Year 2020-2021
COURSE OUTCOME, PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME (CO'S, PO'S & PSO'S)
Department of Computer Science and Application

Objective of the programme:

The objectives of the computer sciences department is to prepare students for graduate training in computer science which is a job oriented program in industry, business or government sector, and to provide support courses for students of commerce, arts and science to acquire the computing skills. The College follows Hemchand Yadav University, Durg Syllabus of B.Sc.(Computer Science). The objectives of prescribed course are:

- Demonstrate proficiency in problem-solving techniques using the computer.
- Demonstrate proficiency in a high-level programming language with interconnection into databases and operating systems.
- Demonstrate proficiency in the analysis of complex problems and the synthesis of solutions to those problems.
- Demonstrate comprehension of modern software engineering principles.
- Demonstrate a breadth and depth of knowledge in the discipline of computer science.
- Demonstrate proficiency in the development of software packages in the different fields.
- Demonstrate proficiency in the development of websites (statics and dynamics types).

B.SC. (Computer Science)
Year-First, Second, Third

Programme Outcome

- Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.
- To prepare students to undertake careers involving problem solving using computer science and technologies.
- Develop ability to pursue advanced studies and research in computer science.
- To produce entrepreneurs who can innovate and develop software product.

Course Outcome

A student after completing his/her B.Sc. (Computer Science) degree will equipped with:

- **An awareness** of how computer science impacts our society and environment and the benefits it offers the technical society
- **Gain proficiency** in the handling of various hardware instruments, software's etc.

- **Develop basic scientific concepts** of programming which will help in rationale thinking and better understanding of various IT problems.
- **Exhibit excellent problem** solving ability by critical thinking and integrating various ideas learned during laboratory experiments or class lectures.
- **Participate in scientific debates** or arguments with confidence and will be able to convince the audience by logical presentation.
- **Undertake project** work for IT Sector, industry or NGOs regarding software engineering, Software testing, data analysis etc.
- **Develop research aptitude** in the various fields of computer for example fuzzy logic, cloud computing, internet technology.

Programme Specific Outcome

PSO of B.Sc. Courses in Computer Science divided into three different years: -

Year: I

PSO01 Course Title :-(Paper Code - 0805) **Fundamentals of Computer**

Students will be able to:

- Bridge the fundamental concepts of computers with the present level of knowledge.
- Understand binary, hexadecimal and octal number system and their arithmetic conversions.
- Familiarize with operating systems, programming languages, peripherals.
- Choose commands and features of operating systems and application software.

PSO 02 Course Title :-(Paper Code - 0806) **Programming in 'C'**

Students will be able to:

- Explore algorithmic approaches to problem solving.
- Analyze a problem and devise an algorithm to solve it.
- Formulate algorithms, pseudo codes and flowcharts for arithmetic and logical problems.
- Implement algorithms in the ‘C’ language.
- Develop modular programs using control structures and arrays in ‘C’.

Year: II

PSO03 Course Title: -(Paper Code – 0855) **Computer Hardware**

Students will be able:

- To introduce the overall organization of micro processor
- To introduce the common peripheral devices used in computers

- To introduce the hardware component, use of microprocessor and function of various chip used in microcomputer
- To describe Program design, software development and used of operating system.

PSO04 Course Title: -(Paper Code – 0856) **Computer Software**

Students will be able:

- To introduce the internet and web related technology
- To learn the intricacies of web page designing using HTML
- To introduce the OOP's concept using C++ language.
- To introduce the problem solving methodology using the C++ programming features.

Year: III

PSO05 Course Title: -(Paper Code – 0909) **Computer Hardware**

Students will be able:

- To introduce the overall organization of the microcomputer and the operating system.
- To introduce the interaction of common devices used with computers with operating system, excluding the assembly languages with special reference to DOS/WINDOWS.
- To introduce the working of hardware components, microprocessor and various chips used in microcomputer by operating system, without the use of electronic circuitry.
- To introduce the use of operating system, architecture with IBM-PC and clones, excluding assembly language, with form an important part of hardware.

PSO 06CourseTitle: -(Paper Code – 0910) **Computer Software**

- To introduce database management system concepts.
- To introduce the relational database management system and relational database design
- To introduce the RDBMS Software and Utility of Query language
- To introduce basic concept of GUI programming and database connectivity using Visual Basic.

B.Sc.- I YEAR

(MATHEMATICS)

COURSE TITLE:- ALGEBRA & TRIGNOMETRY

COURSE OUTCOMES

- Learn to solve system of linear equation and higher degree equation.
- Learn to find roots of polynomial over rational .
- Learn to find graphs , roots and primes integer using maxima software
- Define subgroup ,center, normalize of a subgroup .
- Define normal subgroup , quotient groups and index of a subgroups.
- Define Homomorphism , kernel of a Homomorphism , Isomorphism.
- Prove Lagrange's theorem, Euler's theorem and Fermat's theorems.

COURSE TITLE:- CALCULUS

COURSE OUTCOMES

- Gain knowledge of fundamental concept of real numbers .
- Verify the value of the limit of a function it a point using the definition of the limit .
- Introduction to sequence and series .
- Learn to check function is continuous understand consequences of the intermediate value theorem for continuous functions .

COURSE TITLE:- VECTOE ANALYSIS & GEOMETRY

COURSE OUTCOMES

- Introduction to analytical geometry of two dimensional.
- Study of lines in two and three dimension .
- Finding equation in various form of line , circle ,ellipse, sphere, cones etc.
- Give the knowledge of geometry using maxima software.
- Find the angle between plans , bisector planes, perpendicular distance from a point to a plan, image of a line on a plan , intersection of two lines.
- Find and interpret the gradient ,curl ,divergence for a function at a given point.
- Interpret line , surface and volume integrals.
- Evaluate integrals by using Greens theorems, Stokes theorems , Gauss's theorem.

B.Sc.-II YEAR
(MATHEMATICS)
COURSE TITLE:- ADVANCED CALCULUS

COURSE OUTCOMES:

- To understand different indeterminate form of limit
- Calculate functional value in neighbourhood of some points using expensions
- Continuity and limits , prove convergence and divergence of limits using the ε-δ definition .
- Differentiation – identify and prove basic facts about derivatives and their properties .
- To understand the maxima and minimum behavior of a function of two variables.
- Finding extreme values of function.
- Students will be to understand differentiation and fundamental theorem in differentiation and various rules .
- Geometrical representation and problem solving on MVT and Roll's theorem.

COURSE TITLE:- DIFFERNTIAL EQUATION

COURSE OUTCOMES:

- Find a solution of differential equation of the first order and of a degree higher than the first .
- Compute all the solution of second and higher order linear differential equations with constant coefficients , linear equations with variable coefficients.
- Use inverse Laplace transform to return familiar functions .
- Apply Laplace transform to solve second order linear differential equation and simultaneous linear differential equation.
- Solve differential equation using variation of parameters .
- Solve linear systems of ordinary differential equation .

COURSE TITLE :- MECHANICS

COURSE OUTCOMES:

- Understand the motion of objects in different frame of references .
- Understand law of motion, references and its application.

- Understand the idea of conservation of angular momentum , central forces and the effective potential.
- Understand the application of central force to the stability of circular orbits , kepler's law of planetary motion .
- Understand the basic of material properties like ,elasticity , elastic constant and their relation , torsion of a cylinder .
- Understand the basic of motion of fluid which includes streamlined and turbulent flows , equation of continuity , critical velocity.
- Understand the dynamics and gravitation .
- Understand the definition of center of gravity in hemisphere , hollow hemisphere etc.

B.Sc.-III
(MATHEMATICS)
COURSE TITLE:- ANALYSIS

COURSE OUTCOMES:

- Describe fundamental properties of the real numbers that lead to the formal development of real anaylisis.
- Define countable and uncountable set
- Write Holders and Minkowski inequality .
- Differentiate the concept of continuity and uniform continuity .
- Characterize the concept of compactness in metric space.
- Explain the geometric meaning of each of the metric space.
- Distinguish between open and closed balls in a metrics space.
- Define convergence for a sequence in a metric space converges.
- State and use the triangle inequality and use the Binomial theorem and Mathematical induction method to prove inequalities which involve an integer n .
- Use the strategies introduced for determining least upper bounds and greatest lower bounds.
- Explain how the least upper bound properties is use to define arithmetic operations with real numbers and explain the meaning of rational power.
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COURSE TITLE:- ABSTRACT ALGEBRA

COURSE OUTCOMES:-

- Introduction to vector space and subspace.
- Use computational techniques and algebraic skills essential for the study of systems of linear equation , matrix algebra, vector spaces, eigenvalues and eigenvectors , Orthogonality and Diagonalization .
- Define vector space , Quotient space , direct sum , linear span and linear independence , basis and inner product.
- Learn properties of inner product space and determine orthogonality in inner product space.
- Discuss the linear transformation , Rank , Nullity.
- Prove Cayley-Hamilton theorem ,Schwartz inequality, Gramschmidt orthogonalisation process.
- Define rings , zero divisor of a ring , integral domain field and prove theorem .
- Understand the basic concept of group action and their applications.
- Recognize and use the sylow theorem to characterize certain finite groups

COURSE TITLE :- DISCRETE MATHEMATICS

COURSE OUTCOMES:

- Lean about partially ordered sets, lattices and their types.
- Understand Boolean algebra and Boolean functions , logic gates , switching circuit and their applications .
- Solve real life problems using finite state and Turing machines.
- Assimilates various graph theory concepts and familiarize with their application .
- To understand logical concept and to show logical equivalence by using truth tables and rules in logic
- Learn concept related to counting .
- Apply counting principles to determine probabilities
- Demonstrate an understanding of relations and functions and be able to determine their properties
- Demonstrate different traverse method for trees and graphs .
- Model problems in computer science using graphs and trees.

MSc. Mathematics

Objective of the program:

The main objective of this program is to cultivate a mathematical apptitute and nature the interests of students towards problem solving aptitude. Further, It aims at motivating the young minds for research in mathematical science and to train computation scientists who can work on real life challenging problems .

The Program Objectives are the knowledge skills and attributes which the students have the time of post graduation .At the end of the program the student will be able to

1. To provide comprehensive curriculum to groom the students into quantitative scientific manpower.
2. Enable student to Enhance mathematical skills and understand the fundamental concepts of pure and applied mathematics.
3. To provide quantitative education through effective teaching learning processes by introducing projects, participative learning and latest software tools.
4. To include innovative skill, team work , ethical practices among students so as to meet social expectation.
5. To encourage collaborative learning and application of mathematics to real life situations.
6. To inculcate the curiosity for mathematics in student and to prepare them for future research.

Programme Outcomes :

- Inculcate critical thinking to carry out scientific investigation objectively without being based with preconceived notions.
- Equip the student with skills to analyze problems, formulate an hypothesis, evaluate and validate results, and draw reasonable conclusions thereof.

- Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields
- Imbibe effective scientific and /or technical communication in both oral and writing.
- Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences.
- 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 :

- Understanding of the fundamental axioms in mathematics and capability of developing ideas based on them.
- Inculcate mathematical reasoning.
- Prepare and motivate students for research studies in mathematics and related fields.
- Provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains.
- Provide advanced knowledge on topics in pure mathematics, empowering the students to pursue higher degrees at reputed academic institutions.
- Strong foundation on algebraic topology and representation theory which have strong links and application in theoretical physics, in particular string theory.
- Good understanding of number theory which can be used in modern online cryptographic technologies.
- Nurture problem solving skills, thinking, creativity through assignments, project work.
- Assist students in preparing (personal guidance, books) for competitive exams NET , GATE etc.

M.Sc. – I SEMESTER

Course Outcome:

Course Title: Advanced Abstract Algebra

On completion of this course, the student will be able to:

- Explore the properties of groups normal series and composition series of group, Solvable group and Nilpotent group.
- Understand the concepts of homomorphism, isomorphism and automorphism of groups.
- . Explore the properties of rings, integral domain, principle ideal domain, Polynomial rings, Euclidean ring ,Euclidean domain and UFDs .
- Understand the concept of Field, Extension field, Algebraic extension and separable extension.
- Explain the symmetric functions , Normal extension , Splitting field , Galois theory and Polynomial solvable by radicals.

Course Title: Real Analysis

On completion of this course, the student will be able to:

- Determine the basic properties of subsets of the real numbers and real valued functions.
- Construct mathematical proof of basic results in real analysis .
- Analyze test for convergence and uniform convergence of series and sequences .
- Understand about Riemann-stieltjes integration and its properties.
- Explain the derivative of functions of several variables and prove a theorem about the its derivatives e.g. Inverse and Implicit function Theorem .
- Prove the Weierstrass approximatiom theorem ,Abel, Tauber and Riemann theorem .
- Understand the differentiation of integrals and stoke's theorem .

. **Course Title: Topology**

On completion of this course, the student will be able to:

- Understand the concept of topological spaces and its basic properties .
- Apply the properties of continuity and homeomorphism on topology .
- Analyze the separation axioms of topological space and the concepts of countable spaces and separable spaces.
- Understand the concepts and basic properties of the compactness and connectedness.
- Develop the knowledge to proof of Uryshon lemma, Tietze extension theorem and Lindelof theorem

Course Title : Complex Analysis

On completion of this course, the student will be able to:

- Understands the concept of complex analytic function , harmonic functions .
- Define the Analytic functions, Cauchy-Riemann differential equations,.
- Describe the zeros, singularities, Taylor series and Laurent's series.
- Develop the knowledge to proof of Cauchy's theorem, Cauchy's integral formula, Morera theorem, Liouville's theorem Swartz lemma and applications.
- Understands about Cauchy's residue theorem and its applications.
- Recognize the Mobious transformation , their properties and classifications .

Course Title: Advanced Discrete Mathematics

On completion of this course, the student will be able to:

- Define Semigroup, Monoid , subsemigroup, submoniod, Homomorphism and Isomorphism.
- Describe the propositional logic, quantifiers, predicate calculus and theory of inference .
- Illustrate Tautology, Tautological implication, Truth Tables, Normal Forms, Principal Normal Forms.
- Discuss the Grammars and Languages with their types , regular sets, Pumping lemma and Kleen theorem .
- Interpret the Lattices and its properties, Boolean Algebra and Switching algebra .

M.Sc. – II SEMESTER

Course Outcome:

Course Title: Advanced Abstract Algebra

On completion of this course, the student will be able to:

- Define the modules, Cyclic modules , Simple modules , Noetherian and artinian modules and rings ,Hilbert basis theorem, Wedderbern artin theorem.
- Discuss about Algebra of linear transformation, Singular and non singular transformation, characteristic roots and vectors, matrices and linear transformations.
- Describe Canonical Forms , Reduction to triangular forms, Nilpotent transformations , proof of the primary decomposition theorem .
- Understand Smith normal form, Fundamental structure theorem over Principal ideal domain and its applications to finitely generated abelian groups.
- Interprate the Rational canonical form, Jordan blocks , Jordan forms and Generalized Jordan form over any field.

Course Title: Real Analysis

On completion of this course, the student will be able to:

- Define Riemann-Stieltjes integral, Properties of the Integral ,the fundamental theorem of Calculus and Rectifiable curves.
- Describe the measure measure space, Measurable sets and Lebesgue measure, construction of non-measurable sets, Measurable functions.
- Discuss about Lebesgue integration, convergence theorems for Lebesgue integrals and Fubini's theorem.
- Understand L^p spaces and its completeness ,Computation of Lebesgue measures. Extension of the concepts of measures and integration.
- Establishing measurability or non-measurability of sets and functions.
- Approximating measurable functions by simple and step functions.

Course Title: Topology

On completion of this course, the student will be able to:

- Define topological spaces, product topology and it's characterization ..
- Discuss the continuity,contability,regularity, connecteness and compactness on product topology .
- Describe embedding and metrization,embedding lemma,paracompactness.
- Prove the Urysohn metrization theorem, , Nagata-Smirnov metrization theorem, Ascoli's theorem .
- Understand The fundamental group and covering spaces-Homotopy of paths.

Course Title : Complex Analysis

On completion of this course, the student will be able to:

- Define Gamma function and its properties, Riemann Zeta function, Runge's theorem, Mittag-Leffler's theorem.
- Understand Power series method of analytic continuation , Schwarz Reflection Principle, Monodromy theorem and its consequences.
- Prove Harnack's inequality and theorem, Dirichlet Problem, Green's function.
- Discuss about Canonical products, Jensen's formula, Poisson-Jensen formula ,Order of an entire function, Exponent of Convergence and Borel's theorem.
- Prove of the Bloch's theorem, The Little Picard theorem, Schottky's theorem, Montel Caratheodory , The Great Picard theorem and the 1/4-theorem.

Course Title: Advanced Discrete Mathematics

On completion of this course, the student will be able to:

- Understand the basic concepts of graphs, directed graphs, and weighted graphs and a graph by matrices , Eulerian and Hamiltonian graphs .
- Understand the properties of trees and finding a minimal spanning tree for a given weighted graph.
- Understand Finite state machine, finite automata, Turing machine ,reduced machine .
- Apply shortest path algorithm to solve Chinese Postman Problem and Dijkstra's algorithm.
- Apply the knowledge of graphs to solve the real life problem.

Msc – III SEMESTER

Course Outcome:

Course Title: Integration Theory & Functional Analysis

On completion of this course, the student will be able to:

- Understand the normed linear spaces, Banach space and Dual spaces.
- Understand inner product spaces, orthogonality and Hillbert spaces.
- distinguish between finite and infinite dimensional spaces.
- Concept of the weak convergence and normed linear spaces of bounded linear transformations.
- Define Signed measure, product measure, baire measure and regularity of measure , Labesgue decomposition , Regularity of measures on locally compact spaces .
- Prove Hahn decomposition theorem , Radon-Nikodym theorem, Riesz representation theorem , Riesz Markoff theorem

Course Title: Partial Differential Equation & Mechanics

On completion of this course, the student will be able to:

- Define generalized coordinate ,cyclic coordinate and D'Alembert's principle.
- Derive Lagrange's equation of first and second kinds .
- Discuss about poisson bracket, Motivating problems of calculus of variation.
- Attain the applications of Lagranges formulation and Hamilton canonical equation.
- Explain the PDE and its classification , Non-homogeneous Equation, Mean Value Formulas, Properties of Harmonic Functions, Green's Function,
- Derive the fundamental solution of Laplace's Equation , Heat Equation, Wave Equation ; Energy Methods.
- Derive the attraction and potential due to various physical bodies.

Course Title: Fuzzy sets and its Applications

On completion of this course, the student will be able to:

- Find crisp sets and fuzzy sets and discuss the types of fuzzy sets.
- Classify the operations on fuzzy sets.
- Understand about the Extension principle, Fuzzy number and fuzzy arithmetic.
- Illustrate fuzzy relation and it's compositions , fuzzy equivalence relations.
- Explain fuzzy measures and classify possibility and necessity measures.

• Fuzzy Relations on Fuzzy sets, Composition of Fuzzy relations and Fuzzy equivalence relations.

Course Title: Operation Research

On completion of this course, the student will be able to:

• Formulate some real life problems into Linear programming problem.
• Use the simplex method to find an optimal vector for the standard linear programming problem and the corresponding dual problem
• Prove the optimality condition for feasible vectors for Linear programming problem and Dual Linear programming problem.
• Find optimal solution of transportation problem and assignment problem
• Learn the constructions of networks of a project and optimal scheduling using CPM and PERT.

Course Title: Programming in C (With ANSI Features)

On completion of this course, the student will be able to:

• Recognize and understand the purpose of basic computer components
• Implement of simple 'C' origram, data types and operators and console I/O function
• Understand decision control statements, loop control statements and case control structures.
• Understand the declaration and implementation of arrays, pointers, functions and structures.
• Understand Function, Variables and Constants, Expressions and The Preprocessor directives.

Msc – IV SEMESTER

Course Outcome:

Course Title: Functional Analysis

On completion of this course, the student will be able to:

• Derive Uniform boundedness theorem, Open mapping and closed graph theorems.
• Understand Hahn-Banach theorem for real,compex and normed linear spaces.
• Define Inner product spaces, Hilbert spaces, Orthonormal Sets, Bessel's inequality and Complete orthonormal sets.
• Prove Projection theorem, Riesz representation theorem and the generalized Lax-Milgram theorem
• Understand about Adjoint of an operator , Self-adjoint operators, projection, normal and unitary operators on a Hilbert space, Reflexivity of Hilbert spaces.

Course Title: Partial Differential Equation & Mechanics

On completion of this course, the student will be able to:

• Define Non-linear First Order PDE, Characteristics, Hamilton Jacobi Equations, Hopf-Lax Formula, Weak Solutions, Uniqueness and Conservation Laws.
• Understand Laplace and Fourier Transform, Hopf-Cole Transform, Hodograph and Legendre Transforms, Potential Functions.
• Derive Hamilton's Principle, Poincare Cartan Integral invariant., Whittaker's equations, Hamilton-Jacobi equation .
• Discuss canonical transformations and properties of generating functions,

Lagrange Brackets and Poisson brackets, invariance of Lagrange brackets and Poisson brackets under canonical transformations.

Course Title: Fuzzy sets and its Applications

On completion of this course, the student will be able to:

- Define Fuzzy Logic, Fuzzy propositions, Fuzzy quantifiers, Linguistic variables and hedges, Inference from conditional fuzzy proposition.
- Discuss Fuzzy implications and their selection and the role of fuzzy relation equation.
- Understand Fuzzy controllers, Fuzzy rule base, Fuzzy inference engine , Fuzzification , Defuzzification and it's various methods.
- Determine decision making in fuzzy environments , Fuzzy ranking methods and solve fuzzy L.P.P. by simplex method.

Course Title: Operation Research

On completion of this course, the student will be able to:

- Formulate and solution of linear programming model of two person zero sum game .
- Solve nonlinear programming problems using Lagrange multiplier and using Kuhn-Tucker conditions.
- Solve Integer Programming and Quadratic programming problem .
- Understands to solve Dynamic Programming, . Separable Programming, Convex Programming and Non-convex Programming.
- Analyze and solve linear programming models of real life situations.

Course Title: Programming in C (With ANSI Features)

On completion of this course, the student will be able to:

- Understand the Storage Classes , Scope, the register Specifier and ANSI rules for the syntax and Semantics of the storage-class keywords.
- Understand Structures and Unions, Dynamic Memory Allocation, Linked Lists and enum Declarations.
- Understand Input and Output-Streams, Buffering , the Header File.
- Understand Error Handling, Opening and Closing a File, Reading and Writing Data and the standard library for Input / Output.

Bsc. (Mathematics)

Ojective of the programme

Individuals who have completed a degree in mathematics should be equipped to:

- find employment utilizing their mathematical knowledge;
- use their mathematical knowledge to solve problems; and
- undertake further studies related to mathematics.

Based on these over-arching objectives, a set of program outcomes has been adopted which describe the skills, knowledge, attitudes, values and behaviors that students should be able to demonstrate by the time they complete the program. Specifically, students completing a mathematics major should:

- gain knowledge in foundational areas of mathematics;

• communicate mathematics accurately, precisely and effectively;
• develop mathematical thinking;
• apply mathematical knowledge; and
• be able to solve mathematical problems using technology.

Programme Outcome

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

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

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

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

•Enhancing student's 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.

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

Programme Specific Outcome of B.Sc. Mathematics

• Think in a critical manner.

• 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.

• Formulate and develop mathematical arguments in a logical manner.

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

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

COURSE OUTCOME, PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME (CO'S, PO'S & PSO'S)

Department of Chemistry

B.Sc(CHEMISTRY)

Year-First, Second, Third

OBJECTIVE OF THE PROGRAMME:

The qualification description for B.Sc. programme in Chemistry includes.

• Demonstration of a comprehensive knowledge based on concepts, principles and theories relating to chemistry that spans the traditional sub-disciplines (inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry and biochemistry) as well as advanced and emerging topics.

• Demonstration of an ability to apply underlying concepts and principles outside the context in which they were first studied and in interdisciplinary scenarios.

• Acquisition of competence in the use of routine materials, techniques and practices of chemistry.

• Exhibition of skills required for conducting the documented laboratory procedures as well as well-developed skills for the gathering, evaluation, analysis and presentation of information, ideas, concepts and quantitative and/or qualitative data.

• Acquisition of skills in the operation of standard chemical instrumentation.

• Demonstration of skills in the use of safety data sheets, safe handling of chemical materials, considering their physical and chemical properties including any specific hazards associated with their use.

Development of awareness of the role of chemistry in contemporary societal and global issues, including areas such as sustainability and green chemistry.

• Development of the appreciation of the uses of chemistry in daily life.

• Development of competence in intellectual, practical and transferable skills (Communication skills, IT skills, Interpersonal skills) necessary for employment as a professional chemist

Programme Outcomes

Students will demonstrate an understanding of major concepts in all disciplines of chemistry. Students will employ critical thinking and the scientific method to design, carry out, record and analyse the results of chemical experiments and get an awareness of the impact of chemistry on the environment, society, and other cultures outside the scientific community.

1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
2. Solve the problem and also think methodically, independently and draw a logical conclusion.
3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyse the results of chemical reactions.
4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
5. Find out the green route for chemical reaction for sustainable development.
6. To inculcate the scientific temperament in the students and outside the scientific community.
7. Use modern techniques, decent equipment's.
8. The syllabi of the B.Sc. Chemistry course are discretely classified to give stepwise advancement of the subject knowledge right through the three years of the term.

9.The practical exercises done in the laboratories impart the students the knowledge about various chemical reagents and reactions. Thereby, hone their skills of handling the corrosive, poisonous, explosive and carcinogenic chemicals making themselves employable in any kind of chemical industries. They are also trained about the adverse effects of the obnoxious chemicals and the first aid treatment.

Course Outcomes

1. B.Sc. Chemistry provides backbone in all the traditional branches of Physical, Inorganic and organic chemistry.
2. The experimental work will be continuing throughout the session to develop the theoretical knowledge and practical as well.
3. Graduates from this course will be better prepared to understand the new environment friendly systems and can understand the processes that the chemical industry is adopting.
4. The course has been designed to have insight in almost all the aspects of chemistry and to build a solid foundation in the subject to choose a career in industry or academics or research.
5. The syllabus very well designed and it covers the areas like water chemistry, consumer products-soaps, detergents, shampoos, skin preparations, polymer chemistry, drugs, industrially important chemicals used in Industry.
6. The employment areas for the B. Sc. Chemistry graduates include pharmaceutical industries, chemical manufactures, forensic science department, plastic industries, agro industries etc. apart from these they are also recruited in the field such as oil, gas and power sectors, defence services.
7. After completion of degree, students gained the theoretical as well as practical knowledge of handling chemicals.
8. The knowledge available opportunities related to chemistry in the government services through public service commission particularly in the field of food safety, health inspector, pharmacist etc**.** Afford a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective.
9. Understand the importance of the elements in the periodic table including their physical and chemical nature and role in the daily life.
10. Understand the concept of chemistry to inter relate and interact to the other subject like mathematics, physics, biological science etc.

11. Learn the laboratory skills and safely to transfer and interpret knowledge entirely in the working environment.

Programme Specific Outcome

B.Sc. 1st year

PSO -01 COURSE TITLE: - (PAPER I) INORGANIC CHEMISTRY

Learning Objectives

1. To understand the shapes of different orbitals
2. To understand different principles for filling electrons.
3. To understand how to draw energy diagrams and calculate bond order.
4. To understand how to calculate lattice energy through Born Haber Cycle.
5. The students will be able to understand general trends in the chemistry behind p-block elements.
6. The students will be able to know the important compounds and important applications of compounds of boron and carbon.
7. The students will understand the biological significance of sodium, potassium, magnesium and calcium.
8. The students will be able to describe the salient features of alkali and alkaline earth metals
9. To understand the concept of chemical bonding

Learning Outcomes

1. Able to write electronic configuration of given atomic number.
2. Able to tell the name of orbitals by recognizing shapes of orbitals.
3. Able to calculate bond order of different molecules.
4. Able to draw MO diagrams of different molecules.
5. Able to calculate effective nuclear charge using Slaters Rule.
6. The students will be able to design and carry out scientific experiments as well as accurately record and analyse the results of experiments.
7. Students will be able to explain why chemistry is an integral activity for addressing social, economic and environmental problems.
8. The students will be able to describe the periodic table as a list of elements arranged so as to demonstrate trends in their physical and chemical properties.
9. The students will able to state the principle resemblances of elements within each main group in particular alkali metals, alkaline earth metals, halogens and noble gases.

PSO -02 COURSE TITLE :- (PAPER II) ORGANIC CHEMISTRY

Learning Objective

1. To understand the core concepts of organic chemistry i.e. resonance, hyperconjugation, inductive effect etc. and their application.
2. To study about the isomerism and types of isomerism.
3. To understand optical isomerism, geometric isomerism and conformational isomerism.
4. To acquire basic knowledge of reactive intermediates and mechanism of organic reactions.
5. To study about nomenclature, synthesis, isomerism and physical properties of alkanes and cycloalkanes.
6. To identify addition reactions for alkenes and alkynes.
7. To understand the nature of double and triple bonds for addition reactions.
8. To identify the difference between dienes and alkenes.
9. To understand the mechanism of attack of electrophiles and nucleophiles.
10. To understand the preparation methods for alkenes, alkynes, alkyl halides.

Learning Outcomes

Upon successful completion of this course, the student will be able to

1. Recognize and draw constitutional isomers, stereoisomers, including enantiomers and diastereomers, racemic mixture and meso compounds.
2. Know the fundamental principles of organic chemistry and predict outcomes and derive mechanism of various types of organic reactions.
3. Understand various types of reactive intermediates and factors affecting their stability.
4. Understand the nomenclature, synthesis, isomerism and physical properties of alkanes and cycloalkanes.
5. Recognize the basic practical skills for the synthesis of alkenes, alkynes, alkyl halides.
6. Able to predict the reactivity of organic compound from its structure.
7. Able to understand the rules for naming different organic compounds.
8. Able to recognize mechanism for given chemical reaction.

PSO -03 COURSE TITLE: - (PAPER III) PHYSICAL CHEMISTRY

Learning Objective

1. Students will be able to describe the concept of pressure from a macroscopic and microscopic perspective.
2. Students will describe the relationship between partial pressures and total pressure as described in Dalton's Law of partial pressure.
3. Students will be able to explain the quantitative relationship between T,V,n & P as described by kinetic molecular theory.

4. To describe a reaction rate in terms of a change in concentration divided by a change in time (at constant volume) and a general form of a (differential) rate law.
5. To write a general form of the rate law for any chemical reaction and define the order of a chemical reaction.
6. To determine integrated rate expression for zero order, first order, second and third order reaction and their respective half-life period expressions.
7. To study the various factors which affect the rate of a chemical reaction such as concentration, temperature, solvent, catalyst etc. And theories of chemical kinetics.

Learning Outcomes

1. Students should be able to describe the characteristic of the three states of matter.
2. Students should be able to describe the different physical properties of each state of matter.
3. Students should be able to determine the difference between solids, liquids and gases.
4. Students will be able to define what matter is and where you can find it.
5. Students will be able to give examples of solids, liquids and gases.
6. Mention and explain various methods for the determination of transport number.
7. Derive integrated rate expressions for zero order, first order, second order and third order reaction.
8. Understand theories of reaction kinetics and differentiate them.

B.Sc. Second year

PSO -04 COURSE TITLE :- (PAPER I)INORGANIC CHEMISTRY

Learning Objective

1. In order to study transition metals to understand the trends in properties and reactivity of the d-block elements. and to explain the typical physical and chemical properties of the transition metals.

3. To identify simple compound classes for transition metals and describe their chemical properties.

To understand the nomenclature, classification, properties and preparation of coordination compounds

4. To make the students understand that solutions which have water as a solvent are called aqueous solutions and those with solvent other than water are called non-aqueous solutions.

5.To study lanthanide and actinides elements

6.To understand the concept of acid and base

Learning Outcomes

1. The students will be able to explain the fundamental concepts in coordination chemistry of transition metals.

2. The Students should be familiar with the basic knowledge of the non-aqueous solutions and applications of non-aqueous solvents in analytical chemistry.
3. Students will be able to describe different quantitative methods of analysis of organic and inorganic substances.
4. The students will be able to understand the various uses of lanthanides elements in flash light powders and in dying cotton.
5. The students will be able to understand about recently lanthanides have been used in lasers.
6. The students will be able to know about actinides elements are used as nuclear fuels for various Purposes.

PSO -05 COURSE TITLE :- (PAPER II) ORGANIC CHEMISTRY

Learning Objectives

1. To understand the methods for preparation of alcohols.
2. To understand the different classes of alcohols.
3. To understand the structure of carboxylic acid and their derivatives.
4. To understand the reactivity of different carboxylic acid derivatives.
5. To understand the chemical reactions of phenols.
6. To understand how to name different aldehydes and ketones.
7. To understand the reactivity of different carbonyl compounds towards nucleophilic reaction.
8. To understand how to write the products of addition reaction to carbonyl compounds.
9. To understand to differentiate between primary, secondary and tertiary amines.

Learning Outcomes

1. Able to recognize structures of acid halides, esters, amides, acid anhydrides.
2. Able to convert given name of alcohol to structure.
3. Able to write the order of reactivity of different carboxylic acid derivatives.
4. Able to describe different classes of alcohols.
5. Able to write down structure of phenol and phenoxide ion.
6. Students are able to recognize mechanism of different reactions related to carbonyl compounds.
7. Students are able to differentiate between given different amines.
8. Able to recognize different functional groups by given only graph of peaks.
9. Able to write mechanism of different condensation reaction.
10. Able to recognize the reactivity of substituted aromatic amines.

PSO -06 COURSE TITLE :- (PAPER III) Physical chemistry

Learning Objective

1. To understand thermodynamic terms: system, surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials.

2. To understand Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law

3. To understand the concept of equilibrium constant, free energy, chemical potential

4. To understand the Nernst distribution law – its thermodynamic derivation, modification of distribution law when solute undergoes dissociation, association and chemical combination. Applications of distribution law

Learning Outcomes

After the completion of the course, Students will be able to

1. Recognize the basic concepts of thermodynamics
2. Able to predict the reversible and irreversible reaction
3. Able to understand the physical significance of third law of thermodynamics
4. Able to recognize the reaction of electrochemical cells and types
5. Able to predict the energy change in heat capacities at constant volume and pressure and their relationship.
6. Able to derive relationship between modification of distribution law when solute undergoes dissociation

B.Sc. FINAL YEAR

PSO -07 COURSE TITLE: - (PAPER I) INORGANIC CHEMISTRY

Learning Objective

1. To understand the concepts of metal ligand bonding in transition complex compounds, thermodynamics and kinetic aspects of metal complexes.
2. To understand the chemistry of organometallic compounds, homogenous hydrogenation and carbonyls, the bioinorganic chemistry of haemoglobin, myoglobin etc.
3. To understand the role of metal ions in biological system, oxygen transport.
4. To understand the concept of Hard and soft acids and bases.
5. To understand the uses of inorganic polymers.

Learning Outcomes

After the completion of the course, Students will be able to

1. Recognize the bonding in transition compounds by VBT and CFST theories.

2. Able to determine the properties and preparations of Li, Al, Hg, Sn, Ti etc. metal compounds.
3. Able to recognize the biological reaction alkali and alkaline earth metals, nitrogen fixation, haemoglobin and myoglobin.
4. Students are able to describe role of different metal ions in biological system.
5. Students are able to recognize role of porphyrin ring in haemoglobin.
6. Students are able to count total of electrons in organometallic compound.
7. Students come to know about uses of different inorganic polymers in making of tyres, toys, plastics bags.
8. Students are able to name different organometallic compounds

PSO -08 COURSE TITLE :- (PAPER II) ORGANIC CHEMISTRY

Learning Objective

1. In order to study the NMR spectroscopy to understand the important role of nuclear magnetic resonance spectroscopy in the study of the structures of organic compounds.
2. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic resonance spectra.
3. To be able to assign structures to simple molecules on the basis of nuclear magnetic resonance spectra.
4. In order to study the infra-red spectroscopy and uv -visible spectroscopy to understand the important in the study of compound
5. In order to study carbohydrates will develop the skills to recognize and draw particular carbohydrate structures.
6. To know general structural elements of cyclic monosaccharide and disaccharides and their implications for structure and function.
7. The main aim of Heterocyclic compounds study is to develop novel, efficient, convenient, selective and environmentally benign synthetic methods in organic chemistry.
8. The objective of the present study of heterocyclic compounds is to develop green methodologies for the synthesis of nitrogen containing heterocyclic.
9. The course aims to provide an advanced understanding of the core principles and topics of biochemistry and their experimental basis.

Learning outcomes

1. Students are skilled in probing solving, critical thinking and analytical reasoning.
2. After completion of course students should have the ability to identify organic compounds by analysis and interpretation of spectral data.

3. Students should have the ability to explain common terms in NMR spectroscopy such as chemical shift, coupling constant and anisotropy and describe how they are affected by molecular structure.
4. The students should be able to demonstrate advanced knowledge and understanding in aspect of protein structure.
5. The students will be able to introduce about basic chemistry of the heterocyclic.
6. The students will develop fundamental theoretical understanding of heterocyclic chemistry.
7. The students will be able to fully comprehend the chemistry of many heterocyclic products, carbohydrate, amino acids, peptides, proteins and lipids in use such as drugs and food.

PSO -09 COURSE TITLE: - (PAPER III) PHYSICAL CHEMISTRY

LEARNING OBJECTIVES

1. To understand the concept of black body radiations.
2. To understand the concept of wave functions.
3. To understand different properties of molecular structure.
4. To understand the basic features of spectroscopy.
5. To understand the Harmonic Oscillator.
6. To understand the transitions through electronic spectroscopy

LEARNING OUTCOMES

1. Able to recognize different regions for different spectroscopy. Able to explain the concept of Electromagnetic Waves.
2. Able to explain the concept use in Black Body Radiation.
3. Able to calculate dipole moment in given molecules.
4. Able to use concept of polarizability
5. Recognize the basic rules of electronic spectroscopy.

DEPARTMENT OF BOTANY

PG BOTANY DEGREE PROGRAM

Program specific outcomes (PSOs), Course outcomes (COs)

Vision of the Botany Department:

Our vision is to conduct innovative research, teaching and outreach on the patterns and processes of life with a focus on plants and their environments.

Mission of the Department:

Mission is to foster an environment of excellence by attracting and upporting the outstanding students, faculty and staff needed to sustain our vision.

We focus on the patterns and processes that enable predictive understanding of plants and their environments at local, regional, and global scales, leading to strengths in the areas of ecology, evolution, and systematics.

These topics are investigated using such tools as spatial data analysis, remote sensing, genomics, computational science, stable isotopes, microscopy, biogeochemical and physiological approaches and field and laboratory experiments.

Learning outcomes for Postgraduate Programme M.Sc. Botany

Upon successful completion of M.Sc. Botany Post-Graduates are expected to-

PSO1: Develop a conceptual understanding of principles and importance of Botany. Students would be benefited with knowledge of core subjects like plant diversity, physiology and biochemistry, molecular cytogenetic and application of statistics etc. which are offered in these subjects Modules on analytical techniques, plant tissue culture and photochemistry would make them obtain skills that help in doing research.

PSO2: Learn about practical technique in lab for detail study of plant cell structure, reproduction, anatomy, breeding procedures for hybridization. Maintain a high level of scientific excellence in botanical research with specific emphasis on the role of plants. Create, select and apply appropriate techniques, resources and modern technology in multidisciplinary way. Practice of subject with knowledge to design experiments, analyze and interpret data to reach to an effective conclusion.

PSO3: They would identify, formulate and analyze the complex problems with reaching a substantiated conclusion. Logical thinking with application of biological, physical and chemical sciences. Learning that develops analytical and integrative problem-solving approaches.

PSO4: Students would perform functions that demand higher competence in national/international organizations with sporty and helping spirits. Prepare the students for many competitive exams like MPSC, UPSC NET SET GATE.

PSO5: Best problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth. Enable the students to be resourceful in identifying the plants.

PSO6: Knowledgeable, disciplined students with good values, ethics, and kind heart will help in nation building globally. Student should be aware of ethical issues and regulatory considerations while addressing society needs for growth with honesty.

SEMESTER - I

PAPER - I

CYTOLOGY

End of this course, the students will be able to:

CO1: Correlate the theoretical description of cell components with microscopic ultra structures

CO2: Describe cell wall, plasma membrane and plasmodesmata

CO3: Understand cell organelles Golgi complex, lysosomes, paroxysms etc.

CO4: Understand cell organelles Chloroplast, Mitochondria, Ribosomes structure and function.

CO5: Study the nucleus-ultra structure and function.

CO6: Students will understand about cell cycle and apoptosis. And role of different enzymes envalved in cel division like cdka.

CO7: Students know about Programmed Cell Death mechanism, during cell division role of various harmons effect and cell pate Formation.

CO8: Students know about Microtubule, Microfilament roll of organization of cell .

CO9: Study cell Biology Technique help for highly transcript of cell. Technique of FISH, GISH, Confocal Microscopy.

PAPER - II

GENETICS

After completion of this course students will gain –

CO1: Understanding of the history of gene from 'something', 'factor'; and gene and one gene one enzyme one characters hypothesis. Student will also know the interaction of gene, genetic recombination producing the characters differently.

CO2: Understanding of the structure of chromosome and how the packaging of DNA occurs. Student can differentiate Euchromatin and heterochromatin region of chromosome on the basis of staining properties. Student can draw a good karyotype and Idiograms of Karyotype, and also how the evolution of Karyotype takes place.

CO3: Understanding of the different structural and numerical changes why? And how? It occurs in the chromosome students, can able to use the trisomic and monosomic for the chromosome mapping.

CO4: Understanding the role and process of mutation and different mutagenic agent which brings about mutation in the organism. Students will also understand the role of mutation in crop improvement and permutation.

CO5: Student can also draw good figure of chromosome directly from microscope with the help of Camera Lucida and prepared an ideogram of chromosome on graph paper. Understanding the different technique of plant breeding.

CO6: Study the technique of hybridization.

PAPER – III

MICROBIOLOGY, PHYCOLOGY AND MYCOLOGY

After completion of this course -

CO1: Students will be able to understand the structure, type and identification of Bacteria and cyan bacteria.

CO2: Students will gain understanding of Thallus structure, reproduction and economic importance algae.

CO3: Students will gain understanding of the classification, structure of mycelium reproduction of fungal species. They will know about the hazardous and useful fungi. Student will also know and learn classification and evolutionary trends in fungi.

CO4: Students will gain understanding of the plant diseases, causal organism, host and their relationship and control measure for plant diseases, Understanding of fungicide and use of chemical physical and biological controlling of diseases mentioned in the unit.

PAPER - IV

BRYOPHYTA, PTERIDOPHYTA AND GYMNOSPERM

After completion of this course students will gain knowledge of -

CO1: the characters, distribution, classification and regeneration in Bryophytes.

CO2: the characters of different orders of Bryophytes.

CO3: How the stele evolution occurs in Pteridophytes and also familiar with the work done by Indian pteriodologist.

CO4: the classification of Pteridophytic classes and the morphological and anatomical characters of genus included in the different Pteriodophytic order.

CO5: Understanding the meaning of fossil and its use in the determination of age of plant materials, Understanding the applied knowledge and different aspects of Paleobotany.

CO6: Students can critically differentiate fossil and living fossil. Students will also understand the evolutionary tendencies and comparative morphology of Cycadales, Cycadeodales and Pteridospermales.

CO7: Students can compare the characters of different orders &relationship of each order from Cordaitales to Gnetales.

CO8: Student can critically differentiate the characters of three orders of Gymnosperm i.e., Ginkogales, Coniferales, and Taxales.

(Lab Work) Laboratory exercise

Contents: Cytology & Microbiology, Algae & Fungi –

After completion of this course students will gain knowledge of -

CO1: Students will be able to understand the isolation of chloroplast, mitochondria, lysosome, and nucleus etc.

CO2: Understands the action of low treatment of colchicine and para-dichlorobenzene during plant cell division creating polyploidy in the organism.

CO3: Student will understand the importance of cell wall. They also get to know about plasmodesmata.

CO4: Student will understand the role of various cell organelles. They will have developed knowledge about various phases of cell division.

CO5: Student can also draw good figure of chromosome directly from microscope with the help of Camera Lucida and prepared an ideogram of chromosome on graph paper.

CO6: Student can identify different types of forms of cyanobacteria.

CO7: Student can classify and identify the Algal and fungal genus and specimen included.

CO8: Student can collect few species from locality and identify morphologically during collection of material in the local visit.

(Lab Work) Laboratory exercise

Contents: Genetics & Bryophyta, Pteridophyta, & Gymnosperm

After completion of this course students will gain knowledge of -

CO1: Study the salivary gland chromosome of chiranomas larva.

CO2: Isolate DNA and prepare cot curve

CO3: Student can also draw good figure of chromosome directly from microscope with the help of Camera Lucida and prepared an ideogram of chromosome on graph paper.

CO4: Students know about DNA and RNA chemical and molecular structure.

CO5: Students also known of plant breeding system and improvement new variety and new plants to benefited socioeconomic value for human beings.

CO6: Students also preparation different types of plant stainer.

CO7: Student can collect few species from locality and identify morphologically during collection of material in the local visit.

CO8: Student will develop the skill and will be able to prepare double stained micro preparation of the given material and identify on the basis of observation.

CO9: Student can make micropreparation of the material of Pteridophyta and bryophytes and idenfied anatomically.

CO10: Student can make micropreparation of the material of Gymnosperm and idenfied anatomically.

CO11: Students gain the skill of identifying the fossil specimen.

SEMESETR- II

PAPER - I

TAXONOMY AND DIVERSITY OF PLANTS

After completion of this course students will gain knowledge of -

CO1: Students will get to know about scope, aim, principles of taxonomy. They will get knowledge about concepts of taxa, genus etc.

CO2: Students will get knowledge about various taxonomic evidences. They will also understand how to prepare herbarium sheets and how to read floras.

CO3: Students are able to make herbaria

CO4: Students will understand about biosystematics. They will also understand adaptive features of ICBN.

Students will get knowledge about classification of Angiospermaic plant groups.

CO5: Students will be able to know the probable ancestors of angiosperms, extinct species.

CO6: Students will know the interesting features & systematic position of Rannunculaceae, Magonaliaceae, Nymphaceae, Meliaceae, Fabaceae, Cucurbitaceae, Umbelliferae Asteraceae Bignoniaceae , Labiateae Verbenaceae, Euphorbiaceae, Moraceae, Cactaceae, Orchidaceae, Zingiberaceae, Cypraceae and Poaceae etc.

CO7: Students are able to comments on specimen and identify from locally available families.

PAPER – II

MOLECULAR BIOLOGY

After completion of this course -

CO1: Students will understand the structure and functions of ribosomes. They will get to know about how transcription and translation takes place in Prokaryotes and Eukaryotes.

CO2: Students will understand about fine structure of gene. They will also understand machinery involved in protein sorting.

CO3: Students will get to know about the structure of phage genome. They will also develop knowledge about genetic recombination.

CO4: Students will understand about cell cycle and apoptosis. They will get knowledge about the process of signal transduction.

CO5: Understanding the role and process of mutation and different mutagenic agent which brings about mutation in the organism. Students will also understand the role of mutation in crop improvement and permutation.

PAPER - III

PLANT PHYSIOLOGY

After completion of this course -

CO1: Students will be able to understand the various physiological life processes in plants.

CO2: They will also gain about the various uptake and transport mechanisms in plants and are able to coordinate the various processes.

CO3: They understand the role of various harmones, signaling compounds, thermodynamics and enzyme kinetics.

CO4: During the course students will gain knowledge about various mechanisms such as channel or transport proteins involved in nutrient uptake in plants.

CO5: Demonstrate an understanding of how water moves in plants at both molecular and organism levels.

CO6: The field of plant physiology includes the study of all the internal activities of plants-those chemical and physical processes associated with life as they occur in plants.

CO7: A program that focuses on the scientific study of the cell and molecular plant biology and physiology, water relations and transpiration and mineral nutrition, especially nitrogen metabolism.

. **CO8**: The students will be learning about the various signal transduction mechanisms in plants. The concept of second messengers, calcium signaling, kinases/phosphatases in plant signaling would be delineated to enhance their grasping power for understanding of different signaling pathways operative in plants. Two component signaling concept would be introduced and extended to plant hormone signaling. Quoram sensing and its potential biotechnological applications should be clear to students after these classes.

CO9: During this course you also will learn how plant growth and development and their tropisms, nastic movements, photoperiodism, photomorphogenesis, circadian rhythms under different environmental conditions.

CO10: Understand how to apply the basic concepts of Plant Physiology in other disciplines of agriculture.

CO11: To understand, to know and discuss the concept of physiological processes of plants.

CO12: Study the stress biology, biotic and abiotic stress.

CO13: students also known mechanism of plant responces and adaptation to salinity, metal toxicity, freezing, heat and oxidative stress of plants. Understand the properties, structure and mechanism of action of enzymes.

PAPER - IV

PLANT METABOLISM

After completion of this course -

CO1: 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.

CO2: Students will come to know that, energy produced by respiration is essential for normal functioning of body.

CO3: Student will understand importance of metabolism to maintain living state of cells. They also understand role of nitrogen cycle in environment.

CO4: 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.

CO5:The students are able to isolate starch, pectine and various nutritive products from the plants. Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc.

CO6:Learn Nitrogen fixation process and its use by plants.

CO7:Know about various plants product (Lipids) formation and uses socioeconomically or commercially. **CO8**:Understanding Biosynthesis of different Fatty acids (PlantsProduct like Oil, Wax, latex, Fibre, Gums Etc.)

CO9: During this course you also will learn how plant growth and development and their tropisms, nastic movements, photoperiodism, photomorphogenesis, circadian rhythms under different environmental conditions.

CO10:Learn about Sensory photobiology Know about the Plant Growth hormones (Auxins, Gibberellins. Cytokinins, Ethylene).

Lab Work) Laboratory exercise

Contents: Taxonomy and Diversity of plants &Molecular Biology-

After completion of this course students will gain knowledge of -

CO1: to independent identify and study plants at family, genus and species level.

CO2: get motivated to recognize and classify plants and preserve them as resources for posterity.

CO3: study the plant communities at different localities of known and unknown destinations.

CO4: Description of specimens from representative, locally available families.

CO5: Description of various species of a genus; location of key characters and preparation of keys to generic level.

CO6: Location of key characters and use of keys at family level.

CO7: Training in using floras and herbaria for identification of specimens described in the class.

CO8: Comparison of different species of a genus and different genera of a family to calculate similarity coefficient and preparations of dendrograms.

CO9: Study aware tour under the supervision of lecturers to a place of botanical interest. Access knowledge available in the various databases for carrying out genomic and proteomic research.

CO10: Understand the role played by mutations in plant and would be in a position to put the accrued knowledge for use.

CO11: Genomics will provide the way for the students to take up in silico investigations towards assisting work in manipulating genes to produce plants with desired characters.

CO12: Isolate DNA and prepare cot curve.

CO13: Understanding the role and process of mutation and different mutagenic agent which brings about mutation in the organism.

CO14: Students will also understand the role of mutation in crop improvement and permutation.

(Lab Work) Laboratory exercise

Contents: Plant Physiology and Plant Metabolism -

After completion of this course students will gain knowledge of -

CO1: Perform the experiments on photosynthesis, respiration and growth of plants.

CO2: Identify amount of metabolic-protein, amino acids, fat, carbohydrate, present in plants.

CO3: Water potential by gravimetric and falling drop methods.

CO4: Osmotic potential by Plasmolytic method.

CO5: Quantitative estimation of total chlorophyll content and carotenoid contents inleaves.

CO6: Absorption spectrum of chlorophyll pigments by spectrophotometric method.

CO7: Differentiation of C3 and C4 plants by starch test.

CO8: Determination of nitrogen content in roots and root nodules.

CO9: Effect of temp., substrate concentrate pH and inhibitor concentrate on nitrate reuctase activity.

CO10: UV-B effect on nitrate reducates.

CO12: Demonstration of Brownian movement in the latex of Calotropis.

CO13: Demonstration of tyndalleffect.

CO14: Determination of isoelectric pH of Protein.

CO15: Estimation of Protein, free amino acids, carbohydrate contents in plant sources.

CO16: Estimation of Vitamin C in fruits – titrimetric method.

CO17: Paper chromatographic identification of plant pigments, sugars and amino acids.

SEMESTER - III

PAPER - I

PLANT DEVELOPMENT AND PLANT RESOURCES

After completion of this course students will gain knowledge of -

CO1: Students will understand diversity of phanerograms.

CO2: They will also know about difference between mnocotylecodn and dicotyledon plants. Know about plants anatomical structure, their developmental patterns.

CO3: Student will understand the role of various hormones in plant development. They will understand how growth of shoot apical meristem takes place.

CO4: Classify different kind of cytohistological zonation of shoot and root meristem

CO5: Students know about leaf structure, type, development, and its function. They also known its anatomical character, structure and function.

CO6: Vascular tissues and its constituents by sections and maceration, wood anatomy, TS, TLS and RLS

Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem) , Secretary tissues (Mucilage Canals, Resin canals, Nectaries, and oil glands), laticifers (Latex cells and Vessels).

CO7: Students also known wood development,structure,type and fnction they also known Normal and abnormal secondary growth etc.

CO8: The students will also deal with applied aspect such as cell lineages, cell fate mapping, positional informational techniques for studying development.

CO9: This knowledge will help students to undertake research in the field of developmental biology.

CO10: Students will understand tissue system in Angiosperms. They will also have developed knowledge about anatomical feature of Angiospermic plant.

CO11: Identify and recognize potential of food crops namely cereals, millets, pulses, sugar yielding plants, spices, condiments, tubers, fruits and medicinal plants

CO12: Venture into cultivation, process and harvest economically useful plants**.**

CO13: Gain confidence in pursuing entrepreneurial projects.

CO14: An understanding of commercial products derived from plants that provide us with consumable products such as beverages, herbs and spices, and materials such as cloth, paper, and wood.

PAPER - II

PLANT ECOLOGY- I (ECOSYSTEM AND VEGETATION ECOLOGY)

After completion of this course -

CO1: Students will understand the vegetative organization in community. Students will get to know about how changes take place during ecological succession.

CO2: Student will have developed knowledge about structure and function of ecosystem. They also will understand about biogeochemical cycle in environment and its role.

CO3: 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.

CO4: Student will get knowledge about invasive species of plant. They will get to know about how ecological management takes place.

CO5: Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems .

PAPER – III

BIOTECHNOLOGY AND GENETIC ENGINEERING OF PLANTS AND MICROBES

After completion of this course -

CO1: Students will become familiar with the tools and techniques of genetic engineering DNA manipulation enzymes, genome and transcription analysis and manipulation tools, gene expression regulation, production and characterization of recombinant proteins.

CO2: Students will get knowledge about importance of recombinant DNA technology for the production of vaccines. Students will be able to know about crop developed by genetic engineering used to enhance yields & nutritional quality.

CO3: Students will have knowledge about creative genetically modified bacteria. They will get knowledge that advance proteomic technologies can help us to develop better drugs.

CO4: Students will know how they can grow disease free plant by tissue culture technique. They will develop understanding about how gene technology has helped in improving various qualities in Crops.

CO5: Students will know about the use of computational approach to analyze, manage & store biological data.

CO6: They are able to know, the use of information technology in biotechnology for data storage, Analyzing the DNA sequences.

CO7: Students will learn DNA replication, recombination and repair, transcription and translation

CO8: Students will be aware of the modern tools and techniques of genomics and isolation and identification of genes.

CO9: Students will understand the biology and application of antisense technologies and biology of cancer.

CO10: Students will acquire knowledge of advances in biotechnology- healthcare, agriculture and environment cleanup via recombinant DNA technology.

CO11: Students will learn the principals and technical advances behind the in vitro culture of plant cells and rDNA techniques.

CO12: Students will learn the applications of plant transformation for improving the productivity and performance of plants under biotic and abiotic stresses.

CO13: The course will make the students to learn various diagnostic techniques such as PCR, RTPCR, Real-time PCR.

CO14: This course exposes students to the applications of genetic engineering in biological research.

CO15: The students will learn the theoretical and practical aspects of human genetics.

CO16: The students will understand different types of NAA tests for the diagnosis of microorganisms of medical importance and in forensic science.

CO17: This course will describe pharmaco-genomics and toxic genomics.

PAPER - IV

ELECTIVE COURSE - MOLECULAR PLANT PATHOLOGY-I

After completion of this course -

CO1: Learn about classification, characteristics, ultra structure of Prokaryotic and Eukaryotic microbes. **CO2**: Know about organisms and causal factor responsible for plant diseases & methods of studying plant diseases.

CO3: Familiarize with some common plant diseases of India. Gain knowledge on Host parasite interaction process.

CO4: To acquaint with different strategies for management of plant diseases.

CO5: To acquaint with post harvest diseases of agricultural produce and their ecofriendly management. **CO6**: To impart knowledge about symptoms, epidemiology of different diseases of vegetables and spices and their management.

CO7: To acquaint with seed-borne diseases, their nature, detection, transmission, epidemiology, impacts/loses and management. To impart knowledge on the concepts, principles and judicious use of chemicals in plant disease management.

CO8: Acquaintance with formulation of different fungicides and plant protection appliances.

CO9: Formulation of fungicides, bactericides and nematicides; in vitro evaluation techniques, preparation of different concentrations of chemicals including botanical pesticides based on active ingredients against pathogens; persistence, compatibility with other agro-chemicals; detection of naturally occurring fungicide resistant mutants of pathogen; methods of application of chemicals.

CO10: To provide knowledge on soil-plant disease relationship.

CO11: To study principles and application of ecofriendly and sustainable management strategies of plant diseases.

CO12: To educate about the nature, prevalence, etiology, factors affecting disease development and control measures of field and medicinal crop diseases.

CO13: To acquaint the learners about the principles and the role of Plant Quarantine in containment of pests and diseases, plant quarantine regulations and set-up. To study the nomenclature, classification and characters of fungi. To acquaint with the structure, virus-vector relationship, biology and management of plant viruses.

(**Lab Work) Laboratory exercise**

Contents: Plant Development and Ecology -

CO1: Students will be able to understand the isolation of chloroplast.

CO2: Students will gain knowledge about floral symmetry and anatomical features of various taxa.

CO3: Student can extract chloroplast pigment from leaves.

CO4: Student can identify structure of stomata while peeling epidermis leaves of Tradescantia.

CO5: Students will be able to understand the anatomical structure of monocot and dicot plants

CO6: Food crops: Wheat, Rice, Maize, Chickpea, Potato, Tapioca, Sweet Potato, Sugar cane, Morphology, Anatomy, Micro chemical tests for stored food material.

CO7: Forage/Fodder crops: Study of any five important crops of the locality (For example fodder sorghum, Bajra, Bersem, Clove, Guar bean, Gram, Ficus sp.)

CO8: Plant fibers: (i) Textile fibers: Cotton, Jute, Linen, Sunn hemp, Cannabis. (ii) Cordage fibers; Coir (iii) Fibers for stuffing: Silk and Cotton.

CO9: Study of frequency, abundance and density by quadrate method.

CO10: Student will have developed knowledge about distribution of various plant species by quadrate Method.

CO11: Study of statistical problems based o biometry

CO12: Students will learn the use of mathematical and statistical theory and application of biostatistical methods; use & interpret results from specialized computer software for the management and statistical analysis of research data.

CO13: Students will learn to participate in a research team setting in study design, data coordination and management and statistical analysis and reporting of study results.

CO14: Students also aware scientific visits to a protected area, a wet land, a mangrove, NBPGR, BSI, CSIR, ICAR labs and a recognized botanical gardens or a museum.

(**Lab Work) Laboratory exercise**

Contents: Plant Biotechnology and Plant Pathology -

CO1: This study throws light on virus cultivation, phages and bacterial/yeast genetics.

CO2: Describe DNA replication, recombination and repair, transcription and translation.

CO3: Discuss the modern tools and techniques of genomics and isolation and identification of genes. **CO4**: Study Isolation & quantification of genomic DNA.

CO5: Plasmid isolation & quantification,Southernblotting and RFLP analysis

CO6: Isolation and quantification of RNA,Isolation of poly A + RNA

CO7: Computational analysis of genomic and proteomic data.

CO8: Network search on genomic and proteomic databases.

CO9: Use of PERL programming for : i) Storing DNA sequence ii)DNA to RNA transcription iii) Counting nucleotides.

CO10: Isolation characterization and maintenance of pathogens, role of different storage conditions on disease development.

CO11: application of antagonists against pathogens in vivo and in vitro conditions.

CO12: Comparative efficacy of different chemicals, fungicides, phytoextracts and bioagents.

CO13: Detailed study of symptoms and host parasite relationship of representative diseases of plantation crops.

CO14: Collection and dry preservation of diseased specimens of important crops. Conventional and advanced techniques in the detection and identification of seed-borne fungi, bacteria and viruses.

CO15: Relationship between seed-borne infection and expression of the disease in the field.

CO16: Acquaintance with formulation of different fungicides and plant protection appliances.

CO17: Quantification of rhizosphere and rhizoplane microflora with special emphasis on pathogens; pathogenicity test by soil and root inoculation techniques, correlation between inoculum density of test pathogens and disease incidence, demonstration of fungistasis in natural soils; suppression of test soil-borne pathogens by antagonistic microorganisms.

CO18: Isolation and identification of different biocontrol agents.

CO19: Isolation, characterization and maintenance of antagonists, methods of study of antagonism and antibiosis, application of antagonists against pathogen in vitro and in vivo conditions.

CO20: Study of symptoms caused by viruses, transmission, assay of viruses, physical properties, purification, method of raising antisera, serological tests, electron microscopy and ultratomy, PCR.

SEMESTER - IV

PAPER - I

PLANT REPRODUCTION AND UTILIZATION OF RESOURCES

After completion of this course -

CO1: Student will understand floral structure of Angiospermic plants and how stamens and carpels are evolved. They will also understand adaptive feature of pollinators.

CO2: Students will understand the structure of Anther and it's various. They will understand about pollen wall protein.

CO3: Students will understand the development of male gametophyte. They will get to know about biochemical aspects of pollen.

CO4: Students will understand carpel determination of pistil. They will also understand megasporogenesis.

CO5: Students will understand pollination mechanism. They will understand the concept of Incompatibility.

CO6: Students will get knowledge about reproduction in plants. They are able to differentiate the types of endosperms.

CO7: Students can understand the relation between embryo and endosperm. Students will get idea about practical importance of polyembryony.

CO8: Students are able to know overall development of endosperms. Students will develop understanding of the formation of embryo from somatic cell.

CO9: Student will understand the structure of anther and role of gene expression during pollen development. They will get to know about fertilization and how pollen stigma interaction takes place.

CO10: Students will understand how endosperm provides nutrition to embryo development. They also understand how germination of seed takes place in plants.

CO11: Students known fruit maturation and its contents.

CO12: Introduce to Aesthetic botany in syllabus to study phytogeography and forest types in India

CO13: Understand the technique of grafting, budding, industrial gardening, terrace gardening etc.

CO14: Develop nurseries and other management for cultivation of flowers

CO15: Design landscape in commercial, residential bungalows

CO16: Develop the technique to set up playhouses and ornamental succulents.

CO17: Bring out the relevance of ethnobotany in the present context Know about the major and minor ethnic groups or Tribals of India, and their life styles.

CO18: Learn about the Methodology of Ethnobotanical studies.

CO19: Gain knowledge on the role of Role of ethnobotany in modern Medicine.

CO20: Get awareness on the conservation practices of medicinal plants.

PAPER - II

POLLUTION AND BIODIVERSITY CONSERVATION

By the end of this course, the students will be able to -

CO1: Understand the concept of community and vegetable development and succession

CO2: Organize the ecosystem and mechanism of biogeochemical cycle

CO3: Students will differentiate hydrophytes, mesophytes, and xerophytes and discussing the concept of ecosystem stability.

CO4: Know about IUCN, red data book, sanctuaries, national park

CO5: Study of topography of an area and sampling of plant community by quadrate method.

CO6: Study of composition of wetlands and mangroves.

To analyze the threat and suggest conservative measures.

CO7: Students aware about climate and their role in environment equilibrium.

CO8: Students also known pollution ad pollutant and their role in change environment.

CO9: The students are also trained in the environmental impact analysis.

CO10: Students are able to analyze, monitor various physical, chemical and biological properties of soil water and air.

CO11: ystematically understand biodiversity and its vital role in ecosystem function.

CO12: Identify the importance of biodiversity in natural environments Critically examine.

CO13: biodiversity and human linkages, and help policy formulating for conservation Application of knowledge in general communication for public extension.

CO14: Identification of Rare, Endengered and Threatened species from the region.

CO15: Developing critical thinking for shaping strategies viz. scientific, social, economic and¬ legal issues; for environmental protection and conservation of biodiversity, social equity and sustainable development.

PAPER – III BIOTECHNOLOGY-II

PLANT CELL, TISSUE CULTURE AND ORGAN CULTURE

After completion of this course -

CO1: Biotechnology in an historical perspective

CO2: Scope and Importance of Biotechnology.

CO3: Familiarization of the terms associated with plant tissue culture.

CO4: Learning important milestones in the plant tissue culture.

CO5: Understanding the concepts and principles of Plant tissue culture.

CO6: Learning the techniques of sterilization and monitoring method of sterilization.

CO7: Learning different pathways of plant regeneration under in vitro conditions - organogenesis and somatic embryogenesis.

CO8: Techniques of establishing cell suspension culture. Synthetic seeds and applications.

CO9: Understanding the techniques of virus elimination – methods of virus indexing.

CO10: Meristem and Shoot tip culture and Applications.

CO11: Performing procedures for Micropropagation techniques in rose and banana.

CO12: Culturing of reproductive structures - anther, microspores, embryos, endosperm, Ovule and ovary cultures and methods to produce haploids.

CO13: Protoplast isolation, culture and protoplast fusion - applications

CO14: Somaclonal variation - applications.

CO15: Learning methods to conserve germplasm under In vitro.

CO16: Production of Secondary metabolites production through cell culture.

CO17: Know about the application of tissue culture in forestry, horticulture, agriculture and pharmaceutical industry.

PAPER - IV

ELECTIVE PAPER-- MOLECULAR PLANT PATHOLOGY

After completion of this course -

CO1: To acquaint the students with plant disease epidemiology

CO2: To acquaint the students with plant disease forecasting methods

CO3: To acquaint the students with measurement of plant disease and yield loss

CO4: To acquaint the students with physical and legislative method of plant disease management

CO5: To acquaint the students with cultural methods of plant disease management

CO6: To acquaint the students with biological methods of plant disease management

CO7: To acquaint the students with chemical control of plant diseases

CO8: To acquaint the students with use of resistant varieties in plant disease management

CO9: To acquaint the students with Integrated Plant Disease Management

CO10: To acquaint the students with general characteristic and classification of viral plant pathogens.

CO11: To acquaint the students with classification of bacterial plant pathogens.

CO12: To impart knowledge on the concepts, principles and judicious use of chemicals in plant disease management.

CO13: To teach the students about the different groups of insects that vector plant pathogens, vector-plant pathogen interaction, management of vectors for controlling diseases.

CO14: To acquaint with diseases of fruits, plantation, ornamental plants and their management.

CO15: To impart training on various methods/techniques/instruments used in the study of plant diseases/pathogens.

(**Lab Work) Laboratory exercise**

Contents: Plant Development and Ecology -

CO1: Study of microsporogenesis and gametogenesis in sections of anthers.

CO2: Students Examined of modes of anther dehiscence and collection of pollen grains for microscopic examination (Maize, Grasses, Cannabis Sativa Crotolaria, Tradiscantia, Brassica, Petunia, Solunum melongena etc.)

CO3: Students also known Pollen storage, Pollen-pistil interaction, self-incompatibility in vitro pollination.

CO4: Student aware ovule in cleared preparations, study of monosporic, bisporic and terrasporic types of embryo sac development through examination of permanent, stained serial sections.

CO5: Students Field study for types of flower with different pollination mechanisms (wind pollination thrips pollination bee/butterfly pollination, bird pollination.

CO6: Students know Practically Emasculation, bagging and hand pollination to study of pollen germination, seed set and fruit development using self compatible and obligate out crossing system.

CO7: Study of ceistogamous flowers and. Their adaptations.

CO8: Also known and study of nuclear and cellular endosperm through dissections and staining.

CO9: Study of endospermic and non-endospermic seed.

CO10: Students knowledge seed dormancy and methods to break dormancy.

CO11: Students aware local Medicinal and Aromatic plants; Depending on the geographical location College/University select five medicinal and aromatic plants each from a garden, crop field or from the wild only if they are abundantly available

CO12: Students learn and study of live or herbarium specimens or other visual materials to become familiar with these resources.

CO13: Students also known Different Vegetable oil plants. Mustard, Groundnut, Soya bean, Coconut, Sunflower and Castor.

CO14: Students also known and study of Gums, Resins, Tannins and Dyes plants and perform tests to understand their chemical nature.

CO15: Field survey of a part of town or city to make the students aware of the diversity of plants in urban ecosystems.

CO16: Students aware and study soil moisture content, porosity, water holding capacity and bulk density of soil collected from varying depths at different locations.

CO17: Students estimate rate of carbon dioxide evolution from different soils using soda lime or alkali absorption method.

CO18: Students practically determine gross and net phytoplankton productivity by light and dark bottle method.

CO19: Students estimate practically the dissolved oxygen content in eutrophic and oligotrophic water samples by azide modification method.

CO20: Students aware and study environmental impact of a given developmental activity using checklist as an EIA method.

(**Lab Work) Laboratory exercise**

Contents: Plant Biotechnology and Plant Pathology -

CO1: Study of media for plants tissue culture

CO2: Students are able to isolate protoplast and determine its viability

CO3: Students will be able to conduct experiment on preparation of media for plant tissue culture.

CO4: Students are liable to perform experiment on embryo culture.

CO5: Students are liable to perform experiment on embryo culture.

CO6: Students are liable to perform experiment on callus culture.

CO7: Students are liable to perform experiment on anther culture.

CO8: Students are liable to perform experiment on ovary culture.

CO9: Students are liable to perform experiment on single cell culture culture.

CO10: Students are liable to perform experiment on protoplast fusion.

CO11: Students knowledge aware sterilization technique.

CO12: Students known working principle and uses of laboratory instruments in which use culture technique.

CO13: Study of symptoms sing antisera, serological tests, electron microscopy and ultratomy, PCR.

CO14: Isolation, purificationcaused by viruses, transmission, assay of viruses, physical properties, purification, method of rai, identification and host inoculation of phytopathogenic bacteria, staining methods, biochemical and serological characterization, isolation of plasmid and use of antibacterial chemicals/antibiotics.

CO15: Methods to prove Koch's postulates with biotroph and necrotroph pathogens, pure culture techniques, use of selective media to isolate pathogens.

CO16: Preservation of plant pathogens and disease specimens, use of haemocytometer, micrometer, centrifuge, pH meter, camera lucida. Microscopic techniques and staining methods.

CO17: Detailed study of symptoms and host parasite relationship of representative diseases of plantation crops.

CO18: Collection and dry preservation of diseased specimens of important crops.

CO19: Detailed study of symptoms and host pathogen interaction of important diseases of vegetable and spice crops.

CO20: Detailed study of symptoms and host parasite relationship of important diseases of above mentioned crops. Collection and dry preservation of diseased specimens of important crops.

FACULTY OUTCOMES OF DEPARTMENT OF BOTANY :

Application knowledge of science to different fields.

Application of science to problems to develops scientific temper.

Application of science to human development

Application of scientific investigation for development of scholary debate.

Application of plant and environment knowledge.

BSC – PART ONE PROGRAMME AND COURSE OUTCOMES

NAME OF SUBJECT	SYLLABUS	PROGRAMME OUTCOMES	COURSE OUTCOMES
	Paper- First **Viruses:-**General character,types,structure , Reproduction,lifecycle & economic	Understanding the basic microbial characteristics, structure, reproduction and economic importance of Viruse and Bacteria.	**Upon completion of t course students will able** : To acquire knowled relevant to microbes a

Botany	importance. **Bacteria:-**General character,types,structure, Reproduction,lifecycle & economic importance. **Fungi:-** General character, thallusorganization,types,structure,Reproduction,lifecycle & economic importance. Some species of fungi – saprolegnia,Albuego,Aspergillus,Peziza,Agaricus,Ustilago,Puccinia,Alternaria and Cercospora **Algae:-** General character, thallus organization types,structure, Reproduction,lifecycle & economic importance. Some species of algae – Nostoc,Gloeocapsa,Volvox,Oedogonium,Vaucheria,Chara,Ectocarpus, Polysiphonia. **Lichens:-**General character,types,structure, Reproduction,lifecycle & economic importance. Mycoplasma,BGA. Mushroom Biotechnology **Paper Second** **Bryophyta :-** General character, thallusorganization,types,structure,Reproduction,lifecycle & economic importance.	Know the General account, classification, characteristic features, structure, life history and economic importance of fungi with practical knowledge. Know the classification, characteristic features, life history and economic importance of algae with practical knowledge. Know the classification, characteristic features, life history and economic importance of Lichens with practical knowledge. Know the Mushroom culture technique Know the classification, characteristic features, structure and life cycle of Bryophytes with practical knowledge. Know the classification, characteristic features, structure and life cycle of Pteridophytes with practical knowledge. Know about Seed habit and Seed evalution pattern. Understanding about Spore	lower plants with practical knowledge. To make aware the application of these studies to become entrepreneur. To become employee of related industries. To become employee of related scientific industries such as supplier of classwork material, slides, specimen etc. To become teacher in educational institute. **Upon completion of this course students will be able** : To acquire knowledge relevant to microbes and lower plants with practical knowledge. To make aware the application of these studies to become entrepreneur.

	Some species of Bryophyta – Riccia,Marchantia,Pellia,Anthoceros,Funaria, **Pteridophyta :-** General character, thallus organization,types,structure,Reproduction,lifecycle & economic importance. Stellar System ,Heterospory,Apospory and Apogamy. **Pteridophyta :-** General account , systematic position, structure,Reproduction,lifecycle & economic importance of Some species of Pteridophyta – Psilotum,Lycopodium,Selaginella,Equisetum and Marsilea. **Gymnosperm :-** General account , systematic position, structure,Reproduction,lifecycle & economic importance of Some species of Gymnosperm – Cycas, Pinus and Ephedra. **Paleobotany :-** Geological time scale,Fossilization and some fossile plants – Rhynia and Lygenopteris.	formation and Apogamy Know the classification, characteristic features, structure and life cycle of some Pteridophytes species with practical knowledge. Understand Gymnosperms with respect to distinguishing characters, comparison with Angiosperms, economic importance and classification. Understand the life cycus of Pinus and Ephedra. Know the scope of Paleobotany, types of fossils and geological time scale Understand the various fossil genera representing different fossil groups	To become employee of related industries. To become employee of related scientific industries such as supplier of classwork material, slides, specimen etc. To become teacher in educational institute.

BSC- PART TWO PROGRAMME AND COURSE OUTCOMES

NAME OF	SYLLABUS	PROGRAMME OUTCOMES	COURSE OUTCOMES

SUBJECT			
Botany	**Paper – First** **Plant Taxonomy :-** Bentham and hooker system classification, Binomial Nomenclature, IUCN, Herbarium,Botanical Garden. **Family Descriptions :-** Systematic position, Distinguishing character's and Economic Importance of Family Rannunculaceae,Magnoliaceae, Brassicaceae,Rosaceae,Papaveraceae,Rutaceae,Cucurbitaceae,Apiaceae,Apocynaceae,Asclepiadaceae,Solanaceae,Malvaceae,Verbinaceae,Euphorbiaceae,Poaceae and Liliaceae. **Economic Botany :-** Botanical name,Family,Part used and economic important plants – Fiber Yielding plants Timber Yielding Plants Medicinal Plants,Food Plants, Fruit Plants,Spices,Beverages, Flowers and Biodiesele Plants And Ethnobotany. **Plant Anatomy :-** Root and Shoot Apical Meristem. Permanent tissue,Anatomy of Root, Shoot and Leaf of Monoct and Dicot Plants.Seondary Growth in Root and shoot. **Embryology :-** Flower as reproductive organs,Anther,Microsporogenesis,Ovules,Megasporogenesis,Male and Female Gametophyte, Pollination,Fertilization Embryo and Parthenocarpy. **Paper – Second**	Understand the principles and rules of taxonomy of angiosperms. Knowing the salient features of classification of angiosperms. Understanding the diversity of flowering plants of different families. Understand the utilization of plants as food, fibers, oils, spices, medicine, beverages and rubber with practical knowledge. Understanding the shoot system and root system in detail with practical knowledge. Knowing the morphological and anatomical structure of leaves according to adaptation with practical knowledge. Understand the structure, development of flower and reproduction in flowering plants in detail with practical knowledge. Significance of seeds. Strategies adopted by the organisms under clanging environment in relation to their biogeographic distribution. The students are	After successful completion of this course, students will be able to: Study plant morphology Description of a plant specimen. Study of at least 20 locally available families of flowering plants. Identification of genus and species of locally available wild plants. Preparation of botanical keys at generic level by locating key characters. Knowledge of at least 10 medicinal plant species. Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems Develop critical understanding on the evolution of concept of organization of apex new crops/varieties, importance of germplasm diversity, issues related to access and ownership. Varoius phytochemical techniques, industrial process, pharmacognostic procedures, authentication of specimens, Preservation of plants and plants products Develop a basic knowledge of taxonomic diversity and important families of useful plants. Know about plants anatomical structure, their developmental patterns. Vascular tissues and its constituents by sections and maceration, wood anatomy, TS, TLS and RLS Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem) , Secretary tissues (Mucilage Canals, Resin canals, Nectaries,

	Ecology :-Scope of Ecology, Environmental and Ecological factors,Soil profile, Hydrophytes and Xerophytes Adoptation. **Community Ecology :-** Community character,Population intraction,Ecological Niche,Ecotype and Ecades. Ecosystem- Structure and function,Energy flow Ecological Pyramids, Biogeochemical cycles(N_2,C,P Cycles). **Plant Water Relation :-** Water properties ,Types of Soil Water,Water Absorption,Mineral Nutrition,Transpiration mechanism,Stomata. **Photosynthesis :-** Photosynthetic apparatus and mechanism,C_3,C_4 Cycle,Facters affecting. Respiration :- Aerobic and Anaerobic respiration ,Glycolysis,Crebs cycle. **Plant Growth Hormones :-** Auxins,Gibberellin,Cytokinin ,Ethylene and Abscissic Acid, Photoperiodism, Vernalization,Seed germination, Plant movement.	made conversant with the following topics- Structure of ecosystem: Functions of ecosystem: Community ecology: Biogeography: Environmental pollution in relation to air, water and soil. Use of fertilizer, pesticides and other chemicals in agriculture and hygiene and their disposal. Climate change: Greenhouse gases, their sources, trends and role, Ozone layer and its depletion (Global warming, Sea level rise, UV radiation) acid rain, Bioindicator and biomarkers of environmental health. Know the complete physiology of plants including plant water relationship, transpiration, transport of organic substance, respiration, photosynthesis. Knowing the growth and development process in plants including knowledge of structure and function of plant hormone	and oil glands), laticifers (Latex cells and Vessels). Normal and abnormal secondary growth etc. Plant reproductive parts development of male, female gametophytes and fruits. Know the scope and importance of the discipline. Understand plant communities and ecological adaptations in plants. Learn about conservation of biodiversity, Nonconventional Energy and Pollution. Discover botanical regions of India and vegetation types of Maharashtra. Understand Bioremediation, Global warming and climate change. After completion of the course the students are familiar with various physiological aspects involved in the plant development. Know importance and scope of plant physiology. To understand the plants and plant cells in relation to water. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration. Learn about the movement of sap and absorption of water in

			plant body. Understand the plant movements. The students are able to isolate starch, pectine and various nutritive products from the plants. Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc.

BSC- PART THREE PROGRAMME AND COURSE OUTCOMES

NAME OF SUBJECT	SYLLABUS	PROGRAMME OUTCOMES	COURSE OUTCOMES
	Paper – First **Plant Water Relation :-** Water properties ,Types of Soil Water, Water Absorption, Mineral Nutrition, Transpiration mechanism, Stomata. **Transport of Organic Substances:-** Solute Transport and facter affecting. **Enzymology :-** Enzyme structure, type and mechanism. **Photosynthesis :-** Photosynthetic apparatus and mechanism,C_3,C_4 Cycle,Facters affecting.	Know the complete physiology of plants including plant water relationship, transpiration, transport of organic substance, respiration, photosynthesis. Understand the properties, structure and mechanism of action of enzymes. Know the Nitrogen fixation and its assimilation of plant	Know importance and scope of plant physiology. To understand the plants and plant cells in relation of water. Learn about the movement of sap and absorption of water in plant body. Understand the plant movements. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic

Botany	**Respiration :-** Aerobic and Anaerobic respiration, Glycolysis, Crebs cycle. **Nitrogen & Lipid Metabolism :-** Nitrogen fixation mechanism, Lipid structure, type and function, Biosynthesis of Fatty acids. **Plant Growth and Development:-** Growth phase, Seed Dormancy, Seed Germination, Photoperiodism, Senescence, Fruit ripening. **Plant Hormones -** Auxins, Gibberellins, Cytokinin, Ethylene and Abscissic Acid,Photoperiodism, Vernalization,Seed germination, Plant movement. **Genetic Engineering :-** Tools, Technique DNA Technology and CDna Library. **Biotechnology –** Plant Tissue Culture, Cellular Totipotency, Crop Biotechnology achivments.	in various form. Know the lipids structure type and its uses of human life of every field. Understanding Biosynthesis of different Fatty acids (PlantsProduct like Oil, Wax, latex, Fibre, Gums Etc.) Knowing growth phase of plant . Know the Dormancy of plant part and storage and used after long time. Know Seed germination process. Understand Fruit ripening and maturation related all process . Knowing the growth and development process in plants including knowledge of structure and function of plant hormone Apprises students of conventional and non-conventional plant resources being used by human, their effective and sustainable utilization and improvement by biotechnological tools. deals with more recent development which have taken place in the field of genetics besides providing introduction to methods of plant breeding of improvement of crop plants.	respiration. The students are able to isolate starch, pectine and various nutritive products from the plants. Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc. Learn Nitrogen fixation process and its use by plants. Know about various plants product (Lipids) formation and uses socioeconomically or commercially. Learn about storage of plant part or products for long time uses. Know seed germination mechanism useful and to Grow for High Plant Yielding Production. Learn about Sensory photobiology Know about the Plant Growth hormones (Auxins, Gibberellins. Cytokinins, Ethylene). Understand the biosynthesis of terpenes, phenols and nitrogenous compounds. Stress physiology – Responses of plants to biotic and abiotic stresses. Learn the specific and non-specific methods of gene transfer. Recombinant DNA technology Applications of Biotechnology in Plant, Animal and Human welfare. Biotechnology and IPR, Biosaftey, Biopiracy, Bioterrorism and Bioethics.
	Paper – Second	Strategies adopted by the organisms under chlanging environment in relation to their biogeographic	Understand the history, Scope and Concepts in plant tissue culture. Learn the Techniques in

Botany	**Plants and Environment :-** Atmosphere, Environmental and Ecological factors,Soil profile, Hydrophytes and Xerophytes Adoptation. **Community Ecology :-** Community character, Frequency Density Abundance Ecological succession. **Ecosystem-** Structure and function,Energy flow Ecological Pyramids, Biogeochemical cycles(N_2,C,P Cycles) **Population Ecology :-** growth curves, Ecotypes, Ecads, Biogeographical regions of India. **Vegetation types of India:-** Forest and Grassland. **Utilization of Plants :-** Food Plants-Rice, Wheat, Maize, Potato, Sugarcane. Fiber plants-Cotton and Jute Vegetable oil Plants-Groundnut, Mustard, Coconut. Firewood and Timber wood plants.	distribution. The students are made conversant with the following topics- Structure of ecosystem: Functions of ecosystem: Community ecology: Biogeography: Environmental pollution in relation to air, water and soil. Use of fertilizer, pesticides and other chemicals in agriculture and hygiene and their disposal. Climate change: Greenhouse gases, their sources, trends and role, Ozone layer and its depletion (Global warming, Sea level rise, UV radiation) acid rain, Bioindicator and biomarkers of environmental health. Know the various population and its community as per natality, mortality and its graphical presentation. Understanding the Diversity and population community, habitate ,ecotype and ecads. Knowing the different types of Vegetation in various region consequence India and Chhattisgarh. Know the plants crop variety, cultivation, irrigation, Harvesting and uses of different part's of plants and its economic valued plants listed. Food plants: uses as food and other socioeconomic. Fiber plants: uses as part of stem , root and seed hairs and pappus. Vegetable oil plant: Know the oil production/extracted part of plant and its uses in various socioeconomics fields. Know the wood formation type and its uses for furnicher, slipper bench in	Commercial plant tissue culture. Know about the morphogenesis and organogenesis in plants. Understand the process of somatic embryogenesis Know about the significance of secondary metabolites in tissue culture. Know about the application of tissue culture in forestry, horticulture, agriculture and pharmaceutical industry. Understand plant communities and ecological adaptations in plants. Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems Learn about conservation of biodiversity, Nonconventional Energy and Pollution. Discover botanical regions of India and vegetation types of India and CG. Understand Bioremediation, Global warming and climate change. Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems . Approaches to the study of Ecology (Autecology, Synecology and Genecology) Population Ecology - concept of metapopulation. Know the history of human population growth. Compare the age structures

	Utilization of Plants :- Spices Plants- Medicinal Plants- Beverages Plants- Rubber Plants-	train. Know the spices plants cultivation, harvesting and different part used. Know Types of spices plants of various family. Understanding of medicinal plants and its uses in various fields . Learn about plants socioeconomic value for drug, medicine, antibiotics Cosmetics etc. Knowing Beverages plants and its production. Know Rubber plants and its cultivation Harvesting production and its uses. with practical knowledge.	of different Countries Describe the possible consequences for each country. Learn the problems associated with estimating Earth's carrying capacity for the human species. Define the demographic transition. Know the different types of vegetation/Forest in a Particular region in India or Chhattisgarh. General account on Forests of Chhattisgarh. An understanding of plants as a source of food – emphasis on major food crops with respect to the following: requirements for human nutrition, the origin of agriculture, legumes, and starchy staples An understanding of commercial products derived from plants that provide us with consumable products such as beverages, herbs and spices, and materials such as cloth, paper, and wood. Varoius phytochemical techniques, industrial process, pharmacognostic procedures, authentication of specimens, Preservation of plants and plants products Know about history and relevance of herbal drugs in Indian system of medicine Learn the macroscopic and microscopic characters, chemical constituents, adulterants,therapeutical and pharmaceutical uses of medicinal plants Understand the techniques for drug evaluation (Chemical, Physical and Biological),Phytochemical investigations, standardization and quality control of herbal drugs' Know the technique of

			medicinal gardening - Cultivation practices, marketing and utilization of selected medicinal plants. Learn about beverages plants and its socioeconomic value. Learn about Rubber plants and production.

DEPARTMENT OF PHYSICS

Objective of the programme:

- To know about the fact and principles of science and its application, consistent with the stage of cognitive development.
- To acquire the skills and understand the method of processes that lead to generation and validation of scientific knowledge.
- To develop a historical and developmental perspective of science.
- To relate science education to environment, local as well as global and appreciate the issues at the interface of science, technology and society.
- To acquire the requisite theoretical knowledge and practical technological skill to enter the world of work.
- To nurture the natural curiosity, aesthetic sense and creativity in science and technology.
- To imbibe the values of honesty, integrity,cooperation, concern for life and preservation of environment.
- To cultivate scientific temper, objectivity and critical thinking.

B.SC. (Bachelor of Science)
Year first, second,third

Programme outcomes:

- After successful completion of three year degree program in physics a student should be able to;

PO-1.Demonstrate,solve and an understanding of major concepts in all disciplines of physics.
PO-2. Solve the problem and also think methodically,independently and draw a logical conclusion.
PO-3.Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the result of physic experiment.
PO-4. Create an awareness of the impact of physics on the society, and development outside the scientific community.
PO-5.To inculcate the scientific temperament in the student and outside the scientific community.
PO-6. Use modern techniques, decent equipments and phonics software's.

Programme specific outcomes:

PSO-1. Gain the knowledge of physics through theory and practical's.

PSO-2. Understand good laboratory practices and safety.
PSO-3. Develop research oriented skill.
PSO-4. Make aware and handle the sophisticate instruments/equipments.

B.sc. first year

COURSE TITLE:(Paper I-paper code0793) Mechanics, oscillations and properties of matter.

- **COURSE OUTCOMES :-**

- Understand lows of motion, reference frames,and its applications i.e. projectile motion, simple harmonic oscillator, rocket motion, elastic and collision.
- Understand the idea of conservation of angular momentum, central forces and the effective potential.
- Understand the application of central force to the stability of circular orbits, Kepler's lows of planetary motion, orbital precession and Rutherford scattering
- Understand the dynamic of rotating,object i.e. rigid bodies , angular velocity the moment of inertia, parallel axis theorem , the inertia tensor ,the motion of rigid bodies .Non – inertial frames :pseudo forces, example involving the centrifugal force and coriolis force.
- Understand the basics of material properties like, elasticity, elastic constants and their relation, torsion of a cylinder, bending of a beam, cantilever,beam supported at its end and loaded in the middle.
- Understand the basics of motion of fluid which includes streamlined and turbulent flows,equation of continuity, critical velocity, flow of a liquid through a capillary tube capillaries in series and parallel, stoke's formula.

COURSE TITEL:-(Paper II paper code 0794) ELECTRICITY,MAGNETISM AND ELECTROMAGNETIC THEORY

- **COURSE OUTCOMES:**

- Know the vocabulary and concepts of physic as it applies to : principles of Electric Field, Gauss's law, Electric Potential, Capacitance and Dielectrics, Current and Resistance, Direct Current Circuits, Magnetic Fields,Sources of
  Magnetic Fields, Faraday's law, Inductance, Alternating Current Circuits, and Electromagnetic Waves.
- Understand the relationship between electrical charge, electrical field, electrical potential and magnetism.
- Be able to use electromagnetic theory and principles in a wide range of applications.
- Learn a variety of advanced mathematical methods and computer techniques.
- Develop skill to solve numerical problems on it.
- Solve mathematical problems involving electric and magnetic forces, fields, and various electro-magnetic devices and electric circuits.
- Develop explicit problem- solving strategies that emphasize qualitative analysis steps to describe and clarify the problem.
- Gain confidence in their ability to apply mathematical methods to understand electro-magnetic problems to real- life situations.

- Ability to define and derive expression for the energy both for the electrostatic and magnetostatic fields, and derive poyntings theorem from Maxwell's equation and physical interpret.
- Ability to describe and make calculation of plane electromagnetic waves in homogeneous media, including reflexion of such waves in plane boundaries between homogeneous media.
- Understanding of electrodynamics and relativity.

➢ **Lab outcomes :**

- Understand physical characteristics of SHM and obtaining solution of the oscillator using experiment.

- Use both analytical mathematics and numerical method to explore the subjects mentioned above. In particular you should be able to analyse experiment oscillator or wave phenomena, such as sound,using suitable methods.

- Use lissajous figures to understand simple harmonic vibration of same frequency and different frequency.
- Solve wave equation and understand significance of transverse waves.
- Solve wave equation of a longitudinal vibration in bars free at one end and also fixed at both the ends.
- Obtain boundary conditions of a longitudinal vibration in bars free at one end and also fixed at both the ends.
- Gain knowledge an applications of transverse and longitudinal waves.

B.sc second year

COURSE TITLE:-(PAPER-I)THERMODYNAMICS, KINETIC THEORY AND STATISTICAL PHYSICS

➢ **COURSE OUTCOMES:**

After studying the chapter,the student will be able to understand.

- Lows of Thermodynamics,transport phenomena and maxwell's expression of velocity.
- Carnot's theorem and reversible and irreversible process.
- Entropy- reversible and irreversible process,temp-entropy diagram.
- Joule –Thomson Effect porous plug experiment.
- Basic lows – Stefan's fourth power low, Rayleigh jeans low, plank's low, black body radiation, specific heat of gases- variation of specific heat of diatomic gases.
- Familiarize in depth about statistical distribution and have basic ideas about Maxwell 's Boltzman, Bose – Einstein and Fermi Dirac statistical and their applications.

COURSE TITLE-: (paper II)WAVES, ACOUSTICS AND OPTICS

➢ **COURSE OUTCOMES:**

After studying the chapter, the student will be able to understand

- Solve wave equation and understand significance of transverse waves.
- Solve wave equation of a longitudinal vibration in bars free at one end and also fixed at both the ends.

- Use Lissajous figures to understand simple harmonic vibration of same frequency and different frequencies.
- Understand the concept of mechanics, acoustics and the properties of
- To have developed the idea of interference, diffraction and polarization and to solve problems related to the phenomena.
- Understand about different laser systems and its application.

➢ **LAB OUTCOMES:**

- Student would gain practical knowledge about heat and radiation, thermodynamics, thermo emf, RTD etc. and perform various experiments.
- The practical knowledge of wave motion doing experiments: tuning fork,electric vibration. they would also learn optical phenomena such as interference, diffraction and dispersion and do experiments related to optical devices: prism, grating,spectrometers.

B.sc third year

COURSE TITEL: (Paper I-paper code 0893) Relativity ,Quantum mechanics, Atomic molecular and nuclear physics.

➢ **Course outcomes:**

- Know the Cartesian, Spherical polar and Cylindrical co-ordinate systems.
- To understand the Special theory of Relativity.
- Discuss the Michelson – Morley Experiment.
- To obtain the series Solution by Frobenius method.
- Study the generating function for Legendre, Hermite Polynomials.
- Understand De – Broglie hypothesis and uncertainty principle.
- Derive schrodinger's time dependent and independent equation .
- Solve the problems using schrodinger's steady state equation.
- Get knowledge of rigid rotator.
- Understand different operator in Quantum Mechanics.
- To know the Rutherford experiment of atom,to understand molecular spectra of atom , to study the Raman Spectra. To study the Zeeman effect,to understand the quantum numbers.
- Know the properties of nuclear likes binding energy, magnetic dipole moment and electric quadruple moment.
- To understand the concept of radioactivity and decays law.
- To study achievement of Nuclear Model of physics and its limitations.
- To give an extended knowledge about nuclear reactions such as nuclear fission and fusion
- To understand the basic concept of particle physics.

COURSE TITEL:(Paper II- paper code -0894) Solid State Physics, Solid State Devices and Electronics.

➢ **Course outcomes:**

- Know the principle of structures determination by diffraction.
- To understand the principles and techniques of x- rays diffraction.
- Know the fundamental principles of semiconductors and be able to estimate the charge carrier mobility and density.
- To give an extended knowledge about magnetic properties like diamagnetic, paramagnetic, ferromagnetic,ferrites and superconductors.
- Understand the basic concept of force between atoms and bonding between molecules.
- Understand of diffraction experiment and reciprocal lattice.

- Understand crystal vibrations: phonon heat capacity and thermal conductivity.
- Understand free electron Fermi gas: density of states, Fermi level and electrical conductivity.
- Understand electronic in periodic potential: energy bands theory classification of metals, semiconductors and insulators.
- Understand semiconductors: band gap, effective masses, charge carrier distributions, doping, PN junction.
- Understand metals: Fermi surface, temperature dependence of electrical conductivity.
- Understand the relationship between conductor and insulators and super conductivity.
- Understand the properties of matter and classification polarization.
- Understand the properties of semiconductors.
- Understand the relationship between semiconductor devices and understand the application of semiconductor device.
- Know the special purpose diode.
- To study the transistor amplifier.
- To understand the FET,JFET,MOSFET.
- To study the operational amplifier and their types.
- To know the timer IC-555 and its classification.
- To study the regulated power supply.
- To understand the sequential logic circuits.

➢ **Lab outcomes:**

- Understand the application of diode , npn transistor, OP-AMPand logica gates.
- Understand half adder and full adder
- Understand tunnel diode characteristics. (V-I)
- Understand optical components and systems.
- Understand and choose ,different models for light.
- Ability to calculate light level and ray paths in optical systems.
- Understand the operating principle of some important types of optical instruments.

➢ **SCOPE OF B.SC PHYSICS:**

1. B.sc physics paves a strong ground for student for further studies in physics concentrated courses. It also trains graduates to get entry – level jobs in the private or government sector.
2. Candidates who study B.sc physics degree also gain expertise in lab work through practical session and training programmes which help them excel at the workplace.
3. Student who are creative and have an interest in physic and relevant subject can pursue B.sc physic course .it is a good option for those who wish to study, explore and experiment in fields related to physic .they can implement their imagination in understanding the scientific phenomena and discover methodologies for the benefit of mankind.
4. After completion of B.sc physic course candidates con go for higher education or they can get a job in a relevant field .check various options available for higher education and job opportunities for B.sc physics candidates.

➢ **HIGHER EDUCATION AFTER B.SC PHYSICS**:

After the completion of B.sc degree course,student can pursue higher studies from top educational and research institutes in India.

Candidates can appear in national level entrance tests through which they can take admission in top institutes like IIT.

Here is a list of entrance examinations for higher education after B.sc physics: IIT JAM, JEST, TIFER GS.

- **JOB ROLES FOR B.SC PHYSICS GRADUATES :**

There are various job roles that b.sc physics candidates can opt after the completion of studies . here is the list of some of the job roles available :

PHYSICIST:A physicst is a person who studies and discovers the interaction of matter and energy. They perform experiments and investigate the theories of physics to reach a conclusion.
Usually, a PHD holder in physics becomes a Physicist. However, B.sc physics are also eligible to work as a research assistant or technician in a similar field. for growth and secure job as a physicist ,the candidate must go for higher studies in physic like M.sc or PHD.

PHYSICS LECTURER: A candidate with sound knowledge in a physics subject can join an institute or academy as a lecturer. It is a decent job role and candidates can expect a good salary as a lecturer. Further, they can pursue master's degrees for growth in the career.

LAB ASSISTANT: Candidates who hold ab.sc physics can work as a lab assistant in various firms, clinics or laboratories or institutes. Such professionals handle technical equipment and act as a helping hand for their supervisors.

Subject matter expert (SME): B.sc physics graduates can work as a subject matter expert in various organisations. Such candidates are responsible to creates content as per the requirement of the client. They are responsible to create effective and format based content as specific.

RESEARCHER: Candidates who hold a B.sc physics degree can apply for researcher or scientist posts at top organisations in India like DRDO, BARC, ISRO, NTPC, BHIL etc.

TECHNICIAN: various private organisations hire candidates with B.sc physics degree for technical support /technician jobs. candidatescan look for vacancies and apply for the same .

Department of Zoology

Class-B.Sc. part 1

1st paper

Syllabus –

1-The cell (Prokaryotic n Eukaryotic), Organization of cell: Extra nuclear and nuclear, Nucleus, chromosome, DNA and RNA.

2-Cell division(mitosis and meiosis).Cancer cells and Cell transformation, An elementary idea of Immunity, Lymphoid organs, cells of immune system, Antigen, antibody and their interaction.

3-General character n classification of phylum Protozoa, Poriferan, and Co elenterata up to order paramecium ,sycon, obelia.

4-General character and classification of phylum Platyhelminthes, Nemathelminthes, Annelids and Arthropoda up to order.

5-General character and classification of phylum Mollusca and Echinodermata up to order.

PROGRAMME OUTCOMES

Paper-1

1-*Understand the nature and basic concepts of cell biology n genetics.

*Understand the structure and purpose of basic components of prokaryotic and eukaryotic cells.

2-*Learn about different stages of mitosis and meiosis division

*Understand the cancer cell and cell transformation

*Gain knowledge about basic concept of immunolog

3-*Learn about general character n classification of lower invertebrate animals

*To describe the polymorphism of coelenterates .

4-Understand the general character and classification of phylum platyhelminthes, nemathelminthes, annelida and arthropods..

*Learn about life cycle and larval stages and parasitic nature in invertebrate animal..

5-*understand about General character n classification of phylum Mollusca and Echinoderms .*Learn about economic importance of molluscan.

Paper-2nd

(Chordata and Embryology)

Syllabus-

1.General character n classification of hemichordata, classification of protochordates, A comparative account of Petromyzon and Myxine.

2-Fishes-Skin and Scale, migration and parental care in fish. Parental care n Neoteny in Amphibians. Reptilia-Poisonous & Non-poisonous snake, Poison apparatus, snake venom and extinct Reptiles.

3-Birds-Flight adaptation, Migration, Perching mechanism, Discuss-Birds are glorified reptiles.

Mammals-Comparative account of Prototheria, Metatheria, Eutheria and Affinities.

Aquatic mammals and their adaptation.

4-Fertilization.

Gametogenesis, structure of gamete and types of eggs, Cleavage, Development of frog up to formation of three germ layers, Parthenogenesis.

5-Embryonic induction, Differentiation and Regeneration.

Development of chick(a)up to formation of three germ layers. Extra embryonic membrane .

Placenta in mammals.

PROGRAMME OUTCOMES.

PAPER- 2nd

1-understand about evolution of chordates.

2-know the classification of fishes and their migratory nature. Understand about parental care n economic important of fishes.

3-understand the classification of amphibians and their neotenic form.

4-understand the classification of Reptilia .

*Learn about poisons & nonpoisons snake n extinct reptiles.

5-understand about lower to higher mammals.

* Know about comparative study of Prototheria, Meta theria and Eutheria...

COURSE OUTCOME

*Teach invertebrate biology in educational institute.

*There are various undergraduate and postgraduate course available in this field of fisheries

*We have job started in Aquaculture field.

*The work involves conducting field and laboratory research. Dealing with complex subject such as In-vitrofertilization and cryogenics.

*To become teacher in educational institute.

*To become employee the Scientific Industry.

*To become researcher.

*We can work as Wildlife biologist, Zoocurator, Wildlife educator, Zoology faculty, Lab technicians..

Class -B.Sc.2nd year

Paper 1st

Syllabus-

1-Integument and it's derivatives: Structure of scale, hair and feathers ,Alimentary canal and digestive gland in vertebrates ,Respiratory organs: Gills and lung, airsac in birds.

2-Endoskeleton(a)Axial skeleton- Skull and Vertebrae(b) Appendicular skeleton: Limb and Girdle.Circulatory system, Evolution of heart and aortic arches, Urinogenital system: Kidney and excretory ducts.

3-Nervous sistem: General plan of brain & spinal cord, Ear and Eye: Structure n function, Gonads and genital ducts.

4-Digestion and absorption of dietary components, Physiology of heart, Cardiac cycle and ECG, Blood Coagulation, Respiration: Mechanism and control of breathing.

5-Excretion:Physiology of excretion, Osmoregulation, Physiology of muscle contraction, Physiology of nerve impulse, Synaptic transmissions.

PROGRAMME OUTCOME

PAPER- 1st

1-Course provides student comparative understanding about skin,digestive glands and respiratory organ in vertebrates.

*Understand about scale in fishes and feather in birds.

2-Student gain knowledge about Endoskeleton and their function.

*Understand the Comparative study of evolution of heart and aortic arches in mammals.

*Understand about different types of kidney and it's function in mammals.

3-Gain knowledge about the Comparative study of brain and spinal cord.

*Learn about structure n function of Eye and Ear of mammals.

4-Understand about how to work heart in mammals, Cardiac cycle, ECG and some cardiac disease in human.

*Gain knowledge about Theories Regarding Blood Clotting and Factor effecting blood coagulation.

* Learn about mechanism of respiration,cellular respiration and their process.

5-Student gain knowledge about the comparative physiological concept of excretion, muscle contraction ,nerve impulse and synaptic transmission.

*Learn about physiology of osmoregulation and Homeostasis.

Class-B.Sc.2nd

Paper 2nd

Syllabus-

1. Structure and function of endocrine glands. Hormone receptor. Biosynthesis n secretion of thyroid, adrenal, ovarian and testicular hormones. Endocrine disorder of pituitary, thyroid ,adrenal and pancreas.

2-Reproductive cycle in vertebrate. Menstruation, Lactation and Pregnancy. Mechanism of parturition. Hormonal regulation of gametogenesis.

3-Evidence of organic evolution. Theories of organic evolution,Variation, Mutation ,Isolation and Natural selection. Evolution of horse.

4-Introduction to Ethology: Branches and concept of ethology . Patterns of Behaviour, Taxes, Reflexes, Drives and Stereotyped behavior. Reproductive behavioural patterns. Drugs and behaviour, Hormones and behaviour.

5-Prawn culture, Sericulture, Apiculture, Pisciculture, Poultry keeping, Elements of pest control: Chemical &Biological control.

PROGRAMME OUTCOME

Class-B.Sc.2nd

Paper-2nd

1-Student gain fundamental knowledge of Endocrine glands and their hormones.

*Understand about Endocrine disorders due to hormones of the glands.

2-Gain depth knowledge about Developmental biology .

*Understand about Reproductive cycle in vertebrates.

*Gain knowledge about mechanism of parturition,lactation and pregnancy ,and abnormalities of pregnancy.

*Know about Hormonal regulation in gametogenesis.

3-Understand the theories of Evolution,lamarckism Darwinism and natural selection.

*Knowledge about eras and evolution of species.

*Understand about Gene mutation,Variation and Isolatio.

4-Undestand the complex the evolutionary process and behaviour of animals.

*Learn about different types of taxes in animal.

*Learn about Drugs ,Reproductive behaviour and Drugs abuse and Drug Dependence drugs.

5-Understan the application of biological science in Apiculture,Aquaculture, Poultry keeping,agriculture & medicine.

*Understand the concept of fisheries,fishing tools and site selection.

COURSE OUTCOME

B.Ss.2nd

1-Study of museum specimen identified and classified the specimen which are present the departmental museum by the student for a practical knowledge.

2-To become Neurologist, Ostiologist in hospital or medical research.

3-To become researcher.

4-Teach in educational institute.

5- After completing B.Sc. in genetics,you can also go for further course like M.Sc.,Ph.D.etc.

6-After M.Sc.you can apply CSIR -NET or UGC- NET ,which will make you eligible for Lecturership may provide you research fellowships.

7-To become employee the related industry.

8-You can start business in Apiculture,Sericulture, Aquaculture, poultry keeping etc.

B.Sc.3rd

Syllabus-1(Ecology)Aims and Scope of ecology.

1.Major ecosystem of the world-Brief introduction.

Population-characteristics and regulation of densities.

Communities and Ecosystem.

Biogeochemical cycles.Air and water pollution.

Ecological succession.

2-(Environmental Biology)

Laws of limiting factors.

Food chain in freshwater ecosystem.

Energy flow in ecosystem-Trophic levels.

Conservation of Natural resources.

Environmental impact Assessment.

3-(Toxicology)

Defination of Toxicity.

Classification of toxicants.

Principle of systematic toxicology.

Toxic agent and their action-Metallic and inorganic agents.

Animal poison-Snake venom,Scorpion and bee poisoning.

4-(Microbiology)

General and Applied microbiology.

Microbiology of Domestic water and sewage.

Microbiology of milk and milk product.

Industrial microbiology.

5-(Medical microbiology)

Brief introduction to pathogenic micro-organisurs,Rickettsia,Spirochetes and Bacteria.

Brief account of life history and pathogenicity of the following bn pathogens with reference to man;Prophylaxis and treatment-

(a) Pathogenic protozoans-Entamoeba,Trypanosoma and Guardia.

(b) Pathogenic helminth -Schistosoma

(c)Nematode Pathogenic parasites of man.

Vector insects.

B.Sc.3rd

PAPER 1st

PROGRAMME OUTCOMES

1- Understand about ecology and major ecosystem in the world like fresh water ecosystem and marine water ecosystem.

*Learn about population and their harmful effect.

*Understand about biogeochemical cycle like N,O,C,S,P in ecosystem.

2-Ability to construct the food chain.

*Knowledge about limiting factor and energy flow through the ecosystem &10%law.

*Apply the knowledge about conservation of natural resources like mineral,water forest&wild-life.

3-Understand about plant,animal toxin and metallic &inorganic agent and their action.

*Understand about animal poison and food poisoning.

4-Gain knowledge about microorganisms present in water,milk and sewage.

*Learn about milk testing and Pasteurization of milk.

*Gain knowledge about production of Alcoholic Beverages.

5-Understand about virus,bacterial and spirochetes diseases.

*Learn about Life cycle and Pathogenicity ,Prophylaxis and treatment of the pathogenic Protozoan,Helminth&Nematode..

B.Sc. 3rd

Paper-2

Syllabus

1-(Genetics)

Linkage and Linkage maps.

Varieties of gene expression-Multiple alleles;lithogenesis,Pleiotropic genes;gene interaction;epistasis.

Sexchromosome system,and sex linkage.

Mutation and chromosomal alterations;meiotic consequences.

Human genetics-chromosomal and single gene disorder(Somatic cell genetics)

2-(Cell Physiology)

General idea about pH and Buffer.

Transport across membrane-Cell membrane;Mitochondria and Endoplasmic reticulum.

Active transport and it's mechanism;Active transport in Mitochondria and Endoplasmic reticulum.

Hydrolytic enzyme-Their chemical nature,Activation and specificity.

3-(Biochemistry)

Amino acids and peptides-basic structure and biological functions.

Carbohydrate and it's metabolism-Glycogenesis , Gluconeogenesis, Glycolysis,m lycogenolysis,Kisi cycle.

Lipid metabolism -Oxidation of glycerol,oxidation of fatty acid.

Protein metabolism -Deamination,Transamination,Transmethylation , biosynthesis of protein.

4-(Biotechnology)

Biotechnology-scope and importance.

Recombinant DNA and Gene cloning.

Cloned genes and other tools of biotechnology.

Application of biotechnology in (1)Pharmaceutical industry ,(2)Food processing industry.

5-(Biotechnique)Principles and techniques about the following.-

pH meter.

Colorimeter.

Microscopy-Light microscope,Phase contrast and Electron microscopes.

Centrifugation.

Separation of biomolecules by chromatography,and Electrophoresis.

Histochemical methods for determination of Protein ,Lipids,and Carbohydrate

PROGRAMME OUTCOMES

B.sc.3rd

Paper 2nd

1-Understand the linkage and Various types of gene.

*Gain knowledge about Sexchromosomes and chromosome theory of sex determination.

*Learn about chromosomal disorder and Genetics diseases...

2-Understand the pH of biological fluid &the tissue.

*Understand the importance of biomolecules and different types of enzyme.

3-Understand about Protein, Carbohydrate and Lipid metabolism and their biological significance.

*Learn about Distinction between polypeptide and protein.

4-Understand the application of biotechnology, familiar with the tools and techniques of genetics & biotechnology.

*Learn about production of Recombinant DNA,gene cloning,Vector and some important Example of cloned genes.

5-Understand different types of tools and technique which is used in research field.

*Learn clinical procedure for blood & urine analysis in practically.

*Develop skill in simple biochemical, histochemical laboratory procedure.

* Understand about separation of biomolecules by chromatography..

B.sc.3rd

COURSE OUTCOMES

*Enable the learners to take certificate of master's degree in zoology.

*Motivation further studies and research in the field.

*Producing contributor in the area of Biological research ,Teaching , & Biodiversity conservation.

*To become microbiologist in a hospital or medical research center generally requires a master in microbiology along with Ph.D.in life science.

*To become physician & researcher in laboratories.

*We start own business in food processing industries.

*To become Aquatic ecologist.

*We can field job opportunities in hospital, Pharmaceutical companies and other health services.

*Some of the public sector companies that offer lucrative career are as follow:-Blood service,Drug manufacturing companies,Industrial laboratories,Forensic science.

*To become Biotechnologist.

COURSE OUTCOME, PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME (CO'S, PO'S & PSO'S)

Department of Commerce

BACHELOR OF COMMERCE

OBJECTIVE OF THE PROGRAMME:

The college follows Hemchand Yadav University, Durg syllabus for Bachelor in Commerce. The objectives of the prescribed course are:

- This program aim to provide students with specific knowledge and skills relevant to their disciplines and careers.
- This program satisfies the educational entrance requirements for membership of relevant professional bodies.
- To determine and understanding of the principles of accounting, finance, economic and business law.
- To develop numerical abilities of students.
- To inculcate writing skills and business correspondence.
- To create awareness of law and legalizations related to commerce and business.
- To introduce recent trends in business , organizations and industries.
- To acquire practical skills related with banking and other business.

COURSE OUTCOME:

The three year course has been broken up into three Parts.

Part-I known as B. Com. Part-I Examination at the end of first year. Part-II Examination at the end of the second year, and Part-III Examination at the end of the third year.

A candidate who after passing (10+2) Higher Secondary or Intermediate examination of Chhattisgarh Board of Secondary Education, Raipur or any other examination recognized by the University or Chhattisgarh Board of Secondary Education as equivalent there to has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year, shall be eligible for appearing at the B.Com. Part-I examination.

A candidate after passing B.Com Part-I examination of the University or any other examination recognized by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing in the B.Com Part-II examination.

A candidate after passing B.Com Part-II examination of the University has completed a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com part-III examination. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate students shall be eligible for admission to the examination as per provision of Ordinance No. 6 relating to examinations (General). Provided that non-collegiate candidates shall be permitted to offer only such subject/ papers as are taught to the regular students at any of the University Teaching Department or College. Every candidate for B.Com Examination shall be examined in subjects as mentioned in the marking scheme and course or studies.

A candidate who has passed the B.Com Part-III examination of the University shall be allowed to present him of examination in any of the additional subjects prescribed for the B.Com. Examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B. Com. Part-I examination in the subject which he proposes to offer then the B.Com. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total marks in each paper/group of subjects.

In group where both theory and practical examinations are provided an examinee must pass in both theory and practical parts of examination separately. Candidate will have to pass separately at the Part-I, Part-II and Part-III examination. No division shall be assigned on the result of the Part-I and Part-II examinations In determining the division of the Final examination, total marks obtained by

the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part-I examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject/group only, the total aggregate mark being carried over for determining the division, shall include actual marks obtained in the subject/group in which he appeared at the supplementary examination. Successful examinees at the Part - III examination obtaining 60% or more marks shall be placed in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

At the end of the B.Com. Course:

1. The students can get the knowledge, skills and attitudes during the end of the B.com degree course.
2. By goodness of the preparation they can turn into a Manager, Accountant , Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.,
3. Students will prove themselves in different professional exams like C.A., C.S., CMA, UPSC and state PSC's as well as other courses.
4. The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
5. Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication.
6. Students can also get the practical skills to work as accountant, audit assistant and tax consultant. As well as other financial supporting services.
7. Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
8. Students will be able to do their higher education and can make research in the field of finance and commerce

PROGRAMME OUTCOME:

1. This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc., well trained professionals to meet the requirements.
2. After completing graduation, students can get skills regarding various aspects like Marketing Manager, Selling Manager, over all Administration abilities of the Company.

3. Capability of the students to make decisions at personal and professional level will increase after completion of this course.

4. Students can independently start up their own Business.

5. Students can get thorough knowledge of finance and commerce.

6. The knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization.

PROGRAMME SPECIFIC OUTCOME:

B.COM I YEAR

PSO: FINANCIAL ACCOUNTING

1. Define bookkeeping and accounting.

2. Explain the general purposes and functions of accounting.

3. Explain the differences between management and financial accounting.

4. Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses.

5. Preparation of final accounts and their purposes.

PSO: BUSINESS COMMUNICATION

1. To give the knowledge of effective Communication in Business.

2. Different processes and considerations involved in writing in business.

3. Identify the appropriate use of different channels of written communication in business.

4. Create various types of business reports.

5. Communicating through Technology.

PSO: BUSINESS MATHEMATICS

1. Understanding of basic marketing mathematics by solving relevant problems, including trade discount, cash discounting, and markup & markdown calculations.

2. Apply the principles of simple interest to solve relevant problems in financial applications such as simple interest based loans.

3. To analysis business math concepts that are encountered in the real world understand and able to communicate the under lined business concepts & mathematics involve to help another person.

PSO: BUSINESS REGULATORY FRAMEWORK

1. Knowledge of Contract Act.

2. Explain the rights and duties of bailor, bailee, pawnee and surety

3. Provisions of agency.

4. Contract of Sale.

5. To give the knowledge of consumers protection act and FEMA.

PSO: BUSINESS ENVIRONMENT

1. Analyze the global business environment.

2. Analyze the local business environment.

3. Use critical thinking skills in business situations.

4. Apply an ethical understanding and perspective to business situations.

PSO: BUSINESS ECONOMICS

1. Apply the concept of opportunity cost.

2. Law of Demand.

3. Employ marginal analysis for decision making.

4. Analyze operations of markets under varying competitive conditions.

5. Analyze causes and consequences of unemployment, inflation and economic growth.

B.COM II YEAR

PSO: CORPORATE ACCOUNTING

1. This course aims to enlighten the students on the accounting procedures followed by the Companies.

2. Student's skills about accounting standards will be developed.

3. To make aware the students about the valuation of shares.

4. To impart knowledge about holding company accounts, amalgamation, absorption and reconstruction of company.

PSO : COMPANY LAW

1. To impart students with the knowledge of fundamentals of Company Law and provisions of the Companies Act of 2013.

2. To apprise the students of new concepts involving in company law regime.

3. To acquaint the students with the duties and responsibilities of Key Managerial Personnel.

PSO : COST ACCOUNTING

1. To understand Basic Cost concepts, Elements of cost and cost sheet.

2. Providing knowledge about difference between financial accounting and cost accounting.

3. Ascertainment of Material and Labor Cost.

4. Student's Capability to apply theoretical knowledge in practical situation will be increased.

PSO : PRINCIPLE OF BUSINESS MANAGEMENT

1. To understand basic knowledge of principles & function of management.

2. To understand the process of decision making.

3. Modern trends in management process.

4. To inculcate knowledge of personality perception motivation. job satisfaction morale , group dynamic and leadership.

PSO : BUSINESS STATISTICS

1. To develop the students ability to deal with numerical and quantitative issues in business.

2. To enable the use of statistical, graphical and algebraic techniques wherever relevant.

3. To have a proper understanding of Statistical applications in Economics and Management significance.

4. Discuss critically the uses and limitations of statistical analysis.

5. Solve a range of problems using the techniques covered.

6. Conduct basic statistical analysis of data.

PSO : FUNDAMENTAL OF ENTREPRENEURSHIP

1. To aiming to develop students about Entrepreneurship development.

2. To create an awareness on various Entrepreneurship Development Program.

3. To enable them to understand project formulation.

4. To familiarize the students with EDP schemes.

5. To give an introduction about MSME, EDI and other training institutes in Entrepreneurship.

B.COM III YEAR

PSO : INCOME TAX

1.To introduce the basic concept of Income Tax .

2. In order to familiarize the different know-how and heads of income with its components.

3. It helps to build an idea about income from house property as a concept.

4. It give more idea about the income from business or profession.

5. Make the students familiarizes with the concept of depreciation and its provisions.

PSO: AUDITING

1. Student will understand the audit process from the engagement planning stage through completion of the audit, as well as the rendering of an audit opinion via the various report options.

2. Student will understand auditors, legal liabilities, and be able to apply case law in making a judgment whether auditors might be liable to certain parties.

3. Student will understand to describe the various levels of persuasiveness of different types of audit evidence and explain the broad principles of audit sampling techniques.

4. Student will understand to discuss the need for an independent or external audit and describe briefly the development of the role of the assurance provider in modern business society.

5. Student will able describe the quality control procedures necessary to ensure that a competent assurance engagement is performed, and apply professional ethics including Code of Conduct to specific scenarios.

6. Student will able to explain the internal audit process including the professional standards applicable to the internal audit profession.

PSO: INDIRECT TAX WITH GST

1. Understand the impact of new regulation on distribution of pesticides and kind of changes needed to be done.

2. Gain an insight on the recording and analyzing the transactions for compliance under GST especially in supply chain and distribution.

3. Getting familiar with the technology and the flow of return filing under GST.

4. Knowing “place of supply rules” and applicability of the same under GST.

PSO : MANAGEMENT ACCOUNTING

1. To enlighten the students thought and knowledge on management Accounting.

2. Helps to give proper idea on financial statement analysis in practical point of view.

3. To introduce the concept of fund flow and cash flow statement.

4. To provide knowledge about budget control keeping in mind the scope of the concept.

5. To develop the know-how and concept of marginal costing with practical problems.

PSO: PRINCIPLES OF MARKETING (OPTIONAL GROUP:B-I)

1. To introduce the marketing concept and how we identify, understand and satisfy the market.

2. Needs of customers and markets.

3. To analyze companies and competitors and to introduce marketing strategy to increase .

4. Awareness of the strategic and tactical decisions behind today's top performing brands.

5. The marketing concept and environment.

PSO: INTERNATIONAL MARKETING(OPTIONAL GROUP:B-II)

1. Students will be an expert in international marketing management with competencies in applied business research. Furthermore, you will learn responsible business and teamwork skills.

2. Able to gain an in-depth knowledge and understanding of international marketing strategy processes in all types of firms, be able to identify current challenges in international marketing and propose solutions to them.

3. Able to interpret the special characteristics of an international knowledge-intensive environment and originations and their role in marketing decision-making.

4. You will also learn to apply different marketing tools and strategies in technology and knowledge-intensive markets and to analyze and criticize firms' strategic marketing decisions in these markets.

COURSE OUTCOME, PROGRAMME OUTCOME & PROGRAMME SPECIFIC OUTCOME (CO'S, PO'S & PSO'S)

Department of Commerce

MASTER OF COMMERCE

OBJECTIVE OF THE PROGRAMME:

The college follows Hemchand Yadav University, Durg syllabus for Master of Commerce. The objectives of the prescribed course are:

- To opens up innumerable career options and opportunities to the aspiring managers both in India and abroad.
- To train the student to develop conceptual and applied skills for effective problem solving and right decision making in routine and special activities relevant to financial, management, banking transaction of a business.
- M.Com program also prepares one to start a business of his/ her own in the capacity of an entrepreneur.
- Prepares the students for positions of leadership in business organizations at the local and national levels.

- Prepare the students to apply Statistical methods and skilled use of tools for modeling and analysis of business data.
- Facilitate the students to apply capital budgeting techniques for investment decisions.
- To train the student in project works, which is compulsory in 4th sem.

COURSE OUTCOME:

The Master of Commerce course shall be spread over four semesters. In each semester, there shall be theory courses and practical. Written examinations shall be completed by the end of the each Semester and **Project Work Related Commerce or Management Subject is compulsory** at the end of fourth semester. There shall be numerical marking in evaluation. A candidate who has obtained a Bachelor's degree of this University or of a statutory University recognized by this university as equivalent to the Bachelor's Degree shall be eligible to seek admission in M.Com. Course.

Every candidate thus admitted shall pursue regularly the prescribed courses in each of the four semesters successively. The Master's Degree shall be awarded to those candidates who have obtained at least 36% marks in cumulative aggregate in each of four semesters in theory and practical courses separately and a minimum of 20% qualifying marks in each theory course. The successful candidates shall be placed in divisions on the following basis:

- An aggregate of 60% or above – I Division
- An aggregate of 48% or above – II Division
- An aggregate of 36% or above – III Division

Candidates failing to appear or securing less than 36% aggregate or obtaining less than 20% marks in any of the theory course of semester examinations shall be allowed to pursue the courses for the next following semester and to appear at the examination simultaneously in the course for that semester and any course of the previous semester, which he/she has not cleared. Failure in all the four papers shall have to re-appear in the same ATKT provision shall be in three papers of one semester & maximum three attempts only i.e. (1 main+ 2 ATKT). Failure to secure 36% aggregate or to obtain qualifying marks of 20% in each course in two successive semester examinations, in addition to main examination, shall if so facto disqualify a candidate for admission to the next higher semester or for re-examination.

At the end of the M.Com. Course the student will be able to:

- Work as accountant in any private or Government sector.

- Work as an Auditor, manager, Accountant.
- Pursue research in their chosen areas.
- Work as Data Analyst.
- Work as an investment consultants after a brief internship in suitable organizations absorbed in Banking and Insurance sector as executives.
- Pursue professional courses like CA, CMA, CS and other accounting fields.

PROGRAMME OUTCOME:

The Master of Commerce programme ensures:

- To acquaint a student with conventional as well as contemporary areas in the discipline of Commerce.
- To enable a student well versed in national as well as international trends.
- To enable the students for conducting business, accounting and auditing practices, role of regulatory bodies in corporate and financial sectors nature of various financial instruments.
- To provide in-depth understanding of all core areas specifically Managerial Economics, Advanced Accounting, Income Tax Law & Accounts, Statistical analysis, Corporate legal frame work, Business Economics, Specialized Accounting, Tax Planning &management, Advanced Statistics, Business laws, Management concept, Organizational behaviour, Advance Cost Accounting, Management Accounting, Accounting for managerial decisions, Optional–Specialization Group (A) - Marketing, and Project work as well.

PROGRAMME SPECIFIC OUTCOME:

The course of Semester First M.Com has been divided into Five Papers:-

PSO: PAPER-I MANAGERIAL ECONOMICS

OBJECTIVE:

This course develops managerial, perspective to economic fundamentals as aids to decision making under given environmental constraints. The paper covers the major part of managerial Economics Scope, Nature, objective, Fundamental of Economic Concepts, Demand Analysis, Theory of Consumer Choice and Production.

- Ability to forecast demand in light of changing circumstances and to formulate business plans.
- Ability to chalk out Business Policies.
- Knowledge about Profit Planning and control.
- Skill to analyze effects of Government Policies.

PSO: PAPER-II ADVANCED ACCOUNTING

OBJECTIVE: -

The paper covers the major part of Accounting for Shares, Final Account issues related to amalgamation and Reconstruction of Company, Holding and Subsidiary company and Liquidation of Companies. The objective of this course is to expose students to accounting issues and practices such as maintenance of company accounts and handling accounting adjustments.

- To study the basic concepts of corporate accounting
- To prepare the final accounts of companies.
- To analyze the internal or external reconstructions of companies.
- To know the liquidators final statement of accounts.
- To summarize the consolidated financial statement and balance sheet for holding companies.

PSO: PAPER-III INCOME TAX LAW AND ACCOUNTS

OBJECTIVE:

The paper covers the major part of Law relating Income Tax, Taxable Incomes, Deprecation and development allowance, HUF, Appeals and revisions reference of HC and SC. The objective of this course is to help student Understand and conceptual framework of Income tax.

- To introduce the basic concept of Income Tax.
- In order to familiarize the different know-how and heads of income with its components.
- It helps to build an idea about income from house property as a concept.
- It give more idea about the income from business or profession.
- Make the students familiarizes with the concept of depreciation and its provisions.

PSO: PAPER-IV STATISTICAL ANALYSIS

OBJECTIVE

The Objective of this course is to help student learnt application of statistical tools and techniques for decision making.

1. Development of logical reasoning ability in students.
2. Knowledge about the applicability statistical investigations, data sources, classification and tabulation.
3. How to calculate and apply measures of location and measures of dispersion, skewness, correlation, regression analysis grouped and ungrouped data cases.
4.How to apply discrete and continuous probability distributions to various business problems.
5. Ability to solve statistical problems.

PSO: PAPER-V CORPORATE LEGAL FRAMEWORK

OBJECTIVE

The Objective of this course is providing knowledge of relevant provisions of various Semester laws influencing business operations.

1. To provide students' knowledge of company act with relevant provisions.
2. To provide students' knowledge of negotiable instruments holder and holder in due course and its payments.
3. Endorsement and crossing of Cheque.
4. To provide the knowledge of legal environment for security markets.

The course of Semester Second M.Com has been divided into five papers:

PSO: PAPER-VI BUSINESS ECONOMICS

OBJECTIVE:

This course develops managerial perspective to economic fundaQ1entals' as aids to decision making under given environmental constraints.

- To provide students' knowledge of Micro Economic concepts and inculcate an analytical approach to the subject matter.
- To arouse the students interest by showing the relevance and use of various economic theories.
- To apply economic reasoning to solve business problems.
- To familiarize the students with the basic concept of Macro Economics and its application.

- To aware students about Gross National Product (GNP), Net National Product (NNP) ,Income at Factor cost or National Income at Factor Prices ,Per Capita Income , Personal Income (PI) ,Disposable Income etc.
- To Study the relationship among broad aggregates.
- To apply economic reasoning to solve the problems of the economy.

PSO: PAPER-VII SPECIALISED ACCOUNTING

OBJECTIVE.

The objective of this course-is to expose students to accounting issues and practices such as maintenance of company accounts and handling accounting adjustments. Purpose to introduce the learner to advanced accounting for special types of business Expected.

- Explain the accounting procedure for partnership reorganization.
- Describe procedure for accounting for consignments.
- Describe procedure for accounting for branch and agency.
- Describe procedure for accounting for hire purchase, royalty, and investment.
- Describe procedure for accounting for foreign transactions and translation and price changes.

PSO: PAPER-VIII TAX PLANNING AND MANAGEMENT

OBJECTIVE

This course aims at making students conversant with the concept of corporate Tax planning and Indian tax laws, as also their implications for corporate Management.

- To introduce the basic concept of Income Tax
- In order to familiarize the different know-how and heads of income with its components
- It helps to build an idea about income from house property as a concept
- It give more idea about the income from business or profession
- Make the students familiarizes with the concept of depreciation and its provisions

PSO: PAPER-IX ADVANCE STATISTICS

OBJECTIVE

The objective of this course is to provide an understanding for the graduate business student on statistical concepts to include measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing, regression, and correlation analysis, multiple regression and business/economic forecasting.

By completing this course the student will learn to perform the following:

- Ability to make decisions under uncertain business situations.
- Perform Test of Hypothesis and errors, as well as calculate confidence interval for a population parameter for large sample and small sample cases. Understand ,learn and applicable the Z tests, T tests & F tests.
- Learn and ability Association of attributes for Independence as well as Goodness of Fit.
- Learn and applicable statistical quality control, interpolation and extrapolation.
- Ability to solve statistical problems.

PSO: PAPER-X BUSINESS LAWS

OBJECTIVE

The Objective of this course is providing knowledge of relevant provisions of various laws influencing business operations.

- Explain the concepts in business laws with respect to foreign trade.
- Apply the global business laws to current business environment.
- Analysis the principle of international business and strategies adopted by firms to expand globally.
- Integrate concept of business law with foreign trade.

The course of Semester Third M.Com has been divided into five papers:

PSO: PAPER-I MANAGEMENT CONCEPT

OBJECTIVE -

The Objective of this course is to help student understand and conceptual framework of management and organizational behavior.

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

PSO: PAPER-II ORGANIZATIONAL BEHAVIOUR

OBJECTIVE -

The Objective of this course is to help student understand and conceptual framework of management and organizational behavior.

- To equip the students with the basic idea and introduction on organizational behavior as a concept.
- To give a light on the concept and difference theories on motivation.
- Explain and helps the students to gain more knowledge on Group Behavior.
- To introduce the concept of leadership.
- Understand the concept of conflict management.

PSO: PAPER-III ADVANCED COST ACCOUNTING

OBJECTIVE -

This course exposes the students to the basic concepts and the tools used in cost accounting.

- To understand Basic Cost concepts, Elements of cost and cost sheet.
- Providing knowledge about difference between financial accounting and cost accounting.
- Ascertainment of Material and Labor Cost.
- Student's Capability to apply theoretical knowledge in pact
- To provide knowledge regarding costing techniques.
- To give training as regards concepts, procedures and legal Provisions of cost audit situation will be increased.

PSO: PAPER-IV MANAGEMENT ACCOUNTING

OBJECTIVE:

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

- To enlighten the students thought and knowledge on management Accounting.
- Helps to give proper idea on financial statement analysis in practical point of view.
- To introduce the concept of fund flow and cash flow statement.
- To provide knowledge about budget control keeping in mind the scope of the concept.
- To develop the knowledge and concept of marginal costing with practical problems.

PSO: PAPER-V ACCOUNTING FOR MANAGERIAL DECISIONS

OBJECTIVE

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

- Identify the role and scope of financial and managerial accounting and the use of accounting information in the decision making process of managers.
- Define operation and capital budgeting, and explain its role in planning, control and decision making.
- Prepare an operating budget, identify its major components, and explain the interrelationships among its various components.
- Explain methods of performance evaluation.
- Use appropriate financial information to make operational decisions.
- Demonstrate use of accounting data in the areas of product costing, cost behavior, cost control, and operational and capital budgeting for management decisions.

Course Content: A general description of lecture/discussion topics included in this course.

The course of Semester Fourth M.com has been divided into five papers:

Optional – Specialization Group : (A) Marketing

PSO: PAPER-A-I PRINCIPLES OF MARKETING

OBJECTIVE–

The Objective of this course is to facilitate understanding of the conceptual framework of marketing and its applications in decision making under various environmental constraints. This Paper covers the major part of Introduction of Marketing, Market Analysis, Production Decisions, Pricing Decisions, and Distribution Channels and Physical Distribution Decisions.

- To develop an idea about marketing and its functions.
- To enhance the students on consumer behaviour.
- To familiarize students about product and its classifications.
- To make them understand pricing policies.
- To introduce the concept of sales forecast.

PSO: PAPER-A-II ADVERTISING & SALES MANAGEMENT

OBJECTIVE–

This Paper covers the major part of Concept, Scope, Objective, and Functions of Advertising, Pre-Launch Advertising Decision, Promotional management, Personal Selling and Sales Management.

- Identify and respond to clients' advertising and marketing communications objectives by applying principles of marketing and communications.

- Perform a market segmentation analysis, identify the organization's target market/audience and define the consumer behaviour of each segment.
- Develop an advertising plan and present and defend it persuasively.
- Contribute to evaluating the effectiveness of advertising and marketing communications initiatives.
- Collaborate in the development of advertising and marketing communications material, in compliance with current Canadian legislation, industry standards and business practices.

PSO: PAPER-A-III MARKETING RESEARCH

OBJECTIVE–

- 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.
- define each step and concept in the marketing research process.
- relate each step to other steps in the marketing research process.
- evaluate the corporate public relations and tools.
- apply a research in the marketing area.
- realize to gather data in the marketing research.

PSO: PAPER-A-IV INTERNATIONAL MARKETING

OBJECTIVE–

To develop knowledge and understanding of key issues associated with international marketing:

- Importance of global and international marketing
- Motives to internationalization
- The influence of macro-environment on market selection
- Market entry modes
- Financial, ethical, and organizational issues involved in international marketing.
- Have developed an understanding of major issues related to international marketing

- Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
- Be able to assess an organization's ability to enter and compete in international markets.
- Develop skills to facilitate insurance product cost and pricing, marketing, and distribution.
- Develop practical skills through professional development seminars, internships, and/or practicum's in insurance and risk management.

DEPARTMENT OF LAW
LL.B. Three Year Course

Program Outcomes (POs), Program Specific Outcomes (PSOs) and Course Outcomes (Cos) .

Objective of LL.B. Three Year Course-

This programme is designed with view of spreading legal knowledge among professionals from other disciplines in the society. Its objective is to impart legal education to the students from various backgrounds and equip them to perform various roles of a legal professional, beyond the traditional role of litigation. The students will gain knowledge and develop advocacy skills which will help them in achieving their goals and objective and serve the society.

Programme Outcomes –(LL.B. Duration: 3 years Pattern: Semester pattern)

1: **Knowledge and Understanding**

Display an awareness and understanding of the ethical, social, political and economic context in which the basic concepts, values, principles and rules of the Legal System.

2: **Intellectual skills**

To present logical legal arguments by exhibiting the ability to research and critically analyse and apply legal knowledge in legal problem solving and conflicting perspectives .

3**: Professional Skills**

Communicate effectively in oral and in writing, using language and legal terminology accurately and effectively.

4: **Transferable skills**

Demonstrate an ability to organise and prioritise work and engage in effective teamwork.

5: **Employability**

Demonstrate a willingness to continuously improve skills and abilities through critical self-reflection and evaluation and initiative to find solutions to issues and problems.

Course Outcomes

(LLB Duration: 3 years Pattern: Semester pattern)

Students will be able to demonstrate that they have the ability:

1. Apply a systematic approach to the acquisition of knowledge, underpinning concepts and principles.

2. Deploy a range of subject specific, cognitive and transferable skills.

3. Evaluate the appropriateness of different approaches to solving well defined problems and communicate outcomes in a structured and clear manner.

4. Identify and discuss the relationship between personal and work place experience.

5. Analyse findings from books and journals and other data drawn from the field of study.

6. Critically assess law reform proposals and present alternatives

7. Present critical arguments, drawing on both doctrinal and policy-based perspectives from a wide range of sources, in both written and oral form.

8. Apply legal knowledge to complex problem situations and offer potential.

Program Specific Outcome

SEMESTER – I

Paper - 1

Contract -I

Students will be able to:

1. Define, distinguish and apply the basic concepts and terminology of the law of contract;

2. Define and distinguish amongst the various processes involved in contract formation;

3. Identify the relevant legal issues that arise on a given set of facts in the area of contract law;

4. Select and apply a range of approaches to written communication, and apply the critical thinking required to bring about creative solutions to complex legal problems in the area of contract law;

Paper - 2

Contract -II

Students will be able to:

1. In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract.

2. Set out a range of subject specific, cognitive and transferable skills

3. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society.

5. Formulate oral and written arguments in response to a given set of facts.

Paper - 3

Jurisprudence

Students will be able to:

1. Demonstrate an advanced and integrated understanding of the political, social, historical, philosophical, and economic context of law.

2. Engage in identification, articulation and critical evaluation of legal theory and the implications for policy.

3. Critically analyze and research complex problems relating to law and legal theory and make reasoned and appropriate choices amongst alternatives.

Paper - 4

Course Name :- Law of Tort including Motor Vehicle Accident & Consumer Protection Laws

Students will be able to:

1. To study the principles of Tortuous liability, The defenses available in an action for torts, the capacity of parties to sue and be sued and matters connection there with.

2. To study and evaluate the specific torts against the individual and property. With rapid industrialization, inadequacy of the law to protect the individual is exposed.

3. The students should reflect on the alternative forms, and also the remedies provided under the Consumer Protection Act, 2019.

Paper - 5

Course Name :- Legal and Constitutional History of India

Students will be able to:

1. To study the historical dovelopement of India about law. They able to know is dovelope in ancient time.

2. The students know how to Constitution of India is made.and what was the dovelopement about the Constitution before 1950.

SEMESTER – 2

Paper-1

Course Name :- Family Law I

Students will be able to:

1. Students studying family law learn about basic concepts like marriage, divorce, parental custody, domestic abuse and children's rights.

2. Family law examines historical and social contexts that have influenced the modern definition and regulation of families.

3. Students will gain skills of thinking, analysis, written and verbal presentation of ideas of Argument.

Paper-2

Course Name :- Family Law II

Students will be able to:

1. Students studying family law learn about concepts like Succession, Inheritance

2. Family law examines and compares personal laws

3. Students will gain skills of thinking, analysis, written and verbal presentation of ideas of Argument.

Paper-3

Law of Crimes

Students will be able to:

1. Understand and describe areas of criminal justice, law and society through a critical analysis of the subject

2. Analyze lacunas within the criminal justice system and suggest the amendments have to make to provide the justice according to the changing needs of the society.

3. Summarize the process of judicial review and identify criteria used by courts to evaluate the constitutionality of criminal law of India.

4. Identify and synthesize social theory about crime, justice, and social deviance and explain and address various obstacles and barriers experienced by individuals before, during, and after internment

5. Problem-solve complex issues in the criminal justice.

Paper - 4

The Code of Criminal Procedure, 1973, Juvenile Justice Act, 2000 and Probation of Offenders Act, 1958

Students will be able to:

1. Students will understand importance of criminal procedure followed by criminal courts.

2. It explains procedure from arrest till trials and punishments.

3. It is important legislation which gives practical knowledge to students.

4. It also covers appeals revision etc.

5. It explains hierarchy of criminal courts.

Paper - 5

Law of Evidence

Students will be able to:

1. Analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.

2. Analyse the rule relating to relevance of evidence and admissibility of evidence before the court.

3. Evaluate the rules relating to dying declaration and admissibility of dying declaration

4. Determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.

5. Analyse and evaluate the rules governing examination in chief, cross examination and reexamination,

and establish the procedures in the conduct of a civil or criminal trial

6. Determine the rules relating to competence and compellability of witnesses in relation to case study material.

Semester-3

Paper – 1

Constitutional Law – I

Students will be able to:

1. To create and set up a basic philosophical tenets of Indian Constitutional Law

2. To instill not just a bare understanding of but a perspective on constitutional developments in Indian Constitutional Law.

3. To understand the system of Government and the fundamental principles governing its organization.

4. To understand the detailed analysis of fundamental freedoms guaranteed under the Indian Constitution.

Teaching Hrs distribution per Unit/ Marks weightage per chapter

UNIT No.	**TITLE:**	**No. of Hrs:**	**Marks weight age**
Topic 1	Preamble, Indian Territory & Citizenship	15	20
Topic 2	Fundamental Rights – I	15	20

Topic 3	Fundamental Rights – II	15	20
Topic 4	Fundamental Rights – III	15	20
Topic 5			

Paper - 2

Constitutional Law II

Students will be able to:

1. To understand the form of Government- Parliamentary and Presidential.

2. To understand the Parliamentary democracy and its structure

3. To understand the contemporary status of centre-state relations.

4. To generate understanding of methods of amendment in the constitution of India.

Paper - 3

Administrative Law

Students will be able to:

1. Administrative law is mainly a judge-made law and has secured its present features through a Myriad of judicial decisions. A student got a deep knowledge of the operation and changing phenomena of these standards from a comparative angle.

2. The ever increasing number of delegated legislation in the form of rules, regulations, circulars and general orders has the characteristics of law, which though framed by administration, impose burden on the rights of citizens.

3. Analyze the scope of review of delegated legislation and the limitations on the judicial review of administrative action, the Principles of Natural Justice also have studied in detail in this course.

Paper – 4

Trust and Equity

Students will be able to:

1. To facilitate and promote awareness among the people to donate various organs of human bodyWithin preview of law.

2. To ensure people's involvement in developing a society wherein peace, justice and equality prevail.

3. To promote self employment and other ventures for the benefits of weaker sections.

Paper – 5

Professional Ethics, Bar Bench Relations & Accountancy for Lawyers

Students will be able to:

1. To understand and apply the professional ethics and ethical standard of the legal profession

2. To know and evaluate the key themes in professional ethics, in order to give them an insight.

Semester-4

Paper – 1

Labour Law-I

Students will be able to:

1. The nature and scope of labour laws

2. The rationale of labour laws in organizations.

3. To identify all aspects of Labour Law practiced in India

4. To exhibit a comprehensive theoretical and practical understanding of Labour Law

5. To demonstrate an intellectual capacity for solving industrial disputes-

Paper – 2

Labour Law-II

Students will be able to:

1. The nature and scope of labour laws

2. The rationale of labour laws in organizations.

3. To identify all aspects of Labour Law practiced in India

4. To exhibit a comprehensive theoretical and practical understanding of Labour Law

5. To demonstrate an intellectual capacity for solving industrial disputes

Paper – 3

CG Land Law

Students will be able to:

1. Understand and describe legislative power to make laws relating to land and land ceiling is

in the state list.

2. Different states have enacted their own laws on this subject and the application of these laws is varied from state to state.

3. The Constitutional perspectives relating to these subjects have to be taught as an essential part of this course.

4. Problem-solve complex issues in the land related matters and society related to policies, law enforcement, government bindings and etc.

Paper – 4

Environmental Law

Students will be able to:

1. Analyze advanced and integrated understanding of the complex body of knowledge in the field of environmental law

2. Develop the capacity to identify new law and apply existing law in the rapidly evolving legal context for environmental law

3. Understand in depth knowledge of the specialist area of environmental law and associated disciplinary areas

4. Determine and analyse the different causes of pollution and legal remedies to control it on national level.

5. Analyse and evaluate laws relating to environmental aspect on a national level and its comparison with other countries.

Paper – 5

Arbitration, Conciliation and Alternative Disputes Resolution Systems

Students will be able to:

1. Familiarize with the modalities and techniques of resolution of conflict which is a necessary component in the endeavours of developing expertise in juridical exercise.

2. To understand and analyze the traditional justice delivery system through adjudication by along with an alternative mode of dispute resolution in the common law countries.

3. To approach the processes of arbitration, conciliation and mediation in areas where the

traditional judicial system had its sway in the past and in the new areas of conflicts that demand resolution by alternative methods.

Semester-5

Paper - 1

Company Law

Students will be able to:

1. Explain and apply to various fact scenarios the concept of separate legal entity.

2. To explain the basic documents such as MOA and AOA required for company.

3. To develop the ability to identify and effectively use the corporate law resources. And to develop the ability to learn company law both independently and cooperatively in a professional environment.

4. To evaluate and analyze socially reasonable corporate behaviour.

Paper - 2

Interpretation of Statutes

Students will be able to:

1. Know that the techniques adopted by courts in construing statutes and the importance of the law making process in the present context.

2. Know that the matters to be reckoned with by legislature while enacting laws.

3. Understand and analyze the judicial interpretation, construction of words, phrases and expressions.

Paper - 3

International Law

Students will be able to:

1. Demonstrate knowledge and understanding of the international law framework, its origins and justifying theories;

2. Demonstrate capacity to assess how international law may be asserted, enforced or violated;

3. Critically evaluate the relationship between international and domestic law .

Paper - 4

Human Rights

Students will be able to:

1. Demonstrate knowledge and understanding of the international human rights framework, its origins and justifying theories;

2. Demonstrate capacity to assess how specific human rights may be asserted, enforced or violated;

3. Critically evaluate the relationship between international and domestic law on human rights;

4. Demonstrate understanding of the role of lawyers in human rights protection and capacity to contribute to ongoing processes of law reform.

Paper – 5

Moot Courts

Students will be able to:

1. Understand how to prepare a suit and how to file.

2. Know the practical approach of the law course

3. Get the practical training to make the career bright.

Semester-6

Paper – 1

Intellectual Property Rights

Students will be able to:

1. Get a holistic understanding of the complexities involved in the process of attributing intellectual property rights to people.

2. Learn the legalities of intellectual property to avoid plagiarism and other IPR relates crimes like copyright infringements, etc.

Paper - 2

Property Laws including Transfer of property Act, 1882 and Easement Act, 1882

Students will be able to:

1. Analyse and define the concept and nature of transfer of immovable property, and illustrate the different types of transfers and rules relating to it.

2. Analyse the rule relating to transfer of property within two living persons and the consequences of it

3. Evaluate the rules relating to general transfer of immovable property.

4. Determine and analyse the rules of Sale of Immovable Property and rights and liabilities of seller and buyer.

5. Analyse and evaluate the rules governing Mortgages, Leases, Exchanges, Gift and Actionable Claims rights and liabilities of transferor and transferee.

6. Analyse and evaluate the rules relating concept of easement and kinds of easement and rights and liabilities of transferor and transferee.

Paper - 3

The Code of civil Procedure, 1908 and the Limitation Act, 1963

Students will be able to:

1. Know the detail procedure for redresses of civil rights.

2. Understand, where the suit is to be filed? The essential forms and procedure for institution of suit, the documents in support and against, evidence taking and trial, dimensions of an interim order, the peculiar nature of the suits, the complexities of executing a decree and provisions for appeal and revision are all matters which a lawyer for any side is to be familiar with.

3. To have good grounding in the subject before one enters the profession.

Paper - 4

Law of Taxation

Students will be able to:

1. Know the introduction, overview and fundamental concepts of income tax law.

2. Employ a broad understanding of tax law.

3. Conduct tax law research by using research skills to interrogate primary and secondary legal materials, and analyse and synthesise complex legal information.

Paper - 5

Drafting, Pleading and Conveyancing

Students will be able to:

1. Analyze and define the concept of Pleading and various rules of pleading and able to handle the client during the course of interaction.

2. Articulate the argumentation process and apply the legal drafting abilities during the appearances before Court and Tribunals.

3. Recognize the way to move to the criminal justice system with aid of various complaints.

4. Identify and discuss the various forms of conveyancing deed such as sale deed, gift, mortgage etc.

5. Apply legal drafting skills and understand practical aspect of registration of such documents.

DEPARTMENT OF LAW
LL.B. Three Year Course

Program Outcomes (POs), Program Specific Outcomes (PSOs) and Course Outcomes (Cos) .

Objective of LL.B. Three Year Course-

This programme is designed with view of spreading legal knowledge among professionals from other disciplines in the society. Its objective is to impart legal education to the students from various backgrounds and equip them to perform various roles of a legal professional, beyond the traditional role of litigation. The students will gain knowledge and develop advocacy skills which will help them in achieving their goals and objective and serve the society.

Programme Outcomes –(LL.B. Duration: 3 years Pattern: Semester pattern)

1: **Knowledge and Understanding**

Display an awareness and understanding of the ethical, social, political and economic context in which the basic concepts, values, principles and rules of the Legal System.

2: **Intellectual skills**

To present logical legal arguments by exhibiting the ability to research and critically analyse and apply legal knowledge in legal problem solving and conflicting perspectives .

3**: Professional Skills**

Communicate effectively in oral and in writing, using language and legal terminology accurately and effectively.

4: **Transferable skills**

Demonstrate an ability to organise and prioritise work and engage in effective teamwork.

5: **Employability**

Demonstrate a willingness to continuously improve skills and abilities through critical

self-reflection and evaluation and initiative to find solutions to issues and problems.

Course Outcomes

(LLB Duration: 3 years Pattern: Semester pattern)

Students will be able to demonstrate that they have the ability:

1. Apply a systematic approach to the acquisition of knowledge, underpinning concepts and principles.
2. Deploy a range of subject specific, cognitive and transferable skills.
3. Evaluate the appropriateness of different approaches to solving well defined problems and communicate outcomes in a structured and clear manner.
4. Identify and discuss the relationship between personal and work place experience.
5. Analyse findings from books and journals and other data drawn from the field of study.
6. Critically assess law reform proposals and present alternatives
7. Present critical arguments, drawing on both doctrinal and policy-based perspectives from a wide range of sources, in both written and oral form.
8. Apply legal knowledge to complex problem situations and offer potential.

Program Specific Outcome

SEMESTER – I

Paper - 1

Contract -I

Students will be able to:

1. Define, distinguish and apply the basic concepts and terminology of the law of contract;

2. Define and distinguish amongst the various processes involved in contract formation;

3. Identify the relevant legal issues that arise on a given set of facts in the area of contract law;

4. Select and apply a range of approaches to written communication, and apply the critical thinking required to bring about creative solutions to complex legal problems in the area of contract law;

Paper - 2

Contract -II

Students will be able to:

1. In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract.

2. Set out a range of subject specific, cognitive and transferable skills

3. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society.

5. Formulate oral and written arguments in response to a given set of facts.

Paper - 3

Jurisprudence

Students will be able to:

1. Demonstrate an advanced and integrated understanding of the political, social, historical, philosophical, and economic context of law.

2. Engage in identification, articulation and critical evaluation of legal theory and the implications for policy.

3. Critically analyze and research complex problems relating to law and legal theory and make reasoned and appropriate choices amongst alternatives.

Paper - 4

Course Name :- Law of Tort including Motor Vehicle Accident & Consumer Protection Laws

Students will be able to:

1. To study the principles of Tortuous liability, The defenses available in an action for torts, the capacity of parties to sue and be sued and matters connection there with.

2. To study and evaluate the specific torts against the individual and property. With rapid industrialization, inadequacy of the law to protect the individual is exposed.

3. The students should reflect on the alternative forms, and also the remedies provided under the Consumer Protection Act, 2019.

Paper - 5

Course Name :- Legal and Constitutional History of India

Students will be able to:

1. To study the historical dovelopement of India about law. They able to know is dovelope in ancient time.

2. The students know how to Constitution of India is made.and what was the dovelopement about the Constitution before 1950.

SEMESTER – 2

Paper-1

Course Name :- Family Law I

Students will be able to:

1. Students studying family law learn about basic concepts like marriage, divorce, parental custody, domestic abuse and children's rights.

2. Family law examines historical and social contexts that have influenced the modern definition and regulation of families.

3. Students will gain skills of thinking, analysis, written and verbal presentation of ideas of Argument.

Paper-2

Course Name :- Family Law II

Students will be able to:

1. Students studying family law learn about concepts like Succession, Inheritance

2. Family law examines and compares personal laws

3. Students will gain skills of thinking, analysis, written and verbal presentation of ideas of Argument.

Paper-3

Law of Crimes

Students will be able to:

1. Understand and describe areas of criminal justice, law and society through a critical analysis of the subject
2. Analyze lacunas within the criminal justice system and suggest the amendments have to make to provide the justice according to the changing needs of the society.
3. Summarize the process of judicial review and identify criteria used by courts to evaluate the constitutionality of criminal law of India.
4. Identify and synthesize social theory about crime, justice, and social deviance and explain and address various obstacles and barriers experienced by individuals before, during, and after internment
5. Problem-solve complex issues in the criminal justice.

Paper - 4

The Code of Criminal Procedure, 1973, Juvenile Justice Act, 2000 and Probation of Offenders Act, 1958

Students will be able to:

1. Students will understand importance of criminal procedure followed by criminal courts.
2. It explains procedure from arrest till trials and punishments.
3. It is important legislation which gives practical knowledge to students.
4. It also covers appeals revision etc.
5. It explains hierarchy of criminal courts.

Paper - 5

Law of Evidence

Students will be able to:

1. Analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.
2. Analyse the rule relating to relevance of evidence and admissibility of evidence before the court.
3. Evaluate the rules relating to dying declaration and admissibility of dying declaration
4. Determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.
5. Analyse and evaluate the rules governing examination in chief, cross examination and reexamination, and establish the procedures in the conduct of a civil or criminal trial
6. Determine the rules relating to competence and compellability of witnesses in relation to case study material.

Semester-3

Paper – 1

Constitutional Law – I

Students will be able to:

1. To create and set up a basic philosophical tenets of Indian Constitutional Law
2. To instill not just a bare understanding of but a perspective on constitutional developments in Indian Constitutional Law.
3. To understand the system of Government and the fundamental principles governing its organization.
4. To understand the detailed analysis of fundamental freedoms guaranteed under the Indian Constitution.

Teaching Hrs distribution per Unit/ Marks weightage per chapter

UNIT No.	TITLE:	No. of Hrs:	Marks weight age
Topic 1	Preamble, Indian Territory & Citizenship	15	20
Topic 2	Fundamental Rights – I	15	20
Topic 3	Fundamental Rights – II	15	20
Topic 4	Fundamental Rights – III	15	20
Topic 5			

Paper - 2

Constitutional Law II

Students will be able to:

1. To understand the form of Government- Parliamentary and Presidential.
2. To understand the Parliamentary democracy and its structure
3. To understand the contemporary status of centre-state relations.
4. To generate understanding of methods of amendment in the constitution of India.

Paper - 3

Administrative Law

Students will be able to:

1. Administrative law is mainly a judge-made law and has secured its present features through a Myriad of judicial decisions. A student got a deep knowledge of the operation and changing phenomena of these standards from a comparative angle.
2. The ever increasing number of delegated legislation in the form of rules, regulations, circulars and general orders has the characteristics of law, which though framed by administration, impose burden on the rights of citizens.
3. Analyze the scope of review of delegated legislation and the limitations on the judicial review of administrative action, the Principles of Natural Justice also have studied in detail in this course.

Paper – 4

Trust and Equity

Students will be able to:

1. To facilitate and promote awareness among the people to donate various organs of human bodyWithin preview of law.

2. To ensure people's involvement in developing a society wherein peace, justice and equality prevail.

3. To promote self employment and other ventures for the benefits of weaker sections.

Paper – 5

Professional Ethics, Bar Bench Relations & Accountancy for Lawyers

Students will be able to:

1. To understand and apply the professional ethics and ethical standard of the legal profession

2. To know and evaluate the key themes in professional ethics, in order to give them an insight.

Semester-4

Paper – 1

Labour Law-I

Students will be able to:

1. The nature and scope of labour laws

2. The rationale of labour laws in organizations.

3. To identify all aspects of Labour Law practiced in India

4. To exhibit a comprehensive theoretical and practical understanding of Labour Law

5. To demonstrate an intellectual capacity for solving industrial disputes-

Paper – 2

Labour Law-II

Students will be able to:

1. The nature and scope of labour laws

2. The rationale of labour laws in organizations.

3. To identify all aspects of Labour Law practiced in India

4. To exhibit a comprehensive theoretical and practical understanding of Labour Law

5. To demonstrate an intellectual capacity for solving industrial disputes

Paper – 3

CG Land Law

Students will be able to:

1. Understand and describe legislative power to make laws relating to land and land ceiling is in the state list.
2. Different states have enacted their own laws on this subject and the application of these laws is varied from state to state.
3. The Constitutional perspectives relating to these subjects have to be taught as an essential part of this course.
4. Problem-solve complex issues in the land related matters and society related to policies, law enforcement, government bindings and etc.

Paper – 4

Environmental Law

Students will be able to:

1. Analyze advanced and integrated understanding of the complex body of knowledge in the field of environmental law
2. Develop the capacity to identify new law and apply existing law in the rapidly evolving legal context for environmental law
3. Understand in depth knowledge of the specialist area of environmental law and associated disciplinary areas
4. Determine and analyse the different causes of pollution and legal remedies to control it on national level.
5. Analyse and evaluate laws relating to environmental aspect on a national level and its comparison with other countries.

Paper – 5

Arbitration, Conciliation and Alternative Disputes Resolution Systems

Students will be able to:

1. Familiarize with the modalities and techniques of resolution of conflict which is a necessary component in the endeavours of developing expertise in juridical exercise.

2. To understand and analyze the traditional justice delivery system through adjudication by

along with an alternative mode of dispute resolution in the common law countries.

3. To approach the processes of arbitration, conciliation and mediation in areas where the

traditional judicial system had its sway in the past and in the new areas of conflicts that demand resolution by alternative methods.

Semester-5

Paper - 1

Company Law

Students will be able to:

1. Explain and apply to various fact scenarios the concept of separate legal entity.

2. To explain the basic documents such as MOA and AOA required for company.

3. To develop the ability to identify and effectively use the corporate law resources. And to

develop the ability to learn company law both independently and cooperatively in a professional environment.

4. To evaluate and analyze socially reasonable corporate behaviour.

Paper - 2

Interpretation of Statutes

Students will be able to:

1. Know that the techniques adopted by courts in construing statutes and the importance of the law making process in the present context.

2. Know that the matters to be reckoned with by legislature while enacting laws.

3. Understand and analyze the judicial interpretation, construction of words, phrases and expressions.

Paper - 3

International Law

Students will be able to:

1. Demonstrate knowledge and understanding of the international law framework, its origins and justifying theories;

2. Demonstrate capacity to assess how international law may be asserted, enforced or violated;

3. Critically evaluate the relationship between international and domestic law .

Paper - 4

Human Rights

Students will be able to:

1. Demonstrate knowledge and understanding of the international human rights framework, its origins and justifying theories;

2. Demonstrate capacity to assess how specific human rights may be asserted, enforced or violated;

3. Critically evaluate the relationship between international and domestic law on human rights;

4. Demonstrate understanding of the role of lawyers in human rights protection and capacity to contribute to ongoing processes of law reform.

Paper – 5

Moot Courts

Students will be able to:

1. Understand how to prepare a suit and how to file.

2. Know the practical approach of the law course

3. Get the practical training to make the career bright.

Semester-6

Paper – 1

Intellectual Property Rights

Students will be able to:

1. Get a holistic understanding of the complexities involved in the process of attributing intellectual property rights to people.

2. Learn the legalities of intellectual property to avoid plagiarism and other IPR relates crimes like copyright infringements, etc.

Paper - 2

Property Laws including Transfer of property Act, 1882 and Easement Act, 1882

Students will be able to:

1. Analyse and define the concept and nature of transfer of immovable property, and illustrate the different types of transfers and rules relating to it.
2. Analyse the rule relating to transfer of property within two living persons and the consequences of it
3. Evaluate the rules relating to general transfer of immovable property.
4. Determine and analyse the rules of Sale of Immovable Property and rights and liabilities of seller and buyer.
5. Analyse and evaluate the rules governing Mortgages, Leases, Exchanges, Gift and Actionable Claims rights and liabilities of transferor and transferee.
6. Analyse and evaluate the rules relating concept of easement and kinds of easement and rights and liabilities of transferor and transferee.

Paper - 3

The Code of civil Procedure, 1908 and the Limitation Act, 1963

Students will be able to:

1. Know the detail procedure for redresses of civil rights.
2. Understand, where the suit is to be filed? The essential forms and procedure for institution of suit, the documents in support and against, evidence taking and trial, dimensions of an interim order, the peculiar nature of the suits, the complexities of executing a decree and provisions for appeal and revision are all matters which a lawyer for any side is to be familiar with.
3. To have good grounding in the subject before one enters the profession.

Paper - 4

Law of Taxation

Students will be able to:

1. Know the introduction, overview and fundamental concepts of income tax law.
2. Employ a broad understanding of tax law.
3. Conduct tax law research by using research skills to interrogate primary and secondary legal materials, and analyse and synthesise complex legal information.

Paper - 5

Drafting, Pleading and Conveyancing

Students will be able to:

1. Analyze and define the concept of Pleading and various rules of pleading and able to handle the client during the course of interaction.
2. Articulate the argumentation process and apply the legal drafting abilities during the appearances before Court and Tribunals.
3. Recognize the way to move to the criminal justice system with aid of various complaints.
4. Identify and discuss the various forms of conveyancing deed such as sale deed, gift, mortgage etc.
5. Apply legal drafting skills and understand practical aspect of registration of such documents.

Department of Geography

Program Outcomes

B.A. – Geography

Geography is the study of places and the relationships between people and their environments. Geographers explore both the physical properties of Earth's surface and the human societies spread across it. They also examine how human culture interacts with the natural environment and the way those locations and places can have an impact on people. Geography seeks to understand where things are found, why they are there, and how they develop and change over time. The study of the diverse environments, places and spaces of Earth's surface and their interactions. It seeks to answer the questions of why things are as they are where they are. The modern academic discipline of geography is rooted in ancient practice, concerned with the characteristics of places in particular their natural environments and peoples as well as the relations between the two.

Program specific Outcomes

Name of the Program: - B.A.- Geography

1. To provide general understanding of the conceptual and dynamic aspects of Geomorphology in various fields with main focus on its applied aspects.
2. To expose the students to the basic principles in climatology.
3. To expose the students to the basic principles in population theory and illustrate the same with application.

4. To introduce the student to collection, presentation of data and train them to use statistical techniques to analyze data.

5. Introduce students to computer (GIS and Remote Sensing): components of computer –Hardware and Software and use of computers in geography.

6. To make them understand the structure of the area's economy and its economic relationship with other areas around the world.

7. To explore the importance of conserving biodiversity to maintain ecological balance through sustainable development as well as national and international concerns on various environmental issues such as climate change.

8. The student will get familiarized with the theoretical foundations and conceptual grounding of this branch, understand and evaluate the concept of region in geography and its role and relevance of regional planning in India.

9. To expose the students to the basic concepts of disaster, its impact on humans and various measures to mitigate it.

10. To familiarize the students to the relationship between politics, places and policies

Course Outcomes:

Course outcome

B.A. – I

Subject: Geography

Course outcome

Paper - I: Physical Geography (Code - 0117)

1. Understanding the theories and fundamental concept of Geotechtonic and Geomarphalogy.
2. Understanding earth's techtonic and structural evolution.
3. Gain knowledge about earth's interior.
4. Develop an idea about concepts of plate tectonics.
5. Acquire knowledge about types of folds and faults and earthquake volcanoes and resultant landform.

Paper -II: Human Geography (Code - 0118)

1. Understanding depth knowledge of the history of human geographic thought.
2. Understand different part of geographical knowledge.
3. Understand man-environment relationship.

Paper -III: Practical Geography

1. Comprehend the concept of sale representation of data through cartkgrams.
2. Develop an idea about different types of thematic mapping techniques.
3. Learn the usages of survey instruments. Map making and scale of the maps and diagrams.

B.A. - II

Subject: Geography

Course outcome

Paper -I: Economic and Resources Geography (Code - 0187)

1. Understanding of the concept and classification of resources.
2. Understanding of the approaches to resources utilization.
3. Appreciate the significance of resources.
4. Understanding of the concept of sustainable resources development.

Paper -II: Geography of India (Code - 0188)

1. Knowledge of physical division of India.
2. Knowledge of climate condition of India.
3. Knowledge of socio-economic characteristics of India.
4. Have knowledge about the character and profile of different soil, forest and crops.

Paper -III: Practical Geography

1. Learn the significance of statistics in Geography.
2. Recognize the importance and application of statistics.
3. Know about the difference type sampling.
4. Brings direct interaction of different types of surveying instruments like pragmatic camps.
5. Develop idea about different types thematic map.

B.A. - III

Subject: Geography

Course outcome

Paper -I: Resources and Environment (Code - 0248)

1. Understanding of the importance of resources.
2. Understanding of the environmental related problems.
3. Understanding of the climate change with reference to the geological time scale.
4. Assess the origin greenhouse gases and global warming.
5. Develop the skill of mapping water, bodies, forest from satellite images.

Paper -II: Geography of India (with Special Reference to Chhattisgarh) (Code – 0249)

1. Knowledge of physical and cultural characteristics of India and Chhattisgarh state.
2. Understanding the physiological division in Chhattisgarh.

Paper -III: Practical Geography

1.Conducting field excursions and preparation of field report.

2. Understand Topographical Sheets and socio-economic survey of village.

Department of Economics

Name of the Program: - B.A. & M.A. in Economics

Program Specific Outcomes

After successful completion of the course the students would be able to:

1. Understand the key concept of economics, theories and models.

2. Comprehend current perspectives and issue in major areas of the Indian economy and World economy.

3. Have a comprehensive knowledge of the socio-economic issues and make a critical appraisal of policy measures addressing their effectiveness.

4. Understand the relevance and application of economic theories to contemporary economic issues.

5. Prepare for advanced studies leading to M.Phil. and Ph. D in economics.

6. Equip themselves to be trained quality teachers, researches and policy makers.

Course Outcomes

B.A. - I

Subject: Economics

Paper-I: Micro Economics (Code: 0111)

Upon successful completion of this Paper the student will be able to:

1. Factors affecting consumer demand.

2. Production and cost matrix in output determination.

3. Various market forms and determination of prices in these markets.

4. How factor prices are determined

5. Factors of welfare as conceptualized by economist.

Paper-II: Indian Economy (Code: 0112)

Upon successful completion of this Paper the student will be able to:

1. How Indian economy is changing toward a market based economy.

2. What are basic features of Indian Economy?

3. Planning in India and economic reform introduced and rationale behind reform.

4. Role of Industry and various policy decisions to induce industrial revolution in India.

5. Importance of foreign sector and rationale behind export promotion schemes.

B.A. - II

Subject: Economics

Paper-I: Macro Economics (Code: 0181)

Upon successful completion of this Paper the student will be able to:

1. National income and understand how it is calculated.

2. Factors responsible for employment determination.

3. Consumption and investment and their importance in national income determination.

4. Trade cycles and various factors responsible for trade cycle.

5. Export- Import and its related concepts

6. International institutions for trade and Economics.

Paper-II: Money Banking and Public Finance (Code: 0182)

Upon successful completion of this Paper the student will be able to:

1. How value of money changes.
2. Inflation and measures to control inflation.
3. Banks, their role in economy and Central Banking System.
4. State and effect of its intervention in the economy.
5. Sources of various revenues to state.
6. Public debt and economics effects.

B.A. - III

Subject: Economics

Paper-I: Development and Environmental Economics (Code: 0242)

Upon successful completion of this Paper the student will be able to understand:

1. Economic well being of various nations; Poverty and emerging trends to measure poverty and deprivation.
2. Population and Economy linkage, various perspective developments.
3. Environment, importance of study of Environment Economy and sustainable development.
4. Various socio- economic issues affecting mankind.

Paper-II: Statistical Methods (Code: 0243)

Upon successful completion of this Paper the student will be able to:

1. Statistics, data collection
2. Measurement of representative values.
3. Easement of various representative values.
4. Inter-relationship between social and economic variables.
5. Construction of Index numbers and Measurement of trend

M.A. - Ist Sem

Subject: Economics

Paper-I: Micro Economics

Upon successful completion of this Paper the student will be able to:

1. Define Demand Theories Apply elasticity on price demand measurement.
2. Uses of various methods to implore consumer behaviors.
3. Impact of Time pattern on production process.
4. Cost & Revenue analysis in various market forms.

Paper-II: Macro Economics

Upon successful completion of this Paper the student will be able to:

1. Understand the Flow of National Income.
2. Various assessment of national income.
3. factors affecting employment and income.

4. Consumption & Investment.

5. Money and its supply and demand.

Paper-III:

Upon successful completion of this Paper the student will be able to:

1. To measure Skewers in data.

2. Measure relationship between economic variables.

3. Interdependence and permutation between various factors.

4. How to fine values through Extrapolation and Interpolation.

5. Time based variables and importance and construction of Index Number.

Paper-IV: Indian Economy

Upon successful completion of this Paper the student will be able to:

1. Component and structure of National Income.

2. Demographic features of India.

3. Agriculture and its importance in Indian economy.

4. Industrialization and initiative taken for industrialization of India.

5. Regional imbalance.

Paper-V: Industrial Economics

Upon successful completion of this Paper the student will be able to:

1. Firm Industry and factors affecting their location.

2. Factors affecting productivity & capacity utilization and profitability of a firm.

3. Funding of Industry and firm.

4. Labor related issues.

5. Some big industries.

M.A. - IInd Sem.

Subject: Economics

Paper-I: Micro Economics Analysis

Upon successful completion of this Paper the student will be able to:

1. How a firm takes decisions to maximize its objective.

2. Determination of returns to various factors of production.

3. Welfare economics imply value judgment and assess principles of welfare.

4. Analyze economy as a whole.

5. Operational problem solution.

Paper-II: Macro Economics Analysis

Upon successful completion of this Paper the student will be able to:

1. Understand price rise and employment inflation trade off.

2. Growth dilemmas unstable & unsteady growth.

3. Monetary policy for stability and growth.

4. Govt.'s policy and its economic implications.

5. Complexities of various monetary and fiscal measures.

Paper-III: Research Methodology and Computer Application

Upon successful completion of this Paper the student will be able to:

1. Research designs Methods to carry out researches.

2. Sampling Data collection to study and understand a problem.

3. Presentation of data.

4. Formulation of hypothesis and testing of hypothesis.

5. Uses of computer for Statistical Analysis.

Paper-IV: Indian Economy Policy

Upon successful completion of this Paper the student will be able to:

1. Uses of planning process for growth and desired changes in Indian Economy.

2. Problem of poverty and measurs taken to remove poverty and employment generation policies.

3. Working Finance Commissions to foster centre state relation.

4. Trade Reforms and contribution of export - import in Indian economy.

5. Budget and its importance international economic associations and their importance for India.

Paper-V: Labour Economics

Upon successful completion of this Paper the student will be able to:

1. Labour Market Interplay of forces of Labour market.

2. Employment, wage and wage determinations, role of bargaining power.

3. Formation of trade union, utility and functioning of trade union.

4. Govt. intervention in labour market.

M.A. - IIIrd Sem

Subject: Economics

Paper-I: Economics of Growth

Upon successful completion of this Paper the student will be able to:

1. Essence of economic growth, impediments to growth.

2. Measurements of Growth, Alternative discourse on Growth.

3. Perspectives of various economists on development and their formulation for speedy development.

4. Contraction in strategies of development.

Paper-II: International Trade

Upon successful completion of this Paper the student will be able to:

1. Importance of trade in economy of a nation.

2. Why does different nation trade.

3. What are conditions of trade and how these terms for trading determined.

4. Affects of trade on various macro parameters of Economy.

5. Balance of payment and measure to bring about desirable changes in international payment position of a country.

6. Determination of external value of domestic currency.

Paper-III: Public Finance

Upon successful completion of this Paper the student will be able to:

1. Taxation importance of taxation for Government.

2. Impact of taxes on production, consumption and distribution.

3. Changing pattern of taxation in India.

4. Different forms of taxation

5. Public expenditure and Public debt and its impact on economy.

6. Process of budget making.

Paper-IV: Environment Economics

Upon successful completion of this Paper the student will be able to:

1. Need to study Environment as part of Grand Economics Theory.

2. Environment as a factor in general welfare.

3. Economic welfare and its measurements.

4. Impact of Environment influencing activities on market forces of demand and supply.

5. Price calculation when Environmental influence affects market forces.

Paper-V: Demography

Upon successful completion of this Paper the student will be able to:

1. Factors governing population changes in population.

2. Role of Economic forces in shaping population trend of a nation.

3. Role of population in Economic parameters of a nation.

4. Factor responsible for birth rate, death rate, infant mortality rate.

5. Economic and demographic inter linkages.

M.A. - IVth Sem.

Subject: Economics

Paper-I: Economics of Development and Planning

Upon successful completion of this Paper the student will be able to:

1. Process of Planning, Planning in India and achievements of Indian Five Year Plan.

2. Various theoretical perspectives on strategies to remove back wardress.

3. Role of Govt. and Banking System in development of a Nation.

4. International comparison on two bases of poverty, prosperity and happiness.

5. Some important macro issues and their solution.

Paper-II: International Economics

Upon successful completion of this Paper the student will be able to:

1. Role of bilateral and multilateral integration.
2. Various international cooperative formations and their compact on different economies.
3. International capital movement, its advantages and disadvantages.
4. Various international Institutions for general economic improvement of participating nations.
5. Impact analysis of structural reforms of 1991 on the foreign trade of India.

Paper-III: Public Economics

Upon successful completion of this Paper the student will be able to:

1. Federal system of India.
2. Finances of States and Centre.
3. Constitutional provision to distribute resources between center and states and among states.
4. Idea of fiscal federalism.
5. Analysis of budgets of center and Chhattisgarh.
6. Fiscal analysis of Chhattisgarh.

Paper-IV: Economics of Social Sector

Upon successful completion of this Paper the student will be able to:

1. Pollution, impact analysis of Pollution and causes of Pollution.
2. Various laws to protect environment.
3. Uses of various natural resources and their implications and consequences.
4. Education as an important economic variable and outcome.
5. Health as an important economic variable and outcome.

Paper-V: VIVA-VOCE

Upon successful completion of this Paper the student will be able to:

Students are evaluated for their comprehensive ability to understand and explain two various economic facts of life through personal interface.

DEPARTMENT OF HOME SCIENCE

BA (Home Science)

Objective of Program

- Home Science is both Science and Social science are related multi disciplinary field of Study Programme has been designed to integrate its application of science and humanities to create a cadre of home scientists to improve the quality of life of individuals, family, community and nation.
- Home science program practical oriented and helps to develop skills to empower the cadre required towards innovations entrepreneurship along with professional and employable skills.
- Home science is a course encompassing variety of subjects with the result it covers all the benches of home science namely food science & Nutrition.
- Human development and Resource management and Textiles and clothiers

1. To impact the fundamental knowledge in all major domains of Home science.
2. To develop competency in application of knowledge in different settings ie family, community and workplace.
3. To impact and develop skills for professional life.
4. Foster research and development, teaching, government and public service and entrepreneurship.

- The curriculum envisages to cater to the developmental trends in higher education incorporating multidisciplinary skills, professional and soft skill such as team work, communication skills, leadership skills, time management skills and inculcate human values, professional ethics and the spirit of innovation entrepreneurship and critical thinker among student.
- Curriculum aims to equip the students with competencies like problem solving analytical reasoning and moral and ethical awareness.

Programme outcome in Home Science

- Deliver quality education through learning while doing.
- Instant both generic and subject specific skills to succeed in the employment market.
- Develop resourcefulness and competence to leader service to families, communities and the national at large.
- Promote research innovation and development following all disciplines in Home science.
- Appreciate and benefit from the symbiotic relationship among the five core discipline of Home science. Resource Management, food and nutrition textiles and clothing, human development and extension.

Course Outcome

- Home Science subject offers

1. All around development of the personalities of the members in home and family.
2. Preparation for careers.

- The overall objectives of the learning outcomes based curricular framework are

1. Enable prospective students, parents, employees and other understand the nature and level of learning outcomes knowledge, skills, attitudes and values or attributes a graduate in a programme should be capable of demonstrating on successful completion of the programme.
2. Maintain national standard and international comparability of learning outcomes and academe standard to ensure global competitiveness and to facilities student mobility.
3. Provide higher education institution an importance part of reference for designing teaching learning strategies ass.

Program Specific Outcomes

BA-I Home Science

Paper-1

Anatomy Physiology & Hygiene

- This paper has been structured to provide information about the anatomy and the functioning of human body.
- It proposes to explore the students to personal, social, environmental and industrial Hygiene.
- Deals with importance and purification of Air and water.
- Focus on first aid Home Nursing.

Paper-2

Home Science Extension Education

- Knowledge about areas of Home Science and its inter relationship with extension.
- Focus on role of Home Scientist in community development.
- Awareness of community development problems.
- Focus on Teaching method and Aids.
- Deals with National and International Agencies and their collaboration with Home Science.
- Curriculum Planning in Home Science.
- Job opportunities in Home Science.

BA-II Home Science

Paper-1

Fiber & Clotting Science

- Students get acquaintance with textile fibers.
- Knowledge of different weaves.
- Learn different printing methods.
- Knowledge of different stain removal.
- Impact of clothing on personality .

Paper-2

Family Resource Management

- Focus on management of resources in family for achieving family goals.
- To create awareness among student about management in family as well as other systems.
- Students learn values, goal and standards.
- Awareness of family budget.
- Learn skill of time energy management.
- Emphasis on work simplification techniques.
- To understand various element and principles of art used in the interior decoration.

BA-III Home Science

Paper-1

Human Development

- Knowledge about physiology of pregnancy.
- Different aspects of human growth and development.
- To understand human Holistic development.
- Theories and significance of play.
- Learn about habit formation.

- Knowledge about causes and remedial measures of child delinquency.

BA-III Home Science
Paper-2
Food and Nutrition Science

- Knowledge of all different micro and macro nutrients.
- Understanding of different food groups.
- Study of food preservation, food poisoning and food storage.
- Meal planning in Normal and Therapeutic Nutrition.

Department of English

BA, BSc & BCom (PART – I, II & III) FOUNDATION COURSE (ENGLISH LANGUAGE)

OBJECTIVES OF THE PROGRAMME:

The college follows Hem Chand Yadav Vishwavidyalaya, Durg syllabus for the English Language as the second paper of Foundation Course; Hindi language being the first paper.

The objectives of the prescribed course are:

- To develop an aesthetic sense and love for literature, culture, tradition and language in learners.
- To help them appreciate ancient classic texts.
- To encourage them towards further learning.
- To provide learners with a basic understanding of the language.

PROGRAMME OUTCOME:

English being the second language in the state and the other in the official use and understanding nationwide the course of English Language programme hence ensures:

- The proper reading and writing of the prominent English texts
- Understanding of the texts
- Development of the curiosity and aesthetic sense towards the language
- Learning of the basic grammar and phonetics
- Learning of the syntax and morphology of the language
- Use of the correct language
- Ensures the learner read the other texts in the language

COURSE OUTCOME:

The subject Foundation Course has been divided into two separate papers; Paper-II – English Language. The paper is of maximum marks 75 and minimum pass mark is 26. The candidate has to pass each paper separately.

The English Language of BCA Part- II and III are of maximum marks of 50 each and the minimum pass mark is 20 each.

At the end of the course in the English Language the student can:

- **Read** and write the in the language
- **Acquisition -** Student will acquire knowledge of the use and interpretation of

the texts.

- **Engage** them in the life-long learning process.
- **Write –** Student can write and describe his thoughts in the language
- **Assist** students in the field of literacy, intellectuality, flexibility and adaptability to different cultures.
- **Understanding –** Students will develop an understanding of the less familiar texts and will read them more for the proper usage.
- **Description** – Students will able to describe the incidences and events in the language
- **Aesthetic sense -** Students will develop an aesthetic sense and a sense of love towards the literature and learning.
- **Expressive -** The learning of the literature will make them more expressive and sharpen their artistic outlook.
- **Language –** Students will learn and use the literary language in their writings and will also able to create poetry and prose of their own.
- **Future Scope** – Students can secure their future in the fields of translation, transcription, teaching and education, language curators etc.

PROGRAMME SPECIFIC OUTCOME:

The course of BA in the English Language has been divided into one paper in an academic year:

PSO: BA/BSc/B Com Part-I – English Language and Indian Culture

The paper highlights ancient and old cultural traditions in Ancient India. The paper enables students to:

- To read and understand about Ancient and Old Indian culture and traditions
- Ancient Indian texts, myths and the impact of Ancient Indian culture on other cultures
- The age of Ramayana and Mahabharata and the impact of these epics in the development of the culture and traditions of the South-Asian countries
- Impact of Buddha and Buddhism in India and the neighbouring countries. Also, the development of Buddhism as a religion worldwide
- Ancient Indian Science and knowledge; India being the centre of literature and cultural exchange
- The old India and her boundaries, the rich heritage, the flourishing culture, Ancient Indian civilization, Harappa, Mohenjo-Daro and Indus-River Valley.
- The Ancient Indian Literature and the impact of the literature worldwide.

PSO: BA/BSc/B Com/BCA Part-II – Foundation English

The paper focuses on the Ancient Indian Science and the cultural ethics of India. The paper acquaints students with:

- The fine knowledge of Ancient India
- Ancient Indian Scientists, Mathematics and Mathematicians, medicines, medical practices and the ancient texts based on the same
- The colonial Indian culture and the impact of the colonization on the Indian sub-continent
- The introduction of Western Science and Western Culture
- Modern Indian scientists and the contribution of the Indians in the development of the Modern Science
- The basic knowledge of the language with the fine grammar, phonetics and the vocabulary
- Students will collect much information on the Science in Ancient India with the knowledge of the English language

PSO: BA/BSc/B Com/BCA Part-III – Aspects of English Language and Development

The paper is a collection of essays on the general information and awareness; also it helps students to advance in the language. Students also get glimpse of the English Literature with the collections of short-stories in the prescribed book. The textbook also helps students in:

- Collecting the information on the development and the advancement of the modern technique
- The geography of the state, soil, crops and water
- General information on the types of pollution and the increasing water crisis
- The ethics and conducts of the day-to-day life
- English language and the basic genres of the literature
- Famous essayists and short-story writers
- Famous Indo-Anglian and Anglo-Indian writers
- Texts describing the achievements of the modern Indians
- The development of modern science and technique in India
- Sci-fi and other such forms of the literature
- Also, the learners will develop a positive attitude towards the future and love for learning
- Advance grammar, sentence formation and vocabulary.

BACHELOR OF ARTS ECONOMICS

First, Second &Third Year

Course Outcomes

On the completion of the course student will be able to:

1: Understand the fundamental

concepts of Economics 2:
Understand the theory of
Production and Cost
3: Understand the process of commercial
and central Banking 4: Study economic
development and economic growth
5: Study Environment, ecology and pollution control.

PSO -1 BA-I Paper-I Micro Economics

1. Micro economics knowing the decision making of consumer.
2. Identifying the nature of revenue and cost of production.
3. Comprehending the demand function and production function.
4. Realizing various production theories.
5. Clarifying the meaning of Marginal, average, total revenue,
6. Marginal, average and total cost and its implication.
   Awareness of different markets structure.
7. Understanding pricing in different markets.
8. Judging the factor pricing.

PSO -2 BA-I Paper-II Indian Economy

1. Understanding characteristics, features, structural changes in Indian Economy.
2. Economy Comprehension of the nature and impact of New
   Economic Reforms on The Indian Economy.
3. Knowing the problems of unemployment, poverty, rising economic.
4. Social inequality and problems of regional imbalances in India.
5. Evaluating the changing role of agriculture, industrial and service sector.

PSO -3 BA-II Paper-I Macro Economics

1 Macro Economics identifying the basic concepts and theories of macro-economics.

2 Awareness about changing macro-economics policies and theories.

3 Understanding various concepts such as; GDP, GNP NNP, Personal

4 Income, Disposable Income, Per Capita Income, and National Income. Identifying the factors determining gross domestic product, employment

5 The general level of prices, and interest rates.

6 Realizing the law of markets, consumption function and investment

7 Function. Judging the role of fiscal policy and monetary policy in a Developing

8 Knowing features, phases and theories of trade cycles.

9 Evaluating types, merits and demerits of taxes.

10 Comprehending the role of public finance in developing economy.

PSO -4 BA-II Paper-II Money Banking and Public Finance

1. Understanding the meaning, function and role of commercial banking.

2. Comprehending the procedure of an account opening, operating and closing
3. Knowing the structure, function and role of RBI in economic development.
4. Judging the progress of financial inclusion.
5. Evaluating the importance, characteristics and components of the financial Market.

PSO -5 BA-III Paper-I Development and Environmental Economics

1. Understanding the role and types of development banks and non-banking financial intermediaries.
2. Identifying recent trends in Indian Banking such as E- Banking, MICR.
3. Understanding the efficiency and equity implications of market interference, including government policy.
4. Developing research knowledge in economics.
5. Developing the knowledge about theories of economic growth and development policies.

PSO -6 BA-III Paper-II Statistical Methods

1. Research Methodology understanding the basic framework of research process.
2. Defining various research designs and techniques.
3. Identifying various sources of information for literature review and data collection.
4. Discussing the ethical dimensions of conducting applied research.
5. Appreciating the components of scholarly writing and evaluate its quality.
6. Knowing various aspects of Research in Economics.
7. Understanding various data analysis techniques (Mean, Mode, Median, Range, Standard Deviation, Karl person coefficient of correlation).
8. Ability to interpretation of data and report writing.

MASTER OF ARTS ECONOMICS

I & II SEMESTER

CORSE OUTCOME:

On completion of the course, Students will be able to:

- ✓ Understand the concept of Globalization.
- ✓ Understand concept of budget and deficit finance.
- ✓ Understand economics of Agriculture.
- ✓ Understand Micro and Macro-economic analysis.
- ✓ Understand classical and Keynesian theories of output and employment.
- ✓ Detailed study of Inflation and Business Cycles

M.A. SEMESTER-I and SEMESTER-II

PAPER	SEMESTER-I	Marks		SEMESTER-II	Marks	
		Theory	Internal Assessment.		Theory	Internal Assessment
PAPER-I	Micro Economics-I	80	20	Micro Economics-II	80	20
PAPER-II	Macro Economics-I	80	20	Macro Economics-II	80	20
PAPER-III	Quantitative Methods	80	20	Research Methods & Computer Application	80	20
PAPER-IV	Indian Economy	80	20	Indian Economic Policy	80	20
PAPER-V	Industrial Economics	80	20	Labour Economics	80	20

PROGRAMME OUTCOMES:

Upon completion of the B.A. Degree Programme, the graduate will be able to:-

1 The students should be able to analyze the socio-political and economic issues related to national and international scenario.
2 Apply supply and demand analysis to examine the impact of government regulation.
3 Curriculum helps to create the capacity to Work effectively in a multi-disciplinary environment.
4 The students should able to find a career in Economics.
5 The students should be able to understand how the economic policies affect the common people through the societal interactions.
6 Understand the circular flow model and use the concepts of aggregate demand and aggregate supply to analyze the response of the economy to disturbances.

PROGRAMME SPECIFIC OUTCOMES:

SEMESTER – I

PSO-1 Subject- Micro Economics I

1. Students should be able to develop knowledge about production, demand, market and pricing.
2. Students should be able to develop knowledge about monetary policy and its implications in economy.
3. Students should be able to develop knowledge about economic planning in India and recent changes in our economy.
4. Gain knowledge regarding the implications of mathematical tools in economic planning.

PSO-2 Subject- Macro Economics I

- ✓ Concepts and methods of National income accounting.
- ✓ Theories of aggregate income and employment.
- ✓ Theories of consumption function and investment spending.
- ✓ Rate of interest- Classical, Keynesian and IS-LM Model.
- ✓ Basics of international trade -open economy and closed economy, balance of payments.

PSO – 3 Subject- Quantitative Methods

- ✓ 1 Basic concepts of statistics such as measures of central tendency, dispersion, skewers and kurtosis.
- ✓ 2 Elementary probability theory including probability distributions.
- ✓ 3 Methods of sampling and census.
- ✓ 4 Correlation and simple regression
- ✓ 5 Index numbers.

PSO-4 Subject- Indian Economy

1. Students should be able to develop knowledge about the role of International trade in economic.
2. Helps to understand the basic theories of economic growth and development.
3. Students should be able to develop knowledge about the recent trends in banking trends.

5. Students will understand the use of mathematics and statistics in economic analysis.

PSO-5 Subject- Industrial Economics

1. Classical trade theories- Adam Smith's absolute advantage, Ricardo's comparative advantage, Neo-classical models, offer curve, Huckster-Ohlin theorem.
2. Terms of trade and gain from trade, Perish-Singer views on deterioration of terms of trade, Myrdal's theory of backwash effect and growth
3. International trade policy- free trade and protection, globalization, capital movements
4. Foreign exchange markets, exchange rates, balance of payments
5. Evolution of international monetary system.

SEMESTER –II

PSO- 1 Micro Economics II

1. To analyse the cost conditions of the industries
2. To understand the decision making in market
3. To understand the concept of input output analysis
4. To give awareness about the market conditions
5 To insist an entrepreneurial skill among the students
6. To provide an idea about how externalities affect the market
7. To introduce the general equilibrium concept
8. To make aware how decision making leads to social welfare
9. To provide an idea about how lemon market influence the general market
10. To provide an idea about distribution theory

PSO-2 Macro Economics II

1. To provide knowledge about monetary transactions
2. To understand the theories of inflation
3. To understand about the unemployment problem
4. To understand about the
macro economic principles 5
To provide knowledge about
business cycle
6. To provide knowledge about goods market and money market equilibrium

PSO-3 Research Methods and Computer Application

1. To introduce the basic principles of fiscal economics
2. To understand the difference between public and private finance
3. To understand the source of public expenditure
4. To understand the source of public revenue
5. To make awareness about budget preparation

PSO-4 Subject- Indian Economic Policy

1. Students should be able to develop knowledge about the role of International trade in economics.
2. Helps to understand the basic theories of economic growth and development.
3. Students should be able to develop knowledge about the recent trends in banking trends.
4. Students will understand the use of mathematics and statistics in economic analysis.

PSO-5 Subject- Labour Economics

- ✓ Analyse the nature and scope and significance of labour markets in developing countries.
- ✓ Analyse the nature and scope of Industrial Relations
- ✓ Describe the different theories of wage determination
- ✓ Analyse the level of discrimination in labour market in India
- ✓ Restate the concept of social security and social insurance
- ✓ Analyse the impact of economic reforms on labour market.
- ✓ Describe the evolution of machinery for labour administration in India
- ✓ Restate and analyse the origin of International labour organization
- ✓ Knowledge about labour problems and helps to develop employability skill

History Department

B.A.-History

Program Outcome

After completion of BA in History a student will develop:

1. Understand and evaluate the historical development of various nations, societies and culture.
2. Understand Indian and world history with scientific, critical and rational approach.
3. Prepare themselves for career option in fields like Civil services, teaching.

Program Specific outcome

Name of the program - B.A

There are different score in different areas like sericulture department As demonstrator, care taker pf the forum trainer for others etc.

a) Archaeologist: - Archaeological swivey of India with private firms related to Archaeology.

b) Historian: - with so much debate over the authenticity of historical books, there is over increasing demand for Historians.

c) Public Service :- for History graduate, the option of public service like UPSC, CGPSC are open.

d) Teacher:- After B.A in History one can always find employment as a History teacher.

e) Social Worker:- NGO and social wall fare organization also employ History graduate.

f) Writer subject export :- Now a days a lot of publishing houses seek subject matter expertsive publication of school text book od supplementary reading materials.

g) Travel and Tourism Export: - with an extensive knowledge of History Historical monuments, History graduate can work as a travel export for tourist spot of Historical importance.

B.A.1 (History)

Paper-1

Subject- Ancient Indian History, Culture and Archaeology Program Outcome-

a) Students are able to understand the genesis of History and Development of History writing in different country as well as in India.

b) Source of ancient India Civilization like and Aryan.

c) Political and religious changes in 6century B.C Mauryan empire etc. and student.

d) From this segment of the syllabus student aware about the History of ancient India from 1206 AD.B.A -1 (History)

Paper-2

Subject: - World History (1453-1789)

Program Outcome-

a) This paper deal with political, Economic and Social changes of European countries like France, Spain America Russia etc.

b) Narrate the enlightened despotism in Europe especially in France, Prussia and America.

c) Discus the reform of peter the Great and Catherine -2 of Russia.

d) Discus the causes for the American War of independence.

B.A.- 2(History)

Paper-1

Subject:- medium History of India -1206 AD to 1769 AD

Program outcome-

a) Understand the foundation of the Delhi Sultanate and the Sultanate Administration.

b) From this paper student can learn about formation, expansion and consolidation of Mughal Empire.

c) Explain the administration and art and architecture of Mughals.

d) Recognize the Socio, Economic and Religions condition under Vijayanagar Empire.

e) Analysis the rise of the Marathas and the contribution Shivaji.

B.A-2 (History)

Paper-2

Subject – World History 1890 AD to 1960 AD.

Program outcome -

1) This paper deal with changes of Europe oftoe the France Revolution and political changes in the countries like Russia, Italy and Persia.

2) Freedom struggle of Greece and the German War.

B.A -3 (History)

Paper-1

Subject :- Modern History of India-(1761-1950) Program Outcome-

a) Discus the advent of Europeans and their administration.
b) Evaluate the Anglo-Mysore Wars and Anglo Sikh Wars.
c) Retire the permanent revenge system and Lord Ripens local self- Government.
d) Understand about the Socio-religious reform movement in 19th century.

B.A-3 (History)

Paper-2

Subject- World History of (1871-1945 AD)

program outcome-

1) This paper gives an idea about the Cold War and its consequences problem of third world war this foundation and whole of UNO.
2) This paper gives an idea about the wise of nationalism in Europe, consequences and results of 1st and 2nd world war.
3) The Syllabus covers changes of China from its opening to outside world to the foundation of the Republic.

DEPARTMENT OF POLITICAL SCIENCE
M. A. (POLITICAL SCIENCE)
COURSE OUTCOME/PROGRAMME OUTCOME/ PROGRAMME SPECIFIC OUTCOME:

I. COURSE OUTCOME:

1. INDIAN POLITICAL THOUGHT

CO 1- Tracing the evolution of Indian political thought from ancient India to modern India.

CO 2- Analysing the nationalist thought of Raja Rammohun Roy.

CO 3- Assessing the nationalist thought of Bankim, Vivekananda and Tagore.

CO 4- Discussing the nationalism of Gandhi, M. N. Roy, Narendra Deva and Syed Ahmed Khan.

CO 5- Explaining the formation of the Congress in 1885.

CO 6- Tracing the Bengal Partition and the Swadeshi movement.

CO 7- Analysing the Gandhian Movements such as the Khilafat, Non Cooperation, Civil Disobedience movements.

CO 8- Assessing the alternatives to the Indian National Congress- the Forward Bloc, Congress Socialist Party, Communist Parti of India.

CO 9- Describing the movements against caste and untouchability, Ambedkar's views on Social Justic and the depressed classes.

CO 10- Analysing the Working Class and Peasant movements under colonial rule

CO 11- Discussing the roots of communalism- Savarkar and Hindu Nationalism and Jinnah and the two nation theory

CO 12- Estimating the contribution of the August 1942 movement, the INA and the naval uprising.

2. GOVERNMENT AND POLITICS IN INDIA

CO 1- Outlining the basic values and philosophy of Indian Constitution as expressed in the Preamble.

CO 2- Studying Fundamental rights , duties and Directive Principles of State Policy. **CO 3-** Examining Indian federalism through Centre-state relations.

CO 4- Evaluating the structures of government at the National level. **CO 5-** Evaluating the structures of government at the State level. **CO 6-** Examining the role of Political parties in Indian Democracy.

CO 7- Studying the Election Commission and electoral process in India.

CO 8- Assessing Judicial Activism in India with particular reference to Supreme Court.

CO 9- Studying the process of interaction between society and politics in contemporary India- Caste, tribe and religion.

CO 10- Creating awareness about social movements and empowerment related to women.

3. COMPARATIVE GOVERNMENT AND POLITICS

CO 1- Tracing the evolution of Comparative Politics as a discipline and drawing a distinction between Comparative Politics and Comparative Government.

CO 2- Investigating the nature and scope of Comparative Politics.

CO 3- Analysing the approaches the approaches and models of comparison: systems analysis; structural functionalism; and institutional approach.

CO 4- Critically analyzing the features of a liberal democratic and socialist political system with focus on UK, USA and the People's Republic of China.

CO 5- Discussing the features of a federal system with special reference to USA and Russia. **CO 6-** Conducting an intensive comparative study of the Executive (UK, USA, France and

Russia); Legislature (UK, USA and the PRC); the Judiciary (UK, USA and PRC).

CO 7- Critically looking at the rights of the citizens of UK, USA and PRC from a

comparative perspective.

4. INTERNATIONAL ORGANIZATION

- The expected outcome of the paper is to familiarise students with the International
- workings and functioning of International Organisations, especially the United

Organisations

- Nations and enable them to understand the different issues taken up by the UN.

5. WESTERN POLITICAL THOUGHT

CO 1- Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato; Roman Political Thought: its contributions with special emphasis on the emergence of Roman law.

CO 2- Examining the features of Medieval Political Thought.

CO 3- Evaluating the Renaissance; political thought of Reformation; and Machiavelli.

CO 4- Critically examining Bodin's contributions to the theory of Sovereignty; Hobbes as the founder of the science of materialist politics; Locke as the founder of Liberalism with focus on his views on natural rights, property and consent; and Rousseau's views on Freedom and Democracy; Bentham's Utilitarianism; and John Stuart Mill's views on liberty and representative government.

CO 5- Taking an insight into the following: Hegel's views on Civil Society and State;

Utopian and Scientific socialism: basic characteristics.

CO 6- Examining the varieties of non-Marxist socialism: Fabianism, Syndicalism, Guild Socialism, German Revisionism.

6. Course Title : State Politics in India

Course Code : PS 404

Credits : 6 credits

Course Outcome : This course on the state politics in India will develop an understanding in the students about the historical and emerging trends in political process in the India states. The students will understand the federal process in India. The issues underlying political dynamics of regions, the changing power relations between centre and states over a period of time and the nature of party system and electoral politics at the state level.

07. COMPARTIVE POLITICS OF DEVELOPMENT COUNTRY

CO 1- Examining diverse political systems: Liberal-democratic, Authoritarian, Socialist forms of political systems.

CO 2- Exploring the Constitution of UK: salient features; the executive – the Crown, Prime Minister and cabinet; the legislature: House of Lords, House Commons, speaker and Committees; Party System in UK.

CO 3- Exploring the US Constitution:salient features; the executive: President; Legislature: Senate. House of Representative; Speaker; Judiciary: the composition and role of the Supreme Court; Bill of Rights; Party System.

CO 4- Making a comparative analysis of the following institutions of UK and USA: Legislature, Executive and party systems.

CO 5- Exploring the Chinese Constitution: salient features in the light of the General Principles; the Executive; Legislature; Judiciary; and the role of the Communist Party.

8. INDIAN FOREIGN POLICY

India is an emerging power trying to influence the event in the international system. Due to the accelerated economic development and growth rate, it has been attracting the attention of both global powers and smaller powers. This is the result of sustained effort that has been made since independence. At the time of her nationalist movement against British imperialism, India was on of the few countries in the word to view her independence struggle as a part of the global trends of anti-colonialism and anti-imperialism. After independence, her foreign policy was design to forge friendly relations with all nation irrespective of there ideology, to realize and promote her national interest. In the subsequent years these principals have remained the bed rock of her foreign policy in spite of different pulls and pressure both form within and out side.

A students of this course studies India's Foreign policy; its determinants; the role played by different institution in the policy formulation as well as implementation. Further, the students evaluates India's relation with neighbors as well as with global powers. Critically the course provides a comprehensive understanding of India of global theatre. It provides greater scope for employment in the policy planning division of ministry as consultants and researchers.

9. PRINCIPAL OF INTERNATIONAL POLITICS

Students will be familarised with different theories on International Politics,

International

and to make them aware of the different units and actors that operate in the Politics International system which determine the domestic and foreign policies of a nation state. The students are also expected to be able to grasp the operation of various international organisations, and how the national interests of nation states are attained and defended. Students are also expected to understand power politics and relations among states, while also making them aware of the different characteristics and parameters of national power

10. PUBLIC ADMINISTRATION

CO 1- Explaining the nature, scope and evolution of Public Administration; Private and Public Administration; Principles of Socialist Management.

CO 2- Discussing making of Public Policy Making and methods of Implementation **CO 3-** Analysing the major Concepts in Public Administration.

CO 4- Tracing the Challenges in the discipline of Public Administration like New Public Administration (NPA); Comparative Public Administration (CPA) and Development Administration.

CO 5- Discussing the Ecological approach to Pub. Adm.

CO 6- Analysing the Administrative Processes: decision making; communication and control; leadership; co-ordination.

CO 7- Discussing Weberian and Marxian theories of bureaucracy.

CO 8- Studying the Organisation of the Union Government and State Government. **CO 9-** Examining the Institutions of Local Self Government in India

CO 10- Assessing the relationship between the Citizen and Administration: Lokpal and

Lokayukt.

CO 11- Understanding the concept of District Administration in India.

CO 12- Examining the Institutions of Financial Administration in India.

CO 13- Analysing the Civil Service in India.

CO 14- Explaining the Planning and Planned Administration in India. Continuity and Change in Indian Administration.

11. Course Title : Research Methodology

Course Code : PS 401

Credits : 6

Course Outcome : This paper trains the students to undertake research by familiarizing them with the basic and advance tools and techniques of field studies. So after competing it the students will be able to design research project and programmers in diverse areas of political science.

12. GOVERNMENT AND POLITICS IN INDIA

CO 1- Introducing the Indian Constitution with a focus on the role of the Constituent Assembly and examining the essence of the the Preamble.

CO 2- Examining the Fundamental Rights and Duties of Indian citizens with a study of the significance and status of Directive Principles.

CO 3- Assessing the nature of Indian Federalism with focus on Union-State Relations.

CO 4- Critically analyzing the important institutions of the Indian Union: the Executive: President; Prime Minister, Council of Ministers; Governor, Chief Minister and Council of Ministers; The legislature: Rajya Sabha, Lok Sabha, Speaker, Committee System, State Legislature, The Judiciary: Supreme Court and the High Courts: composition and functions- Judicial Activism

CO 5- Looking at the Constitutional Amendment Procedure with focus on the main recommendations of the Constitutional Review Commission (Venkatachalliah Commission)

CO 6- Critically evaluating the Indian Party system – its development and looking at the ideology of dominant national parties

CO 7- Evaluating the role of various forces on Indian politics: religion; language; caste; tribe; regionalism; business; working class and peasants

CO 8- Evaluating the Electoral Process in India with focus on the Election Commission:

Composition, Functions and Role

CO 9- Investigating the New Social Movements since the 1970s: environmental movements, women's movement and human rights movement

13. CONTEMPORARY POLITICAL AND ADMINISTRATIVE ISSUES IN INDIA

CO 1- Explaining the determinants and features of Indian Foreign Policy.

CO 2- Evaluating the role of UN and assessing its relevance in future.

CO 3- Analysing the various dimensions of the working of the Indian Administrative system- PMO, Cabinet Secretariat, UPSC (Recruitment and Training of civil servants)

CO 4- Understanding the concept of Human Rights. Assessing the availability of Human Rights in the Constitution of India. Studying the State Human Rights Commission.

CO 5- Examining the dynamics of Globalisation.

CO 6- Understanding the working of Urban and Rural Self Government in India with special reference to West Bengal

CO 7- Explaining the Processes and Procedures of Union and State Legislatures.

PROGRAMME OUTCOME

PO1-Political Science and Society: understanding the inter relationship between policy decisions and its effects on society. This is achieved through a comprehensive teaching of the practice of public administration in India.

PO2-Critical thinking: the ability to analyse and predict socio political phenomena based on the study of existing socio economic determinants and past experiences. This goal is achieved by training students in the different methods and tools of investigation such as empirical research methods, survey research and data analysis of subject responses. Some of the research projects carried out by the students are ***Water***

Supply and Sanitation Provisioning in Schools in Kolkata; The Role of The Media in The 16th Lok Sabha Elections; Women's Empowerment and Local Self- Government: Kolkata Municipal Corporation Case Study.

PO3 - Effective citizenship: the course curriculum inculcates among students a basic understanding of the rights and duties of citizenship and thereby to act as responsible citizens through the observation of important days such as Independence Day, Republic Day and also spreading awareness in society through street plays based on specific socio political issues such as domestic violence, disillusioned youth of the materialistic world etc.

PO4 - Communication: Establishment of linkages between academics and civil society at large so as to successfully address socio political problems. The fortnightly wall journal is a means for keeping the entire student population up to

date with political occurrences both global and domestic. Debates, seminars and panel discussions are also regularly organised on relevant themes and participation is sought from experienced resource persons. Some of the events in this regard have been an interactive session on the Presidential Election In America with members of the American Senate, Senator Wayne Harper, a Utah State Senator (Republican Party) and Mrs. Aruna Miller, a Maryland House Delegate (Democratic Party) and Mr. Greg Pardo, Assistant Public Affairs Officer, US Consulate Kolkata; a panel discussion and debate on ***Role of the Media in Politics in 21st Century India***

PO5- Individual and team work: Function effectively as an individual and as a member/leader in different social settings. This aim is achieved through team research and presentations, especially inter college student seminars which have addressed themes such as ***Diverse Paradigms of Indian Democracy: Crises and Challenges*** and ***The Indian Parliament: A critical Retrospect*** and also by participating in the Youth Parliament competition organised by the Department of Parliamentary Affairs, Government of West Bengal

PROGRAMME SPECIFIC OUTCOME

PS0 1 - Understanding the nature and developments in national and international politics PSO2 - Analysing the Indian constitutional provisions, major legislations and reforms.

PSO3- Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian society

PSO3 -Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers.

PSO4 - Encouraging a comprehensive, comparative understanding of specific world constitutions such as UK, USA, China, Russia, Switzerland and France.

PSO5 - Developing knowledge of administrative studies with special reference to Indian administrative structures and practices.

PSO6 - Examining India's foreign relations with her neighbours and great powers.

PSO7 -Use of case study method for analysing the working of important international and regional organisations like UN, EU, ASEAN etc.

BACHELOR OF ARTS POLITICAL SCIENCE
First, Second &Third Year

Course Outcome:

01 Students will be able to access the primary literature, identify the relevant work for particular topic and evaluate the content of this study.

02 Establish the ideal political system and encourage students to participate in awareness programme.

03 The students should know the importance of democracy as the back bone of the nation. 04 Understand Constitutional Framework of state and central government.

05 Know about Right to Information Act.

06 Understand the basic concepts of political theories 07 Study the fundamental right and duties in reality 08 Analyze the thoughts of Political Thinkers.

09 To analyze the source and making of Constitution and understand the objectives of constitution.

10 To understand the importance of Preamble of the Constitution, Fundamental Rights, Directive Principles of State Policy

11 To analyze the working of the Union Executive - President, Vice-President, Prime Minister, Council of Ministers; State Executive- Governor, Chief Minister and Council of Ministers.

12 To understanding the working of the Union Legislature-Parliament-Composition and Functions and the Composition and functioning of the State Legislature-Vidhan Sabha; Panchayati Raj Institutions

13 To analyze the working of Judiciary-Supreme Court, High Courts, Judicial Review and Judicial

14 To Analyze the Federalism and its Working with reference to Centre-State Relations 15 To understand demand for State Autonomy; Emerging Trends in Indian Federalism.

16 To understand the working of Election Commission, Electoral Process and its defects and Voting Behavior, Electoral Reforms, Problem of Defection.

17 To analyze the Party System in India: National and Regional Political Parties, Interest and Pressure Groups.

18 Role of Caste, Religion, Language, Regionalism in India, Politics of Reservation, Emerging Trends and Challenges before Indian Political System.

PROGRAMME SPECIFIC OUTCOME:

The course of B A First Year Political Science has been divided into two papers:-

PSO 01 B.A – I Paper - 1 Political Theory

1. Understanding the origin and nature of State.
2. Assessing the social issues from the political perspective.
3. Becoming a leader of the nation with actual constitutional knowledge.
4. Have a wide variety of positions: One can work as a political advisor, a policy maker, a political journalist
5. It helps to know the political activities taking place in other countries

and its impact on own nation.

6. One can be able to make a substantially critical and scientific contribution to government and society.

PSO 02 B.A – I Paper - II State Government and Polity

1. Political Science goes beyond the politics carried out in a national social system.
2. Political Science helps to understand the concept and origin of power and different types of power relationships.
3. In each and every field of society there is politics (e.g. in sports club in companies, in the pub, even in the relationship of couples).
4. It raises many questions: who decides? Who has more influence? How are the decisions being made? What are the consequences of a decision?
5. Raising questions is not enough: A political scientist also tries to find the answers in a responsible, scholarly and scientific way.
6. It makes to understand the inter-connection between local, state, national and international politics.

PSO 03 B.A – II Paper – I Western Political Thought

1- Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato; Roman Political Thought: its contributions with special emphasis on the emergence of Roman law.

2- Examining the features of Medieval Political Thought

3- Evaluating the Renaissance; political thought of Reformation; and Machiavelli.

4- Critically examining Bodin's contributions to the theory of Sovereignty; Hobbes as the founder of the science of materialist politics; Locke as the founder of Liberalism with focus on his views on natural rights, property and consent; and Rousseau's views on Freedom and Democracy; Bentham's Utilitarianism; and John Stuart Mill's views on liberty and representative government.

5- Taking an insight into the following: Hegel's views on Civil Society and State; Utopian and Scientific socialism: basic characteristics.

6- Examining the varieties of non-Marxist socialism: Fabianism, Syndicalism, Guild Socialism, german revisionism.

PSO 04 B.A – II Paper – II Comparative Governance and Politics

1 Understanding the nature and developments in national and international politics

2 Analyzing the Indian constitutional provisions, major legislations and reforms.

3 Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian society

4 Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers.

5 Encouraging a comprehensive, comparative understanding of specific world constitutions such as UK, USA, China, Russia, Switzerland and France.

6 Developing knowledge of administrative studies with special reference to Indian administrative structures and practices.

7 Examining India's foreign relations with her neighbors and great powers.

8 Use of case study method for analyzing the working of important international and regional organizations like UN, EU, ASEAN

PSO 05 B.A – III Paper – 1 International Politics

1- Explaining scope and subject matter of International Relations as an autonomous academic discipline.

2- Approaches and methods to study the discipline through Political realism, Pluralism and Worlds system's Model.

3- Examining the issues of Underdevelopment, Terrorism, Regionalism and Integration that characterizes the Post Second World War order.

4- Studying the role of Diplomacy, Propaganda and Military capabilities in the making of foreign policy.

5- Explaining certain basic concepts like Globalization in contemporary world order. 6- Describing the Cold War phases and understanding the post-cold war era.

7- Discussing the developments in European Ethno-nationalism since 1990's. Tracing the growth of European Union

8- Examining Indian Foreign Policy: Basic Principles, Evolution and Bilateral Relations.

9- Evaluating the working of UN and its organs; Peace keeping Function and Human Rights. 10- Analysing the Foreign Policy of USA and China.

11- Studying the developments in third world countries in post-world war II era like NAM: Relevance, ASEAN, SAFTA and SAARC, OPEC, OAU, West Asia-Palestine problem after Cold War.

PSO 06 B.A. – III Paper - 2 Public Administration

1- Explaining the nature, scope and evolution of Public Administration; Private and Public Administration; Principles of Socialist Management.

2- Discussing making of Public Policy Making and methods of Implementation 3- Analyzing the major Concepts in Public Administration.

4- Tracing the Challenges in the discipline of Public Administration like New Public Administration (NPA); Comparative Public Administration (CPA) and Development Administration

5- Discussing the Ecological approach to Pub. Adm.

6- Analyzing the Administrative Processes: decision making; communication and control; leadership; co-ordination.

7- Discussing Weber an and Marxian theories of bureaucracy

8- Studying the Organization of the Union Government and State Government. 9- Examining the Institutions of Local Self Government in India

10- Assessing the relationship between the Citizen and Administration: Lokpal and Lokayukt. 11- - Understanding the concept of District Administration in India.

12- Examining the Institutions of Financial Administration in India. 13- Analyzing the Civil Service in India.

14- Explaining the Planning and Planned Administration in India. Continuity and Change in Indian Administration.

Department of Hindi

Program outcomes

Student seeking admission for B.A. and M.A. programme is expected to imbue with following quality which helps them in their future life to achieve the expected goals. a. Realization of human values.

b. Sense of social service.

c. Responsible and dutiful citizen.

d. Critical temper.

e. Critical ability.

Program Specific outcomes

Name of the Program: B.A. and M.A. - Hindi

On completion of B.A. and M.A. (Hindi), students are able to:

1. to understanding to basic concept and subject of Hindi and its origin
2. to make or not the importance of subject Hindi and its Branches
3. to understand various aspect of Hindi literature with a process to reach method and giving new mode and direction.
4. to make a attempt in different area and theory such as vocabulary and vice versa.
5. to understand in the literature more in a border areas then many confined to subject.
6. to know about Hindi literature its roots cause perspectives and methods.
7. Elaborating and understanding its philosophical methods of Hindi Literature.
8. Evaluating the concept of Hindi from past to present and making the society more closely through literature.

B.A. I (Hindi)
Paper – I Subject –Prachin Hindi Kavya (Paper code – 0103)

Program outcome

1. Understanding of Hindi Literature and language of Bhaktikal and Ritikal.
2. Differentiation and departure points of Hindi literature and language of Bhaktikal and Ritikal.
3. Understanding the role played by the poets of Bhakti ….. literature and society.
4. Describing the progressive nature of sant Kabir Das and his writings.
5. Describing the Rama Bhakti poetry of Tulsidas along with the philosophy of Bhalti…… 6. Describing the Krishna leela poetry of Soordas by relating it with his philosophy of his life.

7. Describing the poems of Ghananand in context with his love of life.

B.A. I (Hindi) Paper – II Subject –Hindi Katha Sahitya (Paper code – 0104) Program outcome

1. Understanding the vision of Premchand about middile class and his concern for strengthening the freedom movement in India through Gaban novel.
2. Understanding the social consciousness of Premchand, Prasad, Yashpal, Fanishwar Nath Renu, Mohan Rakesh, Bhishm Sahani and Rangey Raghav through their short stories.
3. Understanding the origin of Hindi novel and short stories.
4. Identifying the dialects of Hindi novels and short stories family.
5. Understanding the concept of history of Hindi novel and sort storys.

B.A. II

Paper – I Arwachin Hindi Kavya (Paper code – 0173)Program outcome

1. Describing the philosophy of life as well as poems of chhayawadi and purvwari kavya writers – Maithili Sharan Gupt, Jayshankar Prasad, Suryakant Tripathi Nirala.
2. Describing the poems of Agey in context with his experience of life.
3. Describing the poems of Makhan Lal Chaturvedi in context with nationlizm, socio and cultural.

B.A. II
Paper – II
Hindi Nibandh Tatha Anya Gadya Vidayen (Paper code – 0174)

Program outcome

1. Understanding the drama Andher Nagaree written by Bhartendu Harishchandra in description machinery of adulterous government.
2. Understanding the cultural consciousness of Hazari Prasad Dwivedi, Vidyaniwas Mishra and Ramvriksha Benipuri.
3. Understanding the thoughts of Ramchandra Shukla and Harishankar Parsai about modern society.
4. Understanding the importance of environment protection through Babu Gulab Ray essay.

B.A. III (Hindi) Paper – I Subject –Janpadiy Bhasha Sahitya (Chhattisgarhi)(Paper code – 0233)

Program outcome

1. Understanding the concept of history of local language and literature.
2. Analysing the development of Chhattisgarhi boli.
3. Understanding the importance of Chhattisgarhi poem, essay and other writing.
4. Understanding the local writer Sant Dharmdas, Lakhan Lal Gupt, Dr. Satya Bhama Adil, Dr.

Vinay Pathak and Mukund Koushal through.

B.A. III (Hindi) Paper – II Subject –Hindi Bhasha aur Sahitya ka Itihas (Paper code – 0234)

Program outcome

1. Understating the origin of Hindi language and its literature.
2. Identifying the dialects of Hindi language family.
3. Analyzing the development of aryabhasha and other Hindi language.
4. Understanding the concept of history of literature.
5. Understanding the basis of the classification of Hindi literature.
6. Understanding the importance and basis of the name given to each period of Hindi literature.
7. Understanding the features of Adikal, Bhaktikal, Ritikal and Adhunikkal in context of sociocultural and political condition of the period.
8. Identifying the eminent Hindi writers of each period.

M.A. (Hindi) Semester -I

Course Outcomes

Paper	Subject Name	Course Outcome
Paper - I	Aadikal and Madhyakal	Understanding the concept of history of literature. Understanding the basis of the classification of Hindi literature. Understanding the importance and basis of the names given to each period of Hindi.
Paper - II	Prachin and Madhyakalin Kavya	Describing the progressive nature of sant Kabir and his writing. Describing the Prithviraj Raso poetry of Chandvar Dayi and the Padmavat poetry of Jaysi.
Paper - III	Chhayawad and Purvwarti Kavya	Describing the philosophy of life as well as poems of chhayawadi and purvwarti kavya writers – Maithili Sharan Gupt, Prasad, Nirala and Mahadevi Verma.
Paper - IV	Natak Ekanki and Charitatmak Kriti	Understanding the history of development of Hindi drama short stories.

Semester –II

Paper	Subject Name	Course Outcome
Paper - V	Utter Madhya kal and Adhunikal	Understanding the reason of emergence of ritikal and adhunik kal in Hindi literature. Understanding the literary trends ritikal and adhunik kal.
Paper - VI	Madhyakalin Kavya	Understanding the role played by the poet of Bhakti calt in literature and society. Discribing the Krishna leela poetry of
		soordas by relating it with his philosophy of his life. Discribing the rama bhakti poetry of tulsidas along with the philosophy of bhakti cult. Discribing the content and the skill of writings of Bihari in context of the socio-cultural condition of his period.
Paper - VII	Prayogwadi and Pragativadi Kavya	Understanding of development of modern Hindi poetry. Differentiation and departure points of modern Hindi poetry. Ability to think about modern Hindi poetry as Agyeya, Muktibodh and Nagarjun.
Paper - VIII	Upanyas Nibandh and Kahani	Understanding the vision of premchand about middle class and his concern for strengthening the freedon movement in India through Godan novel. Understanding the cultural consciousness of Hazari Prasad Dwivedi. Understanding the spirit of Balkrishn Bhatt and Ramchandra Shukla. Understanding the thoughts of Vidya Niwas Mishra and Harishankar Parsai about modern society.

Semester –III

Paper	Subject Name	Course Outcome
Paper – I	Sahitya ke siddhant tatha alochna shastra	To provide knowledge about the kavya lakshan, kavya hetu and kavya prayojan. To provide about the Ras siddhant, paribhasha evam swaroop, ras ke prakar. Understanding the ritti, alankar, vakrokti, dhwani and aouchitya siddhant paribhasha evam swaroop.

Paper – II	Bhasha vigyan	Understanding of hindi language as linguistics. Differentiation and departure points of hindi language and linguistics. Ability to think about hindi language and linguistics.
Paper – III	Kamkaji hindi eavm ptrakarita	Understanding the meaning, concept and importance of functional hindi. Understanding various forms of functional hindi according to its area of application.
Paper - IV	Bhartiya sahitya	Understanding of development of Indian literature and comparative literature. Differentiation and departure points of Indian literature. Ability to think about Indian literature and translation.

Semester –IV

Paper	Subject Name	Course Outcome
Paper - V	Hindi alochana tatha samiksha shastra	Understanding of the development of Indian and western poetics. Differentiation and departure points of Indian poetics. Ability to think about the development of Indian and western poetics.
Paper - VI	Hindi Bhasha	Understanding the origin of Hindi language. Identifying the dialects of Hindi language family. Analysing the development of Hindi language.
Paper - VII	Media lekhan eavm anuwad	Understanding various forms of writing in media. Understanding the importance of translation. Understanding the concept of proof reading.
Paper - VIII	Janpadiy bhasha aur sahitya (Chhattisgarhi)	Understanding the local language and literature. Analysing the development of Chhattisgarhi boli. Understanding the importance of Chhattisgarhi poem, essay and other writing.

Department of SOCIOLOGY

- ***B.A. Part I***

Paper I: General Sociology

- Through the development of an understanding of sociological theories and concepts students candemonstrate the role of theory in Sociology.
- Students can demonstrate an understanding of the diverse forms and sources of social stratification,inequality and difference that exist in society.
- Students will develop understanding of the social and cultural processes and structures that informsocial interact. Students can articulate an understanding of how culture and social structure operate.
- Students will develop an understanding of the reciprocal relationship between individuals andsociety.

Paper II: Indian Society

- Understand the basic knowledge of Indian Society.
- Understand the Hinduand Muslim Social organization.
- Describe the economics and political institution of Indian Society.
- Understand the functions of Indian Social System.

- ***B.A. Part II***

Paper I: Social Change

- Describe the social and cultural changes in Indian society.
- Understand the theory of Social change and co-relate with contemporary Society.
- Analyze the cultural process.
- Understand the social movement in present and post scenario.

Paper II: Social Problems in India

- This paper will develop theoretical understanding to study the individual behavior and socialproblems.
- Students get acquainted about the various social problems like child labour and abuse,unemployment, corruption, terrorism, casteism and communalism and gender discrimination.
- Students develop conceptual understanding about poverty and unemployment and studied about thetwo main poverty abolishment programs in rural India like MNREGA and IRDP.
- Students acquainted about affirmative action regarding backward caste and minorities.

- ***B.A. Part III***

Paper I: Sociological Theories

- To understand the role of theory in sociology such that the student will be able to define theory,describe and illustrate its role in building sociological knowledge.
- Compare and contrast basic theoretical orientations in reference to social phenomena.
- Understand and learn how theories reflect the historical and social contexts of the

times andcultures in which they were developed.

Paper II: Research Methods

- Understand the Research and Social Research.
- Understand the basic knowledge of Social Research.
- Development the comparative understanding of technique of research.

Paper III: Social Anthropology

- Understand the basic knowledge of Anthropology.
- Basic understanding of tribal culture.
- Analyze the Economic and ceremonial exchange among tribes.
- Understand the magic religion and science among tribes.
-

M.A. SOCIOLOGY – 4 Semesters Postgraduate programme

Programme Outcomes (PO)

PO1. Students would be able to think critically on societal issues and its national & global implications.

PO2. Students would be able to shoulder social and ethical responsibilities in its true form and hence develop into a better citizen.

PO3. Students would be able to perceive social issues both objectively and subjectively.

PO4. Students would be able to develop better social interaction skills for greater exchange of thoughts and ideas.

PO5. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO6. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people,media and technology.

PO7. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO8. The students will be able to demonstrate compassionate social concern and act with a cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO9. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO10. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO11. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1.The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Tradition. Students would be able to understand sociological phenomena of individuals, socio-ethnic structures, socio-cultural institutions and socio-economic inequality.

PSO2.The students after the completion of this programme will be able to contemplate and comprehend Philosophical and Conceptual Foundation of Social Research. Students would be able to effectively communicate and draft sociological concepts and theories associated with real life situations.

PSO3.The students after the completion of this programme will be able to contemplate and comprehend Social Change in India. Students would be able to perform analytical thinking on the basis of survey, census & research of qualitative and quantitative data & information.

PSO4.The students after the completion of this programme will be able to contemplate and comprehend Rural Sociology. Students would be able to become a thorough professional with social intellect so as to have career opportunities galore social welfare, rural development, public policy, governance, business, social foundations, NGO and academia.

PSO5.The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Thinkers.

PSO6.The students after the completion of this programme will be able to contemplate and comprehend and apply Quantitative Research Techniques in Sociology.

PSO7.The students after the completion of this programme will be able to contemplate and comprehend Sociology of Development.

PSO8.The students after the completion of this programme will be able to contemplate and comprehend Indian Rural Society. PSO9.The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Theories.

PSO10.The students after the completion of this programme will be able to contemplate and comprehend Social Movements in India.

PSO11.The students after the completion of this programme will be able to contemplate and comprehend Perspectives of Study to Indian Society.

PSO12.The students after the completion of this programme will be able to contemplate and comprehend Industry and Society in India.

PSO13.The students after the completion of this programme will be able to contemplate and comprehend Criminology.

PSO14.The students after the completion of this programme will be able to contemplate and comprehend Modern Sociological Theories.

PSO15.The students after the completion of this programme will be able to contemplate and comprehend Comparative Sociology.

PSO16.The students after the completion of this programme will be able to contemplate and comprehend Contemporary issues in Industry.

Course Outcomes (CO) Course 1: Classical Sociological Tradition

CO1.Students will be able to make sense of modernity by identifying the emergence of sociology as a discipline.

CO2.Students will be able to understand critically and comparatively the methodological preferences of the founders of sociology.

Course 2: Philosophical and Conceptual Foundation of Social Research

CO1.Students will be able to recognize various issues in social research.

CO2. Students will be able to undertake research by selectively choosing and formulating a social research problem.

Course 3: Social Change in India

CO1.Students will be able to perceive disciplinary & inter-disciplinary ideas about the sociology and social change in India.

CO2. Students will be able to recognize the various factors of sociology and social change in India.

Course 4: Rural Sociology

CO1. Students will be able to assimilate the theoretical and empirical knowledge of the past and present rural scenario and approach in rural sociology.

CO2. Students will be able to identify with the various changes and development in rural sociology.

Course 5: Classical Sociological Thinkers

CO1. Students will be able to explain the major themes of Marxian and Weberian perspectives on the social world.

CO2. Students will be able to compare and differentiate between Marxian and Weberian perspectives on the social world.

Course 6: Quantitative Research Techniques in Sociology

CO1. Students will be able to assess, interlink, correlate and use the measures of central tendency and measures of variation involved in social research.

Course 7: Sociology of Development

CO1. Students will be able to distinguish development theory from development as project and relate project development to environmental degradation and social use/abuse.

Course 8: Indian Rural Society

CO1. Students will be able to absorb the theoretical and empirical knowledge of the past and present rural scenario and intricacies of social fabric in India.

Course 9: Classical Sociological Theories

CO1. Students will be able to recognize the role of a sociological theory in the application of conceptual frameworks in a social research progress.

CO2. Students will be able to comprehend various sociological theories like structuralism and exchange theory. **Course 10: Social Movements in India**

CO1. Students will be able to understand the nature and types of social movements in India. CO2. Students will be able to comprehend the theoretical perspectives of social movements in India.

Course 11: Perspectives of Study to Indian Society

CO1. Students will be able to explain the major methods and concepts used in the systematic study of Indian society, its social classes, its social fabric and its sociological issues.

Course 12: Industry and Society in India

CO1. Students will be able to identify the trends of Industrial disputes in Indian society and their impacts on Indian social classes & sociology.

Course 13: Criminology

CO1. Students will be able to familiarize with mainstream criminological theories.

CO2. Students will be able to apply theories of crime and criminal justice to explain actual and hypothetical scenarios, behaviors and trends.

Course 14: Modern Sociological Theories

CO1. Students will be able to debate on modern sociological theories.

CO2. Students will be able to identify the origin and development of modern sociological theories.

Course 15: Comparative Sociology

CO1. Students will be able to compare the historical and social context of emergence of sociology.

CO2. Students will be able to identify various theoretical concerns in comparative sociology.

Course 16: Contemporary issues in Industry

CO1. Students will be able to ascertain the history, objectives and functions of trade unionism in India.

CO2. Students will be able to contemplate on Industrialization in the third world countries.