics)

Course Title: (Paper-I) Mathematical Physics, Mechanics and properties of matter

Course Outcome: After completing the course students will learn:

CO1 Students will understand the concept of scalar and vector fields, differentiation of a vector with their examples.
CO2 Students can learn Newton's laws of motion and its explanation with problems and students can also learn coriolis force and its applications.
CO3 Students can understand the motion of particles.
CO4 Understand the basic principles of elasticity.
CO5 Understand the concept of Surface Tension and viscosity of a liquid.

CO6 Understand the basic ideas of Harmonic Oscillations.

Course Title: (Paper-II) Thermodynamics and statistical physics

Course outcomes: - After completing the course students will learn

CO1 Understand the Zero and First law of thermodynamics and its applications.
CO2 Understand the second law of thermodynamics and its applications..
CO3 Understand the concept of Entropy.
CO4 Understand the thermodynamic description of the ideal gas.
CO5 Understand the concept of Surface Tension and viscosity of a liquid.
CO6 Understand the basic ideas of Harmonic Oscillations.

Physics Practical:

Course outcomes: - After completing the course students will learn

CO1 Students can apply and illustrate the concept of acceleration due to gravity (g) using bar pendulum and katers reversible pendulum experiments.
CO2 Students can apply and illustrate the concept of properties of matter through experiments.
CO3 Students will have practical knowledge about the viscosity and surface tension of a liquid through experiments.
CO4 Students will have practical knowledge about the modulus of rigidity of material of a wire through experiments.

B. Sc. Second Year (Physics)

Course Title: (Paper-I) Optics

Course Outcome:

CO1- The students will understand the basic concepts of geometrical optics and their applications. The students will also learn all basic concepts of wave motions
CO2- The students will learn the phenomena of constructive and destructive interference of light with experimental explanations.
CO3- The students will learn the phenomena of Fresnel and Fraunhofer diffraction of light with experimental explanations.
CO4- The students will learn the phenomena of polarization of light with experimental explanations.

CO5- The students will learn the Basic concept of LASER with experimental explanations. They will also learn basics of Photo Sensors and Fiber Optics

Course Title: (Paper-II) Electrostatics, Magneto statics and Electrodynamics.

Course Outcome: After completion of these course students should be able to.

CO1 Develop an understanding of electric field and electric potential energy.
CO2 Introduce the concept of magnetic field, magnetic dipole, and magnetization.
CO3 Analysis of resistive circuits and resonance in LCR circuits.
CO4 To be able to calculate the resultant force on the charge particle due to simultaneous E and B fields.
CO5 Idea about basic laws of Maxwell's equations and applications of Maxwell's equations.

Course Title: Physics Practical Course Outcome:

CO1- Students will gain experimental knowledge of working of optical instruments.
CO2- Students will gain experimental knowledge of basics of optics, interference, diffraction, Resolving Power, Telescope etc.
CO3- Students will gain experimental knowledge of basic electrostatics and magneto statics.
CO4- Students will observe the experimental evidences of theoretical concepts of their syllabus.

B. Sc. Third Year (Physics)

Course Title: (Paper-I) Quantum mechanics and spectroscopy

Course Outcome: After completion of these course students should be able to:

CO1 Understand De-Broglie hypothesis and Uncertainty principle, Derive Schrodinger's time dependent and independent equations.
CO2 Solve the problems using Schrödinger' equations.
CO3 To understand atomic spectra of atom, Zeeman effect and characteristics of X-rays.
CO4 To understand molecular spectra of atom, Raman effect and elementary concept about NMR,EPR.
CO5 Basic idea about nuclear physics and elementary particles.

Course Title: (Paper-II) Solid state physic and devices

Course Outcome: After completion of these course students should be able to:

CO1 This course will introduce the students to different aspects of classical mechanics like constraints and their classification.
CO2 Learn the concepts needed for the important formalism of lagrange's equations and derive the equations using D'Alembert's principle.
CO3 Describes the concept of Hamilton's principle and their applications, solve the problem of particle moving under a central force.
CO4 Define and discuss the concepts of canonical transformation and generating functions, kepler's problem, poissons brackets and poisons theorem.
CO5 Student will understand the basic properties of 4- vectors and 4- scalars. Explain the symmetries of space and time, Relativistic generalization of newton's laws.

Course Title: Physic Practical

Course Outcome: After completion of these course students should be able to:

CO1 **The** Student would gain practical knowledge about electricity and magnetism, and measurement Such as; Resistance, Voltage Current etc.
CO2 The student will gain experimental knowledge of characteristics of p n junction diode and zener diode and light emitting diode.
CO3 The student will gain experimental knowledge of Half wave rectifier and Full wave rectifier and determine ripple factor and efficiency.
CO4 The student will gain experimental knowledge of characteristics curve and working of transistor in common base and common emitter mode
CO5 The student will gain experimental knowledge of characteristics curve of field effect transistor.
CO6 The student will gain experimental knowledge to find the energy band gap of semiconductor by using reverse saturation current.

M.Sc. (Physics)

Programme specific outcomes

At the end of the program:

PSO1 Understanding the basic concepts of physics: particularly concept in classical, statistical, and quantum mechanics, electrodynamics and Plasma, nuclear and particle physics, Atomic and molecular, condensed matter physics, and their applications.
PSO2 The students would gain substantial knowledge in various branches of physics: electronics, Laser, optical communication, and advanced studies in material science.
PSO3 The course would empower the students to acquire scientific and engineering skills and the required practical knowledge by performing experiments in laser optics, nuclear physics, electronics, and characterization of materials.
PSO4 The program also provides adequate exposure to the students for pursuing higher

education (M.Tech., M.Phil./PhD) and get job opportunities in higher education, research organization (IITs, BARC, DRDO, IISc, ISRO, NPL, NASA), Industries and get professional options in any interdisciplinary area related to physics.

PSO5 With successful completion of this program the students understand diverse phenomena observed in nature follow from a small set of fundamental law and students will have the scientific outlook and lifelong learning attitude.

Programme outcomes:

At the end of the program:

PO1 Apply the skill and knowledge in the design and development of electronic circuits to fulfill the needs of small-scale electronic industry.

PO2 Demonstrate, solve and an understanding of major concepts in all disciplines of physics.

PO3 Solve the problem and think methodically, independently and draw a logical conclusion.

PO4 Employ critical thinking and the scientific knowledge to design, carry out, record, and analyze the results of Physics experiments.

PO5 Create an awareness of the impact of Physics on the society, and development outside the scientific community.

PO6 To inculcate the scientific temperament in the students and outside the scientific community.

PO7 Use modern techniques, decent equipment's, and Phonics software's

PO8 Become professionally trained in electronics, material science, lasers, and nonlinear circuits.

M.Sc. I Semester (Physics)

Course Title: (Paper-I) Mathematical Physics

Course Outcome: After completion of these course students should be able to:

CO1 Students will understand the concept of vectors and matrices with their properties and applications

CO2 Students will learn different types of differential equations, Hermit Bessel etc with their properties.

CO3 Students will understand the concept of Fourier and Laplace transform with their properties.

CO4 Students will understand the concept of Greens Function with its properties and application to boundary value problems

CO5 The student will gain experimental knowledge of characteristics curve of field effect transistor.

CO6 Students will understand the concept of complex variables, their analyticity and method of contour integration.

Course Title: (Paper-II) Classical Mechanics

Course Outcome: After completion of these course students should be able to:

CO1 The D'Alembert's principle, the Lagrangian and Hamiltonian approaches in classical mechanics.
CO2 The classical background of quantum mechanics and get familiarized with linear oscillator, simple and spherical pendulum.
CO3 Solve complicated physical problems using the Poisson's brackets, Hamilton-Jacobi equations, Action, and Angel variables.
CO4 Theory of small oscillations, kinematics, and Dynamics of rigid body in detail.
CO5 Basic idea about symmetric of space and time, concepts of four vectors and scalars.

Course Title: (Paper-III) Quantum Mechanics-1

Course Outcome: After completion of these course students should be able to:

CO1 Difference between classical and quantum mechanical theory and approach.
CO2 Linear Vector Space, operators and tools to calculate eigen values.
CO3 Various techniques to solve time dependent and time independent Schrodinger equations using different coordinate systems.
CO4 Connection between symmetry and conservation laws, commutation relations, tools to calculate components and total angular.
CO5 Various approximation methods utilized in Quantum Mechanics.

Course Title: (Paper- IV) Electronic Devices

Course Outcome: After completion of these course students should be able to:

CO1- Ability to analyze semiconductor devices under various conditions.
CO2- Ability to design and analyze simple electron circuit which is the point of complicated circuits.
CO3- Ability to design and analyze the devices folding the negative resistance properties which leads to great uses.
CO4- Ability to design and analyze the photo optic devices which leads to prepare photo sensors

Course Title: Practical Laboratory Course A: General and Optics

Course Outcome: After completion of these course students should be able to:

CO1- Students will understand the working of Constant Deviation Spectrometer (CDS) and its calibration.

CO2- Students will gain practical knowledge of spectrometers and their use in different experiments.
CO3- Students will gain practical knowledge of different Light sources and their power supply used in experiments.
CO4- Students will practically observe different optical phenomena like interference, diffraction, polarization etc.

Course Title: Practical Laboratory Course B: Electronics

Course Outcome: After completion of these course students should be able to:

CO1- Basic of parameters and operation of various semiconductor devices.
CO2- Implementation of basic circuits using electronic devices.

M. Sc. II Semester (Physics)

Course Title: (Paper-I) Quantum Mechanics-II

Course Outcome: After completion of these course students should be able to:

CO1 Scattering theory and validity of Born approximations, partial wave analysis
CO2 Importance of relativistic quantum mechanics compared to non relativistic quantum mechanics.
CO3 Various tools to understand field quantization and related concepts.
CO4 Exposure to quantum field theory and universal interaction.

Course Title: (paper-II) Statistical Mechanics

Course Outcome: Students would be able to**:**

CO6- Students will understand the basic concepts of statistical mechanics, ensembles and the connection between statistics and thermodynamic.
CO7- Students will learn statistics of indistinguishable particles and their applications.
CO8- Students will gain the knowledge of cluster expansion of classical gas, Ising models and phase transition.
CO9- Students will gain the knowledge of Thermodynamic fluctuation, Brownian motion and related identities.
CO10- Students will learn the concept of phase transition of first and second kind. They will also learn adiabatic demagnetization.

Course Title: (paper-III) Electrodynamics and Plasma Physics

Course Outcome: After completing the course students will learn:

CO1 Understanding the electrodynamics and Maxwell's equations in term of scalar and vector potential.

CO2 Students will learn the field of accelerated charge particle and relativistic transformation properties of E and H field in four dimensional spaces.
CO3 Lorentz transformation, Langragian and Hamiltonian for relativistic particle charge particle in EM field.
CO4 Basics of plasma physics, plasma parameters and plasma oscillation.
CO5 Students will be familiar with Magneto-hydrodynamics and hydrodynamic waves.

Course Title: (paper-IV) Atomic and Molecular Physics-I

Course Outcome: After completing the course students will learn:

CO1- Students will have able to describe the atomic spectra of one and two valance electron atoms.
CO2- Students can study the charge in behavior of atoms under applied external electric field.
CO3- Students can explain rotational, vibrational and Raman spectra.
CO4- Students will have the knowledge of different microscopes which leads to observed nano particles.

Course Title: Practical Laboratory Course A: General and Optics.

Course Outcome: After completing the course students will learn:

CO1- Controlled rectifier Students will learn to verify Hartmann's formula by simple spectrometer.
CO2- Students will gain practical knowledge of finding poisons ratio of glass by optical interference.
CO3- Students will understand the concept of frequency calculation using lissajous figures
CO4- Students will gain practical knowledge of working of silicon.

Course Title: - Practical Laboratory Course B: Electronic

Course Outcome: After completing the course students will learn:

CO1- Verification and analyze of performance of electronic circuits.
CO2- Understanding the forting of electronic devices and components using.

M. Sc. III Semester (Physics)

Course Title: (Paper-I) Condensed Matter Physics – I

Course Outcome:

CO1- Student will gain an understanding of crystal structure; diffraction and reciprocal lattice which help in determine the crystal structure of any material.

CO2- Student will learn about the elastic compliance and stiffness constant, elastic waves, elastic energy density, and reduction of number of elastic constants.

CO3- Student will be able to realize the important concept of lattice vibrational spectrum, inelastic scattering of photon by phonons. Inelastic scattering of neutrons by phonons.

CO4- Student will understand the basic properties of thermal expansion, thermal conductivity, band theory and Fermi surfaces .derive the expression for anomalous skin effect, Dehass van alphen effect.

CO5- The subject treats functional materials from an experimental viewpoint, solid state theory and properties.

Course Title: (Paper-II) Nuclear and Particle Physics – I

Course Outcome: The students will understand:

CO1- Basic properties of nucleus, its structure and different models that explain the behavior and characteristics.

CO2- Bound state of deuteron by scattering theory.

CO3- Types of nuclear reactions and conservation laws, reaction mechanisms.

CO4- Basic particle physics, conservation laws C, P, T invariance and relativistic kinematics.

Course Title: (Paper-III) Digital electronics – I

Course Outcome: The students will understand:

CO1- Students can derive basic logic gates adder and substractor using universal gates, realization of Boolean expression in SOP and POS form and design it using logic gates.

CO2- Design and test combinational circuit.

CO3- Design and develop sequential circuits

Course Title: (Paper-IV) Atomic and Molecular Physics-II

Course Outcome: The students will understand:

CO1- Students will understand the concept of Nuclear Magnetic Resonance (NMR) and the interactions responsible for it.

CO2- Students will learn the three types of motion and energies in a molecule. They will also learn Franck Condon principle and Born Oppenheimer approximation.

CO3- Students will understand the concept of Raman Effect, its classical and quantum theory and its application in spectroscopy.

CO4- Students will understand the phenomena of Mossbauer Effect, the concept of recoilless gama emission and their application in spectroscopy.

CO5- Students will understand the concept of Electron Spin Resonance (ESR), the interactions responsible for it and experimental setup for ESR. They will also learn the applications of ESR.

Course Title: Practical Laboratory Course A: Solid state Physics

Course Outcome: The students will understand:

CO1- Enough knowledge and expertise in the general experiments so that they can be fit for teaching job as well as to design the experiments in research purpose.
CO2- To study the basic properties of materials.
CO3- Study the electrical and magnetic behavior of materials by four probe and hall experiment.

Course Title: Practical Laboratory Course B: Digital Electronic

Course Outcome: The students will understand:

CO1- Understand logic Analyzer.
CO2- Understanding the working of Flip-Flop counters etc which are used in computers.

M. Sc. IV Semester (Physics)

Course Title :- (420370) Condensed Matter Physics - I (Paper-I)

Course Outcome: The students will understand:

CO1- Explain various types of magnetic phenomenon, physics behind them, their properties and application .compare between curie weiss law for susceptibility and Heisenberg model and molecular field theory.
CO2- Describes the concept of super conducting state, type I and type II superconductors AC and DC Josephson effects, meissner effect, London equation B.C.S. theory of superconductivity.
CO3- Define and discuss the concepts of nano structured material, structure of single wall carbon nano tubes and electronic, mechanical, thermal and phonon properties on.
CO4- Student will understand the basic properties of thin film and film thickness, study about electrical conductivity of thin films and quantum size effect in thin film.
CO5- Differentiate between point defects, schottky defect and frenkel defects .Discuss about colour centers, edge and screw dislocation.

Course Title: (Paper-II) Laser

Course Outcome: The students will understand

CO1- The student will learn the condition of laser oscillation in different types of optical resonators, their stability, techniques of laser pulse generation, and different kinds of laser systems.

CO2- Study of propagation of light in optical media clarifies the knowledge of students regarding the interference, diffraction, polarization and other optical phenomena

CO3- The study of non-linear optics analytically and mathematically strong about the subject.

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Course Title: (Paper-III) Digital electronic –II

Course Outcome: The students will understand

CO1- Students will devastate knowledge of analog electrical devices particularly OP-AMP.

CO2- Students will know the fabrication and working principle of OP-AMP amplifiers and oscillator.

CO3- Students also get the knowledge of different languages under which computer runs smoothly.

Course Title: (Paper-IV) Computational Methods and Programming

Course Outcome: The students will understand:

CO1- Students will understand the concepts of Digital computers. They will also learn programming skill in BASIC programming language

CO2- Students will learn different methods of solving Algebraic and Transcendental Equations. They will also learn to solve simultaneous linear equations.

CO3- Students will learn different methods of finding finite difference and interpolation. They will also learn different methods of Numerical Differentiation and Integration.

CO4- Students will learn different methods of solving ordinary and partial differential equations. They will also learn about random variables and methods of importance sampling.

Course Title: Practical Laboratory Course A: Solid state

Course Outcome: The students will understand:

CO1- Correlate their theoretical knowledge with experiments.

CO2- The students will gain practical knowledge in utilizing different types of Interferometers for various uses, practical handling of Lasers and their applications.

Course Title: Practical Laboratory Course B: Digital Electronic and communication:

Course Outcome: The students will understand:

CO1- Apply OP-AMPs fundamentals in design and analyze of OP-AMP application.

CO2- Apply OP-AMP fundamentals and computer tools in project design evaluation and analysis.

Department of Computer Science and Application

B. Sc. Computer Science

Program Outcomes, Program Specific Outcomes and Course Outcomes

Program Outcome:

PO1- Bachelor in Computer Science is an undergraduate programme that focuses on the knowledge of Computer Science and Application and Information Technology.

PO2- Develop ability to pursue advanced studies and research in computer science.

PO3- The primary goal of this programme is to empower the young generation with the essential knowledge of computers and abilities to peruse satisfying jobs in the ever changing world of Information Technology sector.

PO4- To produce entrepreneurs who can innovate and develop software product. It provides an academic base to students to explore their career opportunities in IT sector and also contribute in the economic development of their country.

Program Specific Outcome:

PSO1- After completion of Bachelor of Computer Application programme students will be able to work in IT industries, public and private sectors.

PSO2- Students will be able to work in different profiles like software engineer, web developer, UI designers, Testers, coders, SEO, data analyst, hardware engineer, etc.

Course Outcomes

B. Sc. Computer Science First Year

Course Title: (Paper-I) Fundamentals of Computers and PC-Software

Course Outcomes: Students would be able to:

CO1- Demonstrate the use of mathematical software and solve simple mathematical problems.

CO2- Explain the needs of hardware and software required for a computation task.

CO3- State typical provisions of cyber law that govern the proper usage of Internet and computing resources.

CO4- Explain the working of important application software and their use to perform any engineering activity.

CO5- Demonstrate the use of Operating system commands and shell script.

Course Title: (Paper-II) Programming and Problem Solving Through 'C'

Course Outcomes:

CO1- Learn how to build by the algorithms for problems.
CO2- Learn how to create pictorial representations of the program.
CO3- Learn how to apply logic for problems.
CO4- Enhance their programming skills.
CO5- Learn about Loops, Conditional statements, Array, Pointers, File Handling, Structure,Unions etc.

B. Sc. Computer Science Second Year

Course Title: (Paper-I) Programming in C++

Course Outcomes:

CO1- Apply C++ features to program design and implementation.
CO2- Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.
CO3- Use C++ to demonstrate practical experience in developing object oriented solutions.
CO4- Design and implement programs using C++.
CO5- Analyze a problem description, design and build object-oriented software using goodcoding practices and techniques.
CO6- Implement an achievable practical application and analyze issues related to object-orientedtechniques in the C++ programming language.

Course Title: (Paper-II) Data Structures

Course Outcomes:

CO1- Learn and implement Arrays, Stacks and Queues and various operations on array.
CO2- Learn and implement the concept of Linked List.
CO3- Learn and implement the concept of various types of Trees.
CO4- Learn and implement Graph and Graph traversal techniques.

B. Sc. Computer Science Third Year

Course Title: (Paper-I) Operating System

Course Outcomes:

CO1- Gain extensive knowledge on principles and modules of operating systems.
CO2- Understand key mechanisms in design of operating systems modules.
CO3- Understand process management, concurrent processes and threads, memory management,virtual memory concepts, deadlocks.
CO4- Compare performance of processor scheduling algorithms - produce algorithmic solutionsto process synchronization problems.

Course Title: (Paper-II) DBMS CONCEPTS & ORACLE

Course Outcomes:

CO1- Understand the importance of Database.
CO2- Understand the Architecture & Modeling of Database.
CO3- Understand the concept of RDBMS.
CO4- Learn brief introduction to Structured Query Language.
CO5- Learn and implement Backup and Recovery of databases.
CO6- Learn and implement the Database Security.
CO7- Design Commercial database applications.

Department of Computer Science and Application

Bachelor of Computer Application (BCA)

Program Outcomes, Program Specific Outcomes & Course Outcomes

Program Outcome:

PO1- Bachelor in Computer Application is an undergraduate programme that focuses on the knowledge of Computer Science and Application and Information Technology.

PO2- The primary goal of this programme is to empower the young generation with the essential knowledge of computers and abilities to peruse satisfying jobs in the ever changing world of Information Technology sector.

PO3- It provides an academic base to students to explore their career opportunities in IT sector and also contribute in the economic development of their country.

Program Specific Outcome:

PSO1- After completion of Bachelor of Computer Application programme students will be able to work in IT industries, public and private sectors.

PSO2- Students will be able to work in different profiles like software engineer, web developer, UI designers, Testers, coders, SEO, data analyst, hardware engineer, etc.

BCA First Year

Course Title: (Paper-I) FUNDAMENTALS OF COMPUTERS AND PC-SOFTWARE

Course Outcomes:

CO1- Demonstrate the use of mathematical software and solve simple mathematical problems.

CO2- Explain the needs of hardware and software required for a computation task.

CO3- State typical provisions of cyber law that govern the proper usage of Internet and computing resources.

CO4- Explain the working of important application software and their use to perform any engineering activity.

CO5- Demonstrate the use of Operating system commands and shell script.

Course Title: (Paper-II) COMPUTER SYSTEM ARCHITECTURE

Course Outcomes:

CO1- Understand about concepts of Computer Organization and design.
CO2- Understand and implement Instruction codes and op-codes.
CO3- Understand Registers, Computer Instructions, timing and control.
CO4- Understand CPU basics, Stack Organization, Instruction format, Addressing formats.
CO5- Understand Memory system of a Computer & Understand basics of 8-bit Microprocessor

Course Title: (Paper-III) PROGRAMMING AND PROBLEM SOLVING THROUGH 'C'

Course Outcomes:

CO1- Learn how to build by the algorithms for problems.
CO2- Learn how to create pictorial representations of the program.
CO3- Learn how to apply logic for problems.
CO4- Enhance their programming skills.
CO5- Learn about Loops, Conditional statements, Array, Pointers, File Handling, Structure,Unions etc.

Course Title: (Paper-IV) INTERNET & WEB TECHNOLOGY

Course Outcomes:

CO1- Create web pages using XHTML and Cascading Style Sheets.
CO2- Build dynamic web pages using JavaScript (Client side programming).
CO3- Create XML documents and Schemas.

Course Title: (Paper-V) CYBER SECURITY

Course Outcomes:

CO1- Analyze and resolve security issues in networks and computer system to secure an IT structure.
CO2- Design, develop, test and evaluate secure software.
CO3- Develop policies and procedures to manage enterprise security risks.

Course Title: (Paper-VI) DISCRETE MATHEMATICS AND ALGEBRA

Course Outcomes:

CO1- Understand the theory of Sets, Relations and functions.
CO2- Understand and implement the Permutation and Combination.
CO3- Understand and implement the Algebra of Logic.
CO4- Understand and implement Recursion & Recurrence.
CO5- Understand and implement Graph theory.

BCA Second Year

Course Title: (Paper-I) PROGRAMMING WITH C++ AND DATA STRUCTURES

Course Outcomes:

CO1- Apply C++ features to program design and implementation.
CO2- Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.
CO3- Use C++ to demonstrate practical experience in developing object-oriented solutions.
CO4- Design and implement programs using C++.
CO5- Analyze a problem description, design and build object-oriented software using goodcoding practices and techniques.
CO6- Implement an achievable practical application and analyze issues related to object-orientedtechniques in the C++ programming language.
CO7- Learn and implement Arrays, Stacks and Queues and various operations on array.
CO8- Learn and implement the concept of Linked List.
CO9- Learn and implement the concept of various types of Trees.
CO10- Learn and implement Graph and Graph traversal techniques.

Course Title: (Paper-II) Computer Based Numerical and Statistical Techniques

Course Outcomes:

CO1- Obtain an intuitive and working understanding of numerical methods for the basic problems of numerical analysis.
CO2- Gain experience in the implementation of numerical methods using a computer.
CO3- Trace error in these methods and need to analyze and predict it.
CO4- Provide knowledge of various significant and fundamental concepts to inculcate in the students an adequate understanding of the application of Statistical Methods.
CO5- Demonstrate the concepts of numerical methods used for different applications

Course Title: (Paper-III) OPERATING SYSTEM

Course Outcomes:

CO1- Gain extensive knowledge on principles and modules of operating systems.
CO2- Understand key mechanisms in design of operating systems modules.
CO3- Understand process management, concurrent processes and threads, memory management,virtual memory concepts, deadlocks.
CO4- Compare performance of processor scheduling algorithms - produce algorithmic solutionsto process synchronization problems.

Course Title: (Paper-IV) WEB TECHNOLOGY AND APPLICATION

Course Outcomes:

CO1- Analyze a web page and identify its elements and attributes.
CO2- Create web pages using XHTML and Cascading Style Sheets.
CO3- Build dynamic web pages using JavaScript (Client side programming).
CO4- Create XML documents and Schemas.
CO5- The focus in this course is on the World Wide Web as a platform for interactive applications, content publishing and social services. The development of web-based applications requires knowledge about the underlying technology and the formats and standards the web is based upon.

Course Title: (Paper-V) RDBMS CONCEPTS & ORACLE

Course Outcomes:

CO1- Understand the importance of Database.
CO2- Understand the Architecture & Modeling of Database.
CO3- Understand the concept of RDBMS.
CO4- Learn brief introduction to Structured Query Language.
CO5- Learn and implement Backup and Recovery of databases.
CO6- Learn and implement the Database Security.
CO7- Design Commercial database applications.

Course Title: (Paper-VI) SOFTWARE ENGINEERING

Course Outcomes:

CO1- Understand the process of Software development.
CO2- Understand and plane the Software development.
CO3- Understand and implement the Coding.
CO4- Debug software.
CO5- Test software.

Course Title: (Paper-VII) ORGANIZATIONAL BEHAVIOUR

Course Outcomes: Students would be able to:

CO1- to discuss the development of the field of organizational behaviour and explain the micro and macro approaches
CO2- to analyze and compare different models used to explain individual behaviour related to motivation and rewards
CO3- to identify the processes used in developing communication and resolving conflicts
CO4- to explain group dynamics and demonstrate skills required for working in groups (team building)
CO5- to identify the various leadership styles and the role of leaders in a decision making process.
CO6- to explain organizational culture and describe its dimensions and to examine various organizational designs
CO7- to discuss the implementation of organizational change.

BCA Third Year

Course Title: (Paper-I) Computer Network, Internet Technology and Security

Course Outcomes:

CO1- Learn basic terminologies of Networking.
CO2- Know about fundamentals of Information Security.
CO3- Know and analyze the security threats and vulnerabilities.
CO4- Learn and implement System & Network Administration and security.
CO5- Learn about tools and technologies used for Network security.
CO6- Understand the various layers of Network architecture.
CO7- Understand and implement the switching techniques.
CO8- Learn the need to create a Network.
CO9- Learn about different layers and protocols present in those layers.
CO10- Learn to configure the network devices.
CO11- Learn about IP -Addressing.
CO12- Learn about Network Security.

Course Title: (Paper-II) CORE JAVA

Course Outcomes:

CO1- Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO2- Read and make elementary modifications to Java programs that solve real-world problems.
CO3- Validate input in a Java program.
CO4- Identify and fix defects and common security issues in code.
CO5- Document a Java program using Java doc.
CO6- Use a version control system to track source code in a project.

Course Title: (Paper-III) MANAGEMENT INFORMATION SYSTEM (MIS)

Course Outcomes:

CO1- Relate the basic concepts and technologies used in the field of management information systems;

CO2- Compare the processes of developing and implementing information systems.
CO3- Outline the role of the ethical, social, and security issues of information systems.
CO4- Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.
CO5- Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.

Course Title: (Paper-III) PYTHON PROGRAMMING

Course Outcomes:

CO1- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
CO2- Express proficiency in the handling of strings and functions.
CO3- Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
CO4- Identify the commonly used operations involving file systems and regular expressions.
CO5- Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python.

Course Title: (Paper-IV) E-GOVERNANCE

Course Outcomes:

CO1- Enhanced Transparency and Accountability.
CO2- Expanded reach of Governance.
CO3- Improved Public Administration.
CO4- Enables Environment for Promoting Economic development.
CO5- Improved service delivery in the form of better access to information and quality services to citizens.
CO6- Inheritance and polymorphism as used in Python.

Course Title: (Paper-V) PRINCIPLES AND PRACTICES OF MANAGEMENT

Course Outcomes:

CO1- To study the functions and principles of management.
CO2- To learn the application of the principles in an organization.
CO3- To enable the effective and barriers communication in the organization.
CO4- To study the system and process of effective controlling in the organization.

Department of Botany

Course Outcomes

B.Sc. 1'st Year Botany 2020-21

Programme Outcomes

PSO1- Students will come to understand and appreciate the diversity of flora from simplest to most complex plant forms

PSO2- Students will be able to compare and contrast the characteristics of plants, algae and fungi, bryophyte, pteridophyta and gymnosperm which were differentiate from each other and develop into other forms of life.

PSO3- Students will be able to explain the ecological interrelation of life on the earth by tracing energy and nutrient flow through the environment in different strata. They will be able to relate the physical features of the environment to the structure of populations, communities and ecosystems.

PSO4- Students will be able to explain how Plants function at the level of the gene, genome, cell, tissue, flower development. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and mode of life cycle followed by different forms of plants.

PSO5- Students will be able to collect relevant taxonomical information of plants and accurately interpret the data to evaluate and formulate a position of plant to its phylogenetic level.

Course Title: (Paper I) Diversity of Lower plants

Course Outcomes:

CO1- They will understand the fine structures of lower prokaryotes mycoplasma, viruses, bacteria, cynobacteria etc.

CO2- Student will able to identify local areas various plant disease caused by organisms.

CO3- Student will get knowledge of Local River, ponds algal members and their importance like- Oedogonium, Volvox, Chara etc.

CO4- Some practical knowledge regarding Fungi. They will take and apply their knowledge in the field for different crop diseases like Smul, Rust, Tikka disease etc.

CO5- Student will get knowledge about reproduction and life cycle of Bryophytes and their economic and ecological importance.

CO6- Study of different pteridophytes is very importance regarding evolution and economic importance. Stelar organization.

Course Title: (Paper II) Diversity of Higher plants

Course Outcomes:

CO1- Student will be able to know about most important Gymnosperm plant their evolution, Geological time table, Fossilization projects about Fossil Gymnosperms like Lyginopteris and Williamsonia.

CO2- Student will be able to understand the life cycle pattern of Cycas, Pinus, Ephedra and their economic importance.

CO3- Understand the structure and functions of various simple and complex tissues. Root apex and modification of roots.

CO4- They will understand about shoot apex organization and details study of Phloem, Cambium and Xylem also understand the anomalous secondary growth.

CO5- Student will understand diversity and arrangement of leaves. Also learn about leaf anatomy adaptations to photosynthesis and water stress and about senescence and abscission layer.

B.Sc. IInd Year - (Botany)

Course Title: (Paper-I) Taxonomy and Embryology of Angiosperms

Course Outcomes:

CO1- Gaining in - depth knowledge of salient features of angiosperms, plant nomenclature, classification and understand the concept of origin and evolution of angiosperms, development of taxonomic tools in plants systematic.

CO2- Understand the comparative account among the families of Angiosperms, economic importance, and systematic position of genera, species and families.

CO3- Student will able to know at least 20 locally available families of flowering plants and its economic importance.

CO4- Understand the structure of Anther, micros porogenesis and development of male gametophyte and structure of pistil, ovule, megasporogenesis and female gametophyte.

CO5- Understand the reproduction of plants, haploid male and female gametes, fertilization of zygote and embryo formation, embryo development and endosperm.

Course Title: Paper II – Plant Ecology, Biodiversity and phytogeography

Course outcomes

CO1- Students are able to know analyze various type of ecosystem correlate different ecosystem and understand concept of biogeochemical cycle.

CO2- Student is able to know various ecosystems and plant distribution.

CO3- Systematically understands biodiversity and its vital role in ecosystem function in depth studies on ecological parameter in biodiversity. Understand concept of characters and character weighing and concept of hotspot, mega diversity region of the world. Identification of rare, endangered and threatened species from the regions.

CO4- Student are able to know analyze monitor various physical, Chemical and biological properties of soil, water and air.

CO5- Understand phytogeography, the major plant communities of the world and different vegetation belts of the earth with characteristic climatic condition of the area.

B.Sc IIInd Year - (Botany)

Course Title : Paper –I Plant Physiology

Course Outcomes:

CO1- After completion of the course the students are familiar with various physiological aspects involved in the plant development.

CO2- Students will come to know the importance of water relation of plant with respect to various plant physiological processes.

CO3- Students will come to know about the role of mineral elements and bimolecular in plant development.

CO4- Students will understand the importance of photosynthesis in plants. They will also understand photosynthesis is one of the most important processes that allow plants to Live.

CO5- Students will come to know that, energy produced by respiration is essential for normal functioning of body.

CO6- Student will understand importance of metabolism to maintain living state of cells. They also understand role of nitrogen cycle in environment.

CO7- Students will understand how enzymes serve important function in body, in digestion and metabolism. They have developed knowledge about pathways of water through xylem and phloem.

Course Title: Paper II – Cell Biology, Genetics and Biotechnology.

Course outcomes

The Students will understand the cell as basic unit.

CO1- They understand the structure and function of various cell organelles.

CO2- Students will be able to know about Genetic material and Heredity.

CO3- They will be able to understand how cell divides and growth appears.

CO4- Students will be able to learn about the basic concepts of Mendelian Genetics, its variation and application and also understand the Linkage, Crossing over, Mutation and structural and numerical changes in chromosomes and also learn experimental methods to solve genetic problems.

CO5- Students will be able to understand cell at molecular level.

CO6- Students will be able to understand how the genetic material DNA replicates, how DNA repair mechanism rectify DNA damage and how protein synthesize in the body and how Gene expression regulates in prokaryotic and eukaryotic organisms.

CO7- Students will come to know how Biotechnology and Genetic Engineering concern with the manipulation of Genetic material for improvement of bioresources for human welfare.

M.sc. Botany

Programme Outcomes

PO1- To a botanist no plant is a weed. Conservation of biodiversity in the era of urbanization and industrialization should be the priority. After the completion of post-graduation course in Botany.

PO2- Students will be able to know the value of natural wealth and their conservation. Also become aware about planting trees, their medicinal and industrial values, role of ethnobotany, and herbal medicines forhuman welfare.

PO3- Students will understand the range of plant diversity in terms of morphology, anatomy, phylogeny, classification and their interrelationship. Also, will able to gather knowledge of biochemistry, physiology, cell biology, genetics, plant breeding and micro-propagation, tissue culture and horticulture.

PO4- Students are able to think logically and organize task into a structured form and Assimilate knowledge and ideas based on wide reading and in digital platforms.

PO5- Students will be able to perform/ carry out practical work, in the field and in the laboratory also learn techniques & practical skills like identification of algae, fungi, bryophytes, pteridophytes, gymnosperms, plant morphology and anatomy, angiosperm taxonomy, vegetation analysis techniques, physiochemical analyses of plant materials, physiology-biochemistry, cytology, Molecular biology genetics and plant Breeding.

PO6- Student will be able to understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge and requirement of sustainable development.

PO7- Student will be able to how to plan and execute a project either individually or as a team and these experiences will be invaluable in long run.

PO8- Students will be able to Create, select, and apply appropriate techniques, resources, and modern instruments and equipment's for Biochemical estimation, Molecular Biology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

PO9- Use of different software enrich their communication skill and make them friendly to digital platform like Microsoft, Adobe acrobat, Adobe Photoshop, Google etc.

PO10- Being students of natural science ethics is the key to protect our mother nature.

Program specific outcomes

On completion of program students will be specifically able to

PSO1- Identify classify the plants by using the key characters.

PSO2- Prepare and view specimens for examination using light microscopy

PSO3- Use pure culture and selective techniques to isolate fungi, plant pathogens, algae and identify them growing on media.

PSO4- Qualitative and quantitative estimate the number of floral components by using enumeration and suitable sampling and techniques.

PSO5- Use appropriate plant molecular techniques and use of instrumentation realated to it.

PSO6- Practice safe laboratory procedures, using appropriate protective, biosafety and emergency procedures.

PSO7- Documentation and report writing on experimental protocols, results and conclusions, study tours and filed visits etc.

M.Sc. Ist Sem

Course Title: Paper I – Biology and diversity of Viruses, Bacteria and Fungi

Course outcomes

After completion of this course students are expected to

CO1- Understand the basic microbial structure and study the comparative characteristics of prokaryotes.

CO2- They will be aware about diversity of microorganism.

CO3- They will also gain knowledge about their beneficial and harmful activities.

Course title: - Paper II-Biology and Diversity of Algae

Course Outcomes

CO1- This course aims to increase the understanding of the students about the diversity of lower plants, their classification, structure and growth. Course Learning Outcomes: The students will develop understanding about the diversity, identification, classification and economic importance of lower plants.

CO2- students are able to: Understand the diversity among Algae. Know the systematic, morphology and structure, of Algae. Understand the life cycle pattern of Algae. Understand the useful and harmful activities of Algae

CO3- To understand life cycles of different algal species. To explore economic importance of algae like Nostoc, Oscillatoria Chorella, Pandorina, Ulothrix, Chara Nitella

CO4- To understand life cycles of different algal species. To explore economic importance of algae like Vaucheria, Pinnularia, and Cyclotella

CO5- Understand the diversity among Algae. Know the systematic, morphology and structure, of Algae.

CO6- Understand the life cycle pattern of Algae. Understand the useful and harmful activities of Algae like Ectocarpus, Sargassum, and Dictyota Laminaria. Polisiphonia.etc.

Course Title: (Paper III) Biology and Diversity of Bryophyte & Pteridophyta

Course Outcomes:-

CO1- Able to describe the ecological role of Bryophytes.

CO2- Able to describe the vegetative and sexual reproduction in Bryophytes.

CO3- Able to describe the economic importance of Bryophytes.

CO4- Able to recall the unique evolutionary relationship of the Lycopodials, Selaginellales and Isoetales.

CO5- Able to define the features of coal age Lycophytes tress and compare them with modern day members of the Lycopodiophyta.

Course Title: Paper IV - Biology and diversity of Gymnosperms

Course outcomes

CO1- The student develops the basic understanding of important characteristic, comparison with Angiosperms, economic importance and classification of Gymnosperm.

CO2- Understand the various Fossils genera representing different fossil group.

CO3- Student will be able to know about morphological, anatomical and developmental patterns in Gymnosperms. Compare the main feature that defines the Cycadales, Cordaitable and Ginkgoales.

CO4- Student will be able to know about the reproductive parts their development and mechanism of reproduction and life cycle pattern.

CO5- Understand the angiosperm like features found in same Gnetophyta taxa and these feature are analogous with similar structures found in flowering plants.

M.Sc IInd Sem. (Botany)

Course Title: Paper I – Taxonomy of Angiosperms.

Course outcomes

CO1- Gaining in-depth knowledge of salient features of angiosperms, plant nomenclature, concept of taxonomy with identification, knowledge of secondary metabolites and its use in taxonomy. Understand development of taxonomic tools in plants systematic.

CO2- Understand the various systems of classification and its merits and demerits. Understand origin and its various theories of angiosperms.

CO3- Understand the concept and use of cladistics, phenotics and molecular tool in biodiversity studies.

CO4- Understand the systematic position of genera, species, families and comparative account among the families of angiosperms. Students know the Economic importance of angiosperms plants.

CO5- Student are able to know the comparative study of angiosperm plants and detailed studies on commonly growing families.

M.Sc. IInd Sem. (Botany)

Course Title: Paper I – Taxonomy of Angiosperms.

Course outcomes

CO1- Gaining in-depth knowledge of salient features of angiosperms, plant nomenclature, concept of taxonomy with identification, knowledge of secondary metabolites and its use in taxonomy. Understand development of taxonomic tools in plants systematic.

CO2- Understand the various systems of classification and its merits and demerits. Understand origin and its various theories of angiosperms.

CO3- Understand the concept and use of cladistics, phenotics and molecular tool in biodiversity studies.

CO4- Understand the systematic position of genera, species, families and comparative account among the families of angiosperms. Students know the Economic importance of angiosperms plants.

CO5- Student is able to know the comparative study of angiosperm plants and detailed studies on commonly growing families.

Course Title (Paper II) Morphology, Anatomy and Embryology of Angiosperms.

Course Outcomes-

CO1- Understand the various morphological structures and evolution of flowers different placentations, floral development and Genetics. ABC model of flora development.

CO2- Interdisciplinary application- Histotaxonomy, Histochemistry, Physiological anatomy, Ecological anatomy will be useful for the students and they will be able to learn Root , Shoot apex, Root microbes interactions, Phytotaxy etc.

CO3- Study of anomalous Dicot stem and Monocot stem-Salvadora, Achyranthus, Chenopodium, Leptadenia, Nyctanthus, Bignonia and Dracia stem.

CO4- Understanding the Ecological Anatomy of different Xerophytes, Hydrophytes, Epiphytes and Parasite plant stem roots and leaf.

CO5- Student will understand the structure of Anther and role of Gene expression during pollen development. They will get to know about Fertilization and how Endosperm provides nutrition to Embryo development.

Course Title - Paper III – Plant Ecology

Course Outcomes:

On completion of this course the students are

CO1- Able to analyze various types of ecosystems, correlate different ecosystems.

CO2- Students will understand the vegetative organization in community. Students will get to know about how changes take place during ecological succession.

CO3- Student will have developed knowledge about structure and function of ecosystem. They also will understand about biogeochemical cycle in environment and its role.

CO4- Students will understand the effect of air, water and soil pollution in environment. They will also develop knowledge about greenhouse gases its sources and role.

CO5- Student will get knowledge about invasive species of plant. They will get to know about how ecological management takes place

CO6- Student will have developed knowledge about distribution of various plant species by quadrate Method.

CO7- Student will come to know about the different biomes, vegetation, and botanical gardens and their roles, importance's for lives

Course Title - Paper IV – Plant Ecology

Course Outcomes-

CO1- Students will be able to explainthe range of plant diversity in terms of structure, function and environmental relationships. The evaluation of plant diversity. The role of plants in the functioning of the global ecosystem. A selection of more specialized, optional topics. Statistics as applied to biological data.

CO2- Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.

CO3- Students will be able to explain the ecological interconnectedness of life on earth by tracing energy and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities.

CO4- They understand the pattern origin, diversification and cultivation of plants in nature. They are able to design the strategies for conservation of these natural resources. They become well worst with the role and functions of various organizations.

CO5- They introduces the concepts and principles of BSI, CSIR, ICAR, DBT they gain knowledge and work of these.

CO6- They are able to understand the designing and function of remote sensing and their application. They gain knowledge of Indian remote sensing resources.

M.Sc IIInd Sem. - (Botany)

Course Title: Paper I – Plant Physiology

Course Outcomes-

After completion of the course the students are familiar with various physiological aspects involved in the plant development.

CO1- Students will come to know the importance of water relation of plant with respect to various plant physiological processes.

CO2- Students will come to know about the role of mineral elements and bimolecular in plant development.

CO3- Students will understand the importance of photosynthesis in plants. They will also understand photosynthesis is one of the most important processes that allow plants to Live.

CO4- Students will come to know that, energy produced by respiration is essential for normal functioning of body.

CO5- Student will understand importance of metabolism to maintain living state of cells. They also understand role of nitrogen cycle in environment.

CO6- Students will understand how enzymes serve important function in body, in digestion and metabolism. They have developed knowledge about pathways of water through xylem and phloem.

CO7- Learn about Sensory photobiology, Stress physiology – Responses of plants to biotic and biotic stresses.

CO8- Students will understand the role of various hormones, signaling compounds, thermodynamics and enzyme kinetics.

Course Title : Paper II – Plant Physiology

Course Outcomes-

After completion of the course the students are familiar with various physiological aspects involved in the plant development.

CO1- Students will come to know the importance of water relation of plant with respect to various plant physiological processes.

CO2- Students will come to know about the role of mineral elements and bimolecular in plant development.

CO3- Students will understand the importance of photosynthesis in plants. They will also understand photosynthesis is one of the most important processes that allow plants to Live.

CO4- Students will come to know that, energy produced by respiration is essential for normal functioning of body.

CO5- Student will understand importance of metabolism to maintain living state of cells. They also understand role of nitrogen cycle in environment.

CO6- Students will understand how enzymes serve important function in body, in digestion and metabolism. They have developed knowledge about pathways of water through xylem and phloem.

CO7- Learn about Sensory photobiology, Stress physiology – Responses of plants to biotic and biotic stresses.

CO8- Students will understand the role of various hormones, signaling compounds, thermodynamics and enzyme kinetics.

Course Title : Paper III – **Molecular biology and plant breeding**

Course Outcomes: By successful completion of this course, student will be able to understand

CO1- Student will learn the structural level of nucleic acids DNA and RNA and how the genetic material DNA replicate.

CO2- Learn the concept of gene and gene architecture understand the regulations of gene expression in Eukaryotes and also learn the basic of genetics and classical Genetics in prokaryotes covering bacterial / phage

CO3- The molecular events of transcription and processing of transcripts, RNA aditing, spacing and transport.

CO4- The molecular events of translation leading to Protein synthesis and post translational modifications, protein sorting and targeting of protein to organelles.

CO5- About the basic concept of gene mutation up to molecular level and how DNA repair mechanism rectify DNA damage and they will come to know about the diseases caused by genetic disorder.

Course Title : Paper IV– Conservation and Utilization of Plant Resources

Course Outcomes

CO1- Students will be able to explainthe range of plant diversity in terms of structure, function and environmental relationships.

CO2- The evaluation of plant diversity. The role of plants in the functioning of the global ecosystem.

CO3- A selection of more specialized, optional topics. Statistics as applied to biological data.

CO4- Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation. Students will be able to explain the ecological interconnectedness of life on earth by tracing energy and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities.

CO5- They understand the pattern origin, diversification and cultivation of plants in nature. They are able to design the strategies for conservation of these natural resources. They become well worst with the role and functions of various organizations.

CO6- They introduce the concepts and principles of BSI, CSIR, ICAR, DBTthey gain knowledge and work of these.

CO7- They are able to understand the designing and function of remote sensing and their application. They gain knowledge of Indian remote sensing resources.

Department of Zoology

Program outcomes, Program Specific Outcomes and Course Outcomes

The Department is having the following objectives:

PSO1- To provide quality education in a branch of Biological sciences i.e. Zoology with different specializations.

PSO2- To facilitate Higher education & research in zoology.

PSO3- To provide quality education offering skill based programs and motivate the students for self employment in applied branches of Zoology.

PSO4- To Inculcate the spirit of resource conservation and love for nature

PSO5- To conduct field studies and different projects of local and global interests.

PSO6- To provides opportunities for professional and personal development through curricular and co- curricular activities.

PSO7- Provide consultancy and organize extension activities.

Name of Program: Bachelor of Science in Biology

Course Code - C085 (Chemistry-Botany-Zoology)

Duration 3 Year

After completing B.Sc. (Biology) Programme students will:

Programme Specific Outcomes (PSOs) B.Sc. Biology

PSO1- Demonstrated a broad understood of animal diversity, including knowledge of the scientific classification and evolutionary relationships of major groups of animals.

PSO2- Recognized the relationships between structure and functions at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) for the major groups of animals.

PSO3- Characterized the biological, chemical, and physical features of environments (e.g., terrestrial, freshwater, marine, host) that animals inhabit.

PSO4- Explained how animals function and interact with respect to biological, chemical and physical processes in natural and impacted environments.

PSO5- Explained how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they are able to give

specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life.

PSO6- Understood the applied biological sciences or economic Zoology such as Sericulture, Apiculture, and Aquaculture, Industrial microbiology, RDNA technology and medicine for their career opportunities.

Programme Outcomes (POs): B.Sc. Biology

PO1- Students will be able to develop critical thinking about subject.

PO2- Students will be able to learn various aspects of the subject.

PO3- Students will be able to learn various techniques of the subject.

PO4- . Students will be able to use various application of the subject.

PO5- Students will be able to deliver knowledge about the subject.

PO6- Students will be able to produce knowledge for the larger interest of the society.

B. Sc. First Year (Biology)

Course Title: (Paper I) Invertebrate

Course Outcomes:

CO1- Came to knowing the basic concept of biosystematics and procedure in taxonomy.

CO2- Identified the taxonomic status of the entire non-chordates up to annelids and discuss the evolutionary model of the group.

CO3- Described the general biology of few selected non-chordates useful to mankind.

CO4- Know about some of the important and common protozoans, helminthes of parasitic nature causing diseases in human beings.

CO5- Understood the importance of metamerism in annelids.

CO6- Understood the diversity and classification and functional aspects of different systems of phylum Arthropoda, Mollusca and Echinodermata.

CO7- Described the social life and economic importance of insects.

CO8- Understood the physiology of pearl formation and pearl oyster formation.

CO9- Described the advanced characteristic features of cephalopod molluscs.

CO10- Came to know that the resemblance and evolutionary significance of larval forms of echinoderms.

Course Title: (Paper II) Cell Biology and Developmental Biology

Course Outcomes:

CO1- Understood the structure of cells and cell organelles in relation to the functional aspects and understanding of the working principles and applications of microscopes.

CO2- Described the composition of prokaryotic and eukaryotic cells.

CO3- Understood the structure and functions of chromosome; mitotic and meiotic cell divisions and their significance.

CO4- Understood the properties and treatment of cancer cells. Described the principle and applications of pH meter, centrifuge, chromatography and electrophoresis.

CO5- Understood the process of development of animals.

CO6- Understood the process of organogenesis of selected organs, development of extra embryonic membrane and the nature and physiology of placenta.

CO7- Came to know the inducer and inductor role in embryogenesis and knowledge about metamorphosis and the process of regeneration.

Course Title: (Lab) Invertebrates, Cell Biology and Developmental Biology

Course outcomes:

CO1- Understood the anatomy and physiology of invertebrate animals by dissection.

CO2- Described the structural study and mounding of organs.

CO3- Came to knowing the rules of taxonomy and the principle of animal classification.

CO4- Understood the diversity morphology, biological characters and taxonomical importance some selected museum specimens of different animal groups.

CO5- Came to know that internal skeletons and osteology of different bone structures.

B. Sc. Second Year (Biology)

Course Title: (Paper I) Vertebrate and Evolution

Course Outcomes:

CO1- Identified the taxonomic status of the entire chordates and discussed the evolutionary model of the group.
CO2- Imparted the knowledge on ecology of some important fishes, amphibians reptiles, birds and mammals.
CO3- Impart knowledge in comparative anatomy and development systems of chordates.
CO4- Make able to discuss some and very important phenomena in Chordates.
CO5- Know about the conservation and management strategies of the chordate fauna.
CO6- Understood the theories of evolution and highlighted the role of evidences in support of evolution.
CO7- Described the evolutionary knowledge through the concepts of coloration and mimicry.

Course Title: (Paper II) Animal Physiology and Biochemistry

Course Outcomes:

CO1- Understood about the composition of food and mechanism of digestion absorption and assimilation.
CO2- Attained knowledge of respiration and excretion and understood the mechanism of transport of gages and urine formation.
CO3- Described the mechanism of circulation and composition of blood.
CO4- Knowledge of neuromuscular coordination and the mechanism of osmoregulation in animals and endocrine system and their function is attained.
CO5- Understood the menstrual cycle and the role of contraceptive in population control.
CO6- Comprehended the energy source, chemical bonds and the principles of thermodynamic understood the importance of acid base balance.
CO7- Attained the knowledge of macromolecule such as carbohydrates, protein and fat, their types and significance.
CO8- Understood the knowledge of cholesterol and its biological significance.
CO9- Described the enzymes, mechanism of enzyme action and factors affecting the enzyme activity
CO10- Understood the types and importance of vitamins.

Course Title: (Lab) Vertebrate and Evolution and Animal Physiology and Biochemistry

Course Outcomes:

CO1- Obtained the knowledge about direct observation of fossils and evolutionary important specimen by which evolutionary relationship of animal groups.

CO2- Attained knowledge of qualitative analysis of macromolecules, excretory products, blood glucose and cholesterol.

CO3- Understood the enzyme reaction and influence of temperature on enzyme action.

CO4- Skill development for the observation of blood cells and haemin crystals.

CO5- Understood the working principle and applications of physiological instruments.

CO6- Attained knowledge on the observation of preserved specimens and instruments of sericulture and fisheries.

CO7- Understood the techniques of differentiation of haemolymph and blood

CO8- Observed of preserved specimens and instruments

CO9- Comprehended the physico- chemical nature of water through estimation of its chemical compounds.

CO10- Understood the nature and functional aspects of intra specific association of animals.

B. Sc. Third Year (Biology)

Course Title: (Paper I) Genetics

Course Outcomes:

CO1- Understood the theories of classical genetics and blood group inheritance in man.

CO2- Described the genetic variation through linkage and crossing over, chromosomal aberrations and sex determination.

CO3- Understood the genetic defects and inborn errors of metabolism and genetic counseling and role of inbreeding and out breeding.

CO4- Understood the molecular structure of genetic materials and understood the mechanism of gene expression and regulation character formation.

Course Title: (Paper II) Ecology and Applied Biology

Course Outcomes:

CO1- Understood and appreciate the environment and ecological services of life on earth.

CO2- Understood the biotic factors of environment and biogeochemical cycle and intra specific relationships of animals.

CO3- Acquired knowledge of ecosystem, food chain, energy flow and productivity and understood pond as a model ecosystem.

CO4- Imparted knowledge of habitat ecology, pollution and bioremediation of polluted environment.

CO5- Understood the various types and methods of aquaculture practices.
CO6- Understood the physiology and reproductive mechanisms of important fishes.
CO7- Understood the culture of mulberry plants.
CO8- Came to know about the culture methods of B.mori and mulberry silk.
CO9- Described the diseases and pests of B.mori.
CO10- Studied the quality of silk, silk gland and marketing strategies of silk.

Course Title: (Lab) Genetics and Ecology and Applied Biology

Course Outcomes:

CO1- Understood the inheritance of mendelian traits by direct observation among students.
CO2- Acquired knowledge skill development and observation of blood group identification and pedigree chart preparations
CO3- Understood of the mechanism of phenotypic expression in Drosophila.
CO4- Gained genetic knowledge on the observation of specimens and models.
CO5- Comprehended the physico- chemical nature of water through estimation of its chemical compounds.
CO6- Understood the nature and functional aspects of intraspecific association of animals.

Master of Science in Zoology (M.Sc. Zoology)

Course Code: C056

Duration: 2 Years (Four Semesters)

The primary objective of the program is to impart quality education in the subject of Zoology as a basic science and its applied branches to the students.

Programme outcomes (M.Sc. Zoology)

PO1- The programme also works across related majors within the M.Sc zoology
PO2- Distinguish between the Structure, Function, Behaviour and evolution of different animal.
PO3- For instance if you major in zoology, you can also still take courses from across the other complementary.
PO4- Master of Science majors of conservation biology and ecology, giving you an in-depth knowledge of those most closely related programmes
PO5- Apply the wide range of subject based skills to various fields that provide a base for future career in disciplines such as Health Sciences, Agriculture,

Environmental Management, Biotechnology, Publishing, Teaching and Research Perform,

PO6- Assess and implement practical techniques and procedure to solve biological problems and analyse and quantify data collected during any project.

PO7- Understand the applications of Biological techniques to various fields of biology.

PO8- When you graduate with a Master of Science (Zoology) you will have learned how to work at a high level of academic achievement.

PO9- Work to deadlines under pressure and communicate effectively.

M.Sc. Zoology I-Semester

Course Title: (Paper-I) Biosystematics, Taxonomy and Evolution

Course Outcomes:

CO1- Classify animals on the basis of their relation to other animals by body structure, external characters, development and DNA

CO2- Apply the International rules of Nomenclature to give a scientific name to animals which are found during research.

CO3- Understand the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations

CO4- Understand and demonstrate the internal anatomy of various animals, biodiversity and related indices.

Course Title: (Paper-II) Structure & Function of Invertebrates

Course Outcomes:

CO1- Understand the structure and organization of invertebrate animals.

CO2- Explain modifications in various functions of animals during transition from invertebrates to vertebrates.

CO3- Discuss the evolutionary significance of larval forms of invertebrates.

CO4- Identify invertebrates and homology, analogy and modifications of mouthparts in relation to feeding habits.

Course Title: (Paper-III) Quantitative Biology, Biodiversity and Wildlife

Course Outcomes:

CO1- To understand quantitative approaches and technologies involved in research.
CO2- To identify diversity of fauna on earth and implement conservation measures to save diversity
CO3- To understand importance of wildlife and conservation measures, National parks and Sanctuaries.
CO4- Analyse biological data mathematically and statistically.

Course Title: (Paper-IV) Bimolecular and Structural Biology

Course Outcomes:

CO1- To explain Biomaterial, Nanoparticles and their importance.
CO2- To understand biological reactions, structure of protein, carbohydrates fats, nucleic acids and their metabolism.
CO3- To develop a knowledge of enzymes and mechanism of their action in various biological reactions.
CO4- To understand the process of gene expression & protein synthesis.

M.Sc. Zoology II-Semester

Course Title: (Paper-I) General and Comparative Animal Physiology and Endocrinology

Course Outcomes:

CO1- Understand all physiological processes of vertebrates & analyse them biochemically
CO2- Correlate the comparative physiology of the systems and understand their regulation & control
CO3- Compare the structure, functions and regulation of the receptor organs of vertebrates
CO4- Understand the structure, function and regulation of endocrine & neuroendocrine glands,

Course Title: (Paper-II) Population Ecology and Environmental Physiology

Course Outcomes:

CO1- Understand population and its characters and regulation.
CO2- Correlate physiological adaptations to environment and pollution, control measures for environmental degradation. as well as risk factors to human health.

CO3- Understand limiting factors, predator-prey relationships and physiological responses of the body to environment.
CO4- Demonstrate the methods of relaxation of Stress and body by Yoga, Meditation, Asana & Pranayam.

Course Title: (Paper-III) Tools and Techniques in Biology

Course Outcomes:

CO1- Explain Microscopy, Colorimetry, Chromatography principle, process, applications and working of related instruments.
CO2- Demonstrate Microbiological, Cytological, Histological, Molecular biological techniques.
CO3- Apply and demonstrate Immunological Surgical Immunodetection and Cell culture techniques.
CO4- Understand Cryopreservation, Radioisotope and Isotope techniques and applications of all the techniques in biology.

Course Title: (Paper-IV) Molecular Cell Biology and Genetics

Course Outcomes:

CO1- Explain Biomembranes and the processes of Cell-cell signalling and cell-cell adhesion.
CO2- Understand the process of Sex determination and details of Human chromosomes & Human chromosome project.
CO3- Understand gene libraries, Transgenic and Knockout animals.
CO4- Understand various genetic processes and their applications to biological systems.

M.Sc. Zoology III-Semester

Course Title: (Paper-I) Comparative Anatomy of Vertebrates

Course Outcomes:

CO1- Knowledge of Origin, Evolution and general organisation of Chordates.
CO2- Knowledge of Evolution of heart , lungs and urino-genital organs of vertebrates
CO3- Knowledge of comparative anatomy of all systems of vertebrates.
CO4- Knowledge of flight and aquatic adaptations in birds and mammals.

Course Title: (Paper-II) Limnology

Course Outcomes:

CO1- Knowledge of morphometry, physico-chemical and biological characteristics of fresh water bodies.
CO2- An understanding of the significance of aquatic flora, fauna, insects, birds and macrophytes in water bodies.
CO3- Knowledge of pollution of rivers, causes and control measures.
CO4- Knowledge of legislation and regulation on discharge of industrial effluents and domestic wastes in rivers and reservoirs.

Course Title: (Paper-III) Ecotoxicology

Course Outcomes:

CO1- To develop an understanding of environmental biology, productivity and pollution.
CO2- To develop knowledge of Toxicity of foods, pesticides and agrochemicals among younger.
CO3- To know public health hazards due to natural disasters and occupation.
CO4- To know the process of recycling and reuse technologies of solid and liquid waste.

Course Title: (Paper-IV) Animal Behavior and Neurophysiology

Course Outcomes:

CO1- Understand neurophysiology of perception memory, domestic animal and human behaviour.
CO2- Analyse processes at different levels and neurophysiology of sensory processing of animal behaviour.
CO3- Classify behavioral patterns, communication, learning and memory.

Course Title: (Paper-V) Aquaculture

Course Outcomes:

CO1- Develop knowledge of farming of aquatic organisms for increasing food production and animals beneficial to human.

CO2- Observe culture techniques, farm management and hatchery operations.
CO3- Analyse harvesting and marketing strategies.
CO4- Understand the technique of fish preservation and Water quality monitoring techniques.

Course Title: (Paper-VI) Gamete Biology Development and Differentiation in Vertebrates

Course Outcomes:

CO1- Understand reproductive physiology and development in mammals
CO2- Develop a deep knowledge of the role of endocrine secretion in regulation of reproductive cycle.
CO3- Understand the process of differentiation of eggs and sperms before fertilization.
CO4- Develop knowledge of cryopreservation technique and stem cell disorders.

Course Title: (Paper-VI) Fish Structure and Function

Course Outcomes:

CO1- Know the functional anatomy of all organ systems of fish
CO2- Understand migration and adaptations in fishes.
CO3- Observe the phenomenon of Parental care in various fishes and importance of electric organs in fishes.
CO4- Understand the significance of Coloration, luminous and poisonous organs of fish.

Course Title: (Paper-VII) Pisci-Culture and Economic Importance of Fishes (Ichthyology

Course Outcomes:

CO1- Differentiate between natural and induced breeding in fish.
CO2- Manage hatcheries and fish farm in future.
CO3- Develop technical knowledge of fish preservation and Shark liver oil industry.
CO4- Identify fish by morph metric and meristic characters and apply the method in biodiversity oriented research.
CO5- Explain and apply genetic engineering in fishery technology.

Department of Self Finance Commerce

Bachelors of Business Administration (BBA)

Program outcomes, Program Specific Outcome

& Course Outcome

Program Name: Bachelors of Business Administration (BBA)

Program Outcomes:

PO1- An Understanding of Business Functions
PO2- Providing Global Perspectives
PO3- Developing Critical and Analytical Thinking Abilities
PO4- Interpersonal Skill Development
PO5- Creating Social Sensitivity and Understanding CSR, Ethical and Sustainable
PO6- Business Practices Demonstrate sensitivity to social, ethical and sustainability issues
PO7- Developing Entrepreneurship Acumen.

Program Specific Outcomes

PSO1- Acquiring Conceptual Clarity of Various Functional Areas
PSO2- Ability to analyze various functional issues affecting the organization
PSO3- Demonstrating ability to evolve strategies for organizational benefits
PSO4- Analysis and interpretation of the data which is used in Decision Making
PSO5- Demonstrate the ability to develop models / frameworks to reflect critically on
PSO6- specific business contexts Demonstrate Effectively Oral and Written Communication
PSO7- Demonstrate Ability to work in Groups
PSO8- Demonstrate understanding of social cues and contexts in social interaction
PSO9- Develop Ethical Practices and Imbibe Values for Better Corporate Governance.
PSO10- Understand ethical challenges and choices in a business setting
PSO11- Demonstrate understanding of sustainability related concerns in varied areas
PSO12- Analyze Global Environment and its Impact on Business
PSO13- Understand the ecosystem of start up in the country
PSO14- Demonstrate the ability to create business plans

Course Outcome

Bachelors of Business Administration (BBA)

S.No.	Class	Course Name	Course Outcome
1	BBA I YEAR	Principles of Management (Paper I)	Students will get familiar with the basic concepts applied in contemporary management practice and many of the concepts learnt will form the foundation for subsequent courses in strategy.
2		Communication Skills (Paper II)	Students will be able to communicate their ideas through different modes and mediums. They will be able to make memorable presentations professionally. Students will understand different strategies to adopt while communicating with different personalities with different goals. Students will be able to handle job opportunities successfully
3		Micro economics (Paper III)	Students will learn: How different sectors interact in macro economy. How national income is calculated. Concept of the multiplier effect in an economy. Analysis of the money market. Role of fiscal and monetary policy in macro economy. Causes and impact of inflation and policies to control it. Balance of payments, impact of capital flows in an open economy and role of economic policies in an open economy.
4		Business statistics (Paper IV)	Students will be able to summarize and analyze statistical data to solve practical business related problems. Students will be able to interpret the relevance of statistical findings for business problem solving and decision making. Students will be able to apply technology to statistical analysis and problem solving.
5		Financial Accounting (Paper V)	Show proficiency in basic accounting concepts, conventions and understanding of the accounting process. Understand the process and preparation of financial statements for Sole Proprietorship and Companyand Departmental Business Organizations
6		Business Mathematics (Paper VI)	The students after completion of the program will be able to understand the mathematical concepts and terminology involved in Algebra, Derivatives and basic arithmetic operations on Matrices. The students will be able to interpret and solve business related problems. The students will have strong foundation for further study in Management, Operations, Accounting, Marketing and Finance.

7		Marketing Management (Paper VII)	students will be able to: Have an in depth understanding of the marketing planning process Develop and implement integrated marketing strategies for products.
8		Marketing Research (Paper VIII)	Define the basic concepts related to marketing research. Explain the concepts about contemporary marketing research. Explain relationship and differences between marketing research and marketing information systems. Interpret development of marketing research. List the marketing research process.
9		Financial Management (Paper IX)	Students should be able to show analytical skills in short term and long term decision making.
10	BBA II YEAR	Project Management (Paper X)	Applies the PM processes to initiate, plan, execute, monitor and control, and close projects and to coordinate all the elements of the project Manages projects effectively including the management of scope, time, costs, and quality, ensuring satisfying the needs for which the project was undertaken Applies processes required to manage the procurement of a project, including acquiring goods and services from outside the organization Manages project risk, including identifying, analyzing and responding to risk Analyzes and manages stakeholder expectations and engagement to ensure a successful project outcome
11		Human Resource Management (Paper XI)	Effectively manage and plan key human resource functions within organizations. Examine current issues, trends, practices, and processes in HRM. Contribute to employee performance management and organizational effectiveness. Problem-solve human resource challenges. Develop employability skills for the Canadian workplace. Develop effective written and oral communication skills
12		Organizational Behaviour (Paper XII)	Through this course student will be able to explore various dimensions of Human Resource Management and will find new career opportunities in the same It will provide hands on experience to work on industry assignments and gain

			practical knowledge

13	BBA III YEAR	Entrepreneurial Development (Paper XIII)	Learning the fundamentals of entrepreneurship, marketing, accounting, information systems, and operations. • Learning to ideate for a tangible product or a service, to think about how your business meets a human need. • Learning to research demand using fundamental marketing research
14		Management Information System (Paper XIVI)	Evaluate the role of information systems in today's competitive business environment. Define an information system from both a technical and business perspective and distinguish between computer literacy and information systems literacy. Assess the relationship between the digital firm, electronic commerce, electronic business and internet technology. Identfy the major management challenges to building and using information systems in organizations. identify managerial riskes related to information system organization processing and utilizing.
15		Business Environment (Paper XV)	To enable students to evaluate business and its environment. Students would be acquainted with business objectives, dynamics of business and environment, various types of business environment and its analysis.) To enable students to understand business and society.
16		Business Law Business Law (Paper XVI)	Gain Understanding of the Legal Environment of Business. Learn to apply basic legal knowledge to business transactions. Learn to describe business law in the global context. Learn to describe the relationship of ethics and law in business.
17		Elective A Marketing Consumer Behaviour (Paper XVII)	The course will help the students take a holistic view of the consumer; it will help equip them with knowledge of various models and frameworks to help understand consumer behavior and align the knowledge with formulation of appropriate marketing strategies. To develop an understanding of the theoretical and conceptual concepts of consumer behavior and apply them to real life marketing situations and practices.
18		Elective A Marketing Advertising Management & Sales Promotion (Paper XVIII)	Explain use of advertising and sales promotion as a marketing tool. B. Describe advertising and sales promotional appeals. C. Explain appropriate selection of media. D. Discuss means of testing effectiveness of advertising and sales promotion.
19	BBA III	Elective B Finance	Evaluate comparative working capital management policies

	YEAR	Working Capital Management (Paper XVII)	and their impact on the firm's profitability, liquidity, risk and operating flexibility. Evaluate the importance of effective working capital management and its role in meeting the firm's strategic objectives and its impact in value creation. Investigate funds flow cycles and their impact on working capital management objectives. Plan analytical skills, tools and techniques to enhance the decision-making process. Plan analytical skills, tools and techniques to enhance the decision-making process.
20		Elective B Finance Corporate Taxation (Paper XVIII))	Students would identify the technical terms related to Income Tax. Students would determine the residential status of an individual and scope of total income. Students would compute income from salaries, house property, business/profession, capital gains and income from other sources.
21		Elective C HRM Human Resources Development (Paper XVII))	Understand the role of human resource management Identify how wellness, training and work-life balance policies impact retention Learn best practices in performance management, performance appraisal, and employee development Understand functions of job design, standards of employment law and techniques for employee retention.
22		Elective C HRM Wages and Salary Administration (Paper XVIII)	Recognize how pay decisions help the organization achieve a competitive advantage. Analyze, integrate, and apply the knowledge to solve compensation related problems in organizations. Demonstrate comprehension by constructing a compensation system encompassing; 1) internal consistency, 2) external competitiveness 3) employee contributions, 4) organizational benefit systems, and 5) administration issues. Design rational and contemporary compensation systems in modern organizations.

Department of Geography

Program outcomes, Program Specific Outcomes and Course Outcomes

B.A. (GEOGRAPHY)

Programme outcomes:

PO1- Student will gain the knowledge of physical geography. Student will have a general
PO2- Understanding about the geomorphological and geotechnical process and formation.
PO3- They will be able to correlate the knowledge of physical geography with the human geography.

Course Outcomes

B.A. First Year (GEOGRAPHY)

Course title : - (Paper I) Physical Geography

Course Outcomes:

Students would be able to:

CO1- To explore the fundamental concepts of the atmosphere, oceans and the Earth surface.
CO2- To familiarize the students with the basic map making and reading techniques.
CO3- To make them understand various aspects of human geography especially races religion, cultural regions and population.
CO4- To make the students aware of the theoretical aspects of regional development and planning.
CO5- To give the students general view and importance of man and environment Relationship.
CO6- To equip the students with basic understanding of the satellite science and are alphotogrammetry.
CO7- To make the students aware about the physiographic divisions and economic Resources of India.
CO8- To refrain the theoretical knowledge of students of “what, where and why” in Geography through field survey.
CO9- To make them understand various problems and overcome them through proper management, planning and sustainability.
CO10- To motivate students to understand the disaster risk and to take actions appropriately against such risk with their own will.

Course Title: (Paper II) Human Geography

Course Outcomes:

Students would be able to:

CO1- To make them understand various aspects of human geography especially races, religion, cultural regions and population.
CO2- To give the students general view and importance of man and environment relationship,
CO3- To further the understanding of the students so as to achieve the conceptual clarity of various aspects related to humans.
CO4- Students will demonstrate a proficiency in knowledge of essential concepts of physical and human geography including nature-society interactions as well as global human and environmental issues.

Course Title: - Practical

Course Outcomes:

Students would be able to:

CO1- Develop an idea about scale and draw different types of scale like linear, diagonal and vernier.
CO2- Gain knowledge about topographical maps and apply this knowledge in ground surface.

B. A. Second Year (GEOGRAPHY)

Course title : - (Paper I) Physical Geography (Atmosphere & Hydrosphere)

Course Outcomes: Students would be able to:

CO1- To explore the fundamental concepts of the atmosphere, oceans and the Earth surface.
CO2- Students will have a general understanding of physical geographic processes.
CO3- To introduce the students to the concepts of hydrological inputs and outputs and about the oceans of the world.
CO4- Realize the importance of water conservation.
CO5- Identify marine resources and characteristics of ocean waters.
CO6- Interpret hydrological and rainfall dispersion graphs and diagrams.

Course Title: (Paper II) Economic Geography

Course Outcomes: Students would be able to:

CO1- Students will acquire an understanding of economic activities, and theories associated with it.
CO2- Acquire knowledge of the fundamental and modern issues in Economic Geography.
CO3- Conceptualize, demarcate and analyze the geographical determinates of agriculture and manufacturing activities.

Course Title: Practical

Course Outcomes: Students would be able to:

CO1- Brings direct interaction of different types of surveying instruments like prismatic compass survey.
CO2- Develop an idea about different types of thematic mapping techniques.
CO3- Learn to use of various meteorological instruments.

B.A. Third Year (GEOGRAPHY)

Course Title: (Paper I) Geography Of India

Course Outcomes: Students would be able to:

CO1- To introduce the students to the physiographic divisions of India, drainage system, climate, food and mineral resources.
CO2- The students will get familiarized with the geographic dimensions of India in terms of its regional vitality and formation of regions.
CO3- In-depth knowledge of climate, natural vegetation, agriculture and energy resources and industries of India.

Course Title : - (Paper II) Environment & Resource

Course Outcomes: Students would be able to:

CO1- To make the students understand the key concepts of cause and effect and how they relate to influence the human activities and climate in shaping the Earth surface.
CO2- Assessing the nature, impact and management of major natural and man-made hazards affecting the Indian subcontinent.
CO3- Gain knowledge about concept, scope of environmental geography and components of environment.
CO4- Develop an idea about human-environment relationships.
CO5- Build an idea about ecosystem.
CO6- Know about environmental program and policies.

Dept. of Self-Finance Commerce

B.Com (Tax Procedure and Practices & Computer Application)

Program outcomes, Program Specific Outcome and Course Outcomes

Program Name: B. Com (Tax Procedure and Practices & Computer Application**)**

Program Outcomes:

PO1- Enables learners to get theoretical and practical exposure in the commerce sector which includes Accounts, Commerce, Management, Computer Application, Warehousing Taxation, Environment etc.

PO2- Students will be able to design and implement a web page. Students will be able to perform E-Banking, E-Marketing, E-Learning, and E-Shopping. Students will be able to perform any C++ programming tasks.

PO3- Develops communication skills and build confidence to face the challenges of the corporate world. Enhances the capability of decision making at personal and professional levels. Develops entrepreneurial skills amongst learners.

PO4- Strengthens their capacities in varied areas of commerce and industry aiming towards holistic development of learners.

PO5- Thus, after completing their graduation learners develop a thorough understanding of the fundamentals in Tax Procedure and Practices and Finance.

PO6- A Wide range of opportunities are opened in this field and more people are choosing this subject as their carrier.

PO7- Students have a plethora of choices to pursue professional courses such as CA, M.COM, MBA, CMA, ICWA, CS, CFA, etc.

Skill Outcomes

- To provide the knowledge of Taxation system in India and to enhance employability skills of the Commerce students

- Analyze the scope of the business by adopting modern technology in the business practice
- To motivates the learners towards higher education and The course helps the students to prepare for competitive and professional examination
- The introduction of updated and the need of the hour concepts and contents will make a student employable and at the same time confident in his/her day to day transactions.
- The programmed cultivates the habit of entrepreneur and there by motivates student to start entrepreneurship.
- Students will improve their computer literacy, their basic understanding of operative systems and a working knowledge of software commonly used in academic and professional environments
- Develop proficiency in the management of an organization.
- Attain skills in conducting business transactions online.

Course Outcomes

B. Com First year (Tax Procedure and Practice & Computer Application)

Group: Tax Procedure and Practice

Course Title: (Paper I) Income Tax Procedure and Practices

Course Outcomes: Students would be able to:

CO1- To collect the basic concepts and definitions of Income Tax Act. 1961
CO2- To know the residential status of assesses and incomes exempted from Tax.
CO3- To familiar with the computation of Income from Salary, House Property, Business and Profession, Capital Gain, income from other Sources.

Course Title : (Paper II) Goods and Service Tax

Course Outcomes: Students would be able to:

CO1- To provide knowledge about goods service tax.
CO2- To understand the procedure for registration, payment and refund of GST
CO3- To understand the appeals, offences and penalties with respect to GST

Group: Computer Application

Course Title: (Paper I) Fundaments of Computer and PC software

Course Outcomes: Students would be able to:

CO1- Understanding the concepts of Input and Output devices of computer system.
CO2- Understanding an operating system and its working and solve common problems related to the operating system.
CO3- Learn basic Word processing, Spreadsheet and Presentation Graphics software skills

Course Title: (Paper II) Desktop Publishing and Multimedia

Course Outcomes: Students would be able to:

CO1- Understand basics of computer and its related terminology.
CO2- Write, Edit & print documents using MS-WORD & Excel.
CO3- Understand various software used for Desktop Publishing and would be able to create and design documents with text and graphics like newspaper ad, wedding cards, visiting cards, greeting cards etc.

Group: Account

Course Title: (Paper I) Financial Account

Course Outcomes: Students would be able to:

CO1- To gain knowledge on preparation of accounts in Hire purchase and Installment system.
CO2- To acquire the skill to prepare different types of branch accounts
CO3- To transform the accounting knowledge in preparing departmental accounting.

Course Title : (Paper II) Business Mathematics

Course Outcomes: Students would be able to:

CO1- To understand the mathematical concepts and terminology involved in Algebra, Derivatives and basic arithmetic operations on Matrices.
CO2- It must be able to interpret and solve business related problems.
CO3- It gives strong foundation for further study in Management, Operations, Accounting, Marketing, Taxation and Finance.

Group: Management

Course Title: (Paper I) Business Law and Framework

Course Outcomes: Students would be able:

CO1- To equip with the provisions of Law of Contract, 1872 and enable them to discuss and restate the same.

CO2- To equip with the provisions of Sale of consumer Act, 1986 and enable them to discuss and outline the same.

CO3- To equip students with the provisions of Negotiable Instruments Act, 1881 and enable them to describe and recall the same.

Course Title: (Paper II) Business Organization & Communication

Course Outcomes: Students would be able:

CO1- To be familiar with the complete course outline/Course Objectives/Learning Outcomes/ Evaluation Pattern & Assignments.

CO2- To participate in an online learning environment successfully by developing the implication-based understanding of Paraphrasing, deciphering instructions, interpreting guidelines, discussion boards & Referencing Styles.

CO3- To distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.

B. Com Second Year (Tax Procedure and Practice & Computer Application)

Group: Tax Procedure and Practice

Course Title : - (Paper I) Income Tax and Procedure and practices

Course Outcomes: Students would be able:

CO1- To know the residential status of assesses and incomes exempted from Tax.

CO2- To collect the basic concepts and definitions of Income Tax Act. 1961.

CO3- To familiar with the computation of Income from Salary, House Property, Business and Profession, Capital Gain, Income from Other Sources

Course Title : - (Paper II) Custom Duty-Law & Practices

Course Outcomes: Students would be able:

CO1- It would be acquainted with the various provisions of the Customs Act. They would recall and discuss various types of customs duty, levy and exemption from customs duty and classification and valuation of goods imported and to be exported.

CO2- It would discuss various import and export procedures related to baggage, provisions relating to coastal goods, warehousing and duty drawback.

Group: Computer Application

Course Title : - (Paper I) Internet and E-commerce

Course Outcomes: Students would be able:

CO1- Analyze the impact of E-commerce on business models and strategy.
CO2- Describe the major types of E-commerce.
CO3- Explain the process that should be followed in building an E-commerce presence.
CO4- Identify the key security threats in the E-commerce environment.

Course Title : - (Paper II) Relational Database Management System

Course Outcomes: Students would be able:

CO1- Have a broad understanding of database concepts and database management system software.
CO2- Have a high-level understanding of major DBMS components and their function.
CO3- Be able to model an application data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
CO4- Be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.

Group: Account

Course Title : - (Paper I) Corporate Account

Course Outcomes: Students would be able:

CO1- To understand the provisions of Company Act 2013.
CO2- To familiarize on capital structure and the procedure of share allotment.
CO3- To attain knowledge on rights and duties of shareholders, members and types of meetings in the companies.

Course Title : - (Paper II) Cost Account

Course Outcomes: Students would be able:

CO1- To familiarity with the estimation and controlling of material cost
CO2- To understand the estimation and controlling of labor cost
CO3- To able to prepare cost sheet.

Group: Management

Course Title : - (Paper I) Principle of Statistics

Course Outcomes: Students would be able:

CO1- To use regression analysis to estimate the relationship between two variables and to use frequency distribution to make decision.
CO2- To understand the techniques and concept of different types of index numbers.
CO3- To understand the different concept of population and sample and to make students familiar with Calculation of various types of averages and variation.

Course Title : - (Paper II) Principle of Management

Course Outcomes: Students would be able:

CO1- To understand the concept & functions and importance of management and its application.
CO2- To make the student understand principles, functions and different management theories.

B. Com Third Year (Tax Procedure and Practice & Computer Application)

Group: Tax Procedure and Practice

Course Title : - (Paper I) Tax planning and Management

Course Outcomes: Students would be able:

CO1- To collect the basic concepts and definitions of Income Tax Act 1961
CO2- To familiar with the computation of income from house property
CO3- To familiar with the computation of income from business and profession

Course Title : - (Paper II) Corporate Tax

Course Outcomes: Students would be able:

CO1- To understand the provisions of Company Act 2013.
CO2- To attain knowledge on rights and duties of shareholders, members and types of meetings in the companies.
CO3- To familiar with rules and regulations relating to appointment of directors
CO4- To acquire the knowledge on modes and procedure of winding up of companies.

Group: Computer Application

Course Title : - (Paper I) Web-Designing

Course Outcomes: Students would be able:

CO1- Become familiar with graphic design principles that relate to web design and learn how to implement theories into practice.
CO2- Develop skills in analyzing the usability of a web site.
CO3- Learn the language of the web: HTML and CSS. Develop basic programming skills using Javascript and jQuery.

Course Title : - (Paper II) Digital Marketing

Course Outcomes: Students would be able:

CO1- The greatest outcomes are that, it allows you to target your ideal buyers.
CO2- Digital marketing helps you connect with mobile customers. It can easily and quickly adapt your strategy and tactics for best results.
CO3- SEO and local SEO helps you to reach and more qualified buyers online.

Group: Account

Course Title : - (Paper I) Income Tax Law and Practice

Course Outcomes: Students would be able:

CO1- To know about the aggregation of income and deduction u/s 80C to 80U
CO2- To know about the assessment of individuals.
CO3- To aware about the income tax authorities and their powers and duties.

Course Title : - (Paper II) Indirect Tax (GST)

Course Outcomes: Students would be able:

CO1- To create employability to the students in the commercial tax practices.
CO2- To understand the procedure for registration, payment and refund of GST
CO3- To know tax related with movement of goods.

Group: Management

Course Title : - (Paper I) Management Accounting

Course Outcomes: Students would be able:

CO1- To understand the basic concepts of management accounting
CO2- To enable the students to understand different ratios used for analyzing financial Statements
CO3- To understand the analysis of financial statements by using various methods

Course Title : - (Paper II) Auditing

Course Outcomes: Students would be able:

CO1- Described about the concept, types & methods of auditing.

CO2- Acquired knowledge about vouching of cash and credit transactions, verification of assets and liabilities Comprehend the knowledge about appointment, rights, duties and responsibility of auditor.

CO3- Acquired knowledge of audit documentation and audit evidence.

Department of Commerce

Bachelor of Commerce (B.Com Plane)

Program Outcomes:

Program Outcomes Students who have taken admission to this program of B.Com are expected to concentrate upon the following outcomes.

PO1- Commercial sense.
PO2- Develop managerial skills.
PO3- Entrepreneurial skill.
PO4- Budgeting policy.
PO5- Human Resources Management.
PO6- Develop Numerical ability.
PO7- Well versed with business regularity framework.

Programme specific outcomes:

PSO1- The B. Com. Graduates would be able to acquire basic and fundamental knowledge and skills for doing business and commercial activities of their choice.
PSO2- The program also empowers the graduates to appear for various competitive exams or choose a profession of their choice such as CA, CS, ICWA, MBA, M.Com etc.
PSO3- The program enables the students to acquire the accounting knowledge, management principles, retail trading, banking and insurance transactions, business economics and financial management.
PSO4- The students also acquire knowledge in the field of management accounting, corporate accounting, statistical and mathematical techniques and knowledge relating to corporate law and business laws.
PSO5- The students become capable of doing a business of their choice or choosing a profession or can become employees having basic knowledge and skill required for such activities

B.Com Plane First Year

Course Title: (Paper I) Financial Accounting

Course Outcomes: Students would be able to:

CO1- Understanding basic concepts of accountancy, principles of accountancy and accounting cycle to maintain accounts of trading & non-trading organizations.
CO2- Getting acquainted with the procedure of preparation of income statements, retained earnings, balance sheet and statement of cash flows which are required for external users and more useful to managers for managerial decision making.

CO3- Inculcating different skills for analysis and interpretation of financial data to understand financial health of an organization and ensure that resources are being used to achieve the organizations objectives.
CO4- Developing knowledge about cost ascertainment and fixation of selling price and cost control, obtaining the knowledge of various provisions of Income Tax Act and their applications in computations of taxable income of an individual under different heads of income.
CO5- Getting working knowledge of generally accepted auditing procedure, techniques and skills

Course Title: (Paper II) Business Mathematics

Course Outcomes: Students would be able to:

CO1- Develop an idea about ratios calculations.
CO2- Familiarize with the simultaneous equations.
CO3- Know the various concepts related to elementary matrices.
CO4- Understand the concepts of simple interest, compound interest, discount, depreciation and their application in real life situations.
CO5- Understand the concepts of related to averages and computation of profit and loss.

Course Title: (Paper III) Business Law

Course Outcomes: Students would be able to:

CO1- Introduction to Business Law as well as other Laws.
CO2- Achieving the knowledge of breaching of contract.
CO3- Knowing the rights and liability of every citizen regarding society.
CO4- To make understand various provisions related to negotiable instruments
CO5- Welfare of society
CO6- Creating legal awareness among the students regarding The Consumer Protection Act.
CO7- Acquainting with the FEMA Act.

Course Title: (Paper IV) Organization and Communication

Course Outcomes: Students would be able to:

CO1- Provide understanding about business organization
CO2- Provide understanding about kinds of companies and create awareness about multinational companies
CO3- Familiarize with Communication concepts and its channels.
CO4- Provide understanding about forms of communication and barriers to communication.

CO5- Get an idea about the modern forms of communications.

Course Title: (Paper V) Micro Economics

Course Outcomes: Students would be able to:

CO1- Understand the concept of micro economics.
CO2- Analyze the demand determinants and measuring laws of demand
CO3- Analyze and study the concept of elasticity of demand
CO4- Analyze the peculiarities of factors of production and evaluate the supply and cost analysis of Total, Average and marginal curves.
CO5- Identify Equilibrium, price and output decisions in various market forms

Course Title: (Paper VI) Macro Economics

Course Outcomes: Students would be able to:

CO1- Understanding the basic concepts and theories of Macro economics.
CO2- Awareness about changing macro economics policies and theories and Justifying various concepts such as; GDP, GNP NNP, Personal Income, Disposable Income, Per Capita Income, and National Income.
CO3- Provide understanding about monetary theories.
CO4- Explanation of the factors determining gross domestic product, employment, the general level of prices, and interest rates.
CO5- Acquaintance with law of markets, consumption function and investment function.
CO6- Understanding Recent Industrial Policy and monetary policy of Central Banks and its implications.

B.Com Plane Second Year

Course Title: (Paper I) Corporate Accounting

Course Outcomes: Students would be able to:

CO1- Exposure to the issue of managerial remuneration and disposal of profits at the time of winding up of a company along with knowledge of accounting procedure of company final account.
CO2- Attainment of knowledge about concepts of Goodwill and its computation.
CO3- Understanding the accounting procedure with respect to holding and subsidiary companies.
CO4- Ability to get the knowledge about AS-14.
CO5- Understanding the accounts procedure of banking and Insurance Company.

Course Title: (Paper II) Cost Accounting

Course Outcomes: Students would be able to:

CO1- Creating logical thinking power.
CO2- Creating ability to take decision at different level of production activity like make or buy, project launching etc.
CO3- Developing knowledge among students about cost ascertainment and fixation of selling price and cost control.
CO4- Knowledge about presentation of cost accounting information for the purpose of decision making.
CO5- Determination of profitable or unprofitable activity in business by using different cost accounting tools.
CO6- Developing knowledge about preparation of tenders, quotations, etc.
CO7- Helping in determining the product total cost and fixation of selling price.
CO8- Creating skills about handling of various financial records, documentation, collection and classification of different costs.
CO9- Enhancing the knowledge of business project analysis and cost planning and procedure.
CO10- Getting known with how to publish information about production to management, consumer, Government, Employee at different levels for decision making purpose.

Course Title: (Paper III) Principles of Statistics

Course Outcomes: Students would be able to:

CO1- Making familiar with statistical tools which are relatively used in business.
CO2- Imparting the ability to collect present, analyze and interpret data.
CO3- Ability to predict trend values by using list square methods in regression.

Course Title: (Paper IV) Principles of Management

Course Outcomes: Students would be able to:

CO1- Develop knowledge about management
CO2- Have a better understanding of planning and decision making
CO3- Give an idea about organization, departmentalization and delegation
CO4- Familiarize with directing, motivation theories, communication process and leadership
CO5- Provide idea about process and methods related to directing.

Course Title: (Paper V) Indian Company Act

Course Outcomes: Students would be able to:

CO1- Understanding basic concepts of formation of different forms of companies.

CO2- Getting acquainted with the procedure of preparation of Memorandum of Association and Article of Association.
CO3- Acquiring concepts of shares capital of the company.
CO4- Developing knowledge about various provision related to appointment of directors and theirs Rights, powers and duties in a company.
CO5- Getting knowledge of Majority powers and minority powers along with procedural aspects relate to the winding up of a company.

Course Title: (Paper VI) Banking & Insurance

Course Outcomes: Students would be able to:

CO1- Understand the Banking system in India
CO2- Understand about management banks along with E-Banking.
CO3- Analyze about the Insurance system along with Functioning of IRDA.
CO4- To get an insight into the Insurance system.
CO5- Understand the functions of Organization of General Insurance Corporation

B.Com Plane Third Year

Course Title: (Paper I) Income Tax Law &Practice

Course Outcomes: Students would be able to:

CO1- Update the current finance tax planning and to understand Indian Taxation system.
CO2- Study salary head of income and its related provisions.
CO3- Analyze the profit and gain from business or profession.
CO4- Study various provision related to set off and carry forward of income
CO5- Gain knowledge about the process of filling up of returns.

Course Title: (Paper II) Goods & services Tax & Custom Duty

Course Outcomes: Students would be able to:

CO1- Know the basic methods and legal provisions of indirect taxes
CO2- Familiarize with GST.
CO3- Know the GST LAW 2017
CO4- Acquire knowledge with respect to custom laws.

Course Title: (Paper III) Principles of Marketing

Course Outcomes: Students would be able to:

CO1- Understand the Modern marketing concepts
CO2- Providing knowledge about marketing mix, segmentation, targeting and positioning and Consumer behaviour
CO3- Get clear idea of product planning, Diversification, Elimination and pricing strategies.
CO4- Summarize marketing of consumer goods, channels of distribution and understand the pricing policing.
CO5- Practice and act of sales promotion.

Course Title: (Paper IV) International Marketing

Course Outcomes: Students would be able to:

CO1- familiarize studier in International Marketing
CO2- get knowledge about product planning for in the International market.
CO3- get knowledge about International pricing policies for a product.
CO4- have insight into the International distribution channels.
CO5- gain knowledge about the EXIM policy.

Course Title: (Paper V) Management Accounting

Course Outcomes: Students would be able to:

CO1- know the basics of management accounting
CO2- study the financial statement analysis
CO3- familiarize fund flow cash flow statement
CO4- analyze various budget
CO5- familiarize with marginal costing

Course Title: (Paper VI) Auditing

Course Outcomes: Students would be able to:

CO1- Gain knowledge about auditing, audit programmes, working papers and preliminaries before audit.
CO2- Analyze about implementing internal check and internal control in concerns.
CO3- Understand the various aspects of vouching.
CO4- Learn how to verify and value various assets and liabilities
CO5- Evaluate the traits of Company Auditor and how to draft Auditors Report.

Program Outcomes:

PO1- Impart the students with practical knowledge and understanding of contemporary trends in commerce and business finance.

PO2- Ready the students to assess and understand environmental factors that influence business operation with the abstract ideas and ability to evaluate financial statements.

PO3- Ready the students with proper knowledge on the proficient use of tools of statistics to analyze business data.

PO4- Help the students to apply capital budgeting techniques for investment decisions and to appraise the structure and operations of banking system.

PO5- Develop competency in the students about the laws and regulations, and roles of commercial, government and central banks in controlling money market and inflation

PO6- Provide guidance to students to plan and undertake independent research in a chosen discipline.

PO7- Train the students to become an asset to society through teamwork, lifelong learning and continuous professional development.

Program Specific Outcomes:

PSO1- Students will be well prepared to integrate theory and practices of subjects learned and translate them into their professional behavior.

PSO2- Students will be fully employable with essential skills like, analytical thinking, clear communication, effective teamwork and ethical business practices.

PSO3- Students will have clear understanding to interrelationship of concept learned with business and its environment.

PSO4- Students will exhibit inclination towards starting their own entrepreneurial ventures.

PSO5- Students will demonstrate the understanding and ability to undertake independent research projects and application of statistical methods and tools for modeling and analysis of business data.

M.Com First Semester

Course Title: (Paper I) Management Concepts

Course Outcomes:

CO1- To explain Strategic Management in business operations defining Management identifying relevant Management skills and issues along with the various aspects of Management concepts Nature and scope of Management with special reference to approaches to Management, human relations, behavioural and Systems approach.

CO2- To teach the students about Global situations including opportunities and threats that will impact Management of an organization forecasting and decision-making aspects.

CO3- To explain various Management principles and Management practices teaching, Organizing, Staffing and various aspects of selection training and evaluation of performance appraisal and delegation of authority.

CO4- To orient students about leadership styles and to anticipate the consequences of each leadership styles with various aspects of motivation and to teach theories of motivation.

CO5- Students will be able to discuss and communicate the Management concepts and how it will affect future Managers and also to observe and evaluate the influence of Managerial knowledge and current practices of Management.

CO6- Knowledge to identify and evaluate social responsibilities and ethical issues involved in business situations, Managerial situations and logically articulate on position on such issues along with explaining how organizations attached to an uncertain environment and identify techniques managers used to influence and control the internal environment of business organizations.

CO7- Ability to practice the process of Management's 4 functions Planning, Organizing, Leading and Controlling, also to identify and properly use vocabulary within the field of Management to articulate one's own positions on a specific management issue and communicate effectively with varied departmental heads and different posts of Management.

CO8- Ability to evaluate leadership styles to anticipate the consequences of each leadership style and analyse both qualitative and quantitative information to isolate issues and formula best control methods along with delegation of authority Departmentation, Centralization and Decentralization.

Course Title: (Paper II) Business Environment

Course Outcomes:

CO1- To understand the concept, significance and changing dimension of Business Environment

CO2- To understand Political Economical Socio-cultural and Technological environment of a business

CO3- To understand the importance of Multinational corporations, foreign collaborations and International Economic Institutions

CO4- Foreign trade policies, Patent laws, Policy on Research and Development and Technology transfer

CO5- Identify different types of Business Environment

CO6- Recognize tools for examining the Environment

CO7- Explain the role of economic systems, economic planning, government policies, public sector and development banks, economic reforms, liberalization, patent laws and its impact on business.

CO8- Realize the importance and impact of changing laws and regulations on a business firm.

CO9- Find out emerging dimensions in socio-cultural environment and its relevance for a business firm

Course Title: (Paper III) Advanced Accounting

Course Outcomes:

CO1- To assign the practical approach to the students regarding the preparation of final accounts with advanced adjustments.

CO2- To communicate the presentation of the Investments A/c along with ex and cum interest calculations.

CO3- To provide basic knowledge to the students regarding dissolution of partnership firm. 4.To clear the concepts of the students regarding the accounts of the nonprofit to organizations, and the preparation of the bank reconciliation statement

CO4- To illustrate the procedure and accounting treatment of the Insolvency A/c and rectification journal entries.

CO5- Understand the method of presentation of the financial statement.

CO6- Develop the understanding and skill to prepare the Bank reconciliation statement.

CO7- Prepare and present the financial statement of Non-Profit Organization.

CO8- State accounting entries regarding the investment, insolvency and rectification.

CO9- Solve advance problems related with dissolution of the firms.

Course Title: (Paper IV) Cost Analysis and Control

Course Outcomes:

CO1- Learn Costing methods for Manufacturing and Non-manufacturing concerns

CO2- Learn Cost allocation and its impact

CO3- Learn Identify profitable products and services

CO4- Learn Use data for decision making and performance evaluation

CO5- Learn Cost analysis for cost control

CO6- Learn the operational analysis- Determination of cost, BEP

CO7- Learn improvement techniques for business cost control- Material

CO8- Learn how the efficiency of business is evaluated-Parameters

CO9- Learn the impact of cost allocation and issue pricing- Right technique

CO10- Learn to make critical but rational decisions based on analysis

M.Com Second Semester

Course Title: (Paper I) Corporate Legal Framework

Course Outcomes:

CO1- To make students aware about the existing provisions on companies, negotiable instruments and Competition act.

CO2- To let students know the various cases over companies and organisations which were adversely affecting the competition in the market and the action taken by CCI.

CO3- To teach students the Consumer Protection Act and to make them aware about the series of authorities which can be approached if being a consumer they are cheated upon in the market.

CO4- Students can work in organizations like CCI office, Company Secretary's office, etc as they are well versed with the needed laws and provisions.

CO5- Students can approach the authorities to demand action under Consumer Protection Act.

CO6- They will be more cautious while handling cheques and other negotiable instruments because they know the impact now.

Course Title: (Paper II) Organizational Behaviour

Course Outcomes:

CO1- This course is designed to equip the students with the tools necessary to understanding the dynamics of individual and group behavior for efficient and effective utilization of human resources in the organizations.

CO2- Broadly, the course intends to help the students to understand and analyze the individual needs, feelings, aspirations.

CO3- Develop skills needed to plan for the implementation of change in an organization. Identify and develop effective motivational and leadership skills.

CO4- Demonstrate an understanding of theories, principles and concepts applicable to the study of organisations and management.

CO5- Evaluate and analyze how the study of organizational behaviour can aid us in improving managerial processes and practices.

CO6- Understand how models, theories and concepts about organizational behaviour can be used in practice in different workplaces across difference regions of the world. Critically evaluate models and theories explored throughout the module.

Course Title: (Paper III) Advanced Statistical Analysis

Course Outcomes: Students will be able to**:**

CO1- Distinguish between discrete and continuous random variables

CO2- Explain the assumptions of binomial distribution and apply it to calculate probabilities.

CO3- Explain why populations are sampled and describe methods to sample a population.

CO4- Elaborate central limit theorem

CO5- Use a t statistic to test a hypothesis, methods of interpolation and extrapolation, perform a chi square test for independence on a contingency table and a goodness fit test and ANOVA to test a hypothesis that three or more population means are equal

CO6- Apply regression analysis to estimate the linear relationship between two variables and Classify data and apply yule's coefficient

Course Title: (Paper IV) Functional Management

Course Outcomes:

CO1- To explain and provide opportunities to apply foundation business knowledge and skills to develop competent decisions in the areas of Financial Management and Financial Planning.

CO2- Explain theories of capitalisation and various important concepts and terminology of Financial Management. To explain concept of Marketing Management, Marketing Mix and Advertising Management.

CO3- To explain various concepts of Personnel Management with special reference to Special Recruitment Policies, Training and Development. To explain various aspects of Production Management, concepts of Production Planning, New Product Development and Concepts of Product Diversification.

CO4- Students will learn and will get detailed knowledge about Financial Management, Functions of Financial Management, Financial Planning and Financial Plan.

CO5- Students will get detailed knowledge about Capitalisation, Theories of Capitalisation, over and Under Capitalisation, Capital Structures, trading on Equity and Leverage.

CO6- Students will obtain knowledge about various concepts of Marketing Management, Marketing Mix, Advertising Management, Sales Promotions and Modern Marketing Concepts.

CO7- Students will learn and will develop their skills and knowledge about various aspects of personnel Management, Manpower Planning, sources of Recruitment, Selection, Training and Development and also rules and methods of forming effective Personnel Management

CO8- Students will learn various concepts, importance, scope and functions of Production Management. They will also be taught about the concepts of Production Planning, Production Control, New Product Development, Concept of Product Diversification, Standardisations, Simplification and Specialisations.

M.Com Third Semester

Course Title: (Paper I) Managerial Economics

Course Outcomes: Students will be able to understand the importance of managerial economic concepts and its relevance:

CO1- To make the students aware about the basic concept of managerial economics and its applicability. To demonstrate the knowledge of demand, Elasticity and their application and explain the concept of utility, indifference analysis and consumer surplus.

CO2- To help students to understand concept of demand and the theory of consumer choice, indifference analysis, consumer surplus and their applicability. Students will be able to classify the production laws and theories.

CO3- To know the basic theories of production, relation between cost and revenue. To familiarize the student with the concept of business cycles and various theories. They will be able to examine various theories of business cycles.

CO4- To develop an understanding on Profit and uncertainty. Students will be able to explain and comprehend the economic meaning of profit maximization.

Course Title: (Paper II) Tax Planning and Management

Course Outcomes:

CO1- To make the students aware of the corporate tax laws of India. Students will be able to identify the difference between tax evasion, tax avoidance and tax planning and tax management and how the provisions in the corporate tax laws can be used for tax planning.

CO2- Understanding the corporate tax laws and uses it for tax planning. Students of the course will be able to explain different types of incomes and their taxability and provisions in respect of Free Trade Zone, Infrastructure Sector, Backward areas.

CO3- To make the students aware of what business income is and when it gets taxed. Students will be able to outline the corporate tax laws and their provisions related to financial and managerial decisions.

CO4- The course also provides students with knowledge the difference between tax avoidance and tax planning. Students will able to plan tax in relation to setting up new business.

CO5- To enable the students about Return of Income and Assessment, Penalties and Prosecutions and Appeals and Revisions. Students will be able to file the returns and assessment independently.

Course Title: (Paper III) Entrepreneurship Skill Development

Course Outcomes: After the successful completion of the course the students should be able to:

CO1- expose the students to the fundamentals of Entrepreneurship. Understand different methods to assess the attractiveness of business opportunities

CO2- develop the understanding towards different methods for assessing the attractiveness of business opportunities. Understand different innovation and entrepreneurship theories and their implications.

CO3- make them understand the process of business idea generation and converting the idea into a business model. Detect weaknesses and strengths within a business opportunity and give suggestions for improvement.

CO4- make them understand the role of government and the machinery that renders support in terms of policies, assistances etc. for creation, sustenance and growth of the enterprises by the individuals. Design, organize, and lead a team with the goal of bringing new products and services to market.

Course Title: (Paper IV) Accounting for Managerial Decisions

Course Outcomes: After completing the course, you shall be able to:

CO1- make students understand Management Accounting, different methods of financial statement analysis, Fund Flow and Cash Flow Statement and Capital Budgeting Techniques.

CO2- understand Management Accounting, Financial Accounting & Cost Accounting conceptually and take an overview of the Accountant's role, meaning of Responsibility centers and Transfer pricing concept.

CO3- help students to prepare for a job as a Managerial Accountant.

CO4- Understand the utility of Ratio Analysis, Financial Statements and Cash Flow Analysis in any organization.

CO5- make students understand how to use accounting information to make business decisions, how to interpret accounting numbers, and how to understand internal systems.

CO6- Students also sharpen their analytical and financial reporting skills. Comprehend different contemporary issues in Management Accounting and Reports & Reporting needs & Reporting Levels in an organization.

M.Com Forth Semester

Group: Marketing Management

Course Title: (Paper I) Advertising & Sales Management

Course Outcomes:

CO1- To learn and understand the basic concepts and terminology in advertising with an emphasis on integrated marketing communication. Articulate the role of advertising and explore how it differs from other types of marketing communication.

CO2- To understand and effectively utilize creative elements in advertising campaigns. CO2Identify some of the positive and negative effects that advertising has on contemporary society.

CO3- To understand the meaning of advertising agencies and their selection. Analyze the expanding environment of media and communication techniques.

CO4- Identify the roles of advertising, sales promotion, public relations, personal selling, and direct marketing in the promotion mix. Examine the importance of market segmentation, position and action objectives to the development of an advertising and promotion program.

CO5- To know the objectives of sales force management, its recruitment and selection. Develop creative strategies for advertising. Plan media strategy, scheduling, and vehicle selection. Assess strategic uses of sales promotions.

Course Title: (Paper II) Consumer Behaviour

Course Outcomes: At the end of this syllabus all the students will be able to

CO1- To clear the concepts of consumer behaviour and its determinant to the students. Analyze the buying behavior of Indian consumers and factors influencing their behavior.

CO2- To elaborate the buying process of consumers to the students. They will be able to perform any type of consumer research for any agency engaged in marketing research.

CO3- To discuss organisational buying behaviour with its features and process. They shall also learn how to motivate consumers to buy a product or service with help of different techniques.

CO4- To analyze the consumers need and motivations in detail. This course will enable them to search advance career opportunities directly related with consumer, marketing, selling and market research.

CO5- To give information regarding various class of consumers, its theories s and understanding procedure of consumers diversity

Course Title: (Paper III) Rural and Agricultural Marketing

Course Outcomes:

CO1- To enable students in understanding the basic concepts, importance, challenges, different facets etc. of rural and agricultural marketing. Explore the various facets of rural marketing and develop an insight into rural and agricultural marketing regarding different concepts and basic practices in this area.

CO2- To understand the different market structure and components, types of regulated markets etc. Identify the challenges and opportunities in the field of rural and agricultural marketing.

CO3- To facilitate students about the different process and sales methods in agricultural and rural marketing.

CO4- To acquaint the students with the appropriate concepts and techniques in the area of rural and agricultural marketing –like distribution channels, regulated markets etc.

CO5- Students will get insight into different process and sales methods.

Course Title: (Paper IV) International Marketing

Course Outcomes:

CO1- To develop knowledge and understanding of key issues associated with international marketing. To develop knowledge and understanding of Importance of global and international marketing.

CO2- To develop knowledge and understanding of Motives to internationalization.

CO3- To develop knowledge and understanding of the influence of macro-environment on market selection. To develop knowledge and understanding of Market entry modes.

CO4- To develop knowledge and understanding of Specific international issues affecting the 4Ps. To develop knowledge and understanding of Financial, ethical, and organizational issues involved in international marketing.

CO5- To develop skills in researching and analyzing international marketing opportunities. Developed an understanding of major issues related to international marketing.

CO6- Developed skills in researching and analyzing trends in global markets and in modern marketing practice. Able to assess an organization's ability to enter and compete in international markets.

M.Com Forth Semester

Group: Accounting

Course Title: (Paper I) Corporate Accounting

Course Outcomes: On the successful completion of this course the student will be able:

CO1- To provide thorough and complete knowledge related to the subject.
CO2- To help the students understand the techniques of restructuring and liquidating the corporate entities.
CO3- To provide the student with knowledge of recent developments in corporate accounting. To teach them the Various Requirements of Corporate Reporting.
CO4- To gain knowledge and understanding of the concepts and practices of company accounts in accordance with statutory requirements. The ability to prepare financial statements, consolidated accounts for a corporate group.
CO5- A comprehensive understanding of the advanced issues in accounting for assets liabilities and owner's equity. To Analyze the Financial Statement of different companies

Course Title: (Paper II) Cost Administration and Control

Course Outcomes:

CO1- To understand the application of Marginal Costing in decision making. Decision making made possible in the areas of pricing and cost control based on different real-life situations.
CO2- To know the procedural details about Budgets. The policy making learning for budgets.
CO3- To analyze different pricing techniques in varied situations. To learn the process of cost reduction.
CO4- To learn the implementation of various cost control techniques. Awareness towards Total Quality Management in costing.
CO5- Awareness of Value analysis and Inventory control techniques. Learning of Product Life Cycle costing and Feedback control system

Course Title: (Paper III) Accounting Theory

Course Outcomes:

CO1- To provide thorough and complete knowledge related to the subject.
CO2- To help the students understand the role of theory in understanding current accounting standard, accounting practices & the use of accounting information by the myriad stakeholders in reporting entities.
CO3- To provide the student with knowledge of recent developments in accounting Framework.

CO4- To teach them the Various Requirements of Accounting Standard. This course highlights the role of theory in understanding current accounting standard, accounting practices & the use of accounting information by the myriad stakeholders in reporting entities.

CO5- To demonstrate an understanding of contemporary issues in financial accounting. To analyze& interpret professional accounting literature to prepare financial statement according to generally accepted accounting principles.

Course Title: (Paper IV) Institutional Accounting (Accounting)

Course Outcomes:

CO1- Students will be able to identify analyses and evaluate organizations' business functions. They will also be able to recommend Creative Solutions to business problems. They will be able to apply accounting practices to communicate financial and managerial information to stakeholders effectively.

CO2- To prepare students for advanced academic studies as well as for careers in public accounting, private industry, government and nonprofit sectors.

CO3- Students will recognize commonly used financial statements, their concepts and how information from business transactions flows into these statements.

CO4- Students will learn relevant financial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

CO5- Students will be able to demonstrate knowledge of various Advanced Accounting issues related to financial accounting with in a global and ethical framework.

Department of History

Program outcome, Program Specific Outcome and Course Outcomes

B.A. (History)

Programme outcomes

Programme Outcome may be listed as follows:

PO1- **Sound Knowledge of different Historical Periods:** Under the BA papers in each year are devoted to the study of particular Historical phase in the historical in the events along with the study of a few major works by some master Historians of that period. These not only help the students to understand a historical period better, but also reduce the load of study in the concerned area.

PO2- **Knowledge of the Development of Historical perspective:** While pursing BA Programme of studies in History it is mandatory that a student develops proper knowledge of the historical events. In this sphere also the present syllabus appears to be illuminating, as it's provides the students with standard and up to date knowledge of historical events, impact, war and history, result. The students may acquire knowledge of the historical events of the Ancient, Medieval, Modern and European history in new aspects.

PO3- **Development of the Historical Perspectives**: The current syllabus is well chosen to represent different events from different angles. They are not only meant to make the students familiar with the dominant events of different ages, but also to open out new perspectives, the student may acquire a knowledge of the changing nature of politics or kingdoms of the changing times

Programme Specific Outcomes

On completion of the BA with History, students will be able to...

PSO1- Understand the basic themes, concepts, chronology and the Scope of Indian History.

PSO2- Acquaint with range of issues related to Indian History that span distinct eras.

PSO3- Understand the history of countries other than India with comparative approach.

PSO4- Think and argue historically and critically in writing and discussion.

PSO5- Prepare for various types of Competitive Examinations 6. Critically recognize the Social, Political, Economic and Cultural aspects of History

Outcomes

B.A. First Year (History)

Course Title : - (Paper I) History of India (From Earliest time to 1200 A.D)

Course Outcomes: Students would be able to:

CO1- Perceive various sources to study of Ancient India.
CO2- Know about the development and the achievements of man in the Stone Age.
CO3- Understand physical and geographical structure of India
CO4- Identify Palaeolithic and Neolithic settlements
CO5- Understand the glory of Indian history in the age of Harappan civilization.
CO6- Understand the philosophy of Jainism and Buddhism.
CO7- Know about the Mauryan and Gupta Empire.
CO8- Understand the History of Satvahanas, Shungas, Kushans, and Hunas.

Course Title : - (Paper II) Western world (Mid fifteenth century to 1870)

Course Outcomes: On the completion of course, students will able to...

CO1- Learn about the causes and aftermaths of the French revolution.
CO2- Understand the factors responsible for the end of monarchy in France.
CO3- Understand the rise of Napoleon and how Metternich dominated the European politics.
CO4- Describe how feudalism came to end In Europe.
CO5- Describe the historical process which leads to rise of nationalism in Europe.

B.A. Second Year (History)

Course Title : - (Paper I) History of India (1200 to 1739 A.D.)

Course Outcomes: On the completion of course, students will able to...

CO1- Understand early difficulties of Sultan in India and the administrative set up of Sultan from central to local level.
CO2- Understand the aspects of fiscals and monetary system under Sultanate and Mughals.
CO3- Understand the political situation of India on the eve of Babar invasion.
CO4- Comprehend the basic feature of Mansabdari and change in 17^{th} century.

Course Title: (Paper II) Main Currents of world History (From 1871 to 2001AD)

Course Outcomes: On the completion of course, students will able to...

CO1- Understand the importance of world peace right after the World War I.
CO2- Evaluate the Russian Revolution and the first experiment of the communist government.
CO3- Understand the fascism and rise of dictatorship in Europe.
CO4- Explain the aftermaths of the World War II on the world politics.

B.A. Second Year (History)

Course Title : (Paper I) History of India (1740 to 1857 A.D.)

Course Outcomes: On the completion of course, students will able to...

CO1- Understand Modern Indian History.
CO2- Identify the importance and the legacy of Freedom Movement.
CO3- Distinguish the detail account of British Raj as well as its overall impacts on the Indian Society.
CO4- Evaluate the Renaissance and social reform movement in India
CO5- Understand some of the early resistance to British Raj.

Course Title: (Paper II) History of India (1858 to 1950 A.D.)

Course Outcomes: On the completion of course, students will able to...

CO1- Understand the early political awakening in India Freedom Struggle.
CO2- Identify the social institution of late 19^{th} century.
CO3- Understand various phases of the national movement and the difference between moderates, extremists and the Revolutionaries.
CO4- Comprehend the socio-religious scenario and the social reformation.
CO5- Grasp the detail of freedom movement under the Mahatma Gandhiji leadership
CO6- Understand the evolutionary processes of constitutional development

Master of Arts (MA) in History

Programme Outcomes:

PO1- The students acquire in depth knowledge in the field of social sciences, literature and humanities which make them sensitive and sensible enough to solve the issues related with mankind.

PO2- The postgraduates will be acquainted with the social, economical, historical, geographical, political, ideological and philosophical tradition and thinking of their respective subjects.

PO3- The program also empowers the post-graduates to appear for various competitive examinations or choose the any post graduate or research programme of their choice.

PO4- The M. A. program enables the students to acquire the knowledge with human values framing the base to deal with various problems in life with courage and humanity.

PO5- The students will be ignited enough through the knowledge of the special PG programme to think and act over for the solution of various issues prevailed in the human life to make this world better than ever.

PO6- Through the PG programme the students will come know about research in their respective subject. It may also provide the information to the students for collection of Data, enquiry, primary and secondary methods of collection of data, classification and tabulation of data. Students get knowledge of various research methods and can realize the importance of research to find solutions of a specific issue.

Programme specific outcomes:

PSO1- We can say that History has surrounded us and waits for the right time to explode.

PSO2- It never lets one to forget past easily.

PSO3- Present has its own need and facilities. Some try to forget History where as some we History as per their necessity.

PSO4- All the sage and saints through their saying portray history is very good. It means that everyone is utilizing history according to their perspective only thing is we don’t realize it as it is past and parcel of our life.

PSO5- When it becomes violent and aggressive, then we realize that past is still alive and exists. None of the countries can history of its own and make a new beginning. In this way, History always is alive giving a direction to presents hence history cannot be considered as only a syllabus to study.

PSO6- Countries may be ruled or became independent anytime but the feeling of patriotism remains in the hearts of the people.

PSO7- History provors people about going independence whenever they are ruled by.

PSO8- One historical truth is past condition creating present and it can giving new birth to future and so it is important to remind it.

PSO9- Students can avail good opportunities to work in the field of archeology, education and research.

Faculty of Arts

Program Outcomes

Bachelor of Arts (B.A.)

The arts undergraduate program is designed to achieve the following outcomes:

PO1- To put in place structure and contents to make it an integrated and interdisciplinary program with flexibility and choice.

PO2- To reflect a general understanding of the concepts and principles of selected areas of the study thus providing students an opportunity to decide the specialization fields for making professional choices.

PO3- To augment the ability to describe and compare the roles, impacts and ethical implications of ideas, texts, social movements and contemporary situations.

PO4- Acquire analytical skills and develop a critical understanding of social, political economic and cultural processes, to present materials and ideas effectively on order to connect between the local, regional and global.

PO5- To integrate the treatment of topics by interlinking knowledge, skills, values and attitudes to action.

PO6- To provide an arena for reflective thinking and concern for the common good and application of social values.

PO7- Produce graduates with a foundation in professional ethics who will actively seek to positively impact their profession, community, and society.

Bachelor of Arts (B.A.) Economics

Programme Specific Outcomes:

Upon completion of these courses the student would

PSO1- After the completion of this programme, students will be able to make careers in business, law, education, banking, insurance, journalism, public policy, diplomacy, environmental science, international affairs and in research and consultancy.

PSO2- Students would be able to opt for different competitive exams i.e. Indian Economic Services (IES), Indian Administrative Services (IAS), Banking, National Sample Survey, Ministry of Foreign Affairs, NITI Aayog etc.

PSO3- Students will develop the ability to apply theoretical knowledge of Micro and Macro Economics to explain the behavior of individuals, businesses and industries in market based systems and analyze the challenges of developing economies.

PSO4- The study will help in enhancing numerical and computing ability and will also help in developing presentation skills.

PSO5- The student will enhance the ability to analyze economic behavior in practice.

PSO6- Students will be able to effectively communicate economic ideas to solve the various economic problems.

PSO7- Students will acquire problem solving skills and develop a logical way of dealing with various economic issues.

PSO8- Students will be able to explain the role of the government in the economy, including taxation, expenditure and production. They will also be able to analyze the impact of fiscal and monetary policy in the economy

Course Title: (Paper I) Micro Economics

Course Outcomes: On the completion of course, students will able to...

CO1- Students will identify economic problems and understand how theory and empirical conditions are to be connected and differentiate between positive and normative statements while analyzing and differentiating between major economic systems.

CO2- Use various methods to calculate price elasticity of demand and define the concept of utility and apply the Utility Maximizing Rule to maximize satisfaction within a given income.

CO3- Understand production function and compute, graphically illustrate and explain producer's equilibrium and the various concepts of costs and returns.

CO4- Understand and illustrate the equilibrium of a firm and industry and analyze a firm's profit maximizing decisions under different market conditions.

CO5- Elucidate relationship between factors of production and their productivity and analyze how buyers and sellers of factors can impact factor price.

Course Title: (Paper II) Indian Economy

Course Outcomes: On the completion of course, students will able to...

CO1- Explain the evolution of Indian economy, its institutional framework, role of natural and human resourced in the development process of Indian economy.

CO2- Understand the nature, importance and problems related to agriculture sector in India.

CO3- Critically analyze the recent changes and issues concerned with industrial sector of Indian economy and the role of industrial sector for the development of economy.

CO4- Develop an understanding of infrastructure of Indian economy and foreign trade. They will also be able to correlate it with the development process of the economy.

CO5- Critically evaluate various problems of Indian economy and role of planning to solve them.

B.A. II Year Economics

Course Title: (Paper I) Macro Economic

Course Outcomes: On the completion of course, students will able to...

- CO1- Understand the concept of macroeconomics and applying economic reasoning to understand the operation of an economy.
- CO2- Possess deeper understanding of the concepts like multiplier, propensities to save, consume and invest along with the employment theories
- CO3- Explain liquidity preference and other variables affecting investment function in an economy.
- CO4- Understand practical and theoretical aspects related to money supply, operation of money, inflation deflation and its effect on different segments of the economy.
- CO5- Student will be able to explain the functioning of commercial and central bank and their role in the economy.

Course Title: (Paper II) Public Finance and International Economics

Course Outcomes: On the completion of course, students will able to...

- CO1- Ability to recognize, apply and analyze concepts and theories in public economics.
- CO2- Students get knowledge about the functions of modern governments, revenue for the governments and all other financial structures of a nation.
- CO3- Ability to understand the concepts of international economics such as comparative cost, terms of trade, trade policies and trade agreements
- CO4- Ability to discuss and debate the effects of trade policy, trade agreements, exchange rate policies on the world economy/trade.
- CO5- Analyze the trends and Direction of India's Foreign Trade and Balance of Payments.

B.A. III Year Economics

Course Title: (Paper I) Development and Environmental Economics

Course Outcomes: On the completion of course, students will able to...

- CO1- It will explain the concept of economic growth and can explain inequalities between rich and poor countries, how the differences have evolved over time and how other measurements of quality of life correlates with per capita income.
- CO2- To understand the role of economic theory in solving various problems related to economic development.
- CO3- The students will have the knowledge and skills to critically evaluate economic problems of developing countries.

CO4- The students will understand the various economic theories in the context of India development perspectives.

CO5- Understand the concept of inclusive growth and sustainable development with reference to the environmental resource problems,

Course Title: (Paper II) Statistic

Course Outcomes: On the completion of course, students will able to...

CO1- Enabling students to understand the statistics and different techniques of data collection and its presentation through Tabulation and Graphic Representation.

CO2- Students will be able to understand the various methods of measuring central tendency, Dispersion, Coefficient of Variation, and Quartile Deviation.

CO3- Enabling students to understand the procedure of solving the correlation and regression and its application.

CO4- Students will successfully understand the preparation of time series and index numbers. It will enhance the computational skill of Estimating the time series and trend analysis. Enabling them to computes the cost of living index and Solves the Paasche'S, Laspeyre'S, Fisher'S Index numbers

CO5- Enabling students to understand the concept and rules of Probability. They will be able to understand and apply the concepts of research methodology and research report writing.

M.A. Economics (2 Years Programme)

Programme Specific Outcomes:

PSO1- To impart in depth knowledge to students about economic theory regarding utilization and allocation of resources including labour, natural resources and capital.

PSO2- To develop students understanding about how market for goods and services function and how income is generated and distributed.

PSO3- 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.

PSO4- To make students familiar with economic theories and their relevance, econometrics, quantitative techniques and applied research in a wide variety of fields within economics.

PSO5- Students would know how the economy is influenced by economic policy, technological advances and demographic conditions

M.A. I-Semester (Economic)

Course Title: (Paper I) Micro Economic Analysis-I

Course Outcomes: On the completion of course, students will able to...

CO1- It wills familiar students on creating an understanding among students on the basic reasoning of Economics.
CO2- Students are better able to understand various economic issues and applied part of the economics.
CO3- Students are better able to marginal analysis an approach to price and output determination in various market.
CO4- It will demonstrate knowledge of laws of supply and demand and equilibrium.
CO5- A comprehensive knowledge of Micro Economics will empower students to explain the social reality with better arguments and optimum solutions.

Course Title: (Paper II) Macro Economic Analysis-I

Course Outcomes: On the completion of course, students will able to...

CO1- explain the concept of opportunity costs, trade –off and benefits of economics.
CO2- explain the concept of circular flow of income in economy.
CO3- learn the concept of fiscal and monetary policies and their effect on economy.
CO4- Students will be familiar about a clear picture of circular flow model.
CO5- Students will be familiar about classical approach to demand for money.

Course Title: (Paper III) Quantitative Techniques

Course Outcomes: On the completion of course, students will able to...

CO1- Students would learn the importance and scope of statistics.
CO2- Students would be able to calculation of equilibrium prices, impact of tax and subsidy on demand and supply.
CO3- Students would gain knowledge to simple differentiation and its applications in economics.
CO4- Students would gain knowledge to Interpolation, extrapolation and index numbers.
CO5- Students would learn the measurement of central tendency, analysis of variance and multiple regression and correlation analysis.

Course Title: (Paper IV) Economics of Growth and Development -I

Course Outcomes: On the completion of course, students will able to...

CO1- Students would be acquainted with the various perspectives of economic growth and its relevance.

CO2- Students would become familiar with factors affecting economic growth and development.

CO3- Students would understand the conceptual bases of income measurement, physical quality of life index, poverty, inequality and development gap and role of various institutions in economic growth and development.

CO4- Students would have knowledge about the nature and classical theories of development. Students would be able to apply economic theories and concepts to contemporary social issues, as well as formulation and analysis of policy and recognize the role of ethical values in economic decisions.

M.A. II-Semester (Economic)

Course Title: (Paper I) Micro Economic Analysis-II

Course Outcomes: On the completion of course, students will able to...

CO1- Understand Distribution new classical theory.

CO2- Students are better able to marginal analysis an approach to price and output determination in various market.

CO3- It will demonstrate knowledge of laws of supply and demand and equilibrium.

CO4- Students are better able to individual behavior towards risk, expected utility etc.

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Course Title: (Paper II) Macro Economic Analysis-I

Course Outcomes: On the completion of course, students will able to...

CO1- explain the concept of opportunity costs, trade –off and benefits of economics.

CO2- explain the concept of circular flow of income in economy.

CO3- learn the concept of fiscal and monetary policies and their effect on economy.

CO4- Students will be familiar about a clear picture of circular flow model.

CO5- Students will be familiar about classical approach to demand for money.

Course Title: (Paper III) Quantitative Techniques

Course Outcomes: On the completion of course, students will able to...

CO1- Students would learn the importance and scope of statistics.

CO2- Students would be able to calculation of equilibrium prices, impact of tax and subsidy on demand and supply.

CO3- Students would gain knowledge to simple differentiation and its applications in economics.

CO4- Students would gain knowledge to Interpolation, extrapolation and index numbers.

CO5- Students would learn the measurement of central tendency, analysis of variance and multiple regression and correlation analysis.

Course Title: (Paper IV) Economics of Growth and Development -I

Course Outcomes: On the completion of course, students will able to...

CO1- Students would be acquainted with the various perspectives of economic growth and its relevance.

CO2- Students would become familiar with factors affecting economic growth and development.

CO3- Students would understand the conceptual bases of income measurement, physical quality of life index, poverty, inequality and development gap and role of various institutions in economic growth and development.

CO4- Students would have knowledge about the nature and classical theories of development. Students would be able to apply economic theories and concepts to contemporary social issues, as well as formulation and analysis of policy and recognize the role of ethical values in economic decisions.

M.A III semester Economics

Course Title: (Paper I) Public Economic

Course Outcomes:

CO1- The students would learns of the feature the federal structure and financial relationship among them.

CO2- The course would develop the analytical ability of students to distinguish between beneficial and detrimental effects of a government policy and their effect on macroeconomics framework of an economy.

CO3- It will helps students to critically analyse the fiscal reforms and policy choices of the government in developed and developing countries.

Course Title: (Paper II) International Economics

Course Outcomes:

CO1- Students would know about Interregional and international trade , different theory of international tread.

CO2- Students would know the country’s position regarding international trade, payments and foreign exchange.

CO3- The students would learn the methods regarding improvement in terms of trade, international debt and balance of payments positions.

CO4- Students would know about the policies regarding increase in exports and to deal with international institution.

Course Title: (Paper III) Labor economics

Course Outcomes:

CO1- Student would Know About nature and characteristics of labour market in developing countries.

CO2- Students would become familiar labor market policy, rationalization, methods of recruitment and placement and employment service organization in India.

CO3- Students would know how wages are determined within different models for wage bargaining and models for efficiency wages.

CO4- Students would understand employment and development relationship in developing countries.

Course Title: (Paper IV) Agricultural Economics

Course Outcomes:

CO1- Course provides knowledge agricultural background , rural economy, farm and agro business activities.

CO2- Course provides knowledge livestock economics, rural infrastructure development and Agricultural Production.

CO3- It introduces learner applied part of economics instead theoretical, which deals with allocation of land under various crops, specialization, diversification and other policy amplifications.

CO4- Course offer relevant production and various techniques to understand agri production, cost benefit analysis and enhance learner to make frontier-production function at least cost.

M.A. IV-Semester (Economic)

Course Title: (Paper I) Indian Economic Policy and issues

Course Outcomes:

CO1- To have knowledge about the issues in Indian Economy like planning, poverty, unemployment agricultural production etc.

CO2- To know about relationship between monetary policy, fiscal policy and economic development.

CO3- To know about framework of policy making for the development of Indian economy

CO4- To know about foreign trade and balance of payment, international institutions , multinational corporation and foreign capital.

Course Title: (Paper II) Demography

Course Outcomes:

CO1- Gain a sound command over the basic tenets of demography as well as key demographic issues and illustrations in the context of a large and diverse country like India.

CO2- Grasp a clear understanding of the inter-relationship between demography and the process of economic development

CO3- Comprehend the basic components of population (fertility, mortality, migration)

CO4- To study established theories of population To explore various aspects of the population policy and to study its impact on socio economic issues

बी.ए.(हिन्दी)

कला स्नातक (बीए) का कार्यक्रम परिणाम

बीए में प्रवेश के इच्छुक छात्र कला स्नातक बी.ए.(हिन्दी) कार्यक्रम में निम्नलिखित गुणवत्ता ग्रहण करेगें उम्मीद है कि यह प्रोग्राम विद्यार्थियों को अपेक्षित लक्ष्यों को प्राप्त करने के साथ ही उनके भविष्य को उज्जवल बनाने में और अभिव्यक्ति कौशल विकसित करने में उनकी मदद करेंगा। उनके चरित्र में मानवीय गुणों का विकास करने की दृष्टि से भी यह प्रोग्राम महत्वपूर्ण है।

पाठ्यक्रम अधिगम:-

PO1- मानवीय मूल्यों का बोध।

PO2- समाज सेवा की भावना।

PO3- जिम्मेदार और कर्तव्यपरायण नागरिक के गुणों का विकास।

PO4- गंभीर स्वभाव एवं जीवन की विषमताओं से लड़ने की क्षमता।

PO5- रचनात्मक क्षमता

कार्यक्रम विशिष्ट परिणाम बी.ए.(हिन्दी)

बीए (हिंदी) पाठ्यक्रम पूरा करने पर छात्र, सक्षम हैं:-

PSO1- हिंदी की मूल अवधारणा और विषय और इसकी उत्पत्ति को समझने के लिए

PSO2- विषय हिंदी और उसकी शाखाओं को महत्व देना।

PSO3- हिंदी साहित्य के विभिन्न पहलुओं को समझने की विधि और देने की प्रक्रिया के साथ नई विधा और दिशा का बोध।

PSO4- विभिन्न क्षेत्रों और सिद्धांतो के अनुरूप शब्दावली और इसके विपरीत में प्रयास करने के लिए सक्षम।

PSO5- हिंदी साहित्य की इसकी दार्शनिक विधियों का विस्तार और समझ।

PSO6- अतीत से वर्तमान तक हिंदी की अवधारणा का मूल्यांकन करना और साहित्य के माध्यम से समाज को और अधिक निकटता से जानना ।

बी.ए.(हिन्दी साहित्य) प्रथम वर्ष

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र:-प्राचीन एवं मध्यकालीन काव्य

पाठ्यक्रम परिणाम:

CO1- कबीर तुलसी जायसी के व्यापक दृष्टिकोण का अध्ययन।

CO2- प्राचीन मध्यकाल की साहित्य एवं सांस्कृतिक पृष्ठभूमि का बोध।

CO3- भक्ति के बदलते स्वरूप की जानकारी।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र- हिन्दी कथा साहित्य

पाठ्यक्रम परिणाम:

CO1- गोदान उपन्यास के द्वारा कृषक जीवन की समस्याओं का बोध एवं नवीन दृष्टि।

CO2- हिंन्दी उपन्यास एवं कहानी के उद्भव एवं विकास की जानकारी।

CO3- कहानी के द्वारा राष्ट्रीय भावना का अध्ययन।

CO4- समसमायिक दृष्टिकोण एवं बुर्जुग व्यक्तियों की समस्या का अध्ययन।

बी.ए.(हिन्दी) द्वितीय वर्ष

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र-अर्वाचीन हिंन्दी काव्य

पाठ्यक्रम परिणाम:

CO1- आधुनिक हिंन्दी काव्य के क्रमिक विकास का परिचय।

CO2- राष्ट्रीय काव्यधारा का परिचय।

CO3- युध्द एवं उसके दुखद परिणाम के प्रति मानवीय दृष्टिकोण का विकास।

CO4- छायावाद, प्रगतिवाद, तथा मार्क्सवादी अवधारणा का परिचय।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र- हिन्दी भाषा साहित्य का इतिहास और काव्यांग विवेचन

पाठ्यक्रम परिणाम:

CO1- हिंन्दी भाषा की उत्पति एवं उसके व्याकरण की विस्तृत जानकारी।

CO2- हिंन्दी की वैधानिक स्थिति एवं देवनागरी लिपि के मानकीकरण की जानकारी।

CO3- आधुनिक गद्य के क्रमिक विकास और उसकी विद्याओं की जानकारी।

CO4- हिंन्दी काव्यांग का विस्तृत बोध।

बी.ए.(हिन्दी) तृतीय वर्ष

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र- प्रयोजन मूलक हिंन्दी।

पाठ्यक्रम परिणाम:

CO1- हिंन्दी के प्रयोजन मूलक या कामकाजी स्वरूप का परिचय।

CO2- कार्यालयों में प्रयुक्त हिंन्दी के स्वरूप की जानकारी।

CO3- अनुवाद एवं पत्रकारिता के अध्ययन द्वारा रोजगारोन्मुखी दृष्टिकोण का विकास।

CO4- कम्प्यूटर के क्षेत्र में हिंन्दी के विकास की जानकारी।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र- नाटक निबंध तथा स्फुट गद्य विद्यायें एवं बुन्देली भाषा।

पाठ्यक्रम परिणाम:

CO1- हिंन्दी गद्य की विभिन्न विद्याओं के सम्पन्न साहित्य का परिचय।

CO2- साहित्य के माध्यम से राष्ट्रीय चेतन का विकास।

CO3- बुंदेली भाषा का क्रमिक विकावस उसकी उपबोलियॉ एवं व्यापक क्षेत्र का परिचय।

CO4- हिंन्दी निबंध के विविध स्वरूपों की जानकारी।

स्नातक प्रथम वर्ष आधार पाठ्क्रम (हिन्दी)

(बी.ए./बी.कॉम कम्प्यूटर/बी.कॉम टेक्स/बी.एस.सी/बीबीए/बीसीए)

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र- हिंन्दी भाषा और नैतिक मूल्य

पाठ्यक्रम परिणाम:

CO1- हिंन्दी भाषा एवं नैतिक मूल्य से जुड़ी इकाइयों का समावेश किया गया है।

CO2- नैतिक मूल्य का सामाजिक, राजनैतिक, शैक्षणिकता में बहुत अधिक योगदान है।

CO3- हिंन्दी काव्य गद्य के विभिन्न विधाओं का परिचय।

CO4- हिंन्दी व्याकरण के माध्यम से परिनिष्ठित एवं परिमार्जित भाषा का बोध।

CO5- भाषा संबंधी अशुद्धियों का समावेश।

स्नातक द्वितीय वर्ष आधार पाठ्क्रम (हिन्दी)

(बी.ए./बी.कॉम कम्प्यूटर/बी.कॉम टेक्स/बी.एस.सी/बीबीए/बीसीए)

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र- हिंन्दी भाषा और नैतिक मूल्य

पाठ्यक्रम परिणाम:

CO1- हिंन्दी भाषा एवं नैतिक मूल्य से जुडी इकाइयों का समावेश किया गया है

CO2- संस्कृति के संरक्षण संवर्धन और प्रसार में सहयोग।

CO3- भाषा बोध एवं अभिव्यक्ति कौशल का विकास।

CO4- वैचारिक एवं भावनात्मक समरसता विकसित करने में सहयोगी।

CO5- सर्जनक्षमता का विकास।

स्नातक तृतीय वर्ष आधार पाठ्क्रम (हिन्दी)

(बी.ए./बी.कॉम कम्प्यूटर/बी.कॉम टेक्स/बी.एस.सी/बीबीए/बीसीए)

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र- हिंन्दी भाषा और नैतिक मूल्य

पाठ्यक्रम परिणाम:

CO1- विश्व में प्रचलित विभिन्न धर्मो के ज्ञान के द्वारा व्यापक दृष्टि का प्रसार।

CO2- महापुरूषों के आदर्श जीवन की जानकारी।

CO3- मध्यप्रदेश की कला साहित्य संस्कृति की जानकारी के माध्यम से आत्मीयता का प्रसार।

CO4- हिंन्दी व्याकरण पत्रकारिता का व्यापक ज्ञान।

CO5- अनुवाद कौशल के द्वारा रोजगारोन्मुखी दृष्टिकोण का विकास।

एम.ए ''हिंन्दीं साहित्य'' का कार्यक्रम परिणाम

हिंन्दी अपना स्थान विश्व पटल पर बनायें हुये हैं अभिव्यक्ति एवं रोजगार की दृष्टि से हिंन्दी का महत्वपूर्ण स्थान हैं राज्य एवं केन्द्र स्तर की प्रतियोगी परीक्षओं में हिन्दीं का महत्वपूर्ण योगदान हैं। UPSC% परीक्षा का कोर्स प्रतियोगी परीक्षा के कोर्स से लगभग 70% मिलता है। स्नाताकोत्तर कक्षाओं में पढ़ाये जाने वाले प्रश्नपत्रों के नाम।

एम.ए ''हिंन्दीं साहित्य'' प्रथम सेमेस्टर

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र:- प्राचीन एवं मध्यकालीन काव्य

पाठ्यक्रम परिणाम:

पाठ्यक्रम में निर्धारित प्रश्न पत्र विद्यार्थियों को निम्नलिखित अधिगम प्रदान करता है।

CO1- प्राचीन एवं मध्यकालीन साहित्य को समझने की व्यापक दृष्टि प्रदान करता है।

CO2- प्राचीन एवं मध्यकाल की भाषा के क्रमिक विकास समझने में सहायक हैं।

CO3- साहित्य के माध्यम से संत कवियों द्वारा किये गये सामाजिक सुधारों की जानकारी।

CO4- हिंन्दी काव्य परम्परा में सूफी मत का महत्व का बोध।

पाठ्यक्रम का नामः द्वितीय प्रश्न पत्रः- आधुनिक गद्य एवं उसका इतिहास

पाठ्यक्रम परिणामः

CO1- रंगमचीन अवबोध।

CO2- उपन्यास के माध्यम से ग्राम्य जीवन का बोध एवं मनोवैज्ञानिक दृष्टिकोण का विकास।

CO3- मध्यवर्गीय जीवन दृष्टि का ज्ञान।

CO4- इतिहास एवं साहित्य के सुन्दर समन्वय का बोध।

पाठ्यक्रम का नामः तृतीय प्रश्न पत्र- भारतीय एवं पाश्चात्य काव्य शास्त्र

पाठ्यक्रम परिणामः

CO1- साहित्य के विभिन्न सिद्धांतो का परिचय।

CO2- भारतीय काव्य शास्त्र के सिद्धांतों का साहित्य में योगदान।

CO3- भारतीय काव्यशास्त्र के आचार्यो का योगदान, रस सिद्धांत के साधारणीकरण के परिचय के अध्ययन से जीवन के प्रति नवीन दृष्टि कोण का विकास।

पाठ्यक्रम का नामः चतुर्थ प्रश्न पत्र- हिंन्दी साहित्य का इतिहास एवं सांस्कृतिक पृष्ठभूमि

पाठ्यक्रम परिणामः

CO1- इतिहास लेखन की सुदीर्घ परम्परा ये छात्रों को अवगत करना।

CO2- सांस्कृतिक परम्परा उसके महत्व का निरूपण।

CO3- विभिन्न कालों की सामाजिक आर्थिक एवं राजनैतिक परिस्थितियों के अनुरूप साहित्य के विकास का परिचय।

एम.ए ''हिंन्दीं साहित्य'' द्वितीय सेमेस्टर

पाठ्यक्रम का नाम:प्रथम प्रश्न पत्र:- प्राचीन एवं मध्यकालीन काव्य

पाठ्यक्रम परिणाम:

CO1- पाठ्यक्रम में निर्धारित प्रश्न पत्र विद्यार्थियों को निम्नलिखित अधिगम प्रदान करता है।भक्ति विषयक भक्ति कालीन एवं रीति कालीन आवधारणा से परिचय।

CO2- भ्रमर गीत की समुन्नत परम्परा का बोध।

CO3- रीति सिद्ध एवं रीति मुक्त काव्य धारा की जानकारी।

CO4- विभिन्न कालों में विषय विविधता का बोध।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र:- आधुनिक हिन्दी गद्य और उसका इतिहास

पाठ्यक्रम परिणाम:

CO1- हिंन्दी गद्य के क्रमिक विकास से परिचय।

CO2- रंगकर्म एवं गद्य की निबन्ध, उपन्यास, कहानी व अन्य विधाओं के माध्यम से जीवन से जुड़ी विभिन्न समस्याओं एवं उनके निराकरण की जानकारी।

CO3- गद्य विकास में युगानुरूप नवीन विषयों के समावेश के दृष्टिकोण का विकास।

CO4- साहित्य में समाविष्ट अन्य विषयों की जानकारी का अर्जन।

पाठ्यक्रम का नाम: तृतीय प्रश्न पत्र:- भारतीय एवं पाश्चात्य काव्यशास्त्र

पाठ्यक्रम परिणाम:

CO1- पाश्चात्य साहित्य के विभिन्न सिद्धान्तों एवं वादों का परिचय।

CO2- पाश्चात्य काव्यशास्त्र के सिद्धान्तों पर आधारित साहित्य का जीवन पर प्रभाव का अध्ययन।

CO3- आधुनिक समीक्षा की विभिन्न प्रवृतियों का ज्ञान।

CO4- औदात्य सिद्धांत एवं कल्पना सिद्धांत द्वारा जीवन-दर्शन का बोध।

पाठ्यक्रम का नाम: चतुर्थ प्रश्न पत्र:- हिन्दी साहित्य का इतिहास एवं सास्कृतिक पृष्टभूमि

पाठ्यक्रम परिणाम:

CO1- आधुनिक काल की सामाजिक आर्थिक राजनैतिक एवं सास्कृतिक पृष्ठभूमि का ज्ञान।

CO2- गद्य के क्रमिक विकास का बोध।

CO3- साहित्य जगत के नये वाद एवं पुरष्कृत रचनाकारों की जानकारी।

CO4- हिंन्दी आलोचना एवं अस्मिता मूलक नयें विमर्शो का ज्ञान।

एम.ए ''हिंन्दीं साहित्य'' तृतीय सेमेस्टर

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र- आधुनिक हिंन्दी काव्य ।

पाठ्यक्रम परिणाम:

CO1- राष्ट्रकवि मैथलीशरण गुप्त एवं जयशंकर प्रसाद की महाकाव्यत्मक रचना कामायनी का परिचय एवं जीवन मूल्य का विकास।

CO2- छायावादी रचना शैली की विशिष्टिताओं का परिचय।

CO3- आधुनिक काल में विकसित राष्ट्रीय चेतना एवं देश प्रेम की भावाना का बोध।

CO4- पौराणिक कथा एवं पात्रो के संदर्भ में नवीन ज्ञानदृष्टि।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र- भाषा विज्ञान एवं हिन्दी भाषा।

पाठ्यक्रम परिणाम:

CO1- भाषाविज्ञान के अंतर्गत भाषा विज्ञान हैं, स्वर एवं व्यंजन के उच्चारण की वैज्ञानिक अवधारणा का परिचय एवं उसका महत्व।

CO2- विविध बोलियों एवं भाषाओं का व्यापक ज्ञान।

CO3- अनुवाद विज्ञान का परिचय।

CO4- अर्थ विज्ञान, वाक्य विज्ञान का परिचय एवं भाषा विज्ञान के वैज्ञानिक अध्ययन द्वारा सूक्ष्म दृष्टिकोण का विकास।

पाठ्यक्रम का नाम: तृतीय प्रश्न पत्र -नाटक निबंध एवं अन्य विधायें।

पाठ्यक्रम परिणाम:

CO1- रंगमंच के क्रमिक विकास की जानकारी।

CO2- सामाजिक रूढियों एवं अंध विश्वासों के विरूद्ध नवीन दृष्टिबोध।

CO3- साहित्य एवं इतिहास के समन्वय का बोध।

CO4- पौराणिक व्याख्यों के माध्यम से आधुनिक मूल्य बोध का विकास।

पाठ्यक्रम का नाम: चतुर्थ प्रश्न पत्र:- सूरदास।

पाठ्यक्रम परिणाम:

CO1- सूर साहित्य की सार्वकालिकता एवं सार्वभौमिकता का परिचय।

CO2- आज की प्रासंगिता में वात्सल्य एवं सृगांर का योगदान।

CO3- भक्ति-की सुदीर्घ परम्परा का बोध।

CO4- सूर साहित्य की चरवाहा संस्कृति एवं साम्यवाद की दृष्टि का विकास।

एम.ए ''हिंन्दीं साहित्य'' चतुर्थ सेमेस्टर

पाठ्यक्रम का नाम: प्रथम प्रश्न पत्र:- आधुनिक काव्य

पाठ्यक्रम परिणाम:

CO1- साहित्य में विकसित नवीन बोध एवं वादों की जानकारी।

CO2- मुक्तिबोध के काव्य के अध्ययन से नवीनदृष्टि एवं ज्ञान के वास्तविक रूप का परिचय।

CO3- अज्ञेय के माध्यम से यथावर संस्कृति का बोध एवं महत्व के प्रति नवीन दृष्टि का विकास।

CO4- समाज के अनछुये विषयों को साहित्य का विषय बनाने के ज्ञान का विकास।

पाठ्यक्रम का नाम: द्वितीय प्रश्न पत्र:- भाषा विज्ञान एवं हिन्दी भाषा

पाठ्यक्रम परिणाम:

CO1- हिंन्दी की ऐतिहासिक पृष्ठभूमि का बोध।

CO2- भौगोलिक विस्तार की दृष्टि से हिंन्दी और उसकी उपबोलियों को ज्ञान।

CO3- हिंन्दी की भाषिक संरचना एवं व्याकरण का व्यापक ज्ञान।

CO4- कम्प्यूटर के क्षेत्र में हिन्दी के नवीनतम संसाधनों की जानकारी।

पाठ्यक्रम का नाम: तृतीय प्रश्न पत्र:- नाटक निबंध एवं अन्य विधायें

पाठ्यक्रम परिणाम:

CO1- हिंन्दी गद्य की मुख्य एवं गौण विधाओं का परिचय।

CO2- निर्धारित निबंधों के माध्यम से मनोवैज्ञानिक एवं भारतीय संस्कृति विषयक दृष्टिकोण का विकास।

CO3- समाज की विद्रुपताओं पर व्यंग्य के माध्यम से किये गये कटाक्ष और उसके महत्व का निरूपण।

पाठ्यक्रम का नाम: चतुर्थ प्रश्न पत्र:- सूरदास

पाठ्यक्रम परिणाम:

CO1- भ्रमरगीत परम्परा का अध्ययन एवं बोध।

CO2- वाग्वैदग्धता एवं कूटपदों की अवधारणा।

CO3- सगुण भक्ति उपासना का प्रतिपादन।

CO4- कृष्ण भक्ति परम्परा में अन्य रचनाकारों के योगदान का परिचय।

Department of Political Science

BA. I YEAR

Course Title: Paper I – Basic Principal of Political Science

Course Outcomes:

- Student will be able to understand definition, Natures and scope of Political sciences & significance of Political theory, different ideologies and approaches.
- They will be able to explain the Principal origin of State.
- They will be able to learn Right and Duties, Liberty and Equality, Justice, Welfare State, Power and Authority.
- They will be able to explain different models of democracy.

Course Title: Paper II - Indian Government & Politics

Course Outcomes:

- Students will be able to understand the constitutional development in India.
- They will be able to answer how constituent assembly was formed.
- They will be able to identify the power division in constitutional setup.
- They will be able to describe the significance of the Preamble, Fundamental fights and Directive Principles of State Policy in the constitutional design of India.

B.A. II YEAR

Course Title: Paper I- Representative Political Thinkers

Course Outcomes:

- Student will be able to understand about salient features of Ancient Indian Political thought, Manu, Kautilya & Buddhist tradition.
- Student will be able to understand about Modern Political thought of different writer such as Hobbes, Locke and Rousseau.

Course Title: Paper I- -Constitution of Majar Countries

Course Outcomes:

CO1- Student will be able to understand about salient features of British Constitution.

CO2- Student will be able to understand about salient features of American Constitution.

CO3- Student will be able to comparative studying are the American and British polity.

BA. III YEAR

Course Title: Paper I- Indian Foreign Policy

Course Outcomes:

CO1- Student will be able to understand about Indian Foreign Policy.

CO2- Student will be able to understand about regional organization that is SAARC, ASEAN and BRICS.

Course Title: Paper II- Public Administration

Course Outcomes:

CO1- Student will be able to Understand about Public Administration.
CO2- Student will be able to understand of financial administration.

M.A. Semester I

Course Title: Paper I-Modern Indian Political Thought

Course Outcomes:

- CO1- The purpose of this paper is to develop an understanding about the specificities of Indian political thought.
- CO2- Students have learnt about the thought processes developed during the interaction with and struggle against the colonial regime.
- CO3- This period spans from mid 18^{th} century to mid 20^{th} century.
- CO4- The main thinkers abourt which students have lesrnt are Raja ram Mohan roy, Bal Gangadhar Tilak, Swami Vivekanand, Mahatma Gandhi ,Sayyid Ahmad Khan, Jay Prakash Narayan, J.L.Nehru, Ram Manohar Lohia and others.

Course Title: Paper II- Comparative Politics

Course Outcomes:

- CO1- This paper aims at the development of an understanding of the theoretical aspect of comparative politics.

CO2- Students have learnt to compare between various political and social formations .This paper has also developed an understanding of the parameters of comparison.

CO3- The main approaches which a students have learnt are, institutional approach, political system approach, structural functional approach, political economy approach and neo-institutional approach. The theoretical bases of analysis taught are state, class, Caste, elites, gender and race.

CO4- A theory of development, political culture, political communication, political recruitment and political participation has also been taught.

Course Title: Paper III- International Political Theory

Course Outcomes:

CO1- This papers aims at the development of understanding of the theoretical aspect of international politics. Concepts which are taught are, balance of power, and collective Security; Imperialism, Colonialism, New Colonialism and War' National interest and International Ideology, morality etc.

CO2- The concept of non-alignment, disarmament CTBT and cold war has also been developed. Other concepts such as North-South dialogue, South-South dialogue, NAFTA and globalization has also been developed.

Course Title: Paper IV- Public Administration

Course Outcomes:

CO1- This paper aims at the development of an understanding of the concepts and issues of public administration, Students have learnt about the various phases of the development of meaning, nature and scope of public administration.

CO2- They have also learnt about the various approaches such as liberal democratic, welfarist and Marxist approaches of Public administration.

CO3- The course has also developed an understanding about financial administration and the nature of civil service and bureaucracy.

M.A. Semester II (Political Science)

Course Title: Paper I- Political Thinkers Part I

Course Outcomes:

CO1- This papers aims at developing an understanding of the history of political thought among the students.

CO2- Students have learnt the political thinkers ranging from Plato and Aristotle from Greek Political thought, Kautilya and Confucius from Asia in ancient period.

CO3- They have also developed understanding about medieval Christian political thinkers such as Thomas Augustine, Thomas Aquinas and the modern political thinkers such as Machiavelli, Thomas Hobbes and John Locke.

CO4- They have also learnt as to how they can have a critical understanding of the political thinkers.

CO5- addition to it they have an idea about the methodologies used by classical political thinkers**.**

Course Title: Paper II- Politics of South Asian Countries (Pakistan, Bangaladeso Srilanka, Nepal)

Course Outcomes:

CO1- This paper aims at providing an understanding of the politics of neighbouring countries, Pakistan, Sri Lanka, Bangla Desh and Nepal.

CO2- Over the years they have developed ideas about the socio-economic conditions and the political development in post 1970s.

CO3- They have also learnt the constitutional framework of these countries. In additions to it they have learnt about the main issues which influence the politics of these countries.

Course Title: Paper III- International Organization

Course Outcomes:

CO1- This paper develops an idea about the understanding the structure and functioning of international organizations.

CO2- This includes world level organization United Nations Organization, and regional organizations such as European Union, SAARC, ASEAN, APAC, OAS, and BRICS.

CO3- Students have also learnt about economic organization like WTO and World Bank.

Course Title: Paper III- Research methodology

Course Outcomes:

CO1- This paper aims at the development of understanding of methodological aspect of research in political science.

CO2- Students studying this paper have learnt about the nature of research methods used in social science.

CO3- This includes the study of research method and hypothesis. They also study about the survey techniques and methods of data collection. In addition to it they have also learnt about the methods of report writings

M.A. Semester III (Political Science)

Course Title: Paper I- Modern Political Thinkers

Course Outcomes:

CO1- The purpose of this paper is to develop the understanding about the thought processes starting from the period of French Enlightenment.

CO2- Students have learnt about the political thoughts of J.J. Rousseau, Montesquieu of Enlightenment period, utilitatians such as Bentham and J.S. mill, idealists such as Hegel and Green, and the thought of Karl Marx.

CO3- In addition to it they have also developed understanding about yentieth century thinkers such as Berlin, Hannah Arendt, Eric Voegelin and John Dewey.

Course Title: Paper II- Indian Government & Politics

Course Outcomes:

CO1- This paper aims at developing an understanding about the political processes in India.

CO2- In course of learning these processes students learn about the functioning of government based on Indian constitution.

CO3- This includes the study of preamble of Indian constitution and the fundamental rights and directive principles for state policies.

CO4- They also learn about the values enshrined in Indian constitution such as secularism, socialism and pluralism.

CO5- In addition it this paper has also made them acquainted about the important debates and court cases related to them.

Course Title: Paper III- International Law and Human Rights

Course Outcomes

CO1- This paper is a discussion about the international law and the protection of human rights. Students have learnt about evolution and development of international law in the human history.

CO2- They have learnt about law of neutrality.

CO3- Rights and duties, violation of international law of air and Geneva Convention. They also get informed about the international covenants.

Course Title: Paper IV Indian Foreign Policy

Course Outcomes

CO1- This paper is a discussion about the developments in Indian foreign policy.

CO2- Students have learnt about the external and internal determinants of Indian foreign policy.

CO3- They also have an idea about the foreign policy with reference to India's relations with super powers United States of America and Russia, with neighbours, Bangla Desh, Sri Lanka and Pakistan. In addition to it they have an idea about the India and United nations.

M.A. Semester IV (Political Science)

Course Title: Paper I: Advance Political Theory

Course Outcomes

CO1- This paper is aimed at developing an understanding about the recent trends in advanced political theory.

CO2- Students learn about the nature and scope of political theory.

CO3- In so doing they know about the debates of political theory such as decline and resurgence of political theory and end of history debate.

CO4- They also know about the various theories of democracy such as Athenian democracy, republican democracy elitist theory of democracy and deliberative democracy.

CO5- They also get acquainted with various ideologies such as Marxism, liberalism, socialism, feminism, anarchism, multiculturalism and environmentalism.

Course Title: Paper II- Indian Political Processes

Course Outcomes

CO1- This paper aims at providing the knowledge of actual functioning of Indian state and constitution on the one hand and the social and non –political processes on the other.

CO2- Students have learnt about the various interpretations and theorizations of Indian state.

CO3- It has also provided the political analysis of the Indian planning process. They also have an idea of the challenges to Indian political system such as castiesm, regionalism under gender differences.

CO4- In addition to it they have idea about the Indian system of democratic decentralization i.e. panchayats and nagar palikas

Course Title: Paper III State Politics in India

Course Outcomes

CO1- This paper develops an understanding of the state politics in India with special focus on Madhya Pradesh.
CO2- Students have learnt about the re-organization of Indian state after independence.
CO3- An understanding of determinants of politics is also developed. They have developed an idea about the executive and legislative processes of the state.
CO4- In addition to it they also learn about the challenges faced by the Indian state by the specific forms of politics in the state such as interstate water distribution disputes and state autonomy.
CO5- They also learn about the interstate council state planning commission.

Course Title: Paper IV- Diplomacy- Theory and practice

Course Outcomes

CO1- This paper aims at providing an idea of diplomatic behavior of states. Students learn about the historical development of theory and practice of diplomacy.
CO2- They learn the various types of diplomacy. Further they have developed understanding about the functioning of diplomats in different countries.
CO3- An idea about the foreign policy and its relationships with diplomacy is also developed.

Department of English

Program Outcomes, Program Specific Outcomes and Course Outcomes

Academic Session: 2020-2021

Program: BA I Year

Programme Outcomes:

PSO1- **Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PSO2- **Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PSO3- **Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PSO4- **Effective Citizenship**: Demonstrate empathetic social concern and equity centre national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PSO5- **Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PSO6- **Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.

PSO7- **Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context ofsocio-technological changes.

BA I Year: Foundation Course

Course Outcomes:

After completion of this course the students will be able to:

CO1- Prepare for various competitive exams by developing their English language competency.

CO2- Promote their comprehension skills by being exposed to a variety of texts and their interpretation.
CO3- Build and enhance their vocabulary.
CO4- Develop their communication skills by strengthening grammar and usages.
CO5- Inculcate values which make them aware of national heritage and be responsible citizens.

BA II Year: Foundation Course

Course Outcomes:

After the completion of the course students are expected to gain competency and proficiency in English language to perform at professional and personal level as well as to face competitive examinations at state and national level. Through this course the students will be able to:

CO1- Strength their grammar and vocabulary
CO2- Acquire and develop LSRW (Listening, speaking, reading and writing skills).
CO3- Enhance their creative and critical thinking.
CO4- Strengthen their knowledge of figures of speech.
CO5- Learn correspondence skills like writing application, formal &informal letters
CO6- Do translations work from Hindi to English and vice versa.

BA III Year: Foundation Course

Course Outcomes:

After completion of this course, students will be able to

CO1- Transform the sentences from direct to indirect.
CO2- Describe nature and types of poetry.
CO3- Write about short Story and its basic elements
CO4- Know about the concept of essays and its types.
CO5- Have knowledge about report writing and narrative skills
CO6- Learn about precis writing and drafting the CV.

BA I Year English Literature

Programme Specific Outcomes

PSO1- To develop basic knowledge of literary devices, forms and techniques in order to appreciate and interpret the text.

PSO2- To develop language and communication skills and creativity.
PSO3- To develop analytical skills and develop critical thinking skills.
PSO4- To familiarize with different cultures and social structures.
PSO5- Inculcate feelings of togetherness, empathy and harmony.
PSO6- To cultivate wisdom and world-view within themselves.

Course Title: Paper I- Study of Poetry

Course Outcomes:

The study of poetry will not only instruct and delight the students, but also inspire them to have positivity, creativity and a new way of thinking. After completion of this paper the students will be able to –

CO1- Identify, interpret, analyze and appreciate the various elements of poetry.
CO2- Appreciate the lyrical and sonorous quality of poetry and its various forms.
CO3- Analyse Metaphysical poetry and its important elements.
CO4- Develop a taste for poetry reading and writing; learn about poetic devices in English Literature.
CO5- Enhance their knowledge about English my theology and culture
CO6- Describe Neo-classical Age and major and minor writers and their works
CO7- Learn about Romantic Age, Nature Poets and their writings and its elements.

Course Title: Paper II–Study of Prose

Course Outcomes:

After completion of this course, the students will come to know about:

CO1- Prose and its other forms.
CO2- Definition of essay, essayists of different ages and their styles.
CO3- Periodicals famous in different ages and their different approaches.
CO4- Literary techniques to write non-fictional works.
CO5- Literary taste and approaches of different essayists.

BA II Year (English Literature)

Course Title: Paper I - Drama

Course Outcomes

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

- CO1- Analyze literary devices, forms and techniques in order to appreciate and interpret the text.
- CO2- Understand in detail about English drama or theatre in different ages.
- CO3- Write about different genres of drama, like comedy, tragedy, epic theatre.
- CO4- Describe distinctive features of Sanskrit, Greek, English, American and Indian plays.
- CO5- Acquaint with dramatic techniques and elements like plot, theme, character, spectacle and narrative**.**

Course Title: Paper II – Fiction

Course Outcomes

After the completion of this course, the students will be able to

- CO1- Understand various aspects and forms of fiction.
- CO2- Trace the origin and development of English novel.
- CO3- Appreciate morality and humanity values.
- CO4- Improve the understanding of the world and the complexities of human mind.
- CO5- Expand creativity and imagination and enrich the vocabulary in a delightful manner.

BA III Year (English Literature)

Course Title : Paper I -Contemporary Literature

Course Outcomes

Contemporary Literature allows students to explore the most recent literature being written. The goals of this course include the following:

- CO1- To become familiar with the very best fiction, nonfiction, drama and poetry of the last twenty years.
- CO2- To develop the necessary interest to read the works of contemporary literature.
- CO3- To gain a better understanding of the techniques and ethics involved in using secondary sources.
- CO4- To develop the ability to write critical exposition.
- CO5- To develop vocabulary through the use of literary terms and the author's diction.

Course Title Paper II– Indian Writing in English

Course Outcomes

After completing this course, the students would gain insight into 'Indianness' through representative works. Students will able to –

CO1- Appreciate the historical trajectory of various genres of Indian Writing in English from colonial times till the present.

CO2- Analyse Indian literary texts written in English in colonial, post-colonial period and recognize regional and national approaches of writers.

CO3- Understand the role of English as a medium for political awakening and the use of English in India for creative writing.

CO4- Evaluate critically the contributions of major Indian English poets, novelists and dramatists.

CO5- Develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them

CO6- Apply the ideas encapsulated in Indian Aesthetics to literary texts.

Programme: MA English Literature

Programme Specific Outcomes (PSOs):

PSO1- **Reading:** Postgraduate students will become accomplished, active readers who can articulate their own interpretations & perspectives.

PSO2- **Writing Skills:** Students will be able to write effectively for a variety of professional & social settings.

PSO3- **Sense of Genre:** Students will develop an appreciation for the elements of language, diction, syntax, rhetorical statements for a variety of genres as poetry, prose, fiction & drama etc.

PSO4- **Critical approaches:** Students will develop the ability to read works of literary, rhetorical and cultural criticismand deploy ideas from these texts in their own writing.

PSO5- **Culture & History:** Students will gain knowledge of the major traditions of literatures written in English and wouldbe able to appreciate the diversity of literary & social voices within those traditions.

PSO6- **Research Skills:** Students will be able to identify topics & formulate questions for productive inquiry; they will identify appropriate methods & sources for research & evaluate critically literary texts.

PSO7- **Communication Skills:** Students will demonstrate the skills needed to participate in conversation; articulate their own ideas clearly in creative writing.

Programme: MA - I and II Semester

Course Title Paper I- Poetry

Course Outcomes

After completion of this course the students will be able to

CO1- Become familiar with different kinds of British poetry such as narrative poetry, sonnet, elegy, satire, ode, epic, mock-epic and metaphysical poetry.
CO2- Study the development of different poetic genres as a means of articulating personal, cultural and political concerns. Identify various elements of poetry such as figures of speech, symbolism, theme etc.
CO3- Develop the understanding of rhyme, rhythms, metre, and prosody through various themes.
CO4- Develop creative writing skills and experiment with new trends.
CO5- Acquire natural rhythm of speech and become better communicators.
CO6- Understand the aesthetic and political shifts in poetry and philosophy towards modernity.

Course Title : Paper II - Drama

Course Outcomes

After completion of this course the students will know about origin of Western drama, Greek drama, Roman drama, Indian drama and the whole journey of drama; types of drama and basic elements of drama. The students will be able to

CO1- Demonstrate the understanding of the social and artistic movements that have shaped theater and dance as we know it today.
CO2- Analyze and interpret texts and performance both in writing and orally.
CO3- Develop collaborative skills in various theatrical contexts.
CO4- Demonstrate problem solving skills in the creation of artistic reflection.
CO5- Explore different aspects of theatrical drama.

Course Title : Paper III - Fiction

Course Outcomes

After completion of the course students will be able to

CO1- Take up the special studies in language and literature.
CO2- Introduce them to different cultures and social structures.
CO3- Develop a sense of humanity and good conduct with the learnings of fiction.
CO4- Build their confidence in handling of English language, inculcates feelings of togetherness, empathy and harmony.
CO5- Develop their intellectual flexibility, creativity and cultural literacy.
CO6- Build interest to write short stories and script writing.
CO7- Work as journalist, freelance writer, commentator, translator, educator.

Course Title : Paper IV - Prose

Course Outcomes

After the completion of the course, students will be able to:

CO1- Understand a passage and grasp its meaning.
CO2- Read essays of eminent writers like Bacon, Addison, Lamb, Gardiner etc. Comprehend and explain the themes of the essays.
CO3- Improve creative and critical skills which will lead them to various career options in print media.
CO4- Become competent.
CO5- Develop report writing skills which would accommodate them as editors, reporters, and content writer in newspapers.

Programme: MA – III and IV Semester

Course Title : Paper I - Critical Theory

Course Outcomes

After completion of the course, the students will be able to**:**

CO1- Be familiar with critical writing through the study of canonical texts from representative ages.
CO2- Understand critical perspective and terminology.
CO3- Develop a better understanding of the function of criticism.
CO4- Apply ancient critical theories to contemporary texts.
CO5- Develop their critical, sensible and logical thinking.
CO6- Identify the literary devices used in unseen passages.
CO7- Learn about practical criticismon the basis of the theories prescribed in the course.

Course Title : Paper II - English Language

Course Outcomes: After completion of this course, students will become familiar with:

CO1- The growth and development of English Language and contribution of different theorists.
CO2- The theories of language learning.
CO3- The difference between language and linguistics.
CO4- Various approaches and methods to linguistics.
CO5- Tools to measure language proficiency of learners.
CO6- Speech organism, mechanism and articulation of speech sound.

Course Title : Paper III- Indian Writing in English

Course Outcomes

After completion of the course the students will be able to

CO1- Be introduced to a wide range of Indian Writing in English.
CO2- Know about the trends and techniques in Indian Writing in English
CO3- Critically appreciate the representation of culture, identity, history, national and gender politics, in the prescribed text.
CO4- Familiarize themselves with the emergence & growth of Indian Writing in English.
CO5- Be aware of social, political &cultural issues reflected in Indian Writing in English
CO6- To develop sensibility and emotions with the purpose to enable them to relish literature.

Course Title : Paper IV- American Literature

Course Outcomes

After completion of the course the students will acquire the knowledge of different genre of American drama, comedy, tragedy, epic theatre. The students will be able to

CO1- Understand the distinctive features of American Literature.
CO2- Identify the relationship between various movements in American history, colonialism and culture.
CO3- Interpret literature as it relates to its historical, cultural, and political context.
CO4- Interpret literary works using critical perspectives.
CO5- Develop their creative thinking and ability.

कार्यक्रम के परिणाम (Program outcome)

B.A. Sanskrit

PO1- संस्कृत सर्वप्राचीन एवं व्याकरण के नियमों से बंधी हुई व्यवस्थित भाषा है।

PO2- संस्कृत को देवभाषा की पदवी प्राप्त है क्योंकि देवों के एवं सभ्य समाज के विचार विनमय की प्रथम भाषा संस्कृत थी।

PO3- सर्वप्राचीन साहित्य भी संस्कृत में { ऋग्वेद } आदि में प्राप्त है । संस्कृत भाषा चारों युगों में अपरिवर्तनीय है ।और संस्कृत का विशाल शब्द भण्डार भी संस्कृत भाषा को सर्वजन सुलभ बना देता है ।

PO4- संस्कृत में वर्तमान समय तक लिखा जा रहा साहित्य संस्कृत को पाठकों में रुचि बढ़ाने का कार्य करता है । संस्कृत स्नातक कक्षाओं का पाठ्यक्रम भी प्रतियोगी परिक्षाओं को पूर्ण रूप से ध्यान देकर बनाया गया है । परिणामत: प्रतियोगी परिक्षा में विद्यार्थी अन्य प्रयास के विना भी सफल हो जाते हैं ।

कार्यक्रम विशिष्ट परिणाम (Program Specific outcome)B.A. Sanskrit

PSO1- स्नातक पाठ्यक्रम के अध्ययन से छात्र अपने प्राचीन इतिहास एवं सर्वजनग्राह्य मूल्यों से अवगत हो जाते हैं ।

PSO2- संस्कृत भाषा में लिखे ग्रन्थों के अध्ययन एवं उनके गूढ़ अर्थों को समझने की क्षमता का विकास हो जाता है।

PSO3- स्नातक कक्षाओं में संस्कृत अध्ययन से स्नातकोत्तर कक्षाओं में प्रवेश मिलना आसान रहता है ।

PSO4- विद्यार्थी स्नातक कक्षा में संस्कृत अध्ययन से UPSC की परीक्षा के लिए संस्कृत विषय एक उत्तम विकल्प होता है ।

बी. ए. 1 Year

Course Title: प्रश्नपत्र -1 वेद व्याकरण एवं भाषा नैपुण्य ।

Course Outcomes

CO1- वैदिक संस्कृत एवं लौकिक संस्कृत का छात्र ज्ञान प्राप्त करेंगे ।

CO2- वैदिक साहित्य(वेद ब्राह्मणग्रन्थादि) एवं लौकिक साहित्य रामायण महाभारत आदि का कथा प्रसंग छात्रों में नैतिक मूल्यों का विकास करते हैं ।

CO3- वैदिक सूक्तों से छात्रों में मन की इच्छा शक्ति का संदेश अपने कार्य पर विजय प्राप्ति का संदेश एवं अग्नि के महत्व को समझेंगे।

CO4- संस्कृत संभाषण में छात्र प्रवीणता प्राप्त करेंगे । फलत: धातुरूप एवं शब्द रूप को स्मरण करके अपने शब्द भण्डार को विकसित करेंगे । संस्कृत अनुवाद को सीखने के लिए छात्रों को विभक्ति एवं कारकों का ज्ञान कराया जायेगा

CO5- भाषा को सरल रुचिकर एवं साहित्यक बनाने के लिए छात्र संधिओं का ज्ञान प्राप्त करेंगे ।

बी. ए. 1 Year प्रश्नपत्र -2

प्रश्नपत्र का शीर्षक - आर्षकाव्य एवं लौकिक काव्य

CO1- रामायण की संपूर्ण कथावस्तु को पढ़कर छात्रों में मर्यादा , भक्ति ,प्रीत ,नीति ,रीति , एवं एक आदर्श पत्नी एवं आदर्श भाई के कर्तव्यों से छात्र परिचित होंगे ।

CO2- शान्तिपर्व में धर्म, दर्शन, राजानीति और अध्यात्म ज्ञान का विशद निरूपण किया गया है। शान्ति पर्व में युद्ध की समाप्ति पर भीष्म के द्वारा श्रीकृष्ण की स्तुति, भीष्म द्वारा युधिष्ठिर के प्रश्नों का उत्तर तथा उन्हें राजधर्म, आपद्धर्म और मोक्षधर्म का बोध का ज्ञान प्राप्त करेंगे ।

CO3- रघुवंश की कथावस्तु का ज्ञान प्राप्त करेंगे। साथ ही दिलीप एवं सुदक्षिणा से गौभक्ति से फल सिद्धि को भी छात्र समझेंगे ।

CO4- मेघदूत काव्य से प्रेम की महत्ता एवं कवि कालिदास के सूक्ष्म चिंतन से छात्र परिचित होंगे ।साथ ही लघुत्रयी एवं बृहत्त्रयी का ज्ञान प्राप्त करेंगे ।

बी. ए. 2 Year , प्रश्नपत्र -1

प्रश्नपत्र का शीर्षक - गद्य दर्शन एवं व्याकरण

CO1- कादम्बरी में वर्णित पाञ्चाली रीति से युक्त महकवि बाणभट्ट के विशिष् कथावस्तु प्रबंध को छात्र जानेंगे एवं समस्त पदों के बड़े बड़े प्रयोगों को सीखेंगे। साथ ही मंत्री शुकनास के उपदेश राजधर्म को भी जानेंगे साथ ही लक्ष्मी की महत्ता को भी समझेंगे ।

CO2- आस्तिक दर्शनों से ईश्वर भक्ति एवं नास्तिक दर्शनों से मुख्यरूप से जीवन प्रबंधन को सीखेंगे। बोद्धों के अपोहवाद से पदार्थों के प्रति अनासक्ति को जानेंगे । योगदर्शन से इन्द्रियों का संयम का ज्ञान प्राप्त करेंगे

CO3- छात्र आश्रम व्यवस्था को पढ़कर ब्रह्मचर्य आश्रम , गृहस्थ आश्रम आदि कर्तव्यों को जानकर अपने कर्तव्यों को जानेंगे । संस्कारों के अध्ययन से स्वयं पर संयम करना सीखेंगे ।

CO4- संस्कृत में निबंध लेखन एवं वाच्य परिवर्तन से छात्रों की कल्पना शक्ति एवं बौद्धिक दक्षता का विकास होगा

CO5- समासों के ज्ञान से कठिन संस्कृत को भी समझने की शक्ति का विकास होगा ।

बी. ए. 2 Year , प्रश्नपत्र - 2

प्रश्नपत्र का शीर्षक - महाकाव्य एवं नाटक

CO1- महाकाव्य एवं नाटक के बारे में छात्र जानेंगे साथ ही कुमार संभव के प्रथम सर्ग के अध्ययन से छात्रों में हिमालय के प्रकृति चित्रण के संदर्भ से प्रकृति के प्रति लगाव उत्पन्न होगा ।

CO2- भरत मुनि के नाट्यशास्त्र के बारे में जानेंगे साथ ही नाट्य की उत्पत्ति एवं नाटक प्रस्तुति के विभिन्न आयामों एवं बिंदुओं से परिचित होंगे ।

CO3- अभिज्ञान शाकुन्तल के अध्ययन से छात्रों में दुष्यंत एवं शकुन्तला के प्रसंग से प्रकृति प्रेम समाज प्रेम एवं अपने कर्तव्यों के प्रति सजगता का विकास होगा ।

CO4- कालिदास , मास ,भवभूति आदि महाकवियों के परिचय अध्ययन से छात्रों में बौद्धिक पराकाष्काल्पनिक एवं आदर्श बुद्धि के महत्व को जानेंगे । साथ ही उनके आदर्शों पर चलेंगे ।

बी. ए. 3 Year , प्रश्नपत्र -1

प्रश्नपत्र का शीर्षक - काव्य व्याकरण और भाषा विज्ञान

CO1- भगवद्गीता के अध्ययन से कर्म के प्रति आस्था एवं आलस्य का त्याग द्वितीय अध्याय के अध्ययन से अपने धर्म के प्रति पूर्ण निष्ठा एवं संबंधों के प्रति उचित आचरण कैसे करें यह सिखाया जायेगा ।

CO2- पंचतंत्र की नीति कथाओं से छात्र राजनीति युद्ध नीति कूटनीति मित्रता आदि गुणों को सीखेंगे एवं अवगुणों से दूरी कैसे बनाई जाये इसको भी जानेंगे।

CO3- उपनिषद् के माध्यम से छात्र ईश्वर के स्वरूप को समझेंगे । साथ ही कर्म करने के लिए तत्पर रहेंगे । विद्या और अविद्या के स्वरूप को भी जानेंगे ।

CO4- शब्दों में धातु और प्रत्यय दो अवयव होते हैं ।छात्र धातु एवं प्रत्ययों का ज्ञान प्राप्त करेंगे ।

CO5- विचार विनमय की साधिका भाषा के स्वरूप के साथ साथ भाषाविज्ञान की अनेकों शाखाओं से परिचित होंगे । ध्वनि विज्ञान अर्थ विज्ञान एवं वाक्य विज्ञान को जानेंगे ।

M.A.Sanskrit

कार्यक्रम के परिणाम (Program outcome)

PO1- संस्कृत भाषा के महत्व को देखते हुए । संस्कृत को भारतीय संविधान की 8 वीं अनुसूची में स्थान दिया गया है

PO2- M.A. संस्कृत के पाठ्यक्रम के अध्ययन से ही छात्रों M Fill PH.D. में प्रवेश लेना आसान हो जाता है । पाठ्यक्रम के अध्ययन से संभाषण कौशल एवं संस्कृत साहित्य , वेद दर्शन एवं नाटक आदि ग्रंथों की समझ विकसित होती है । साथ ही मानवीय मूल्यों का संरक्षण एवं वर्धन होता है ।

कार्यक्रम विशिष्ट परिणाम (Program Specific outcome)

PSO1- स्नातकोत्तर पाठ्यक्रम से विद्यार्थी अपने प्राचीन संस्कृत साहित्य के इतिहास से परिचित होते हैं ।

PSO2- संस्कृति एवं संस्कृत एवं मानवीय मूल्यों की भावना से युक्त होते हैं ।

PSO3- पाठ्यक्रम के अध्ययन से M Phill PH.D. में प्रवेश आसानी से मिल जाता है ।

PSO4- पाठ्यक्रम के अध्ययन से शिक्षक परीक्षा प्राध्यापक परीक्षा NET आदि परीक्षाओं में छात्र सफल होते हैं

एम. ए. 1 Sem प्रश्नपत्र -1

प्रश्नपत्र का शीर्षक - वेद

CO1- अग्नि सूक्त , इन्द्र सूक्त , पर्जन्य सूक्त , वाक् सूक्त आदि के माध्यम से छात्र जल की उपयोगिता अग्नि की उपयोगिता वाणी की उपयोगिता आदि का ज्ञान प्राप्त करेंगे । साथ संवाद सूक्तों के माध्यम से नदी उपयोगिता को जानेंगे ।

CO2- नासदीय सूक्त के माध्यम से सृष्टि उत्पत्ति को जानेंगे । पुरुष सूक्त के माध्यम से ईश्वर के विराट स्वरूप को जानेंगे ।

CO3- शिवसंकल्प सूक्त के माध्यम से काल्याण कारी भावनाओं से परिचित होंगे।उत्तम मन की कामना करेंगे । राष्ट्र अभिवर्धन सूक्त के माध्यम से राष्ट्र की रक्षा के प्रति समर्पण भाव विकसित होगा ।

CO4- पञ्च यज्ञों की उपयोगिता को जानेंगे। अतिथि सेवा पितृसेवा वनस्पति रक्षण की भावना का विकास होगा ।

एम. ए. 1 Sem प्रश्नपत्र -2

प्रश्नपत्र का शीर्षक - वेदांग

CO1- निरुक्त के अध्ययन से क्रिया के स्वरूप को जानेंगे । वेदों के स्वरूप को जानेंगे । आचार्य , अग्नि , आदि महत्वपूर्ण शब्दों के निर्वचन के माध्यम से निर्वचन करने की क्षमता विकास होगा ।

CO2- ऋक्प्रातिशाख्य के माध्यम से वर्ण (अक्षर) व्यवस्था स्वर व्यवस्था वर्णों का उच्चारण स्थान आदि को जानेंगे ।

CO3- पाणिनीय शिक्षा के माध्यम से स्वर व्यवस्था एवं पाठकों के उत्तम एवं अधम पाठकों से परिचित होंगे

CO4- वैदिक वाङ्मय के वारे में जानेंगे । वेद , ब्राह्मणग्रन्थ , आरण्यक , एवं वेदांगों का सामान्य परिचय प्राप्त करेंगे ।

एम. ए. 1 Sem प्रश्नपत्र -3

प्रश्नपत्र का शीर्षक - पालि प्राकृत एवं भाषाविज्ञान

CO1- पालि एवं प्राकृत भाषा की विशेषताओं को जानेंगे । जातक कथाओं के माध्यम से जीवन के उद्देश्य एवं जीवन के लक्ष्यों का ज्ञान प्राप्त करेंगे ।

CO2- अभिलेखों के अध्ययन से ऐतिहासिक समझ का विकास होगा एवं अभिलेखों में प्रदत्त विषयवस्तु के साथ विद्यार्थी में स्वत: विश्वास की भावना जागृत होती है ।

CO3- भारतीय भाषाशास्त्रियों का अध्ययन करेंगे

CO4- भारोपीय भाषा परिवार का अध्ययन करेंगे। भाषाओं के समय को जानेंगे ।

CO5- ध्वनि सिद्धांत , संकेतग्रह अभिहितान्वयवाद , अन्विताभिधानवाद के स्वरूप को जानेंगे ।

एम. ए. 1 Sem प्रश्नपत्र -4

प्रश्नपत्र का शीर्षक - काव्य

CO1- मेघदूत का अध्ययन करेंगे। मेघदूत में वर्णित यक्ष यक्षिणी के दैविक प्रेम को जानेंगे प्रकृति सौंदर्य को जानेंगे।

CO2- अलकापुरी के लिए वर्णित प्रकृति चित्रण को जानेंगे । संदेश वाहक मेघ के मार्ग के लिए वर्णित पर्वतों एवं नदियों को जानेंगे ।

CO3- कुमार संभव में वर्णित पार्वती मां के अतिथि सत्कार से अतिथि सेवा की भावना का विकास होगा ।

एम. ए. 2 Sem प्रश्नपत्र - 1

प्रश्नपत्र का शीर्षक - भारतीय दर्शन

CO1- दर्शन शास्त्र के अध्ययन से सम्यक दर्शन (चिंतन)की शक्ति का विकास होगा ।

CO2- दर्शनों के माध्यम जन्म मरण के सिद्धांत को समझेंगे ।

CO3- दर्शनों के अध्ययन से कैवल्य प्राप्ति के रहस्य को जानेंगे ।

CO4- दर्शन के अध्ययन से षोडश पदार्थों (प्रामण प्रमेय संशय)आदि को जानेंगे ।

CO5- वेदान्तसार के अध्ययन से "अहं ब्रह्मास्मि "महावाक्य को आत्मसात करेंगे ।

CO6- वेदान्तसार के अध्ययन से षड् प्रकार के कर्मों को जानेंगे ।

CO7- नास्तिक दर्शन अर्थात् जो वेद को प्रमाण नहीं मानते उनके अध्ययन से कर्म के सिद्धान्त को विशेष रूप से महत्व देंगे ।

एम. ए. 2 Sem प्रश्नपत्र - 2

प्रश्नपत्र का शीर्षक - सांख्य एवं मीमांसा ।

CO1- सांख्य कारिका के अध्ययन से तीन प्रकार के दुखों से कैसे बचे उसके रहस्य को समझेंगे ।

CO2- पच्चीस प्रकार के तत्व को जानकर ही दुःख निवृत्ति सम्भव है इसको जानेंगे ।

CO3- सांख्य दर्शन के प्रमुख सिद्धांत सत्कार्यवाद से छात्र अवगत होंगे ।

CO4- मीमांसा दर्शन में वर्णित वेदों के अपौरुषेयत्व को जानेंगे । शाब्दी भावना एवं अर्थी भावना से अवगत होंगे । वेद प्रतिपादित धर्म को जानेंगे ।

CO5- योगदर्शन के अध्ययन से चित्तवृत्ति निरोध , मोक्ष प्राप्ति एवं दुःख निवृत्ति को जानेंगे ।

एम. ए. 2 Sem प्रश्नपत्र - 3

प्रश्नपत्र का शीर्षक – काव्यशास्त्र

CO1- प्रमुख काव्यशास्त्रीय सिद्धांत से छात्र लाभान्वित होंगे ।

1. अलंकार सिद्धांत 2. रीति सिद्धांत 3.ध्वनि सिद्धांत

4.रस सिद्धांत 5.औचित्य सिद्धांत 6.वक्रोक्ति सिद्धांत ।

CO2- काव्य प्रकाश के अनुसार काव्य का स्वरूप एवं काव्य के भेदों के बारे में बताया जायेगा और काव्य शक्तियों के बारे में बताया जायेगा ।

CO3- काव्य के स्वरूप एवं काव्य की महत्ता को बताया जायेगा ।

CO4- साहित्य दर्पण के अनुसार रूपकों के भेद महाकाव्य का स्वरूप संधिया ,अर्थोपक्षेपक , अर्थप्रकृतियां आदि का बोध कराया जायेगा।

CO5- ध्वन्यालोक के अनुसार काव्य स्वरूप को बताया जायेगा ।

CO6- ध्वनि सिद्धान्त के विरोधी सिद्धांतों का खण्डन करके ध्वनि-सिद्धांत को ध्वन्यालोक के अनुसार बताया जायेगा।

एम. ए. 2 Sem प्रश्नपत्र - 4

प्रश्नपत्र का शीर्षक - भारतीय संस्कृति तथा पर्यावरण

CO1- संस्कृत वाङ्मय के अनुसार धर्म को समझाया जायेगा । मुख्यरूप से धर्म के 10 लक्षणों को बताया जायेगा

CO2- भारतीय संस्कृति के बारे में जानेंगे ।

CO3- संस्कृत साहित्य में वर्णित जीवन मूल्यों को जानेंगे ।

CO4- पर्यावरण की महत्व को जानेंगे । जिससे पर्यावरण के प्रति जागरूक हो सकेंगे ।

CO5- संस्कृत साहित्य के इतिहास से छात्र परिचित होते हैं । संस्कृत में हुये विभिन्न विषयो वाले साहित्य से छात्र जुड़ेंगे

एम. ए. 3 Sem प्रश्नपत्र - 1

प्रश्नपत्र का शीर्षक - साहित्य शास्त्र

CO1- अलंकार प्रधान काव्यालंकार में वर्णित काव्य स्वरूप एवं काव्य के गुण एवं दोषों से छात्र अवगत होंगे साथ ही काव्य के पांचों भेदों को जानेंगे ।

CO2- शास्त्रकाव्य एवं वाङ्मय काव्य के बारे में जानेंगे । छात्र के भेदों को जानेंगे ।1.बुद्धिमान 2.आहार्यबुद्धि 3 दुर्बुद्धि काव्य में प्राप्त होने वाले रस दोषों के बारे में छात्र जानेंगे ।

CO3- काव्य गुणों को छात्र जानेंगे ।

CO4- शब्दालंकार एवं अर्थालंकारों के ज्ञान से अवगत होंगे ।

एम. ए. 3 Sem प्रश्नपत्र - 2

प्रश्नपत्र का शीर्षक - संस्कृत वाङ्मय एवं आधुनिक विश्व

CO1- विनयाधिकरण के प्रथम अधिकरण में विनयाधिकरण के समस्त प्रकणों से छात्र अवगत होंगे ।

CO2- मानवीय मूल्यों को छात्र जानकर समाज के अनुसार अपने व्यक्तित्व को उत्कृष्ट करेंगे । साथ ही भारतीय संस्कृति के अनुसार जीवन जीने की कला सीखेंगे ।

CO3- मनुस्मृति में वर्णित धर्म का स्वरूप । एवं आठ प्रकार के ब्राह्म ,आर्ष ,दैव गन्धर्व आदि विवाहों के महत्व को जानेंगे ।

CO4- पुराणों में वर्णित कथानकों से शिक्षा प्राप्त करेंगे । शिव ,नारद , विष्णु आदि के चरित्र से अवगत होंगे ।

एम. ए. 3 Sem प्रश्नपत्र - 3

प्रश्नपत्र का शीर्षक – महाकाव्य

CO1- नारद द्वारा वर्णित कृष्ण के चरित्र से छात्र शिक्षा प्राप्त करेंगे ।

CO2- शिशुपाल के दुष्ट चरित्र से छात्र अपनी बुराई का दमन करेंगे ।

CO3- रघुवंश में वर्णित महाराज रघु की दानशीलता को जानकर दान की भावना का विकास करेंगे ।

CO4- महाकाव्यों के उद्भव एवं उसकी विकास प्रक्रिया से छात्र परिचित होंगे ।

एम. ए. 3 Sem प्रश्नपत्र - 4

प्रश्नपत्र का शीर्षक - नाट्यशास्त्र

CO1- नाट्यशास्त्रीय चिंतकों से परिचित होंगे । वामन दण्डी भामह क◌ालिदास , भवभूति आदि ।

CO2- तीन प्रकार के प्रेक्षागृहों को जानेंगे ।
(1)विकृष्ट (लंबा आयताकार) (2) चतुरस्र (वर्गाकार) और(3) त्र्यस्र (तिकोना)।

CO3- दशरूपक में वर्णित नायक एवं नायिका के भेदों को जानेंगे ।

CO4- साथ ही शृंगार रस को जानेंगे ।

CO5- दृश्य काव्य के अंतर्गत आने वाले 10 रूपकों को जानेंगे ।

पाठ्यक्रम के परिणाम { Course Coutcome }

एम. ए. 4 Sem प्रश्नपत्र - 1

प्रश्नपत्र का शीर्षक –

CO1- छात्र व्याकरण शास्त्र में उपयोगी संज्ञा सूत्रों से अवगत होंगे ।

CO2- छात्र भाषा बोध एवं शास्त्र अध्ययन के लिए अति उपयोगी विभक्ति एवं करकों के बारे में ज्ञान प्राप्त करेंगे ।

CO3- संस्कृत भाषा में निबंध लेखन सीखेंगे ।

CO4- संस्कृत से हिन्दी एवं हिन्दी से संस्कृत में अनुवाद करना सीखेंगे ।

एम. ए. 4 Sem प्रश्नपत्र - 2

प्रश्नपत्र का शीर्षक - रूपक

CO1- मृच्छकटिकम् की कथावस्तु का छात्र अध्ययन करेंगे ।

CO2- कथावस्तु शासन-व्यवस्था एवं राज्य-स्थिति पर भी प्रचुर प्रकाश डालता है। साथ- ही-साथ वह नागरिक-जीवन का भी यथावत् चित्र अंकित करता है।

CO3- इसमें नगर की साज-सजावट, वेश्या (वारांगनाओं) का व्यवहार,दास प्रथा,जुआ (द्यूत-क्रीड़ा)

CO4- विट की धूर्तता,चोरी (चौरकर्म), न्यायालय में न्यायनिर्णय की व्यवस्था ,अवांछित राजा के प्रति प्रजा के द्रोह एवं जनमत के प्रभुत्त्व का सामाजिक स्वरूप भली-भाँति चित्रित किया गया है।

CO5- भट्टनारायण द्वारा रचित नाटक से छात्र अवगत होते हैं । द्रौपदी के अपने गलत का बदला तब पूर्ण होगा

CO6- जब दु:शासन के रक्त से चोटी के बाल नहीं रंगे जायेगें । इसी कथानक से ग्रन्थ नाम वेणीसंहार पड़ा ।रत्नावली के अध्ययन से छात्र राजा हर्ष एवं रत्नावली के चरित्र से लाभान्वित होंगे ।

एम. ए. 4 Sem प्रश्नपत्र - 3

प्रश्नपत्र का शीर्षक - गद्य पद्य चम्पू ।

CO1- कादम्बरी में वर्णित पाञ्चाली रीति से युक्त महकवि बाणभट्ट के विशिष्ट

CO2- कथावस्तु प्रबंध को छात्र जानेंगे एवं समस्त पदों के बड़े बड़े प्रयोगों को सीखेंगे। साथ ही पुण्डरीक एवं महाश्वेता के अलौकिक प्रेम प्रसंग से अवगत होंगे ।

CO3- रघुवंश के अध्ययन से राम एवं लघु दिल्ली दशरथ जैसे आदर्श बनने की प्रेरणा मिलती है ।

CO4- जिसकी कथा अमृत को भी तिरस्कृत करने वाली श्री राजा नल के प्रतापी चरित्र का जानेंगे ।

CO5- त्रिविक्रमभट्ट द्वारा वर्णित नल एवं दमयंती की प्रणयकथा का चमत्कारी वर्णन को जानेंगे ।

एम. ए. 4 Sem प्रश्न पत्र - 4

प्रश्नपत्र का शीर्षक - विशेष कवि ।

CO1- छात्र विशिष्ट कवियों (कालिदास , भवभूति)आदि के जीवन से एवं उनकी कृतियों में दिए संदेशों से प्रेरणा लेंगे ।

CO2- दुष्यंत शकुन्तला ऋषि कण्व के जीवन से छात्र प्रेरणा लेंगे ।एवं अपने जीवन को दुष्यंत एवं शकुन्तला जैसा तपस्वी बनाएंगे

CO3- मालविका एवं अग्निमित्र के प्रेम एवं विवाह को जानेंगे । साथ ही राजमहलों में होने वाले षड्यंत्रों से भी परिचित होंगे ।

CO4- विक्रम एवं उर्वशी के प्रेम कथानक से परिचित होंगे । साथ ही नाटक कौशल में प्रवीण होंगे ।

B. Sc Microbiology

Program Learning Outcomes

PO1- Students of the B.Sc. Microbiology programme will learn to use scientific logic as they explore a wide range of contemporary subjects spanning various aspects of basic microbiology such as Bacteriology, Virology, Biochemistry, Microbial Physiology, Immunology, Cell Biology, Molecular Biology, Genetics, Systems Biology, Immunology and Molecular biology, in addition to becoming aware of the applied aspects of microbiology such as Industrial Microbiology, Food and Dairy Microbiology, Environmental Microbiology and Medical Microbiology to name just a few.

PO2- Students will appreciate the biological diversity of microbial forms and be able to describe/explain the processes used by microorganisms for their replication, survival, and interaction with their environment, hosts, and host populations. They will become aware of the important role microorganisms play in maintenance of a clean and healthy environment. They will learn of the role of microorganisms in plant, animal and human health and disease.

PO3- Students will gain knowledge of various biotechnological applications of microorganisms and will learn of industrially important substances produced by microorganisms. They will gain familiarity with the unique role of microbes in genetic modification technologies.

PO4- Students will become familiar with scientific methodology, hypothesis generation and testing, design and execution of experiments. Students will develop the ability to think critically and to read and analyze scientific literature.

PO5- Students will acquire and demonstrate proficiency in good laboratory practices in a microbiological laboratory and be able to explain the theoretical basis and practical skills of the tools/technologies commonly used to study this field.

PO6- Students will develop proficiency in the quantitative skills necessary to analyze biological problems (e.g., arithmetic, algebra, and statistical methods as applied to biology)

PO7- Students will develop strong oral and written communication skills through the effective 2 presentation of experimental results as well as through seminars.

PO8- Graduates of the B.Sc. Microbiology programme will be informed citizens who can understand and evaluate the impact of new research discoveries in the life sciences, and will be able to pursue a wide range of careers, including biological and medical research in higher education institutions as well as careers in public and global health, scientific writing, environmental organizations, and food, pharmaceuticals and biotechnology industries.

B. Sc I YEAR Microbiology

Paper-I General Microbiology and Cell Biology

CO1- To understand the basics of microbiology.

CO2- To understand the different type of microorganisms.

CO3- To describe the symbiosis of microorganisms and microbial disease.

CO4- Understand the structure, function and metabolism of microbes.

CO5- Understand the application of microbes in ecological and economic

processes.

Paper-II Tools &Techniques in Microbiology

CO1- Understand the fundamentals of Instrumentation.

CO2- Basic Media preparation.

CO3- Understand the fundamentals of biostatistics.

CO4- Analyze the measures of central tendencie

CO5- Analyze the various methods of distribution.

CO6- Analyze the various types of statistical tests.

CO7- Analyze correlation, regression of biostatistics.

B.Sc II YEAR Microbiology

Paper-I Biochemistry & Microbial Physiology

CO1- Describe the role of macromolecules.

CO2- Understand about the structure and function of hormones

CO3- Describe the metabolism of macromolecules.

Learning outcome: This particular paper will help in understanding the basic biochemistry involved in the course including buffers, carbohydrate, lipid, proteins, enzymes.

Course level learning outcomes: Students will gain knowledge of energy transfers and biomolecular transformations.Students will comprehend metabolic pathways unique to microorganisms.

Learning outcome: Its an advanced course where students get to know about the microbes in extreme environment, their mode of functioning under stress. Besides this, they are acquainted with prokaryotic photosynthetic machinery in detail and the knowledge gained can be applied for enhancing the efficiency of plants.

Paper-II Microbial Genetics & Molecular Biology

Objectives: This course develops concepts in molecular biology: DNA packaging, DNA damage and repair, gene structure, expression and regulation in both prokaryotes and eukaryotes.

Course content: Nucleic Acids, bonds, types of DNAs, DNA packaging and model organisms. DNA Damage, DNA Repair and Recombination 3. How cells read the Genome

Learning outcome: This paper acquaints the student with the genetic material in prokaryotes, mutations which are of importance for applying the knowledge in research.

Course level learning outcomes: Understanding of gene structure, expression and regulation of gene expression in both prokaryotes and eukaryotes for application in molecular research.

B.Sc III YEAR Microbiology

Paper-II Applied & Environmental Microbiology

Objectives: This course develops concepts in Environmental Microbiology (microbial diversity, community structure and role of microorganisms in biogeochemicl cycles, role of microorganisms in sustainable development and bioremediation of pollutants using microorganisms.)

Course content

1. Microbial Ecology
2. Biogeochemical processes
3. Concepts of sustainable and holistic development
4. Microbes on surface
5. Microbiological bioremediation

Course level learning outcomes:

Course level learning outcomes: 1. Students will gain knowledge and use the properties of microorganisms, principally bacteria, as bioindicators of contamination and to remedy problems of contamination and other environmental impacts.

Understanding the significance of microorganisms in biogeochemical cycling of nutrients, sustainable development and bioremediation of pollutants for developing strategies of environmental conservation and remediation.

Learning outcome: This is a specific paper which will train students for sustainable development by maintaining soil health. Besides this, they will be acquainted with the biofertilizer production technology and the bottlenecks in the technology.

Paper-II -Immunology and Medical Microbiology

Objectives: It is to develop concepts in role and the underlying mechanisms forthe functioning

of immunological cells and their interactions. The regulation of molecular synthesis, signalling, immune responses and allied activities of immune system at the molecular level.

Course content

1. Phagocytosis
2. Immunocompetent T and B cells
3. Immuno-technique

Course level learning outcomes:

Explains the mechanisms of immunological responses. Apply the principles of cellular ontogeny and the gene rearrangement tounderstand the novel and complex immune system.

Course level learning outcomes: 1. Students will study the detailed structure of nucleic acids. 2. Students will learn in detail the molecular processes such as replication, transcription and translation.

Course level learning outcomes: Students will gain knowledge of prokaryotic gene transfer mechanisms, mutations and recombination.

Department of Microbiology

(Programme outcomes POs): M.Sc. Microbiology

Critical Thinking about microbiology and microbes.

PO1- They will learn about history, general features and characteristics of microbes and bio-safety issues.

PO2- They will learn various techniques for detection, identification and characterization ofmicrobes.

PO3- Learn about applied application of microbes.

PO4- Generate knowledge about molecular approaches of Recombinant DNA technologyfor betterment of society.

Programme Specific Outcomes (PSOs)

M. Sc. Microbiology, I Semester:

PSO1- Understand history of microbiology and microorganisms

PSO2- Learn about general Techniques to isolate the microbes.

PSO3- Understand general feature and characteristics of microbes

PSO4- Understand the Biochemistry of microbes.

PSO5- Understand the microbial genetics of microbes

PSO6- Understand gene mutation and gene transfer.

PSO7- Learn about gene expression in Prokaryotes and Eukaryotes.

PSO8- Understand and learn about general techniques to detection and identitfication of microbes.

PSO9- Learn various methods to investigate significant data through statistical methods.

PSO10- Learn about basics of computer.

M. Sc. Microbiology, II Semester:

PSO1- Understand core techniques and essential enzyme used in recombinant DNATechnology (rDNA Technology).

PSO2- Learn about application of r-DNA Technology

PSO3- Understand and learn cloning strategies.

PSO4- Learn about DNA sequencing methods .

PSO5- Understand basic aspects of Bioenergetics and metabolism of microbes.

PSO6- Learn about assimilation of nitrogen by microbes.

PSO7- Lean Microbes used in food Microbiology

PSO8- Microbial spoilage of food, food preservation and microbial indicators of food safetyand quality.

PSO9- Understand to industrially important strain of microbes.

PSO10- Learn about novel microbes and methods of strain improvement in industry.

PSO11- Lean about Industrial production of enzymes, alcohol, acids, Vaccines and vitaminsthrough the helps of microbes.

M. Sc. Microbiology, III Semester:

PSO1- Understand Immunology and immunodiagnostics

PSO2- Learn about infection, Antigen, Antibody, MHC and Immune response.

PSO3- Understand transplantation immunology, Tumour immunology and Immuno deficiency diseases.

PSO4- Understand environmental microbiology and microorganism in air and their common diseases Learn about microbial assessment of water quality test

PSO5- Microorganisms of sewage and its treatment

PSO6- Learn about Microbial degradation, Xenobiotics, Phytoremediation and Bioremediation.

PSO7- Understand agriculture microbiology

PSO8- Lean about Rhizosphere and phyllosphere microflora

PSO9- Understand plant diseases caused by microbe

PSO10- Understand physical and chemical method to control plant diseases.

PSO11- Learn about biofertilizers and its applications

PSO12- Understand about medically important microorganism and normal microflora of humanand animal system.

PSO13- Learn about infection/disease and their pathogens.

PSO14- Understand Pathogenesis, immunity and laboratory diagnosis of various diseases causedby medically important microbes.

M. Sc. Microbiology, IV Semester:

Program Specific Outcomes (PSOs):

Students engaged in project /dissertation work for six months in the department of Microbiology J.H.Govt. P.G. College Betul or other scientific institutes of India. For this tenure student will be able to understand various aspects of basic and applied research and do research work in future for betterment of society.

Course Outcomes (COs)

CO1- Understand and learn about history and classification of microbes.

CO2- Learn about general features and characteristics of microorganisms.

CO3- Understand and learn about technique used to identify microbes in microbiology field.

CO4- Learn various methods to investigate significant data through statistical methodsand Learn about basics of computer.

CO5- Knowledge generate about Biochemistry of microbes.

CO6- Knowledge generate about genome and their structures.

CO7- Learn about gene and gene mutation.

CO8- Knowledge generated about gene expression

CO9- Generate knowledge about cloning strategies.

CO10- Understand DNA sequencing methods

CO11- Understand food and Industrial microbiology.

CO12- Understand and learn food preservation and spoilage.

CO13- Generated knowledge about microbial indicators for food safety and quality

CO14- Knowledge generated about Immunology and Immunodiagnostics.

CO15- Learn about Environmental Microbiology

CO16- Learn about Microbial degradation, Xenobiotics, Phytoremediation and Bioremediation.

CO17- Generated knowledge about plant pathogenic disease (Microbial Biodiversity) its management strategies and biosafety issues.

CO18- Learn about Bio-fertilizers and its applications.

CO19- Learn about medically important microbes, their diseases, pathogenesis,Immunity and Laboratory diagnosis.

Department of Chemistry

M.Sc. Chemistry

Program Outcomes (PO):

PO1: Creative Thinking: Students will be able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems

in chemistry. The skills of observations and drawing logical inferences from the scientific experiments will also be developed.

PO2: Interdisciplinary Approach: Students will realize how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments. Also the knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc. can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.

PO3: Personality Development: Students will imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality. They will also realize that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

PO4 Skills in research and industrial field: Students will build a scientific temper and will be able to learn the necessary skills to succeed in research or industrial field. In addition they will acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

PO5 Communication Skills: Students will develop various communication skills such as reading, listening, speaking, etc., which we will help in expressing ideas and views clearly and effectively.

PO6 Environmental monitoring: Students will be able to understand the **e**nvironmental issues Global warming, Climate change, Acid rain, Ozone depletion and will create awareness in society .

Program Specific Outcomes (PSO):

PSO-1 Students will understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life. They will also be able to acquire knowledge about the fundamentals and applications of chemical and scientific theories.

PSO-2 Students will find that every branch of science and technology is related to Chemistry. They will develop scientific outlook not only with respect to science subjects but also in all aspects related to life.

PSO-3 Students will become familiar with the different branches of chemistry like analytical, organic, inorganic, physical, environmental, polymer and biochemistry. They will also learn to apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries.

PSO-4 The student will acquire knowledge of Chemical Thermodynamics, Kinetics, Electrochemistry, Atomic Structure, Organic Chemistry, Spectroscopy and Skill in Industrial Chemistry.

PSO-5 Viewing chemistry as a tool the developing mind and critical attitude and the faculty of logical reasoning that is prepared to serve in diverse fields.

PSO-6 Students will gain a thorough Knowledge in the subject to be able to work in projects at different research as well as academic institutions.

COURSE OUTCOMES

COURSE NAME: LIGAND FIELD THEORY

CLASS - M.Sc. Chemistry SEMESTER – I

Objectives: This course aims at acquainting students to concept of Crystal field and Ligand field theory. The symmetry, magnetic properties and spatial arrangements of molecules are studied in good detail.

Programme Learning Outcomes:

A. Knowledge and Understanding:

Students will be able to analyse the point group of chemical molecules. They will learn the relation of structure to magnetic properties.

B. Intellectual (Cognitive and Analytical) Skills:

Students will be able to understand the structure and arrangement of ligands around different oxidation state of metals.

C. Practical Skills

Students will learn the theoretical basis of stability of different electronic states.

D. Transferable Skills

Students will be able to make a correlation between structure and stability of different metal compounds.

COURSE NAME: ORGANIC REACTION MECHANISM-I

CLASS - M.Sc CHEMISTRY SEMESTER – I

Objectives of the Course ;

This course aims at acquainting students with the knowledge of organic reaction mechanisms of aromatic electrophilic substitution and aromatic nucleophilic substitution reactions. It provides an introduction to the synthesis of complex organic molecules. Transformations for C-X and C-C bond-formation, functional group reactivity, chemoselectivity, regioselectivity, and the strategy of multistep synthesis will be the core topics that are covered.

Program Learning Outcomes:

The aim is to help the students to study in detail the basics of very important substitution reactions in organic chemistry. Along with the revision of basic concepts of electrophilic and nucleophilic reactions, further applications in advanced fields of organic chemistry are aimed to be discussed.

Concepts include strategy/retrosynthesis, advanced aromatic chemistry, protecting groups, stereochemistry, enolates and other carbonyl chemistry, alkene synthesis, reduction/oxidation (introductory), heterocycles, cross-coupling reactions and other modern methods of synthesis.

COURSE NAME: PHYSICAL CHEMISTRY – THERMODYNAMICS

CLASS - M.Sc CHEMISTRY SEMESTER – I

Objectives of the Course :

• This course aims at to accustom the students the basic concepts of thermodynamics along with the Non-ideal systems including the basic Debye Huckel theory.

• Students will be guided to apply phase rule to various systems (2 and 3 component systems) and introduction to the basic concepts of non equilibrium thermodynamics along with the applications is another purpose.

Program Learning Outcomes:

Knowledge and Understanding:

Students will explain statistical chemistry and thermodynamics as logical consequences of the postulates of statistical mechanics;

Intellectual (Cognitive and Analytical) Skills:

Apply the principles of statistical mechanics to selected problems;

Practical Skills

Apply techniques from statistical mechanics to a range of situations;

Transferable Skills

Use the tools, methodologies, language and conventions of chemistry to test and communicate ideas and explanations.

COURSE NAME: SPECTROSCOPY A: TECHNIQUES FOR STRUCTURE ELUCIDATION OF ORGANIC COMPOUNDS

CLASS - M.SC CHEMISTRY SEMESTER – I

Objectives of the Course:

Modern theoretical and experimental methods used to study problems of molecular structure and bonding; emphasis on spectroscopic techniques.

Program Learning Outcomes:

The student will learn :To perform rigorous characterization of their compound using 1- and 2-dimensional NMR techniques (1 H and 13C), Mass spectrometry, infrared spectroscopy and UV-Vis spectroscopy.

Department of Chemistry

Programme Outcomes, Programme Specific Outcomes and Course Outcomes

Academic Session: 2020-2021

Program Learning Outcomes in B.Sc. Chemistry

The student graduating with the Degree B.Sc. Chemistry, should acquire

1. **Knowledge and Understanding:**
    - The course provides the students with comprehensive understanding of the fundamental concepts of chemistry.
    - In depth knowledge of the core subjects-concept, theories, principles and its applications.
    - Knowledge about the emerging topics and current developments in Chemistry and its related field.
2. **Laboratory Skills and Techniques:**
    - The students gain good practical knowledge and laboratory skills by systematically training them.
    - Through methodical instructions the students experience hands-on training of using basic chemical laboratory instruments.

- Basic knowledge about preparation of laboratory reagents, solutions and also protocols for their safe disposal.
- Ability to conduct experiments, analyses of data and interpretation of the results.

3. **Communication Skills:**
    - Students develop good communication skills in writing and speaking through vigorous training of recording experiments, viva-voce and presentations.
    - Ability to listen and convey effectively the knowledge and information acquired to scientific community and society at large.
4. **Competency:**
    - Student develop the ability to think and work independently as well as adaptability to work efficiently in diverse groups.
    - A leadership qualities in student develop through its effective contributions in teamwork based projects by designing and execution of the experiments.
    - The opportunities for critical thinking, reflective thinking and analytical reasoning also add up the overall development of students.

5. **Portable Skills:**

- Students developed problem-solving skills to solve different types of chemistry-related problems.
- Attitude to be a life-long learner by consistently updating oneself with current knowledge, skills and technologies.
- Basic IT skills and ability to use relevant software's for making structures, equations and data analysis.

B.Sc. I Year Chemistry

CHEMISTRY -: INORGANIC CHEMISTRY
Learning Outcomes:
By the end of the course, the students will be able to:

- Understand the quantum mechanical model of an atom using Schrodinger equation, the significance of wave function, quantum numbers, electronic configuration, radial and angular distribution curves, shapes of s, p, and d orbitals, and periodicity in atomic radii, ionic radii, ionization enthalpy and electro negativity of elements.
- Suggest the plausible structures and geometries of molecules using Radius Ratio Rules, VSEPR theory and MO diagrams for homo- & hetero-nuclear diatomic molecules.
- Calculate the lattice energy using Born-Landé and Kapustinskii expression.
- Differentiate between metals, semiconductors and insulators based on the Band theory.
- Gain the theoretical understanding of inter-molecular and intra-molecular weak chemical forces and their effect on melting points, boiling points, solubility and energetics of dissolution.

CHEMISTRY -: PHYSICAL CHEMISTRY
Learning Outcomes:

By the end of the course, students will be able to:

- Gain insight into the physical significance of various properties of gas, liquid and solids and also derive their mathematical expressions.
- Demonstrate understanding of the crystal structure of cubic systems using diffraction pattern.
- Explain the concept of ionization of electrolytes of weak acid and base and hydrolysis of salt.
- Understand various fundamental concepts of pH, buffer solutions, solubility of sparingly soluble salts, acid-base indicators.

CHEMISTRY – : ORGANIC CHEMISTRY
Learning Objectives:
On completion of the course, the student will be able to:

- Develop a sound understanding of the fundamental concepts of stereochemistry.
- Learning various physical and chemical properties of alkanes, alkenes, alkynes and aromatic hydrocarbons and their general methods of preparation
- Learn and formulate mechanisms of different organic reaction including Free Radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution.

B.Sc. IInd Year Chemistry

CHEMISTRY -: PHYSICAL CHEMISTRY
Learning Outcomes:
By the end of the course, students will be able to:

- Understand some important concepts like intensive and extensive properties, state and path functions, reversible and irreversible processes.
- Gain deeper understanding of the three laws of thermodynamics.
- Derive the expressions of w, q, ΔU, ΔH, ΔS, ΔG, ΔA for ideal gases under different conditions.
- Apply the thermodynamic concepts to evaluate enthalpy of various reactions and understand its dependence on temperature and pressure.
- Explain the concept of chemical potential and partial molar quantities.
- Derive the thermodynamic relations between the colligative properties and understand their applications in everyday life.

CHEMISTRY – : INORGANIC CHEMISTRY
Learning Outcomes:
By the end of the course, the students will be able to:

- Learn the fundamental principles of metallurgy and methods of extraction and purification of metals.

- Gain knowledge of the basic and practical applications of metals and alloys in various fields and their manufacturing processes. Apply the thermodynamic concepts like that of Gibbs energy and entropy to the principles of extraction of metals.
- Understand the periodicity in melting point, atomic and ionic radii, electron gain enthalpy, and ionization enthalpy, electronegativity of s and p block elements.
- Understand oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides.
- Understand vital role of sodium, potassium, calcium and magnesium ions in biological systems.

CHEMISTRY – : ORGANIC CHEMISTRY
Learning Outcomes:
On completion of the course, the student will be able to:

- Understand preparation, properties and reactions of haloalkanes, haloarenes and oxygen containing functional groups.
- Use the synthetic chemistry learnt in this course to do functional group transformations.
- Propose plausible mechanisms for any relevant reaction

B.Sc. IIIrd Year Chemistry

CHEMISTRY – : PHYSICAL CHEMISTRY
Learning Outcomes:
By the end of the course, students will be able to:

- Have knowledge of concepts like phase, components and degree of freedom in phase equilibrium.
- Derive Phase rule, Clausius-Clapeyron equation, Gibbs-Duhem-Margules equation, Nernst Distribution law and understand their applications.
- Draw the phase diagram for one- component system (water and sulphur) and two-component system involving eutectic, congruent and incongruent melting points.
- Have better understanding of terms, azeotropes, lever rule, partial miscibility of liquids, CST.
- Differentiate between the working of electrolytic cells and galvanic cells and understand the applications of electrolysis in metallurgy and industry.
- Measure the EMF of an electrochemical cell using Nernst equation and its applications.
- Understand concentration cells with and without transference.
- Differentiate between physical adsorption and chemisorption and explain various adsorption isotherm
- Explain the variation of conductance with dilution for weak and strong electrolytes using Arrhenius theory and Debye Huckel Onsager theory.
- Learn the applications of conductance measurements.
- Determine transference number using Hittorf and Moving Boundary methods.
- Explain order, molecularity, rate law and rate of reaction, theories of reaction rates and catalysts; both chemical and enzymatic.
- Derive differential and integrated form of rate expressions up to second order reactions.

- Have deep understanding of the laws of photochemistry and terms, quantum yield, quenching, photostationary states, chemiluminescence.

CHEMISTRY : INORGANIC CHEMISTRY

Learning Outcomes:

By the end of the course, the students will be able to:

- Understand the terms, ligand, denticity of ligands, chelate, coordination number and use standard rules to name coordination compounds.
- Discuss the various types of isomerism possible in such compounds and understand the types of isomerism possible in a metal complex.
- Use Valence Bond Theory to predict the structure and magnetic behaviour of metal complexes and understand the terms inner and outer orbital complexes.
- Explain the meaning of the terms Δo, Δt, pairing energy, CFSE, high spin and low spin and how CFSE affects thermodynamic properties like lattice enthalpy and hydration enthalpy.
- Explain magnetic properties and colour of complexes on basis of Crystal Field Theory.
- Understand the important properties of transition metals like variable oxidation states, colour, magnetic and catalytic properties and use Latimer diagrams to predict and identify species which are reducing, oxidizing and tend to disproportionate and calculate skip step potentials.
- Understand reaction mechanisms of coordination compounds and differentiate between kinetic and thermodynamic stability.
- Gain insights into the basic principles of qualitative inorganic analysis.
- Apply 18-electron rule to account for the stability of metal carbonyls and related species.
- Understand the nature of Zeise's salt and compare its synergic effect with that of carbonyls.
- Identify important structural features of the metal alkyls tetrameric methyl lithium and dimerictrialkyl aluminium and explain the concept of multicenter bonding in these compounds.
- Diagrammatically explain the working of the sodium-potassium pump in organisms and the factors affecting it and describe the active sites and action cycles of the metalloenzymes carbonic anhydrase and carboxypeptidase.
- Understand the sources and consequences of excess and deficiency of trace metals.
- Explain the use of chelating agents in medicine and, specifically, the role of cisplatin in cancer therapy.
- Understand the applications of iron in biological systems with particular reference to haemoglobin, myoglobin, ferritin and transferrin. Explain catalysis and describe in detail the mechanism of Wilkinson's catalyst, Zeigler-Natta catalyst and synthetic gasoline manufacture by Fischer-Tropsch process.

CHEMISTRY – : ORGANIC CHEMISTRY

Learning Outcomes:

On completion of this course, the students will be able to:

- Understand thouroughly the chemistry of compounds having nitrogen containing functional groups, heterocyclic, polynuclear hydrocarbons, alkaloids and terpenes which

includes various methods for synthesis through application of the synthetic organic chemistry concepts learnt so far.

- Acquainted with important properties, chemical reactions, aromaticity of polynuclear hydrocarbons and heterocyclic compounds, basicity of amines and heterocyclic compounds and their behavior at different pH
- Elucidate structure of organic compounds with specific examples of terpenes and alkaloids by practical approach.
- Predict the carbon skeleton of amines and heterocyclic compounds via use of Hoffmann's exhaustive methylation and Emde's modification methods.
- Understand the applications of these compounds including their medicinal applications through their reaction chemistry.
- Learn about basic principles of UV, IR and NMR spectroscopic techniques to interpret the spectra to determine structure and stereochemistry of known and unknown compounds.
- Have better knowledge of the chemistry of natural and synthetic polymers including fabrics and rubbers.
- Learn about the chemistry of biodegradable and conducting polymers and assess the need of biodegradable polymers with emphasis on basic principles.
- Understand the theory of colour and constitution as well as the chemistry of dyeing.
- Learn the synthesis, properties and reactions of nucleic acids, amino acids and peptides.
- Demonstrate how structure of biomolecules determines their reactivity and biological functions.
- Gain insight into concepts of heredity through the study of genetic code, replication, transcription and translation.
- Understand the primary, secondary and tertiary structures of proteins and denaturation.
- Demonstrate understanding of metabolic pathways, their inter-relationship, regulation and energy production from biochemical processes.
- Develop a sound understanding of the structure of Pharmaceutical Compounds and understand the importance of different classes of drugs and their applications for treatment of various diseases.
- Explain catalysis and describe in detail the mechanism of Wilkinson's catalyst, Zeigler-Natta catalyst and synthetic gasoline manufacture by Fischer-Tropsch process.