



**Dr. Babasaheb Ambedkar Memorial Society, Chandrapur**



## **Dr. Ambedkar College of Arts, Commerce & Science, Chandrapur**

**Affiliated to Gondwana University, Gadchiroli.**

**Re-accredited by NAAC 'B +' with 2.61 CGPA**

**ANNUAL QUALITY ASSURANCE REPORT**

**AQAR: 2022-2023**

### **CRITERION – II TEACHING, LEARNING AND EVALUATION**

**METRIC NO: - 2.6.1**



**METRIC NAME: 2.6.1 Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.**

**Web: - [dacchanda.ac.in](http://dacchanda.ac.in)**

**e-mail: - [dachanda@yahoo.in](mailto:dachanda@yahoo.in)**

**Phone: - 07172256080**

**Dr. Ambedkar College of Arts, Commerce and Science,  
Chandrapur**

**Faculty of Science and Technology**

**Course Outcomes**

**DEPARTMENT OF PHYSICS**

**B.SC. SEMESTER - I**

**Course title: Paper I (Mechanics and Relativity)**

**Course Code: USPHT01**

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

1. Understand the laws of motions and its applications.
2. Distinguish centre of mass and centre of gravity.
3. Distinguish elastic collision and inelastic collisions with transfer of energy.
4. Have a thorough knowledge of rotational dynamics, non-inertial systems.
5. Understand relative motion and theory of relativity.

**B.SC. SEMESTER - I**

**Course Title: Paper II (Gravitation, Oscillation and Properties of Matter) Course Code: USPHT02**

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

1. Understand concept of gravitation and planetary motion.
2. Have a knowledge of different types of oscillations.
3. Understand the concept of elasticity and different types of elastic moduli & their Inter-relations.
4. Have the knowledge of Streamline flow and Turbulent Flow and Bernoulli's Theorem and its applications
5. Understand the concept of surface tension and its molecular interpretation.
6. Do oral and written scientific communication and will prove that they can think critically and work independently.

**B.SC. SEMESTER - I**

**PHYSICS LAB I:**

**Course Code: USPHP01**

1. Students will have good laboratory skills, enabling them to take observations and measurements in a physics laboratory and analyze the results to draw valid conclusions.
2. Students will learn the use various apparatus to take the measurements up to the marks.

### **B.SC. SEMESTER - II**

**Course Title: Paper I (Vector Analysis and Electrostatics) Course Code: USPHT03**

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

1. Have a sound knowledge of vectors and its application to solve the various problem of motion in physics.
2. Understand the Electric Field and Potential, Electrical circuits and be able to apply this knowledge to analyze a variety of physical phenomena.
3. They can use this knowledge in daily life.

### **B.SC. SEMESTER - II**

**Course Title: Paper II (Magnetostatic and Electromagnetic waves) Course Code: USPHT04**

After successful completion of the course, the student is expected to:

1. Understand effect of electric field, Magnetic field, magnetic properties of materials and will able to distinguish them.
2. Have the knowledge of magnetic induction, transformer and their application in daily life.
3. They can understand the propagation of light wave as a electromagnetic wave.
4. They will be able to understand DC and AC electric current and apply to various circuit.

### **B.SC. SEMESTER - II**

#### **PHYSICS LAB II:**

**Course Code: USPHP02**

1. Students will acquire good laboratory skills to connect various components in circuit.
2. Students will learn the use various apparatus to take the measurements up to the marks.
3. Student will able to take observations and measurements in a physics laboratory and analyze the results to draw valid conclusions.

### **B.SC. SEMESTER - III**

**Course Title: Paper I (Thermal Physics)**

**Course Code: USPHT05**

After successful completion of the course, the student is expected to:

1. Have a thorough knowledge of Thermal physics and be able to study of different the thermal phenomenon.
2. Understand the laws of thermodynamics to solve the various problem.
3. Realize the importance of Thermo dynamical functions and applications of Maxwell's relations.

### **B.SC. SEMESTER - III**

**Course Title: Paper II (Radiation and Statistical Physics) Course Code: USPHT06**

The completion of this course will enable the students to:

1. Understand the Thermal Radiation laws.
2. Study statistical basis of thermodynamics.
3. Understand the concept of different statistics.
4. Familiarize in depth about statistical distribution and have basic Ideas about Maxwell- Boltzman, Bose-Einstein and Fermi- Dirac Statistics and their applications

### **B.SC. SEMESTER - III**

#### **PHYSICS LAB III:**

**Course Code: USPHP03**

1. Students will acquire good laboratory skills to handle the thermal problem.
2. Student will able to take observations and measurements in a physics laboratory and analyze the results to draw valid conclusions.
3. Students will understand experimentally the concept of statistical physics.

### **B.SC. SEMESTER - IV**

**Course Title: Paper I (Wave, Acoustics and Laser) Course Code: USPHT07**

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

1. Understand basic concept of sound waves.
2. Distinguish audible, ultrasonic and infrasonic waves.
3. Use the mathematical treatment to show various form of waves.
4. Differentiate noise and music, understand the characteristics of musical sound and requirement of good auditorium.
5. Understand and explain the principles and design considerations of various (solid state, gas and semiconductor) lasers, modes of their operation and areas of their application.

### **B.SC. SEMESTER - IV**

**Course Title: Paper II (Optical Physics)**

**Course Code: USPHT08**

The completion of this course will enable the students to:

1. To have a thorough knowledge about Geometrical optics, wave optics, wave motion, and apply the above knowledge to analyze various aspects of a physical phenomenon.
2. Familiar with phenomenon of interference, diffraction and polarization.

3. Understand the applications of interference and diffraction.
4. Understand the applications of interference in design and working of interferometers.

### **B.SC. SEMESTER - IV**

#### **PHYSICS LAB IV:**

##### **Course Code: USPHP04**

1. Students will observe the phenomenon of the interference and diffraction in the laboratory.
2. Student will able to take observations and measurements in a physics laboratory.
3. They can find out the refractive index of various transparent material.

### **B.SC. SEMESTER - V**

#### **Course Title: Paper I (ELEMENTS OF MODERN PHYSICS) Course Code: USDSEPHT09**

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

1. Understand Failures of Classical theories and concept of quantum mechanics.
2. Derive Schrodinger's wave equations & solve them and apply them to one dimensional infinitely rigid box; Quantum mechanical scattering and tunnelling in one dimension.
3. Have a basic knowledge of nucleus, its size, shape, binding energy, etc.
4. Understand phenomenon of radioactivity and emission of alpha, beta and
5. gamma rays from radioactive substance and Law of radioactive decay.
6. Understand the phenomenon of fission on the basis of liquid drop model and a fusion.

### **B.SC. SEMESTER - V**

#### **Course Title: Paper II (SOLID STATE PHYSICS) Course Code: USDSEPHT10**

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

1. Understand the different types crystal structures in solid, Lattice Translation Vector, Lattice with a Basis, Periodicity in crystal. Unit Cell, Miller Indices, Reciprocal Lattice, Types of Lattices, Brillouin Zones and Diffraction of Crystal, Bragg's Law, Bragg's X-ray spectrometer.
2. Familiar with Dia-, Para-, Ferri- and Ferromagnetic Materials and understand the Classical Langevin theory of Diamagnetism, Quantum Mechanical Treatment of Paramagnetism and Weiss's Theory of Ferromagnetism.
3. Able to know three electric vectors E, D and P. and understand Claussius-Mossotti Equation, its molecular interpretation and limitations and Classical Theory of Electric Polarizability.
4. Familiar with elementary band theory and understand Kroning Penny model, Hall Effect, Fermi level and Fermi energy.
5. Understand the phenomenon and theory of superconductivity and types of superconductors.

## **B.SC. SEMESTER - V**

### **PHYSICS LAB V:**

**Course Code: USDSEPHP05**

1. Students will be able to take observations / measurements in a physics laboratory and to analyze its results.
2. Students will acquire the skills to take measurements with accuracy and handle the instruments carefully.

## **B.SC. SEMESTER - VI**

**Course Title: Paper I ( NUCLEAR & PARTICLE PHYSICS) Course Code : USDSEPHT13**

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

1. Know the general properties of nuclei such as its size, mass, charge density, packing fraction, mass defect and binding energy.
2. Understand the nuclear models such as liquid drop model, Fermi gas model and shell model and concepts of nuclear force.
3. Familiar with nuclear reactions, its types, Conservation Laws, Endoergic and exoergic reactions, Q-value, reaction rate and interaction of Nuclear Radiation with matter.
4. Know Detector for Nuclear Radiations such as Wilson chamber, Ionisation chamber, Proportional counter, GM counter, Scintillation counter and photo-multiplier tube (PMT) and Particle Accelerators such as Vande Graaff generator, Linear accelerator, Cyclotron, Synchro-cyclotrons.

## **B.SC. SEMESTER - V**

**Course Title: Paper II ( DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION)**

**Course Code : USDSEPHT14**

The completion of this course will enable the students to:

1. Understand difference between Analog and Digital Circuits, binary, decimal, hexadecimal number systems, and their inter conversion, Binary Addition, Binary Subtraction using 1's and 2's Complement Method, Binary codes 8421 and EX-3 code, De Morgan's Theorems, Boolean Laws.
2. Design of different logic gates, Half and Full Adders, Half and Full Subtractor
3. Familiar with Semiconductor Devices and Applications such as LED and Photocell, Half-wave Rectifier, Full-wave Rectifier and bridge Rectifier, Calculation of Rectification Efficiency, Ripple Factor and Regulation, L-section and  $\pi$ -section filter, Zener diode, its characteristics and Voltage Regulation .
4. Know construction and working of n-p-n and p-n-p Transistors, their characteristics in CB and CE configuration, Current gains  $\alpha$  and  $\beta$  and relation between  $\alpha$  and  $\beta$ , CE amplifier and its graphical analysis, different voltage amplifiers.

5. Understand the construction, working and characteristics of operational amplifiers and applications of OP AMP as Inverting and Non-inverting Amplifiers, Adder, Subtractor, Differentiator, Integrator and Zero Crossing Detector.

### **B.SC. SEMESTER - V**

#### **PHYSICS LAB VI:**

**Course Code: USDSEPHP06**

1. Students will be able to construct the various circuits of logic gates, HA, FA, FF and counters and verify their truth tables.
2. Students will have a good laboratory skills to design the logic circuits to prove the experimental and theoretical concepts.

### **M. SC. PHYSICS SEMESTER-I**

**Course Title: Paper I (Mathematical Physics)**

**Course Code: PSCPHYT01**

On successful completion of this course students will be able

1. To learn about Gradient, Divergence and Curl in orthogonal curvilinear and their typical applications in physics.
2. To study the Fourier series, Fourier integral and Fourier transforms Convolution theorem, Parseval's identity and applications to the solution of differential equations.
3. To learn about special type of matrices that is relevant in physics and then learns about tensors.
4. To study about Cayley Hamiltonian theorem, Eigen vector and Eigen value problems, diagonalization and complete orthonormal sets of functions.
5. To study different ways of solving linear differential equations and familiarized with various special functions-Laguerre, Hermite, Legendre Polynomials, special Bessel's.

### **M. SC. PHYSICS SEMESTER-I**

**Course Title: Paper II (Complex Analysis and Numerical Methods)**

**Course Code: PSCPHYT02**

On successful completion of this course students will be able

1. To learn about Complex Numbers and Geometrical representations of the sum, difference, product and quotient of Complex Number, Cauchy Riemann Conditions, Analytic functions, Multiply connected regions, Cauchy Theorem, Cauchy Integration formula, Derivatives.

2. To understand the basic concepts of singularities such as poles, branch points, Calculus of Residues-Residues Theorem, Cauchy Principle value, Pole Expansion of Meromorphic Functions, Product expansion of entire Functions.
3. To understand the methods for determination of zeros and linear and non-linear single variable algebraic and transcendental equations.
4. To learn Lagrange's interpolation, Divided differences, Numerical integration, trapezoid rule, Simpson's 1/3rd rule, Simpson's 3/8th rule, Linear least squares, Euler and Runge Kutta methods.

### **M.SC. PHYSICS SEMESTER-I**

**Course Title: Paper III (Electronics)**

**Course Code: PSCPHYT03**

On successful completion of this course students will be able

1. To learn about Semiconductor discrete devices and Opto-electronic devices and their characteristics.
2. To study the applications of semiconductor devices in linear and digital circuits, Feedback in amplifiers and oscillators, TTL and CMOS gates.
3. To study Digital integrated circuits - NAND and NOR gates, X-OR gate, Half and full adder, Flip-Flops, Multivibrators, shift registers, counters, A/D and D/A converters, Operational amplifier and its applications.
4. To understand the basic concepts of communication electronics- Modulation and demodulation, fundamentals of optical communication and microwave oscillators.

### **M.SC. PHYSICS SEMESTER-I**

**Course Title: Paper IV (Electrodynamics-I)**

**Course Code: PSCPHYT04**

On successful completion of this course students will be able

1. To learn about Electrostatics: Coulomb's law, Gauss's law and its differential form, Dirac delta function, electric field and potential, Poisson and Laplace equations.
2. To understand the boundary value problems and study the Uniqueness theorems, Green's theorem, method of separation of variables (Cartesian, spherical and cylindrical coordinates).
3. To gain the knowledge about Magnetostatics: to realize the importance and application of Biot-Savart's Law and Ampere's law, understand the relevance of vector potential, magnetic field, magnetic moment and magnetic shielding.



4. To understand of Maxwell's equations and time varying fields. Have grasped the idea of scalar and vector potential, Gauge transformation and Poynting's theorem.
5. To use Maxwell equations in different forms and different media and describe the propagation of electromagnetic waves through different media.

## **M. SC. PHYSICS SEMESTER-I**

### **Course Title: Practical-I & II**

### **Course Code : PSCPHYP01 & P02**

On successful completion of this course students will be able

1. To learn various experimental and computational tools thereby developing analytical abilities to address real world problems.
2. To study the practicals in computational physics using C++ language, Analyze the outcome of the algorithm/program graphically which will give a new experience to the students in the field of computer simulations.
3. To acquire experience of handling and building electronics circuits. Students will have hand on experience of Digital electronics experiments Amplifiers, diodes, various logic gates, flip-flops and multivibrator, counters.
4. To Assess possible causes of discrepancy in practical experimental observations, results in comparison to theory.
5. To delivered Seminars on recent topics related to Physics

## **M. SC. PHYSICS SEMESTER-II**

### **Course Title: Paper-I (Quantum Mechanics - I)**

### **Course Code: PSCPHYT05**

On successful completion of this course students will be able

1. To understand and explain the differences between classical and quantum mechanics.
2. To understand the central concepts and principles in quantum mechanics, such as the Schrodinger equation, the wave function and its statistical interpretation, the uncertainty principle, stationary and non-stationary states, time evolution of solutions, as well as the relation between quantum mechanics and linear algebra including understanding of elementary concepts in statistics, such as expectation values and variance. They will master the concepts of angular momentum and spin, as well as the rules for quantization and addition of these. Hence they will be able to solve the complex systems by approximation method.

3. To study the importance and implication of vector spaces, Dirac ket bra notations, Eigen value problem.
4. To better understand the mathematical foundations of spin and angular momentum for a system of particles.
5. To solve Schrodinger equation for various QM systems using approximate methods.

### **M. SC. PHYSICS SEMESTER-II**

**Course Title: Paper-II (Statistical Physics)**

**Course Code: PSCPHYT06**

On successful completion of this course students will be able

1. To study the fundamentals of classical statistical mechanics and Gibbs Paradox, Ensembles, partition function, free energy and connection with thermodynamic quantities.
2. To study the fundamentals of quantum statistical mechanics- MB, BE and FD statistics.
3. To understand the concepts of Ideal Fermi system, Free electrons in metals as fermions, Electronic specific heat.
4. To have ideas about Phase transition, Landau theory, Brownian motion, Langevin theory, and Weiss theory of ferromagnetism.

### **M. SC. PHYSICS SEMESTER-II**

**Course Title: Paper-III (Classical Mechanics)**

**Course Code: PSCPHYT07**

On successful completion of this course students will be able

1. To understand the Lagrangian and Hamiltonian approaches in classical mechanics.
2. To learn about Conservation theorems and symmetry properties, Canonical transformations, Poisson brackets and Poisson theorems, Hamilton-Jacobi Theory.
3. To study the Central force motion, reduction to one body problem, Rutherford scattering in laboratory.
4. To understand the Rigid body dynamics, Euler's theorem.
5. To learn about moment of inertia tensor, eigen values and principal axis transformation, non-inertial frames and Pseudo forces.

### **M.SC. PHYSICS SEMESTER-II**

**Course Title: Paper-IV (Electrodynamics-II)**

**Course Code: PSCPHYT08**

On successful completion of this course students will be able

1. To gain a clear understanding of scalar and vector waves, Stoke's parameters, reflection and refraction of plane waves, Fresnel polarization on reflection and refraction, propagation in dielectric films.
2. To get clear understanding about symmetries of Maxwell's equations: Lorentz transformation, covariance of electrodynamics, Lorentz gauge condition, equation of continuity, tensor and its transformation, relativistic field theory, Lagrangian for EM field, conservation laws and conformal invariance.
3. To have a clear understanding about motion of charge in EM fields, electric dipole, quadruple and magnetic dipole radiation, half wave and full wave antenna. To study the Lienard-Wiechert potentials, Larmor's formula.
4. To understand the wave guides: cylindrical cavities, field on the surface and within a hollow metallic conductor, TE, TM, TEM modes in rectangular and cylindrical wave guides, Bremsstrahlung: virtual quanta and synchrotron radiation.

## **M. SC. PHYSICS SEMESTER-II**

**Course Title: Practical-III & IV**

**Course Code: PSCPHYP03 & P04**

On successful completion of this course students will be able

1. To handle specific electronic equipment's like CRO, function generators etc.
2. To hand on experience of Hall coefficient, Curie temperature, B-H curve,  $e/m$  by Thomson method, Planck's constant, Stefan's constant, dielectric constant, and magnetic susceptibility by Gouy's balance.
3. To design and perform scientific experiments, Bifilar pendulum, BG energy using four probe method, study of line emission spectra, thermistor characteristics, Newton's rings experiment.
4. To acquire the appropriate data accurately and keep systematic record of laboratory activities, Interpret findings using the correct physical scientific framework and tools.
5. To evaluate possible causes of discrepancy in practical experimental observations, results in comparison to theory.
6. To delivered Seminars on recent topics related to Physics.

## **DEPARTMENT OF CHEMISTRY**

**B.SC. SEMESTER - I**

**Course Title: I: Paper I (INORGANIC)**

**CHEMISTRY) Outcomes:**

1. Students will properly understand the structure of atom, variations of its periodic properties.
2. They will be able to understand theory of formation of covalent bond, concept of hybridization and molecular orbital theory.
3. They can understand comparative study of s-block elements and comparative study of p-block elements with regards to various properties
4. Students will have a thorough knowledge of (A) Hydrogen Bonding (B) Chemistry of Noble gas (C) Theory of Volumetric Analysis.

**B.SC. SEMESTER - I****Core II: Paper II (Organic Chemistry) Outcomes:**

1. The student should understand Fundamentals of Organic Chemistry such as Physical Effects, Electronic Displacements, Structure, shape and reactivity of organic molecules, Types of Reactions, Strength of organic acids and bases
2. They will come to know basic concept of stereochemistry.
3. The students will thoroughly understand preparation, properties and reactions of aliphatic hydrocarbons and aromatic hydrocarbons.

## **B.SC. SEMESTER - I**

### **CHEMISTRY LAB I:**

#### **Outcomes:**

1. Students will have good laboratory skills, enabling them to handle apparatus and chemicals with precaution to avoid laboratory accidents.
2. Students will learn experiments on volumetric analysis and qualitative analysis.

## **B.SC. SEMESTER - II**

### **Course Title: Paper I (ORGANIC**

### **CHEMISTRY) Courses Outcomes:**

1. The students will thoroughly understand preparation, properties and reactions of alkyl halides, aryl halides, alcohols, phenols, aliphatic and aromatic ethers, aldehydes and ketones.
2. They will understand nomenclature, structure, bonding and physical properties of carboxylic acid and their derivatives.
3. This knowledge can help them to understand organic chemistry properly.

## **B.SC. SEMESTER - II**

### **Core II: Paper II (PHYSICAL CHEMISTRY)**

#### **Courses Outcomes:**

1. Students will learn mathematical concepts necessary to understand physical chemistry throughout.
2. They will understand basic knowledge of ionic equilibrium phenomena.
3. They will understand thermodynamics, thermochemistry.
4. They can understand thoroughly states of matter such as solid state with regard to crystallography, liquid state with its properties and gaseous state with concerning to ideal and real gas.

## **B.SC. SEMESTER - II**

### **CHEMISTRY LAB II:**

1. Students will know methods of purification of impure organic compounds.
2. Students will develop the skill of preparation of organic compounds.
3. Students will be able to verify theoretical knowledge experimentally.

## **B.SC. SEMESTER - III**

### **Course title: Paper I (INORGANIC**

### **CHEMISTRY) Courses Outcomes:**

1. Students will have a thorough knowledge of classification, structure, preparation, and properties of hydrides of Boron, Iodine interhalogen compounds, oxy acids of sulphur and
2. Students will know Ionic structures, radius ratio effect & coordination number of ionic solids. Also they will understand metallic bonding, concept of acids and bases.

3. Students will understand chemistry of first, second, third transition series, lanthanides and actinides

### **B.SC. SEMESTER - III**

#### **Core II: Paper II (PHYSICAL CHEMISTRY)**

##### **Courses Outcomes:**

1. Students will understand the Phase equilibria and theory of liquid-liquid mixtures.
2. They will be able to study and understand properly thermodynamics, Chemical kinetics, colligative properties, and magnetic properties.

### **B.SC. SEMESTER - III**

#### **CHEMISTRY LAB III:**

1. Students will acquire good laboratory skills to semi micro qualitative analysis of inorganic salt mixture containing two acid and two basic radicals.
2. Students will understand experimentally the concept of phase equilibria, colligative properties and chemical kinetics.

### **B.SC. SEMESTER - IV**

#### **Course Title: Paper I (INORGANIC CHEMISTRY) Courses Outcomes:**

1. Students will able to understand basic concept of co-ordination chemistry, theory of soft and hard acid and base, and principle involved in extraction of elements.
2. They can study crystal field theory as Metal Ligand Bonding In Transition Metal Complexes
3. They can understand Electronic Spectra of Transition Metal Complexes, Thermodynamic And Kinetic Aspect of Metal Complexes
4. They can understand Colorimetry and Spectrophotometry.

### **B.SC. SEMESTER - IV**

#### **Core II: Paper II (ORGANIC CHEMISTRY)**

##### **Courses Outcomes:**

1. Students will have a thorough knowledge about Synthesis, structure and chemical reaction of Nitro Compound, Amino compounds, Diazonium salt, Heterocyclic Compounds, organo metallic compounds, Amino Acids, Peptides and Proteins, Carbohydrates and Synthetic Dyes and Drugs.

### **B.SC. SEMESTER - IV**

#### **CHEMISTRY LAB IV:**

1. Students will able to prepare some complex compounds.
2. Student will able to handle Colorimeter/spectrophotometer properly and can perform practicals
3. Students will able for quantitative estimation of elements in solution gravimetrically.

### **B.SC. SEMESTER - V**

**Course Title : Paper I (ORGANIC CHEMISTRY) Course Code :USC DSE ChT 09**

#### **Courses Outcomes:**

1. Students will understand Nuclear Magnetic Resonance (NMR) spectroscopy
2. Students will be able to understand Organic Synthesis via Enolates
3. Students will study thoroughly Polymers, Polymerization reactions, Fibres.
4. Students will understand properly Green Chemistry and Technology for sustainable development

### **B.SC. SEMESTER - V**

**Course Type : Paper II ( Physical Chemistry) Course Code:-USC DSE ChT10**

#### **Courses Outcomes:**

1. Students will understand complete theory of Electrochemistry through electrical transport, types of reversible electrodes, Galvanic cells, irreversible & reversible cells, Concentration cells with & without transference
2. Students will understand basic concept of quantum mechanics.

### **B.SC. SEMESTER - V**

**Course Type: Skill Enhancement Course Paper-III (Pharmaceutical Chemistry) Courses Outcomes:**

1. Students will understand thoroughly concepts of the Pharmaceutical Chemistry regarding Drugs & Pharmaceuticals.

### **B.SC. SEMESTER - V**

**Course Type: CHEMISTRY LAB V**

**Course Code: USC DSE ChP 05, 06**

1. Students will develop skill of
  - A. Identification of organic compound on the basis of NMR data.
  - B.
    - I. Estimation of hydroxyl number of a polymer using colorimetric method.
    - II. Estimation of the amount of HCHO in the given solution by sodium sulphite method.
  - C.
    - I. Preparation of nylon 66.
    - II. Preparation of urea-formaldehyde resin.
  - D. Green chemistry synthesis of organic compound by using micro wave technic.
2. Students will develop skill of handling and understand the proper working of Potentiometer and Conductometer through experiments.

3. Students will develop skill Preparation analysis of Aspirin, magnesium bisilicate (Antacid), Paracetamol to perform analytical method validation of Paracetamol in pure and tablet form by using UV spectrophotometric method.

### **B.SC. SEMESTER - VI**

**Course Type : Paper I (INORGANIC**

**CHEMISTRY) Course Code: ..USC DSE ChT**

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1. Students will able to understand basic concept Qualitative and quantitative aspects of analysis,
2. Flame Photometry
3. Students can know Separation Techniques such as Chromatography, Ion- Exchange, Solvent
4. Extraction.
5. Students can understand Classification of Chemical fertilizer with example, its advantages and disadvantages, manures and compost and their advantages over chemical fertilizers
6. Students can understand theory of Organometallic Chemistry, nano materials, water pollution
7. water purification methods, Industrial waste management.

### **B.SC. SEMESTER - VI**

**Course Type :Core II: Paper II ( Physical**

**Chemistry) Corse Code:.....USC DSE ChT 14**

1. Students will understand thoroughly Photochemistry, Dipole Moment.
2. Students will understand basic concept of rotational, vibrational spectroscopy.
3. Students will gain thorough knowledge of Surface Chemistry, Colloidal Chemistry, And Nuclear Chemistry.

### **B.SC. SEMESTER - VI**

**Course Type : Skill Enhancement Course : Paper III (Analytical Clinical**

**Biochemistry) Course Code:**

1. Students will understand the structures, properties and functions of carbohydrates, lipids and proteins

### **B.SC. SEMESTER - VI**

**Course Type: CHEMISTRY LAB VI**

**Course Code: USC DSE ChP 09,10**

1. Students will study Ion Exchange Method and Chromatographic Separation of Binary Mixtures, verification of F, Q, and T test and rejection of data for acid base titration
2. Students will gain the knowledge of the analysis of soil and water analysis regarding some parameters by suitable methods.
3. Students will gain the handling skill of the instruments like colorimeter, Abbe's refractometer by doing practicals based on them. They will also gain the practical knowledge of as adsorption and CMC



4. Students will study Identification and estimation of the
  - a. Carbohydrates – qualitative and quantitative.
  - b. Lipids – qualitative.
  - c. Determination of the iodine number of oil.
  - d. Determination of the saponification number of oil.
  - e. Determination of cholesterol using Liebermann- Burchard reaction.
  - f. Proteins – qualitative.
  - g. Isolation of protein.
  - h. Determination of protein by the Biuret reaction.
  - i. Determination of nucleic acids

#### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title : Paper I (Inorganic**

**Chemistry) Course Code : PSCChT01**

1. Learns the fundamentals of Stereochemistry and Bonding in Main Group Compound,
2. Metal – Ligand Bonding, Metal – Ligand Equilibria in Solution
3. Study the Metal – Ligand Equilibria in Solution
4. Understand details of Cluster.
5. Learn Metal-Metal bonds, Isopoly, Heteropoly acids and their anions

#### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title : Paper II (Organic**

**Chemistry) Course Code : PSCChT02**

1. Study Nature and Bonding in Organic Molecule, Synthetic applications of enamines and imines anions in organic synthesis, phase transfer catalysis, crown ethers and graphene.
2. Appreciates the fundamentals Stereochemistry , Reactive Intermediates
3. Understands the background of Reaction mechanism: Structure and Reactivity
4. Learn Aliphatic nucleophilic substitution, Aromatic electrophilic substitution, Aromatic Nucleophilic Substitution.

#### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title : Paper III (Physical**

**Chemistry) Course Code : PSCChT03**

1. Gains the information of FORMULATION OF QUANTUM MECHANICS
2. Understands the CLASSICAL THERMODYNAMICS
3. Learn PHASE EQUILIBRIA
4. Learns the CHEMICAL KINETICS, Photochemistry and Catalysis.

### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title : Paper IV (Analytical Chemistry)**

**Course Code : PSCChT04**

1. Introduction to analytical chemistry and statistical analysis
2. Estimates the separation techniques
3. Study Classical methods of analysis
4. Study Optical methods of analysis

### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title : Practical-I (Inorganic Chemistry)**

**Course Code : PSCChP01**

1. Preparation of Inorganic Complexes and their characterization by: Elemental analysis and physico-chemical methods (Electronic and IR Spectra, magnetic susceptibility measurements, Thermal analysis and Molar conductance studies).
2. Quantitative Analysis: Separation and determination of two metal ions from the alloys involving : Volumetric, Gravimetric and Spectrophotometric methods

### **M.SC. CHEMISTRY SEMESTER-I**

**Course Title: Practical-II (Organic Chemistry)**

**Course Code : PSCChP02**

1. Qualitative Analysis Separation, purification and identification of the mixture of two organic compounds (binary mixture with two solid, one solid one liquid and two liquids) using chemical methods or physical techniques.
2. Understands the method of organic preparation

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title : Paper V (Inorganic Chemistry) Course Code : PSCChT05**

1. Learn the Electronic spectra of Transition Metal complexes, Magnetic Properties of Transition Metal complexes
2. Study Reaction mechanism of Transition Metal Complexes-II
3. Understand Structure and bonding, vibrational spectra of metal carbonyls
4. Gain the knowledge of Nitrosylating agents for synthesis of metal nitrosyls,
5. vibrational spectra and X-ray diffraction studies of transition metal nitrosyls for
6. bonding and structure

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title :Paper VI (Organic Chemistry) Course Code : PSCChT06**

1. Study Addition to carbon-carbon multiple bond, Addition to carbon-hetero atom
2. multiple bond
3. Understand Mechanism of molecular rearrangement, Free radical reactions-I
4. Learn Free radical reactions-II
5. Study Elimination reactions , understand Green chemistry

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title : Paper VII (Physical Chemistry) Course Code : PSCChT07**

1. Study the application of quantum mechanics Electronic structure of atoms, Hybridization
2. Gains the knowledge of thermodynamics
3. Understand Solid state chemistry
4. Enlightens the knowledge about Nuclear Chemistry

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title : Paper VIII (Analytical Chemistry) Course Code : PSCChT08**

1. Understand Sampling and quantification
2. Gains the procedure for Modern separation techniques
3. Study Optical methods of analysis
4. Learn Electrochemical methods of analysis

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title :Practical-IV (Physical Chemistry) Course Code : PSCChP04**

1. Study the experiments related to thermochemistry and phase equilibria
2. Study the experiments base on thermodynamics and Chemical kinetics

### **M.SC. CHEMISTRY SEMESTER-II**

**Course Title : Practical-V (Analytical Chemistry) Course Code : PSCChP05**

1. Study Classical methods such as Volummetry, Gravimetry
2. Study Gravimetric estimation,
3. Understand Chromatographic separation techniques, Analysis of sample by Instrumental Electroanalytical techniques such as

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title : Paper IX (Spectroscopy)**

**Course Code :PSCChT09**

1. Study Symmetry properties of molecules and group theory
2. Understand Mass spectrometry, Mossbauer spectroscopy
3. Gains the importance of Microwave spectroscopy, ESR spectroscopy
4. Learn Infrared spectroscopy, Raman Spectroscopy

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title: Paper X (Special I-Organic Chemistry) Course Code: PSCChT10**

1. Study Photochemistry
2. Understand Pericyclic Reactions
3. Learn Oxidation, Reduction Reactions
4. Gains knowledge of Chemistry of P, S, Si, B, and Ti compounds

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title: Paper XI Special II- (Organic Chemistry)**

**Course Code: PSCChT11**

1. Study Classification, nomenclature, occurrence, isolation, general methods of structure determination of Terpenoids, Porphyrins:
2. Learn Classification, nomenclature, occurrence, isolation, general methods of structure determination Alkaloids, Prostaglandins
3. Study Classification, nomenclature, occurrence, isolation, general methods of structure determination teroids, Plant Pigments
4. Understand Carbohydrate, Amino acids, protein and peptides

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title: Paper XII (Elective- Polymer Chemistry)**

**Corse Code: PSCChT12**

1. Introduction to polymers
2. Understand Molar mass and its determination
3. Study Physical characteristics of polyemers
4. Learn Commercial polymers

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title : Practical-VII (Organic Chemistry Special) Course Code: PSCChP07**

1. Study Quantitative Analysis
  2. Learn Isolation of Organic Compounds from Natural Source
  3. Qualitative analysis Separation of the components of a mixture of three organic compounds (three solids, two solids and one liquid, two liquids and one solid, all three
- a. liquids and identification of any two

**M.SC. CHEMISTRY SEMESTER-III**

**Course Title : Practical VIII–Elective (Polymer Chemistry) Course Code : PSCChP08**

1. Study Synthesis of polymers
2. Follow Characterization of polymers
3. Understand Purification and fractionation of polymer , Magnetic and electrical properties of polymers
4. Learn Thermal analysis and degradation of polymers
5. Study Dielectric behavior of polymers and Kinetics of polymerization

**M.SC. CHEMISTRY SEMESTER-IV**

**Course Title : Paper XIII (Spectroscopy) Course Code : PSCChT13**

1. Study Ultraviolet and visible spectroscopy, Photoelectron spectroscopy
2. Learn Nuclear magnetic Resonance Spectroscopy
3. Follow Application of NMR spectroscopy
4. Understand Diffraction techniques

**M.SC. CHEMISTRY SEMESTER-IV**

**Course Title : Paper XIV (Special I-Organic Chemistry) Course Code : PSCChT14**

1. Study of Carbanions in organic Chemistry, Organometallic reagents -I
2. Understand Organometallic reagents-II, Transition metals in organic synthesis
3. Gains the potential about Advanced Stereochemistry
4. Learn Designing the synthesis based on retrosynthetic analysis

**M.SC. CHEMISTRY SEMESTER-IV**

**Course Title : Paper XV (Special II-Organic Chemistry) Course Code : PSCChT15**

1. Learn Enzyme chemistry, Co-Enzyme Chemistry
2. Study Heterocycles, Benzofused heterocycles, Diazines
3. Understand Nucleic Acids, Lipids, Vitamins

4. Gains the importance of Dyes, Polymer chemistry

#### **M.SC. CHEMISTRY SEMESTER-IV**

**Course Title: Paper XVI (Elective- Polymer Chemistry)**

**Course Code: PSCChT16**

1. Understand Polymerization
2. Study Techniques of polymerization
3. Follow Characterization of polymers
4. Gain the importance of Specific polymers- Biomedical polymers, Inorganic polymers,
5. Coordination polymers

#### **M.SC. CHEMISTRY SEMESTER-IV**

**Course Title: Practical-X (Organic Chemistry Special)**

**Course Code: PSCChP10**

1. Quantitative Analysis based on classical and instrumental technique
2. Determine Structure of organic compounds on the basis of spectral data

#### **M.SC. CHEMISTRY SEMESTER-IV**

**Course Title: Practical-XI Project**

**Course Code: PSCChP11**

1. Enters in the first step of research aptitude
2. Visualizes the steps of project work presentation
3. Develop research skill for further research

### **DEPARTMENT OF COMPUTER SCIENCE**

#### **B.SC. SEMESTER – I**

**Course Title: Paper –I: Information and Communication Technology**

**Course Code: USCST01**

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

1. Handle and understand the Computer & IT.
2. Learn and understand the different Number systems and codes.
3. Distinguish between Input, Output and Storage Devices.

4. Understand the Windows Operating System and operate to solve the different tasks.
5. Understand the different Networks types and its topology

### **B.SC. SEMESTER – I**

**Course Title: Paper –II: PROGRAMMING TECHNIQUES & INTRODUCTION TO ‘C’**

**Course Code: USCST02**

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

1. Comparative study the different types of computer languages.
2. Study of programming tools such as algorithm, flowcharts.
3. Details study of C-Character Set and Keyboards, Constants and Variables, Data types.
4. Study of Type Casting, Operators and Expressions.
5. Understand conditional statements of C Language.
6. Understand looping statements of C Language. For, while, do-while.

### **B.SC. SEMESTER – I**

**Computer Science Lab I:**

**Course Code: USCSP01**

1. Students will have good laboratory skills, enabling them to write Algorithms, flowcharts and write the programs in computer programming language “C”.
2. Students will debugging and execute the programs.
3. Students will learn to handle the Computer.

### **B.SC. SEMESTER – II**

**Course Title: Paper –I: OPERATING SYSTEM &**

**LINUX Course Code: USCST03**

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

1. Study the different type of operating systems used in computer and their applications.
2. Study the Operating System Structure.
3. Study the UNIX operating system and different commands used in unix OS.
4. Able to write the programs is shell script.

### **B.SC. SEMESTER – II**

**Course Title: Paper –II: STRUCTURED PROGRAMMING WITH ‘C’**

**Course Code: USCST04**

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

1. Understand the array & write programs on arrays.
2. Study the different string library functions.
3. Understand use structure and union using different programs.
4. Differentiate the standard library and user defined functions and their structures.

5. Comparative study of storages classes.
6. Understand the concept of pointer and file.

### **B.SC. SEMESTER – II**

#### **Computer Science Lab II:**

#### **Course Code: USCSP02**

1. Students will have good laboratory skills, enabling them to write Algorithms, Flowcharts and write the programs using arrays, structure and unions in computer Programming language “C”.
2. Write Algorithms, flowcharts and write the programs using pointer and file handling.
3. Students will debugging and execute the programs.

### **B.SC. SEMESTER – III**

#### **Course Title: Paper –I: DATABASE MANAGEMENT AND SYSTEM ANALYSIS**

#### **Course Code: USCST05**

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

1. Study the Database Environment and data models.
2. Understand the different normal forms and their uses.
3. Understand the system and study the system life cycle.
4. Study the System Analysis, Information Gathering Tools and Tools of Structure Analysis.
5. Study the System Design & Implementation.

### **B.SC. SEMESTER – III**

#### **Course Title: Paper II: OBJECT ORIENTED PROGRAMMING WITH C++**

#### **Course Code: USCST06**

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

1. Understand the concept of function used in C++.
2. Study and implementation of classes and objects using programs.
3. Understand the concepts of Constructors, Destructors, Operators Overloading and Inheritance.
4. Understand the concepts of Pointers Virtual & Friend functions and file handling

### **B.SC. SEMESTER – III**

#### **Computer Science Lab III:**

#### **Course Code: USCSP03**

1. Students will have good laboratory skills, enabling them to write the programs using C++ Computer Programming Language.
2. Students will debugging and execute the programs.

### **B.SC. SEMESTER – IV**

#### **Course Title: Paper –I: ALGORITHM & DATA STRUCTURES Course Code: USCST07**



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

1. Study different techniques used in data structure such as sorting, searching, merging, stack and their presentation in memory.
2. Study the recursion and queues and their applications.
3. Study the linked lists and their applications.
4. Study the Tree and Graphs

#### **B.SC. SEMESTER – IV**

**Course Title: Paper –II: VISUAL BASIC & INTRODUCTION TO .NET**

**Course Code: USCST06**

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

1. Understand the concept of Integrated Development Environment (IDE), Programming Constructs and Control flow statement. And implement using programs in VB.
2. Study and implementation of Visual Basic Control, ActiveX Control and Procedure in VB.
3. Study and implementation of Interface, Array and ActiveX Data Object
4. Study the introduction to .NET and implementation of Visual Studio.NET Interface, Array and ActiveX Data Object.

#### **B.SC. SEMESTER – IV**

**Computer Science Lab IV:**

**Course Code: USCSP04**

1. Students will have good laboratory skills, enabling them to write the programs using Visual basic and .NET.
2. Students will debugging and execute the programs.

#### **B.SC. SEMESTER – V**

**Course Title: Paper I: E-Commerce & Web Designing**

**Course Code:**

1. Introduction to E-commerce.
2. History of HTML and basics of HTML with environment.
3. Study of different tags and frames used in HTML.
4. Study of different controls and concept of CSS.

#### **B.SC. SEMESTER – V**

**Course Title: Paper II: Database Programming with Oracle**

**Course Code:**

1. Detail study of RDBMS and its concepts.
2. Study of various elements of SQL and its commands.
3. Practical demonstration of operations on table, functions and database objects.

4. Elaborative concepts of cursor and exception handling.

### **B.SC. SEMESTER – VI**

#### **Course Title: Paper I: CORE JAVA**

##### **Course Code:**

1. History of java programming language and its basics with JDK environment.
2. Practical demonstrations with classes and objects.
3. Study of exception handling and multithreading.
4. Programming with applets and toolkit of java.

### **B.SC. SEMESTER – VI**

#### **Course Title: Paper II: DATA COMMUNICATION WITH CLOUD COMPUTING**

##### **Course Code:**

1. Study of data transmission protocols.
2. Introduction to Networking concepts.
3. Overview of the architecture of cloud computing techniques.
4. Different types of clouds and their comparative study.

<b>M. Sc. Computer Science - I Semester - I</b>	
<b>1. Course Title:</b>	
<b>Paper – I: ADVANCED JAVA</b>	
<b>Course Code: PSCSCT01 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Learn advanced Java and able to develop enterprise level web applications.
CO2.	Understand the advanced programming concepts of JAVA.
CO3.	Understand the server side script writing features supported by Java.
CO4.	Know about complex data objects and its elements using Java Beans.
CO5.	Learn Java programming language which can be utilized to develop windows and internet based software solutions.
CO6.	Able to understand and apply the knowledge of object-oriented principles, applets, GUI for scientific and business oriented applications.
<b>2. Course Title:</b>	
<b>Paper – II: DISCRETE MATHEMATICS</b>	
<b>Course Code: PSCSCT02 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	An ability to use mathematically correct terminology and notation.
CO2.	Having skill to construct correct direct and indirect mathematical proofs.
CO3.	Understanding and able to use division into cases in a proof.
CO4.	Able to use counter examples.
CO5.	Apply logical reasoning to solve a variety of problems.

<b>3. Course Title:</b>	
<b>Paper – III: DATA WAREHOUSE AND SQL</b>	
<b>Course Code: PSCSCT03 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Understand data warehouse architectural strategies.
CO2.	Recognize whether a data mining solution is a feasible alternative for a specific problem.
CO3.	Able to understand how data warehousing can be employed and applied to solve real problems.
CO4.	An ability to apply basic statistical to evaluate the results of data mining models.
CO5.	Develop a comprehensive understanding of how several data mining techniques can be applied to solve problems.
CO6.	Understand the common designs and structures of warehouse systems.
<b>4. Course Title:</b>	
<b>Paper - IV: SCRIPTING LANGUAGE &amp; INFORMATION RETRIEVAL</b>	
<b>Course Code: PSCSCT04 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Demonstrate genesis and diversity of information retrieval situations for text and hyper media.
CO2.	Describe hands-on experience store and retrieve information from www using semantic approaches.
CO3.	An ability to apply and creating of webpage.
CO4.	Understand the concepts and objectives of HTML, Java Script and VB Script.
CO5.	Analyze the performance of information retrieval using advanced techniques such as classification, clustering and filtering over multimedia.
<b>5. Course Title:</b>	
<b>PRACTICAL – I: Practical based on PSCST01</b>	
<b>Course Code: PSCSCP01 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to create basic programs in programming language JAVA.
CO2.	Understand the programs on user interface applet.
CO3.	Capable to perform the program to read the contents from given URL.
CO4.	Able to read the contents of one file and copied to another using JAVA.
CO5.	Knowledge of programming in various aspects of discrete mathematics using C++ for example union, intersection and difference of sets and matrix manipulation.
<b>6. Course Title:</b>	
<b>PRACTICAL – II: Practical based on PSCST03 &amp; PSCST04</b>	

<b>Course Code: PSCSCP02 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Understand the practical part related with SQL and PL/SQL.
CO2.	Study of various programs based on scripting language.
CO3.	Practical demonstration on illustrate Client-Server Program using VBScript.
CO4.	Elaborative concepts of JavaScript program to illustrate the different properties of Document Object.
CO5.	Able to write and understand Java Script Program to Create a Dynamic Web Page and also program to Generate User ID at Runtime.
<b>7. Course Title: Seminar</b>	
<b>Course Code: PSCSCS01 (Ability Enhancement) Credit: 1</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to prepare the power point presentation on any topic to deliver the seminar.
CO2.	An ability to present the paper in the State, National and International Conferences.
CO3.	Understand to make the report or document on any topic of their related area.
CO4.	Able to present within a short duration about huge information.
CO5.	Understanding the concepts of performing shortest report.
<b>M. Sc. Computer Science – I Semester-II</b>	
<b>1. Course Title:</b>	
<b>PAPER – I : Theory of Computation &amp; System Programming</b>	
<b>Course Code: PSCSCT05 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Understand the fundamental framework of language processor.
CO2.	Know about the scanning and parsing phases of compilation.
CO3.	Learn about the design specifications of macros and its advanced facilities.
CO4.	Study of different controls and concept of Theory of Computation.
CO5.	Understand the working principles of linkers and loaders.
<b>2. Course Title:</b>	
<b>PAPER – II: VB.NET</b>	
<b>Course Code: PSCSCT06 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Learn to design a graphical user interface in Visual Basic.NET implementing basic controls including text boxes, labels, list boxes, buttons, radio buttons and checkboxes etc.
CO2.	Designing the algorithm, write, document, debug and test the code for event procedures and sub procedures of a Visual Basic application incorporating elementary coding constructs.
CO3.	To Read, analyze and explain introductory level of Visual Basic code.

CO4.	Able to design windows application.
CO5.	Able to connect with different databases with the application.
<b>3. Course Title:</b>	
<b>PAPER - III: Web Technologies</b>	
<b>Course Code: PSCSCT07 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to create web-based applications and database driven website.
CO2.	To De-bug PHP code and fix database problems.
CO3.	To Deploy a local web server and local install of a database.
CO4.	An ability to acquire programming skills in core Python.
CO5.	To develop the skill of designing Graphical user Interfaces in Python.
CO6.	Able to acquire skills in handling of various operations on data in Python.
<b>4. Course Title:</b>	
<b>PAPER - IV: Software Engineering</b>	
<b>Course Code: PSCSCT08 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to apply the concepts of software engineering which is essentially important while working on big modules and or projects.
CO2.	Understand software process framework, requirement modeling approaches, software design, and software quality.
CO3.	Understand the concept of system and able to analyses its feasibility study.
CO4.	Able to apply software metrics and software testing.
CO5.	Recognize the need for and ability to engage in continuing professional development.
CO6.	Able to solve software problems and command on system software knowledge, use of technology with innovative ideas.
<b>5. Course Title:</b>	
<b>PRACTICAL – I: Practical based on PSCST06</b>	
<b>Course Code: PSCSCP03 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Knowledge of using Visual Studio IDE to design basic application.
CO2.	Able to develop GUI Application using Form Controls and its events.
CO3.	Apply Object Oriented concepts and also use Data Binding in GUI Application.
CO4.	To handle interaction of two forms using VB.NET.
CO5.	Use Data access controls to store data in Database and retrieve it.
<b>6. Course Title:</b>	
<b>PRACTICAL – II: Practical based PSCST07</b>	
<b>Course Code: PSCSCP04 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Expertise to any kind of work with web technologies using PHP, HTML and

	Python.
CO2.	An ability to perform sending Mail from PHP Script.
CO3.	Performing program to create a table in mysql database using PHP.
CO4.	Able to perform mathematical operations on data using Python.
CO5.	Gaining knowledge of decision making platform based on Python.
<b>7. Course Title: Seminar</b>	
<b>Course Code: PSCSCS02 (Ability Enhancement) Credit: 1</b>	
<b>Course Outcomes (COs)</b>	
CO1.	An ability to teach subjects geared to personal growth.
CO2.	To bring new ideas and apply new tactics the students might not have known about before while preparation to present the Seminar.
CO3.	Boosts up the proficiency in Verbal Communication.
CO4.	Acquirement of Knowledge in a Particular Field of Computer Science and IT.
CO5.	Gets encouragement and motivation approach towards innovations in subject area and research.
<b>M. Sc. Computer Science – II Semester-III</b>	
<b>1. Course Title:</b>	
<b>Paper – I: Software Testing Tools and Methodology</b>	
<b>Course Code: PSCST09 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	To understand different software testing techniques and strategies.
CO2.	An ability to apply specific (automated) unit testing method to the software.
CO3.	To distinguish characteristics of structural testing methods.
CO4.	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible.
CO5.	To analyze the functional and system testing methods
CO6.	An Ability to learn about the transaction flow testing.
<b>2. Course Title:</b>	
<b>Paper – II: Soft Computing Techniques</b>	
<b>Course Code: PSCST10 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Implement, evaluate and compare solutions by various soft computing approaches for finding the optimal solutions.
CO2.	Develop intelligent systems leveraging the paradigm of soft computing techniques.
CO3.	Recognize the feasibility of applying a soft computing methodology for a particular problem
CO4.	Design the methodology to solve optimization problems using fuzzy logic, genetic algorithms and neural networks.
CO5.	Design hybrid system to revise the principles of soft computing in various

	applications.
<b>3. Course Title:</b>	
<b>Paper – III: Research Methodology And Operational Technique</b>	
<b>Course Code: PSCST11 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Analyze research related information and understand research problem formulation and also able to perform sample design with writing.
CO2.	Understanding the nature of problem to be studied and identifying the related area of knowledge for research.
CO3.	Follow research ethics and ability to implement the specific research method for the selected problem.
CO4.	An ability to write and present the research paper in the Conferences.
CO5.	Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept and creativity.
<b>4. Course Title:</b>	
<b>Paper – IV: C#.NET</b>	
<b>Course Code: PSCST12 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Understanding programming concepts in .Net Framework and also able to create website using ASP.Net Controls.
CO2.	Able to understand the Distributed Application using C#.
CO3.	Acquired knowledge of C#.Net Programming.
CO4.	Create user interactive web pages using ASP.Net.
CO5.	Create simple data binding applications using ADO.Net connectivity.
<b>5. Course Title:</b>	
<b>PRACTICAL – I: Practical based on PSCST09 &amp; PSCST10</b>	
<b>Course Code: PSCSP05 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Compute soft computing techniques using Mat Lab.
CO2.	Identify the problem given and find its solution using various algorithm design techniques.
CO3.	Implement algorithm design techniques such as different operations on fuzzy sets, linguistic variable, fuzzy intersections and fuzzy union problems.
CO4.	Implement neural network algorithm for various applications like Properties of single neuron theoretical model of neuron, binary model of neuron and essential vector operations.
CO5.	Compare and contrast the performance of various algorithms for same problem such as Genetic Algorithm, Genetic algorithm in problem solving and Biological terminology of genetic algorithm.
<b>6. Course Title:</b>	
<b>PRACTICAL – II: Practical based on PSCST11 &amp; PSCST12</b>	
<b>Course Code: PSCSP06 (Core Lab) Credit: 4</b>	

<b>Course Outcomes (COs)</b>	
CO1.	Ability to compute entire practical based C#.NET.
CO2.	Knowledge of performing programs using conditional statements and loops using c#.
CO3.	Understanding object oriented programs with C#.
CO4.	Capable to perform programs on using different controls with C#.
CO5.	An ability to perform and understand programs using ASP.NET server controls and database programs with ASP.NET and ADO.NET.
<b>7. Course Title: Seminar</b>	
<b>Course Code: PSCSS03 (Ability Enhancement) Credit: 1</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to boosts up confidence and fluency while interacting verbally.
CO2.	Ability to present students in front of gathered audience boosts the confidence of the students preparing them precisely for interviews and group discussions.
CO3.	This activity makes skill to enhance in verbal communication while expressing them.
CO4.	Able to learn on their own which boost their confidence, performance and productivity.
CO5.	Ability to make eminent personalities in future by these basic steps of such activities.
<b>M. Sc. Computer Science – II Semester-IV</b>	
<b>1. Course Title:</b>	
<b>Paper – I: Android Application Development</b>	
<b>Course Code: PSCST13 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Getting knowledge of Android platform.
CO2.	Understand both the basic and advanced concepts of Android's Development Environment.
CO3.	Able to install and configure Android Studio.
CO4.	Ability to understand very well about entire concept of Networking and Web Services.
CO5.	Creating Graphics, Animations with Android's Graphics API and Multimedia
<b>2. Course Title:</b>	
<b>Paper – II: Digital And Cyber Forensics</b>	
<b>Course Code: PSCST14 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	An ability to communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in presentations to both technical and lay audiences.
CO2.	Able to conduct digital investigations of cybercrimes.
CO3.	Able to apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices for digital investigations.



CO4.	Capable to protect the computer network resources from unauthorized activity.
CO5.	Able to identify and document potential security breaches of computer data and suggest violations of legal, ethical, moral, policy, and/or societal standards.
<b>3. Course Title:</b>	
<b>Paper – III: Web Designing Using Asp .Net</b>	
<b>Course Code: PSCST15 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Understand the Web Application basics.
CO2.	Able to configure and deploy Web Application.
CO3.	Ability to design web application with variety of controls.
CO4.	Capable to perform various web services and access the data using inbuilt data access tools.
CO5.	Able to use Microsoft ADO.NET to access data in web Application and also Develop secured web application.
<b>4. Course Title: Project</b>	
<b>Course Code: PSCST16 (Core Course) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	On successful completion of the course students will be able to demonstrate a sound technical knowledge of their selected project topic.
CO2.	Prepares students to accept and meet challenges in the real world, mirroring what professionals do every day.
CO3.	Able to design engineering solutions to complex problems utilizing a systems approach.
CO4.	Understand very well about problem identification, formulation and solution.
CO5.	Learn to apply the knowledge gained through various courses in solving a real life problem.
CO6.	Communicate with different social areas to understand social problems besides that contacting engineers and the community at large in oral forms to build the project.
CO7.	Demonstrate the knowledge, skills and attitudes of a professional Computer technician.
CO8.	Project-based learning connects students to the real world.
<b>5. Course Title:</b>	
<b>PRACTICAL – I: Practical based on PSCST13 &amp; PSCST14</b>	
<b>Course Code: PSCSP07 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Compute practical's based on Android Application.
CO2.	Able to perform program which will shows you how to run any video file.
CO3.	Knowledge of program which allows you to set an image as wallpaper.
CO4.	Ability to perform program which enables you to draw an image using bitmap class object.
CO5.	Design and develop User Interfaces for the Android platform.
<b>6. Course Title:</b>	

<b>PRACTICAL – II: Practical based PSCST15</b>	
<b>Course Code: PSCSP08 (Core Lab) Credit: 4</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to compute practical's based on Based on Web designing using ASP.NET.
CO2.	Ability to design web application with different validations.
CO3.	Knowledge of authentication and authorization in asp.
CO4.	Capable to deployment and publishing web sites.
CO5.	Design web application for uploading files on web.
<b>7. Course Title: Seminar</b>	
<b>Course Code: PSCSS04 (Ability Enhancement) Credit: 1</b>	
<b>Course Outcomes (COs)</b>	
CO1.	Able to create learning environment different and unique from classrooms, students learn more effectively and efficiently.
CO2.	An ability to talk and learn about any topic will encourage the students to explore new areas relevant to the topic.
CO3.	Students encourage new ways of thinking and learning.
CO4.	Create skill of making power point presentation and talk on the topic which has been selected.
CO5.	Able to create golden opportunity of personality development in students by seminar activity.
<b>Subject Code Details:</b> In Course Code 1 <sup>st</sup> Letter (U): Represent it a Under Graduate Course 2 <sup>nd</sup> Letter (S): Represent it is Science Faculty Next 3 Letters (CSC): Represent the subject Computer Science Next Letter (P): P: Represents Practical/Project Next Letter (S): S: Represent Seminar Last two letter: Represent Paper No. for Example 01 Represent Paper No. 1	

## DEPARTMENT OF ELECTRONICS

### B.SC. SEMESTER – I

**Course Title: Paper-I (Network Analysis and Digital Fundamentals)**

**Course Code: (USELT01)**

On completion of the course, students are able to:

1. Apply concepts of electric network topology, nodes, branches, loops to solve circuit problems Including the use of computer simulation.
2. Understand the basic concepts of various network Theorems.

3. Learn the various parameters and their interrelationship, able to solve numericals with series, cascade, parallel connection using two port parameters.

4. Understand basic digital electronic systems
5. To learn function of basic digital circuits and use of transistors to create logic gates in order to perform Boolean logic.
6. To learn different theorems for simplification of basic Digital electronics circuits.
7. Student understand symbols, Truth tables, Boolean equations, & working principle.

### **B.SC. SEMESTER – I**

#### **Course Title: Paper-II (Semiconductor Diodes and Analog Electronics) Course Code: (USELT02)**

On completion of the course, students are able to:

1. Know various semiconductor diodes and their characteristics
2. Know the various types of Rectifies and their advantages and disadvantages.
3. Know the various transistors and their input output characteristics
4. Know about the multistage amplifier using BJT and FET in various configuration to determine frequency response and concept of voltage gain.
5. Know the concept of feedback amplifier and their characteristics.
6. Design the different oscillator circuits for various frequencies

### **B.SC. SEMESTER – II**

#### **Course Title: Paper-I (Unipolar Devices and Linear Integrated Circuits) Course Code: (USELT03)**

On completion of the course, students are able to:

1. Understand various Unipolar Devices like UJT, MOSSFET
2. Understand the fundamentals and areas of applications for the integrated circuits.
3. Analyze important types of integrated circuits.
4. Understand requirement of Operational Amplifier and Block diagram of Operational Amplifier
5. Understand various parameters of Operational Amplifier
6. Understand various linear and Nonlinear applications of Operational Amplifier

### **B.SC. SEMESTER – II**

#### **Course Title: Paper-II (Digital Integrated Circuit) Course Code: (USELT04)**

On completion of the course, students are able to:

1. Understand combinational and logical digital circuits and their differences.
2. Students will be introduced to Flip-flop, shifts register, counters for data Processing circuits.
3. To learn symbol, working principle of basic Digital electronics circuits for data processing application.
4. At the end of this course, students should be able to recognize and analyze the basic digital circuits.

### **B.SC. SEMESTER – III**

**Course Title: Paper-I (Power Amplifier, Oscillators and Power Supplies) Course Code: (USELT05)**

On completion of the course, students are able to:

1. To understand Basic Analog Circuits and their applications using Active Devices
2. To learn basic function of single stage amplifier, multistage amplifier and power Amplifier and their working principle.
3. To understand basic construction of feedback circuits and their application in Oscillators
4. Understand basic amplifier and oscillator circuits and their application in analog circuits.
5. To learn and design various regulated and unregulated Power supplies.

### **B.SC. SEMESTER – III**

**Course Title: Paper-II  
Microprocessor Course Code:  
(USELT06)**

On completion of the course, students are able to:

1. To understand the basic architecture of 8- bit microprocessors.
2. Able to write programs on 8085 microprocessor based systems.
3. Identify the addressing modes of an instruction.
4. Develop programming skills in assembly language.

### **B.SC. SEMESTER – IV**

**Course Title: Paper-I Communication  
Electronics Course code: (USELT07)**

On completion of the course, students are able to:

1. Understand different blocks in communication system and how noise affects communication using different parameters.
2. Distinguish between different amplitude modulation schemes with their advantages, disadvantages and applications.
3. Analyze generation and detection of FM signal and comparison between amplitude and angle modulation schemes.
4. Identify different radio receiver circuits and role of AGC.
5. Basic concept of mobile communication System
6. Understand idea of GSM, CDMA, TDMA and FDMA technologies, GPS navigation system.

### **B.SC. SEMESTER – IV**

**Course Title: Paper-II (Interfacing, PPI devices and Microcontroller)  
Course Code: (USELT08)**

On completion of the course, students are able to:

1. Understand interfacing various Input and Output devices with 8085 Microprocessor.
2. Get Knowledge of various PPI Devices used in Microprocessor.
3. Ability to differentiate microprocessor and microcontroller
4. Draw and describe architecture of 8051 microcontroller
5. Write assembly language program for microcontrollers.
6. Design microcontroller based system for various applications

### **B.SC. SEMESTER – V**

#### **Course Title: Paper-I (Electronic Instrumentation) Course Code: (USELT09)**

On completion of the course, students are able to:

1. Learn various measuring Instruments like voltmeter, ammeter, ohmmeter and various dc bridges.
2. Understand the detailed block diagram of CRO
3. Understand the detailed applications of CRO for the measurement of Phase, frequency and phase.
4. Understand the concept of Transducers.
5. Understand the various types of Transducers.

### **B.SC. SEMESTER – V**

#### **Course Title: Paper-II (C-Programming-I) Course Code: (USELT10 DSE-01)**

On completion of the course, students are able to:

1. Understand basic of the programming language
2. Able to switch any other programming language
3. Able to write C program for simple real life applications using structures.

### **B.SC. SEMESTER – VI**

#### **Course Title: Paper-I (Photonic Devices and Power Electronics) Course Code: (USELT11 DSE-02)**

On completion of the course, students are able to:

1. Understand power semiconductor devices used in industries.
2. Understand the construction and working of different power semiconductor devices
3. Analyze various triggering circuits used for different semiconductor devices
4. Design power electronic circuit for real time application like rectifier and convertor etc.
5. Recognize the role power electronics play in the improvement of energy usage efficiency and the applications of power electronics in emerging areas.

### **B.SC. SEMESTER – VI**

#### **Course title: Paper-II**

**Course Code: (USELT12 DSE-03)**

On completion of the course, students are able to:

1. Understand the fundamentals of C programming.
2. Choose the loops and decision making statements to solve the problem.
3. Implement different Operations on arrays.
4. Use functions to solve the given problem.
5. Understand pointers, structures and unions.
6. Implement file Operations in C programming for a given application

**M. Sc. ELECTRONICS****Materials Research****Methods:**

On successful completion of this course the student are enabled with the Knowledge in Materials Research, Material Characterization.

**Biomedical Electronics**

After the successful completion of the course the student should have a throughout knowledge in Biomedical Electronic. He can handle various Instruments in Medical like ECG, EEG, EMG, Ultrasonography and many medical Instruments

**Embedded System**

On successful completion of this course the students should have the practical knowledge in Embedded system. He can design Microcontrollers and Microprocessors

**Fuzzy Logic and Artificial Neural Network**

On successful completion of this course the students can developed his logic. FuzzyLogic is used When one wants to deal with uncertainty of non-statistical kind. To capture humanistic understanding of processes and to develop a formal way to that. Fuzzy Logic is a decision making system

**‘C’ Programming**

This course aims to develop an understanding of the conceptual framework of Programming in C, C++. After the successful completion of the course the student acquires the knowledge in the Programming skill and decision making.

**Virtual Instrumentation**

On successful completion of this course the students provides knowledge on design of process control by using virtual instrumentation techniques. He acquires knowledge in process analysis by VI

**Project Work & Viva-Voce**

This gives practical exposure in the Project work, knowledge which will equip the students in Research work.



## **B.SC. SEMESTER – I**

### **Course Title: Paper – I (Microorganism, Algae, Fungi and Plant Pathology)**

#### **Outcomes:**

1. On completion of course students are able to understand:
2. Compare the relationships among plants and microbes
3. Know about viruses, mycoplasma, bacteria & cyanobacteria
4. Understand the diversity among Algae.
5. Study of cryptogams and phanerogams and its diversity
6. Know about the systematics, morphology, structure, economic importance of algae & fungi.
7. Compare viral, bacterial & fungal symptoms on plants
8. Know the prevention and control measures of plant diseases and its effect on economy of crops

## **B.SC. SEMESTER – I**

### **Course Title: Paper – II (Bryophyta, Pteridophytes, Gymnosperms & Paleobotany Outcomes:**

On completion of the course, students are able to understand

1. Learn about general character, classification and economic importance of the Bryophytes, Pteridophytes and Gymnosperms
2. Know the taxonomic position, occurrence, thallus structure & reproduction of Bryophytes
3. Concept of heterospory and seed habit
4. Knowledge about geological time scale, process of fossilization and type of fossils
5. Understand fossil gymnosperm of Glossopteris & Cycadeoidea
6. Know about external morphology, anatomy and reproduction of the Cycadales & Coniferales

## **B.SC. SEMESTER – I**

### **BOTANY LAB - I**

1. Students have good laboratory skill of handling of instruments
2. Student got knowledge slide preparation, observation and drawing diagram
3. Students perform practicals as per laboratory exercises in different areas Bacteria, Algae, Fungi, Lichen, Plant pathology, Bryophyta, Pteridophytes, Gymnosperms & Paleobotany

## **B.SC. SEMESTER – II**

### **Course Title: Paper – I (Morphology and Anatomy of Angiosperms)**

#### **Outcomes:**

1. Learn about vegetative and reproductive morphology of Angiosperms
2. Understand root apical, shoot apical meristem and tissue system

3. Students know knowledge about primary and secondary structure of angiosperm plants
4. Differences about anomalous secondary structure of stem roots and leaf

### **B.SC. SEMESTER – II**

#### **Course Title: Paper – II (Taxonomy and diversity of Angiosperms)**

##### **Outcomes**

1. Understand about primitive angiosperms (Magnolia) & fossil angiosperms
2. knows about classification of angiosperms and herbarium technique
3. Student identify, classify and naming of angiosperm plants. herbarium techniques
4. Enable the students to identify dicot and monocot families
5. Students are able to know about characteristic of various plants and its classification

### **B.SC. SEMESTER – II**

#### **BOTANY LAB - II**

1. Understand good laboratory practices and safety.
2. Acquired knowledge of plants through practical work in fields as well as in laboratory
3. Students described families, identify, classify, and naming of plants.
4. Students acquire fundamental botanical knowledge through practical.
5. Students gain practically knowledge about vegetative, reproductive morphology of Angiosperms and anatomy
6. Students acquired skill about herbarium sheet.

### **B.SC. SEMESTER – III**

#### **COURSE TITLE: PAPER – I - REPRODUCTIVE BIOLOGY OF ANGIOSPERMS, PLANT GROWTH AND DEVELOPMENT**

##### **Outcomes:**

On completion of course students able to understand

1. Understand about the vegetative and reproductive taxonomic characters of plants
2. Know about types of pollination and structure of embryo sac.
3. Classify endosperm, monocot and dicot embryo and its development
4. Know seed dormancy & its method to break seed dormancy
5. Students understand growth and development of plants
6. Know about plant growth regulators and plant movements.
7. Understand knowledge about physiology of flowering, photoperiodism, phytochromes, senescence and abscission

### **B.SC. SEMESTER – III**

#### **COURSE TITLE: PAPER – II PLANT BIOCHEMISTRY AND PHYSIOLOGY**

**Outcomes:**

1. To understand the properties & role of Monosaccharides, Oligosaccharides and Polysaccharides.
2. Students know about properties, structure and uses of fatty acids
3. Learn classification of amino acids and proteins structure
4. Student should understand basics of enzymology
5. Students will have a thorough knowledge of nitrogen metabolism and mineral nutrition
6. Understand plant water relations, Ascent of sap, transpiration and phloem transport
7. They will learn about theories of absorption of solute in plants: Active absorption & Passive absorption
8. They will be able to understand Photosynthesis & Respiration

**B.SC. SEMESTER – III****BOTANY LAB - III**

1. Students will acquire good laboratory skills to handling the different equipment's regarding practical of reproductive biology of angiosperms, plants growth and development, plant biochemistry and plant physiology.
2. Students got knowledge practically about plants description, seed dormancy and germination of pollen tube, embryo and endosperm development.

**B.SC. SEMESTER – IV****COURSE TITLE: PAPER – I CELL BIOLOGY, GENETICS AND BIOTECHNOLOGY OUTCOMES:**

1. Students know about the eukaryotic cell cycle, mitotic and meiotic cell division and DNA
2. Learn plant tissue cultures and regeneration.
3. Study the phenomenon of dominance, laws of segregation, independent assortment of genes, Interaction of genes
4. Students understand linkages & its types, complete and incomplete, significance.
5. They learn about theories, crossing over and variation in chromosome
6. They know about structural changes in chromosome and mutagens
7. Genetic Engineering- tools and techniques of Recombinant DNA technology

**B.SC. SEMESTER – IV****COURSE TITLE: PAPER – II -PLANT ECOLOGY OUTCOMES:**

1. Summarize the environmental factors like climatic, edaphic factors and biotic factors CO.2. Understand ecosystem, biogeochemical cycles environmental pollution
2. Compare autecology and synecology
3. Student knows plant succession, causes and climax concept CO.5. Understand phytogeographic regions of India

#### **B.SC. SEMESTER – IV**

##### **BOTANY LAB - IV**

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

1. Identify different stages of mitosis and meiosis, slide preparation, observation of slide
2. Students perform practicals as per laboratory exercises in the areas of genetics and ecology
3. Solve Mendel's law of inheritance by using color beads
4. To get acquainted with tools of genetic engineering, laboratory equipments, apparatus and instruments in biotechnology laboratory
5. Students acquired knowledge practically by performing practical regarding tissue culture like explants, callus formation & seedling formation and technique of anther culture.
6. Study natural habitats of plants and identify ecological characters of hydrophytes, xerophytes, epiphyte & parasite.

#### **B.SC. SEMESTER – V**

##### **COURSE TITLE: (DSE-I)- PAPER-I - ECONOMIC**

##### **BOTANY- I OUTCOMES:**

1. Know about the scope of Economic Botany
2. Understand about botanical description, cultivation and their uses of various, Cereals, Legumes and Pulses of crop plants.
3. Gain knowledge about various plants of vegetables, sugar, fruits and its economic use.
4. Compare about the oil yielding plants and wild edible fruit plants.
5. Understand the role of the plants in human welfare.
6. Students get to know about origin, distribution, botanical description, cultivation and uses of fibers and for age yielding plants

##### **LABORATORY EXERCISES:**

1. Students have good laboratory skill to handle the various instruments

2. Make use of live and preserved specimens, plant parts, charts, pictures and Photographs of Food, Pulses, Vegetable, Fruit, Oil, Fiber and Forage yielding plants
3. Students perform practical as per laboratory exercises in the area Economic Botany

#### **B.SC. SEMESTER – IV**

#### **COURSE TITLE: (DSE-I) - PAPER-II - ECONOMIC**

#### **BOTANY- II OUTCOMES:**

1. Understand concept, scope and importance of economic botany
2. Students get to know about origin, distribution, botanical description, cultivation and uses of spices, condiments and beverages
3. Acquire knowledge about the gum, rubber and dye
4. Know about the cultivation process and uses of timber yielding plants and bamboo
5. Gain knowledge about the various type of medicinal and aromatic plants.
6. Students are able to understand medicine, essential oil and bio-fuels found in plants and used in human welfare

#### **LABORATORY EXERCISES:**

1. Students used of live or preserve specimens, plant parts, charts, pictures or photographs for study of plants.
2. Study economically important plants spices, condiments, beverages, gum, rubber, dye, timber, Bamboo, medicine, essential oil and bio-fuels
3. Perform biochemical tests for carbohydrates, proteins and fats
4. Demonstrate the technique for extraction of essential oil from *Citronella* oil (Lemon grass), plant material (Steam distillation)
5. Perform experiment procedures as per laboratory standards and demonstrate the technique for extraction of bio-fuel from *Jatropha curcus* plant material (Soxhlet Extraction Method)

#### **B.SC. SEMESTER – VI**

#### **COURSE TITLE: (DSE-II)- PAPER-I - PLANT**

#### **BIOTECHNOLOGY- I OUTCOMES:**

On completion of course students are able to understand:

1. Understand history about plant tissue culture.
2. Students get to know about the nutrient and hormone requirements in (MS, B5, and N6) media for tissue culture.
3. Understand concept about totipotency, differentiation, dedifferentiation, redifferentiation, regeneration, organogenesis, embryogenesis in the field of plant biotechnology.

4. Students know about various technique of tissue culture - Micropropagation, virus elimination, protoplast isolation, culture and fusion, Secondary metabolite production
5. Learn about the techniques of anther, pollen and ovary culture, production of haploids, triploids and hybrids, hardening of the tissue culture raised plants for field plantation, cryopreservation, germ plasm conservation

#### **LABORATORY EXERCISES:**

1. Students know about laboratory setup for plant tissue culture techniques.
2. Students to get acquainted with equipment's and instruments used in Plant Biotechnology laboratory.
3. Learn various sterilization methods employed in plant biotechnology laboratory.
4. Prepared Murashige and Skoog plant tissue culture medium.
5. To conduct surface sterilization and inoculation of different explants (leaf, nodal buds, seeds) from suitable plant for callus induction.
6. Demonstrate anther culture.
7. Students will be able to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of biotechnology

#### **B.SC. SEMESTER – VI**

#### **COURSE TITLE: (DSE-II) - PAPER-II - PLANT**

#### **BIOTECHNOLOGY- II OUTCOMES:**

On completion of course students are able to understand

1. Understand the principle and basic protocols for plant tissue culture Technique.
2. Students know about the direct methods of gene transfer (electroporation, microinjection, microprojectile bombardment, silicon carbide mediated)
3. Gain Knowledge about indirect method of gene transfer (*Agrobacterium*-mediated gene transfer and selection of transgenics)
4. Students aware about the biotechnological technique and its application for pest resistant, herbicide resistant plants, transgenic crops with improved quality traits (Golden rice), improved horticultural varieties (Moondust carnations)
5. Scientific knowledge about transgenic plants producing edible vaccines, biodegradable plastic, chloroplast transformation, biosafety concerns and ethics in the area of biotechnology.

#### **LABORATORY EXERCISES:**

1. Students demonstrate micro propagation from callus and explants.
2. Isolate and culture protoplasts.
3. Prepare suspension culture for secondary metabolite production.
4. Understand the different methods of direct gene transfer using models, charts, photographs, ppt, and video.

5. To Study steps involved in the production of Bt cotton, Golden rice through models, charts, photographs, ppt, video.
6. Students are able to understand the production of biodegradable plastic using models, chart, photographs, ppt, video.

### **M.SC. BOTANY SEMESTER I**

**Course Title: Paper I (Microbiology, Algae and Fungi)**

**Course Code: PSCBOTT01**

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

1. Understand history, structure and life cycle microorganism like Bacteria, Virus, Archaeobacteria and Eubacteria which is in daily life.
2. Know the diversity, systematics, structure, life cycle pattern, evolutionary trends, useful and harmful aspects of Algae and Fungi which create in research activities of subject.
3. Understand the Bacterial, Fungal and Viral diseases of plant and their control measure which is Use in their daily life.

### **M.SC. BOTANY SEMESTER I**

**Course Title: Paper II (Bryophytes and Pteridophytes)**

**Course Code: PSCBOTT02**

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

1. Understand the diversity, systematics, structure, life cycle pattern, evolutionary trends, uses and fossil history of Bryophytes.
2. Know the diversity, systematics, structure, life cycle pattern, evolutionary trends of Pteridophytes and Indian Pteridologist.

### **M.SC. BOTANY SEMESTER I**

**Course Title: Paper III (Gymnosperm and Paleobotany)**

**Course Code: PSCBOTT03**

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

1. Know the scope of Paleobotany, types of fossils, its role in global economy and geological timescale.
2. Understand the various fossil genera representing different fossil groups and their evolutionary trends.
3. Know the diversity, systematics, structure, life cycle pattern, evolutionary trends of
4. Gymnosperm.

### **M.SC. BOTANY SEMESTER I**

**Course Title: Paper IV (Cytology and Genetics)**

**Course Code: PSCBOTT04**

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

1. Know the Medels law and chromosomal theory of inheritance, genetic inheritance in plants.

2. Understand molecular structure of chromosome and chromatin organization.
3. Differentiate the structural and numerical changes in chromosome.
4. Learn the mutation and its role in crop improvement and epigenetics.

## **M.SC. BOTANY**

### **SEMESTER I BOTANY**

#### **PRACTICAL: I**

##### **Course Code: PSCBOTP01**

1. Students can differentiate the morphological and anatomical structure of Algae, Fungi, Bryophytes and Pteridophyte.
2. Students learn the symptomology of some diseased plants and Identification of fungal culture.
3. Students take interest in the field collection of Algae, Fungi, Bryophytes, Pteridophyte.

## **M.SC. BOTANY**

### **SEMESTER I BOTANY**

#### **PRACTICAL: II**

##### **Course Code: PSCBOTP02**

1. Students can distinguish the morphological and anatomical structure of Gymnosperm.
2. Students learn the various fossils of gymnosperm and their permanent slides.
3. Students visit to fossiliferous localities and collection of specimen.

## **M.SC. BOTANY SEMESTER II**

### **Course Title: Paper V (Plant Physiology and Biochemistry)**

#### **Course Code: PSCBOTT05**

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

1. Distinguish between the plant physiology like Photosynthesis and Respiration.
2. Know the importance of metabolism of Carbohydrates, Lipids, Amino acids, and Nitrogen.
3. Know the importance of the Sulfur and Phosphate assimilation of plant.
4. Understand Enzymology of plant.
5. Know the importance of solute transport and photo-assimilate translocation in plants.

## **M.SC. BOTANY SEMESTER II**

### **Course Title: Paper VI (Plant Development and Reproduction) Course Code: PSCBOTT06**

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

1. Differentiate the plant growth kinetics pattern of Shoot, Leaf, Root and Flower.
2. Understand the structure of Male Gametophyte, Female Gametophyte and mechanism Pollen-Pistil interaction and Fertilization.
3. They acquire the thorough knowledge of Seed development, Fruit growth, Germination and dormancy of



seed.

4. Differentiate the mechanism of Senescence and Programmed Cell Death.

### **M.SC. BOTANY SEMESTER II**

**Course Title: Paper VII (Cell and Molecular Biology-I)**

**Course Code: PSCBOTT07**

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

1. Know the structure and function of Cell wall, Plasma membrane and Plasmodesmata.
2. Understand the ultra structure and function of various Cellular organelles, Cell shape and motility.
3. Know the ultra structure of Nucleus, forms of DNA and DNA replication in prokaryotic and eukaryotic cell.
4. Understand the Molecular biology of stress responses.

### **M.SC. BOTANY SEMESTER II**

**Course Title: Paper VIII (Angiosperm-I)**

**Course Code: PSCBOTT08**

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

1. Know the Angiosperm morphology, floral symmetry and evolution of floral organ.
2. Understand the Angiosperm Taxonomy like Taxonomic evidences and Taxonomic tools.
3. Take interest in the Biosystematics for plant identification.

### **M.SC. BOTANY**

#### **SEMESTER II BOTANY**

#### **PRACTICAL: III**

**Course Code: PSCBOTP03**

1. Know the importance of the Enzyme activity and Carbohydrate, Chlorophyll, Protein content.
2. Students can distinguish the Anatomical detail of various parts of plant like Root, Stem and Leaf.
3. Students can acquire the practical knowledge of Gametogenesis, pollen tube germination and Pollen-Pistil interaction.
4. Students know the different type of endosperm, embryo sac and method of breaking seed dormancy practically.

### **M.SC. BOTANY**

#### **SEMESTER II BOTANY**

#### **PRACTICAL: IV**

**Course Code: PSCBOTP04**

1. Students can take interest in isolation of salivary gland chromosome, isolation of cell organelles like Chloroplast and Mitochondria practically.
2. Students can take interest in the flagellary staining, isolation of DNA and structure of cell.
3. Students know the differentiate the floral symmetry and differentiate the dicot and monocot flower.
4. Students can acquire the practical knowledge of the variation in stamens and carpel's, placentation and floral adaptation for pollination.

5. Students learn the anatomical, embryological, palynological, cytological feature of various taxa practically.

### **M.SC. BOTANY SEMESTER III**

**Course Title: Paper IX (Plant Ecology) Course Code: PSCBOTT09**

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

1. Differentiate the Vegetation organization and Vegetation development .
2. Use Knowledge of Ecosystem organization and Air, Water, Soil Pollution in daily life.
3. Know the importance of Climate change and Ecosystem stability for healthy life on earth.

### **M.SC. BOTANY SEMESTER III**

**Course Title: Paper X (Cell and Molecular Biology-II) Course Code: PSCBOTT10**

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

1. Know the Structure and function of Ribosome and mechanism of Transcription and Translation.
2. Understand the Gene structure and mechanism of gene expression and Protein sorting.
3. Differentiate the Genome organization in prokaryotic and eukaryotic organism.
4. Understand the Genetic recombination, genetic mapping, cell cycle and apoptosis at molecular
5. level.
6. Acquire through knowledge of the Signal transduction and Techniques in cell biology.

### **M.SC. BOTANY SEMESTER III**

**Course Title: Paper XI (Paleobotany-I) Course Code: PSCBOTT11**

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

1. Know the importance of the science of Petrology, Geological time scale and Fossilization.
2. Know the types and techniques of fossil study.
3. Differentiate the fossil members of Pteridophyte.

### **M.SC. BOTANY SEMESTER III**

**Course Title: Paper XII (Basic Botany-I) Course Code: PSCBOTT12**

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

1. Know the Diversity of cryptogams.
2. Understand the Diversity of phanerogams.
3. Know the morphology of angiosperm.
4. Understand the anatomy of angiosperm.

## **M.SC. BOTANY**

### **SEMESTER III BOTANY**

#### **PRACTICAL: V**

##### **Course Code: PSCBOTP05**

1. Students learn the distribution pattern of different plant species by Quadrate method practically.
2. Students take interest in the analysis of soil for CO<sub>3</sub>, NO<sub>3</sub> practically.
3. Students take interest in the analysis of water for BOD, COD, O<sub>2</sub>, and CO<sub>2</sub> practically.
4. Students can understand the adaptation of plant of Hydrophytic, Xerophytic and Halophytic zones through these plants practically.
5. Students learn the Isolation of nuclei and identification of histones by SDS-PAGE practically.
6. Students learn the isolation of Chloroplast and demonstration of two subunits of RUBISCO by SDS-PAGE.
7. Acquire knowledge of the in vitro transcription, translation and conjugation practically.
8. Students learn the presence of specific antigen by ELISA practically.
9. Students can isolate RNA and quantify it by spectrophotometric method.

## **M.SC. BOTANY**

### **SEMESTER III BOTANY**

#### **PRACTICAL: VI**

##### **Course Code: PSCBOTP06**

1. Students learn the different technique of study fossil and see different types of fossil practically.
2. Students see practically the different types of Pteridophyte fossil.
3. Students work on the Stratigraphy and Geological Maps of India.
4. Students know the importance of Geological time scale and see different types of rocks practically.

## **M.SC. BOTANY SEMESTER IV**

### **Course Title: Paper XIII (Plant Biotechnology)**

#### **Course Code: PSCBOTT13**

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

1. Acquire knowledge of the Recombinant DNA technology and Genetic engineering of plant.
2. Differentiate the Microbial genetic manipulation, Genomics and proteomics.
3. Know the importance of Plant tissue culture and transgenic production.
4. Have knowledge of the Bioinformatics, Database, Data analysis, prediction and submission tools
5. and their uses.

## **M.SC. BOTANY SEMESTER IV**

### **Course Title: Paper XIV (Angiosperms-II)**

#### **Course Code: PSCBOTT14**

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

1. Know the importance of the floral variation, evolution and affinities of different family.
2. Have through knowledge of the probable ancestors of angiosperm, speciation and extinction, IUCN

categories of threat.

3. Understand the Biological diversity concept and level, Endemism, Hot spot and local plant diversities and socioeconomic importance.

#### **M.SC. BOTANY SEMESTER IV**

**Course Title: Paper XV (paleobotany-II)**

**Course Code: PSCBOTT15**

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

1. Differentiate the fossils members of Gymnosperm.
2. Understand the formation of Deccan trap and Intertrap, age and its floristic composition in relation to Pteridophyte, Gymnosperm and Angiosperm.
3. Know the difference between Paleopalynology, Paleoecology and paleogeography.
4. Understand the Indian Gondwana- its stratigraphy and classification.

#### **M.SC. BOTANY SEMESTER IV**

**Course Title: Paper XVI (Basic Botany-II)**

**Course Code: PSCBOTT16**

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

1. Know the Plant physiology.
2. Understand the Ecology and evolution plant.
3. Understand importance of the Economic botany.
4. Know the importance of the Paleobotany.

#### **M.SC. BOTANY**

##### **SEMESTER IV BOTANY**

##### **PRACTICAL: VII**

**Course Code: PSCBOTP07**

1. Students take interest in studying the Growth characteristics of E.coli using plating method practically.
2. Students learn the Isolation of plasmid from E.coli practically.
3. Students learn the isolation of protoplast and determine its viability practically.
4. Students take interest in the preparation of media for plant tissue culture.
5. Students learn to write the description of locally available families.
6. Students learn to use the location of key characters and preparation of keys at generic and family level practically.
7. Students use the floras for identification of plants.
8. Students know the Deccan Intertrappean flora of India. Pteridophytes, Gymnosperm and Angiosperm-

flowers and fruits.

9. Students know the important features of spores and pollen morphology by maceration technique.

**M.SC. BOTANY**

**SEMESTER IV BOTANY**

**PRACTICAL: VIII**

**Course Code: PSCBOTP08**

1. Students do their Project work and acquire the skill of taking observation in the field which develop their critical thinking.

## **DEPARTMENT OF MATHEMATICS**

### **B.SC. SEMESTER – I**

**Course Title: Paper I (Differential and Integral Calculus) Course Code: USMT-01**

This course will enable the students to:

1. State theorems on limits and continuity.
2. State and prove Mean value theorem.
3. Know statement of Roll's theorem and its proof.
4. Recognize Beta and Gamma function and its properties.
5. Recognize and solve double integration and its properties

### **B.SC. SEMESTER – I**

**Course Title: Paper II (Differential Calculus and Trigonometry) Course Code: USMT-02**

This course will enable the students to:

1. Acquire the basic knowledge of Partial differentiation, Differential and Chain rule
2. Familiarized with Homogeneous function, Euler's theorem and Taylor's theorem for function of two variable.
3. Distinguish between tracing of curves and tracing of curves in Cartesian form.
4. Understand how to prove De Moivre's theorem and its application.
5. Understand the Circular and Hyperbolic function.
6. Appreciate the beauty of the  $C + iS$  method

### **B.SC. SEMESTER – II**

**Course Title: Paper I (Ordinary Differential Equation and Difference Equation )  
Course Code: USMT-03**

This course will enable the students to:

1. Understand basic properties of differential equations, Orthogonal trajectories, Linear differential equations.
2. Apart from this the students will able to solve ODE by Transformation of the equation by changing the dependent variable/ the independent variable.

3. Solution by operators of nonhomogeneous linear differential equations.
4. Understand formation of Difference equation, Order of difference equation and homogeneous linear equation with constant coefficient.

### **B.SC. SEMESTER – II**

**Course Title: Paper II (Partial Differential Equation)**

**Course Code: USMT-04**

This course will enable the students to:

1. Apply a range of techniques to solve first & second order partial differential equations.
2. Learn solution of homogeneous partial differential equation with constant coefficients .
3. Know solution of Non-homogeneous partial differential equation and equation reducible to linear partial differential equation with constant coefficient.
4. Learn classification of second order partial differential equation.

### **B.SC. SEMESTER – III**

**Course Title: Paper I (Real Analysis)**

**Course Code: USMT-05**

This course will enable the students to:

1. Understand many properties of the real line  $\mathbb{R}$  and learn to define sequence in terms of functions from  $\mathbb{R}$  to a subset of  $\mathbb{R}$ .
2. Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.
3. Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.
4. Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration

### **B.SC. SEMESTER – III**

**Course Title: Paper II (Set Theory And Laplace Transform)**

**Course Code: USMT-06**

This course will enable the students to:

1. Learn basic facts about the cardinality of a set.
2. Know Dirac delta function, Laplace transforms and its properties.
3. Solve ordinary differential equations using Laplace transforms.
4. Know Convolution theorem and solution of differential equation and partial differential equations.

### **B.SC. SEMESTER – IV**

**Course Title: Paper I (Algebra )**

**Course Code: USMT-07**

The course will enable the students to:

1. Recognize the mathematical objects called groups.
2. Link the fundamental concepts of groups and symmetries of geometrical objects.
3. Explain the significance of the notions of cosets, normal subgroups, and factor groups
4. Analyze consequences of Lagrange's theorem.
5. Learn about structure preserving maps between groups and their consequences
6. Recognize and use the Sylow theorems to characterize certain finite groups.

**B.SC. SEMESTER – IV****Course Title: Paper II (Elementary Number Theory )****Course Code: USMT-08**

This course will enable the students to:

1. Learn about some important results in the theory of numbers including the prime number theorem, Chinese remainder theorem, Wilson's theorem and their consequences.
2. Learn about Congruence. properties of congruence, Chinese remainder theorem and Goldbach conjuncture.
3. Familiarize with modular arithmetic and find primitive roots of prime and composite numbers.

**B.SC. SEMESTER – V****Course Title: Paper I ( Linear Algebra )****Course Code: DSC-I**

After successful completion of course, a student will be able to:

1. Recognize the concepts of the terms span, linear independence, basis, and dimension, and apply these concepts to various vector spaces and subspaces.
2. Analyze finite and infinite dimensional vector spaces and subspaces over a field and their properties, including the basis structure of vector spaces.
3. Use matrix algebra and the related matrices to linear transformations.
4. Compute and use eigenvectors and eigenvalues.
5. Compute inner products and determine orthogonality on vector spaces, including Gram-Schmidt orthogonalization.

**B.SC. SEMESTER – V****Course Title: Paper II ( Special relativity-  
I) Course Code: DSC-IV**

After successful completion of course, a student will be able to:

1. Understand the basic elements of Newtonian mechanics including Michelson-Morley experiment and



geometrical interpretations of Lorentz transformation equations.

2. Learn about postulates of special relativity theory.
3. Analyze Study 4-dimensional Minkowskian space-time and its consequences.
4. Understand equations of motion as a part of relativistic mechanics.
5. Recognize geometrical representation space time, four vectors and four tensors in Minkowskin space time.

### **B.SC. SEMESTER – VI**

#### **Course Title: Paper I (Complex Analysis and Vector Calculus) Course Code: DSC-VI**

After successful completion of course, a student will be able to:

1. Working knowledge of differentiability for complex functions and be familiar with the Cauchy-Riemann equations.
2. Analyze harmonic function and Mobius transformation.
3. Apply complex integration, Cauchy's integral theorem and Cauchy's integral formula.
4. Determine gradient, divergence and curl.
5. Know about Green, Gauss and Stokes theorem and problem based on these.

### **B.SC. SEMESTER – VI**

#### **Course Title: Paper II ( Special relativity - II) Course Code: DSC-VIII**

After successful completion of course, a student will be able to:

1. Understand basic properties of Tensor analysis
2. Realize importance of Christoffels symbols, Transformation Christoffels symbols ,covariantderivatives and Geodesics and curvature, Ricci, Einstein tensor
3. Apply various tests to determine Relativistic Mechanics.
4. Analyze propogation of electric and magnetic field strength.
5. Understand Maxwell's equation in vacuum, The electromagnetic field tensor Maxwell's equation in tensor form.

### **M.SC. MATHEMATICS**

#### **SEMESTER – I COURSE TITLE:**

#### **ALGEBRA-I**

#### **COURSE CODE: PSCMTHT01**

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

1. The concept of permutation group, group of symmetry, dihedral group, automorphisms, conjugacy and G-Sets.
2. Students will observe how so much theory can be developed from just a few simple axioms that define group

and ring.

3. They will understand the importance of normal series, solvable groups, nilpotent groups, cyclic decomposition of permutation groups, alternating groups.
4. Knowledge of this course can help students to read field theory, another basic concept of Modern algebra, in the next semester

### **M.SC. MATHEMATICS**

#### **SEMESTER – I COURSE TITLE:**

#### **REAL ANALYSIS-I COURSE**

#### **CODE: PSCMTHT02**

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

1. Understand basic properties of uniform convergence and continuity, uniform convergence and integration, uniform convergence and differentiation, The Stone-Weierstrass theorem.
2. Know contraction principle. The inverse and implicit function theorem, the rank theorem.
3. They will understand the topological manifolds, differential manifolds, real projective space, Grassman manifolds, differentiable functions and mapping.
4. Recognize the rank of mapping, immersion, sub manifolds, lie groups and examples of Lie groups.

### **M.SC. MATHEMATICS**

#### **SEMESTER – I COURSE**

#### **TITLE: TOPOLOGY-I COURSE**

#### **CODE: PSCMTHT03**

After completing this course, the student will be able to:

1. Understand countable and uncountable sets, examples and related theorem, cardinal numbers and related theorems, Topological spaces and examples
2. Discuss open set and limit point, derived sets, closed set and closure operators, interior, exterior and boundary operators, bases and relative topologies.
3. Study connected sets and components, compact and countably compact spaces, continuous functions and homeomorphisms.
4. Recognize the axioms of countability, separability, regular and normal spaces.

### **M.SC. MATHEMATICS SEMESTER – I**

#### **COURSE TITLE: LINEAR ALGEBRA AND DIFFERENTIAL**

#### **EQUATIONS COURSE CODE: PSCMTHT04**

1. Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and inner product.
2. Discuss the linear transformations, rank, nullity.
3. Find the characteristic equation, eigen values and eigen vectors of a matrix.

4. To know homogeneous linear system, A non-homogeneous equation, higher order system, the primary decomposition, The S+N decomposition, Nilpotent canonical forms.
5. To Learn Jordan and real canonical forms, canonical forms and differential equations, Higher order linear equations on function spaces, Hyperbolic flows, Generic properties of operators, Significance of genericity.

**M.SC. MATHEMATICS SEMESTER – I**

**COURSE TITLE: NUMERICAL**

**ANALYSIS COURSE CODE:**

**PSCMTHT05**

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

1. Understand the errors, source of error and its effect on any numerical computations and also analysis the efficiency of any numerical algorithms.
2. Learn how to obtain numerical solution of nonlinear equations using bisection, secant, Newton and fixed-point iterations methods and convergence analysis of these methods.
3. Solve linear and nonlinear systems of equations numerically.
4. Apply numerical methods to find eigen value and eigen vectors.
5. Handle the functions and data set using interpolation and least square curves.
6. Evaluate the integrals numerically.
7. Learn how to solve initial and boundary value problems numerically.

**M.SC. MATHEMATICS SEMESTER –**

**II COURSE TITLE: ALGEBRA -II**

**COURSE CODE: PSCMTHT06**

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

1. Understand the concepts of unique factorization domains, Principal ideal domains, Euclidean domains, polynomial rings over unique factorization domains.
2. Understand irreducible polynomials and Eisenstein criterion, adjunction of roots, normal extensions and multiple roots.
3. Understand the concepts of fundamental theorem of Galois theory and fundamental theorem of algebra.
4. Find the roots of unity and cyclotomic polynomials, cyclic extensions, polynomials solvable by radicals, Ruler and compass constructions.

**M.SC. MATHEMATICS**

**SEMESTER – II COURSE TITLE:**

**REAL ANALYSIS -II COURSE**

**CODE: PSCMTHT07**

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

1. Understand how Lebesgue measure on  $\mathbb{R}$  is defined, Littlewoods three principles.
2. Understand basic properties are measurable functions,

3. Understand convex function, Riesz-Fischer theorem, bounded linear functions on  $L_p$ - spaces.
4. Know the basic convergence theorems for the Lebesgue integral,
5. Understand the compact metric spaces, Baire category theorem, Arzela-Ascoli theorem, Locally compact spaces, Sigma compact spaces.

### **M.SC. MATHEMATICS**

#### **SEMESTER – II COURSE**

#### **TITLE: TOPOLOGY-II COURSE**

#### **CODE: PSCMTHT08**

After completing this course, the student will be able to:

1. Understand Urysohn's lemma, Tietze extension theorem, Compactness for metric spaces, properties of metric spaces.
2. Know quotient topology, Nets and filters.
3. Study product topology.
4. Understand locally finite topological spaces, paracompact spaces, Urysohn's metrization theorem.

### **M.SC. MATHEMATICS SEMESTER –**

#### **II COURSE TITLE: CLASSICAL**

#### **MECHANICS COURSE CODE:**

#### **PSCMTHT09**

After completing this course, the student will be able to:

1. Understand Variational Principle.
2. Analyze the Derivation of Lagrange's Equations from Hamilton's Principle and Extension of Hamilton's Principle to Non-holonomic Systems.
3. Study the concept of the Legendre transformations and the Hamilton equation of motion, the Hamiltonian formulation of relativistic mechanics
4. Understand the principle of least action.
5. Understand the equation of canonical transformation and examples of canonical transformation, Poisson bracket and other canonical invariants.
6. Know the equation of motion, Infinitesimal canonical transformation and conservation theorem in the Poisson bracket formulation.

### **M.SC. MATHEMATICS SEMESTER –**

#### **II COURSE TITLE: DIFFERENTIAL**

#### **GEOMETRY COURSE CODE:**

#### **PSCMTHT10**

After completing this course, the student will be able to:

1. Understand the definition of surface, curves on a surface, helicoids Intrinsic properties, Geodesics.
2. Learn to normal property of geodesics, existence theorems, geodesics curvature. Gauss Bonnet theorem.
3. Understand second fundamental form, principle curvature, lines of curvature.

4. Know compact surfaces whose points are umbilics, Gaussian or mean curvature, two dimensional Riemannian manifolds.

**M.SC. MATHEMATICS SEMESTER –  
III COURSE TITLE: COMPLEX  
ANALYSIS**

**Core Paper-XI**

After completing this course, students are expected to be able to:

1. Understand impossibility of ordering complex number, Extended Complex numbers and stereographic projection. Properties and example of Analytic function.
2. Know analytic function as mappings, Mobius transformation, power series representation of analytic function.
3. Study Cauchy 's theorem and integral formula the homotopic version of cauchy's theorem and simple connectivity, counting zero's , Goursat's theorem and classification of singularities.
4. Know the maximum principle Schwarz's lemma, Convex function and Hadamard's three circles theorem, Phragmen-lindel of theorem .

**M.SC. MATHEMATICS SEMESTER –  
III COURSE TITLE: FUNCTIONAL  
ANALYSIS**

**Core Paper- XII**

After completing this course, the student will be able to:

1. Understand normed spaces, Banach spaces , properties of normed spaces, finite dimensional normed spaces and subspaces, compactness in finite dimension, bounded and continuous linear operators.
2. Know linear functional, normed spaces of operators, dual spaces, inner product space, properties of inner product spaces, Hilbert space orthonormal sets and sequences .
3. Understand representation of functionals on Hilbert spaces, reflexive spaces.
4. Study category theorem, uniform boundedness theorem, strong and weak convergence, convergence of sequences of operators and functionals .

**M.SC. MATHEMATICS SEMESTER –  
III COURSE TITLE: MATHEMATICAL  
METHODS**

**Core Paper- XIII**

After completing this course, the student will be able to:

1. Study fourier integral theorem, Fourier theorem, Fourier cosine and sine transform, solution of partial differential equation by means of Fourier transform.
2. Understand the calculation of Laplace transform of some elements function, the convolution of two functions inverse formula for the laplace transform.

3. Solve ordinary differential equation by laplace transform.
4. Study finite Fourier transform, Finite sturm-Liouville transform, generalized finite Fourier transform.
5. Understand finite Hankel transform, finite Legendre transform, and finite Mellin transform.

**M.SC. MATHEMATICS**

**SEMESTER – III COURSE TITLE:**

**GENERAL RELATIVITY-I CORE**

**ELECTIVE PAPER- XIV**

After completing this course, the student will be able to:

1. Understand the tensor formula, Riemannian geometry, curvature tensor.
2. Learn about the principle of covariance, the principle of equivalence, geodesic principle.
3. Study Newton's equations of motion as an approximation geodesic equations.
4. Understand gravitational field equations in free space.
5. Find Weyl's solution of linearized field equations, Interior Schwarzschild's solution.

**M.SC. MATHEMATICS SEMESTER –**

**III COURSE TITLE: OPERATIONS**

**RESEARCH I FOUNDATION PAPER--**

**XV**

After completing this course, the student will be able to:

1. Study simplex method, theory of simplex method, duality, dual simplex method.
2. Understand the mathematical tools that are needed to solve optimization problems.
3. Solve transportation and assignment problems.
4. Study dynamic programming.
5. Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision-making processes.

**M.SC. MATHEMATICS**

**SEMESTER – IV COURSE**

**TITLE: DYNAMICAL SYSTEMS**

**CORE PAPER XVI**

After completing this course, students are expected to be able to

1. Understand dynamical systems and vector fields, the fundamental theorem, the flow of a differential equation.
2. Learn nonlinear sink, gradient and inner product.
3. Study limit sets, the Poincare Bendixson theorem and its application.
4. Know asymptotic stability of closed orbit.

**M.SC. MATHEMATICS SEMESTER – IV**

**COURSE TITLE: PARTIAL DIFFERENTIAL EQUATIONS CORE PAPER -XVII**

After completing this course, students are expected to be able to

1. Study first order partial differential equations in two independent variables and the Cauchy problems.
2. Understand classification of second order partial differential equations.
3. Study the diffusion equation and parabolic differential equations.
4. Know wave equation and its application.

**M.SC. MATHEMATICS SEMESTER – IV COURSE TITLE: INTEGRAL EQUATIONS CORE PAPER -XVIII**

After completing this course, students are expected to be able to

1. Learn preliminary concept of integral equations.
2. Study Fredholm equation.
3. Obtain solutions of integral equations with Green's function type kernels.
4. Know types of Volterra equations.
5. Understand approximate methods of solutions for linear integral equations.

**M.SC. MATHEMATICS SEMESTER – IV COURSE TITLE: GENERAL RELATIVITY -II CORELECTIVE PAPER -XIX**

After completing this course, students are expected to be able to

1. Understand static cosmological models of Einstein and de sitter and their derivation its properties.
2. Study cosmological principle.
3. Know density and pressure of the present universe.
4. Realize galaxy count.

**M.SC. MATHEMATICS SEMESTER – IV COURSE TITLE: OPERATIONS RESEARCH -II FOUNDATION PAPER -XX**

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

1. Understand integer programming.
2. Study queuing theory and sequencing
3. Understand non-linear programming.
4. Study quadratic programming, fraction programming and goal programming.

## **DEPARTMENT OF ZOOLOGY**

### **B.SC. SEMESTER – I**

**Course Title: Paper I (Animal diversity of non-chordate) Course Code: USZOT01**

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

1. Understand the general characters and classification up to classes of phylum Protozoa to Annelida.
2. Distinguish Locomotory organs, locomotion, Nutrition and Reproduction in Protozoa.



3. Understand the structure and Life history of Obelia, Taenia solium, Ascaris lumbricoides .
4. Have a detailed knowledge of systems i.e. Digestive, Nervous and Reproductive system of Hirudinaria.
5. Understand the concept of Canal system in Sycon.

### **B.SC. SEMESTER – I**

**Course Title: Paper II (CELL BIOLOGY) Course Code: USZOT02**

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

1. Understand the concept of Cell theory, Protoplasmic theory, and Organismal theory and distinguish the Prokaryotic and Eukaryotic cell.
2. Have a detailed knowledge of cell organelles (Nucleus, Mitochondria, Endoplasmic reticulum, Golgi complex, Lysosomes, and Ribosomes).
3. Understand the occurrence, position and morphology, Ultrastructure, Composition and function of Nuclear membrane, nuclear pore complex.
4. Have the knowledge of Structure and type of Chromosomes.
5. Understand the concept of Cell cycle and their different phases i.e. Mitosis and meiosis.

### **B.SC. SEMESTER – I**

#### **ZOOLOGY LAB - I**

**Course Code: USZOP01**

1. Students will have good laboratory skills, enabling them to take observations and
2. measurements in a zoology laboratory and analyze the results to draw valid conclusions.
3. Students will adopt the skill of draw the neat and clean well labeled diagram.

### **B.SC. SEMESTER – II**

**Course Title: Paper I (ANIMAL DIVERSITY OF NON-CHORDATE)**

**Course Code: USZOT03**

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

1. Have a detailed knowledge of general characters and classification upto the classes of the phylum Arthropoda to Hemichordata.
2. Distinguish the external morphology, digestive system, nervous system, Reproductive system of Periplaneta and Pila.
3. Have the detailed knowledge of Regeneration and Autotomy in Echinoderm
4. Understand the concept of pearl formation.

### **B.SC. SEMESTER – II**

**Course Title: Paper II (Genetics and Evolution)**

**Course Code: USPHT04**

After successful completion of the course, the student is expected to:

1. Understand the concept of Genetics in detailed.
2. Have the knowledge of Syndrome and their symptoms, concept of the gene mutation.
3. They get information about the major events in History of life and their related theory, and the evidence of Evolution.
4. They will be able to understand processes of the evolutionary changes.

### **B.SC. SEMESTER – II**

#### **ZOOLOGY LAB – II**

**Course Code: USPHP02**

1. Students will acquire good laboratory skills to perform the experiment of Genetics.
2. Students will learn the use various apparatus to take the measurements up to the marks.
3. Student will able to take observations of the different picture of Adaptive radiation and different type of Evolution.

### **B.SC. SEMESTER – III**

**Course Title: Paper I (ANIMAL DIVERSITY AND COMPARATIVE ANATOMY)**

**Course Code: USCZOT05**

After successful completion of the course, the student is expected to:

1. Have the detailed knowledge of the general characters and classification up to the order of the phylum Urochordata, Amphibia, Reptilia, Aves and Mammals.
2. Understand the Osmoregulation and Accessory respiratory organ of the fish..
3. realize the importance of the snake venom and the uses in the medical industry
4. Understand the whole concept of the comparative anatomy.

### **B.SC. SEMESTER – III**

**Course Title: Paper II (PHYSIOLOGY AND BIOCHEMISTRY- I)**

**Course Code: USCZOT06**

The completion of this course will enable the students to:

1. Understand the concept of the Metabolism.
2. Study the general properties and classification of enzymes.
3. Understand the concept of Nutrition and Digestion and the structure and function of the digestive gland.
4. Study the Mechanism of Respiration, Respiratory pigment and their type, distribution and properties.
5. Have the detailed of the Respiratory disorders and effect of smoking.

### **B.SC. SEMESTER – III**

#### **ZOOLOGY LAB – III**

**Course Code: USZOP03**

1. Students will acquire good laboratory skills to handle and focus the microscope.

2. Student will able to take Anatomical observation and skeleton of the Rabbit and fowl.
3. Students will adopt the skill of permanent stained micro preparation. SEMESTER-IV

#### **B.SC. SEMESTER – IV**

**Course Title: Paper I (Developmental Biology)**

**Course Code: USCZOT07**

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

1. Understand basic concept of Early Development.
2. They will get detailed knowledge about the Frog and Chick Embryology.
3. Get detailed information about the concept Mammalian development.
4. Differentiate Spermatogenesis and Oogenesis; understand the structure of Sperm and Ovum.
5. Understand and explain the Whole concept of In-vitro Fertilization.

#### **B.SC. SEMESTER – IV**

**Course Title: Paper II (Physiology and Biochemistry-II)**  
**Course Code: USCZOT08**

The completion of this course will enable the students to:

1. Have knowledge about the whole concept of the Excretion and apply the above knowledge in our daily life.
2. Understand the Concept of Endocrinology and Reproduction.
3. Get detailed information of Nerves and muscles physiology.
4. Understand the whole concept of the Circulatory system of Human body.

#### **B.SC. SEMESTER – IV**

**ZOOLOGY LAB – IV**

**Course Code: USZOP04**

1. Students will observe the slides of Frog and Chick embryology.
2. Student will able to take observations and measurements in a zoology laboratory.
3. They adopt the skill of Permanent stained Micro preparation.

#### **B.SC. SEMESTER – V**

**Course Title: Paper I (PARASITOLOGY)**

**Course Code: USCZOT09**

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

1. Understand the concept of the Parasitism, life cycle, pathogenicity and treatment.
2. Establish connection between parasites in our daily life.
3. Understand the concept of the parasites which is responsible for the diseases found in our daily life.

4. Study the Zoonotic diseases and pathogenicity and vectors as disease transmitters.

#### **B.SC. SEMESTER – V**

**Course Title: Paper II (AQUATIC BIOLOGY) Course Code: USCZOT12**

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

1. Understand the different types of the Zones and applications in various fields.
2. Understand the concept and identification of Zooplankton.
3. Have the detailed knowledge of the physic-chemical characters of the different types the lakes.
4. Understand the concept of the Adaptation of deep sea organism..

#### **B.SC. SEMESTER – V**

**ZOOLOGY LAB V:**

**Course Code: USCZOP08**

1. Students will have a thorough laboratory skills enabling them to take observations and measurements in a zoology laboratory and to analyze its results.

#### **B.SC. SEMESTER-VI**

**Course Title: Paper I (Medical Diagnostics) Course Code: SEC**

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

1. Know the Blood composition and detailed information about the Blood group.
2. Get the detailed information about the Physical characteristics and Constituent of urine.
3. Get the information about the Disease Tuberculosis and Hepatitis and their causes, types, symptoms, diagnosis and prevention.
4. Know the concept of the types of tumours and Medical imaging.

#### **B.SC. SEMESTER-VI**

**Course Title: Paper II (Public health and Hygiene) Course Code: 6S-PHY 602**

The completion of this course will enable the students to:

1. Understand the importance of the personal, community health, Environmental Hygiene and government and its policies for public health.
2. Know the concept of the TB, Polio, diphtheria, tetanus, MMR, Diarrhoea, Typhoid and Vaccination and sterilization programmes...
3. Understand need of social programmes i.e. Family planning, child obesity, malnutrition.
4. Familiar with Hygiene education in communities and their importance.

## **B.SC.**

### **SEMESTER-VI ZOOLOGY LAB**

#### **VI:**

#### **Course Code: SEC**

1. Students will have a good laboratory skills, enabling them to take observations in a zoology laboratory.
2. Students will be able to prepare the chart or posters related to health.

### **M.SC. ZOOLOGY SEMESTER - I**

#### **Course Title: Structure and function of Invertebrates**

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

1. Understand the concept of Ultrastructure of protozoan, locomotory organ, Polymorphism and metamorphosis..
2. Student will able to explain the Reproductive system of Dugesia, Fasciola, Taenia and Ascaris, and formation, Evolution and significance of coelom..
3. They will understand the structure, affinities and taxonomic position of Peripatus, Neopilina and Respiratory organ in Arthropoda...
4. Students will get the detailed knowledge about the water vascular system, Metamorphosis and phylogenetic significance in Echinodermata.

### **M.SC. ZOOLOGY SEMESTER - I**

#### **Course Title: General Physiology**

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

1. Understand the whole concept of Enzymes, Respiratory pigment, Neurotransmitters, Colour change mechanism.
2. They will able to do the comparative study of the term Thermoregulation and Osmoregulation..
3. They will understand the Myogenic and neurogenic heart, Digestion and absorption of carbohydrate, protein and Lipids.
4. They will get the detailed knowledge about the hydro mineral metabolism, Cerebrospinal
5. fluid, mechanism of reflex action and Physiology of environmental stress and strain..

### **M.SC. ZOOLOGY SEMESTER - I**

#### **Course Title: Cell Biology and Genetics**

After completing this course, the student will be able to:

1. Understand and discuss the topic Structural organization and function of Cell organelles, cell division and cell cycle.
2. Able to explain and give demonstration of the topic Cell signaling, Cellular communication and disease Cancer..

3. Solves the problems based on the Mendelian, non- Mendelian inheritance and get the knowledge on the topic Mutation.
4. Know the detailed concept about Structural and numerical alteration of chromosomes, microbial genetics and human genetics..

### **M.SC. ZOOLOGY SEMESTER - I**

#### **Course Title: Advanced Reproductive Biology**

1. Define the various methods of asexual and sexual reproduction in protozoa, Regeneration in Hydra, Digestion and Annelid worms. Metamorphosis and mechanism of vitellogenesis in Insect.
2. Discuss the Spermatogenesis and oogenesis, cytological and , molecular event of fertilization..
3. Get detail knowledge about the Male accessory sex gland in mammals, Semen and Pheromones and sexual behavior in mammals.
4. Understand the neurohormonal control of fish reproduction and mechanism of vitellogenesis ,molecular induction and organizer concept.
5. Give demonstration and presentation on the topic Cryopreservation of gametes, embryo and test-tube baby and discuss about the In-vitro fertilization and its significance.

### **M.SC. ZOOLOGY SEMESTER - I**

#### **ZOOLOGY LAB I:**

1. Students will have good laboratory skills, enabling them to take observations and
2. Measurements in a zoology laboratory and analyze the results to draw valid.
3. Students will adopt the skill of draw the neat and clean well labeled diagram.
4. Developed the Practical skill based on the Cell biology, Genetic and Advanced Reproductive biology.

### **M.SC. ZOOLOGY SEMESTER - II**

#### **Course Title: Structure and Function of Vertebrates.**

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

1. Understand the origin and ancestry of Chordate, General organization and affinities of Cephalochordata and Dipnoi...
2. Learn and discuss organ and mechanism of respiration in Pisces and Amphibia , Appendicular skeleton in Amphibia, Reptilia, Aves and Mammals.
3. Get the knowledge Evolution of urinogenital organ in vertebrates, origin of birds.
4. Understand the concept of comparative anatomy of the brain invertebrates.
5. Give the demonstration on the Evolution of heart in vertebrates and sense organ in vertebrates, Evolution of Man.

## **M.SC. ZOOLOGY SEMESTER - II**

### **Course Title: Comparative Endocrinology**

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

1. Understand the concept of Hormones and function in Coelenterata , Helminths and Echinodermata, Neurosecretory system in Annelida and Neuroendocrine system in Mollusca. .
2. Understand Endocrine control of metamorphosis , reproduction and colour change mechanisms in Crustacea and in Insect and also get information about Cephalic neuroendocrine system in insect.
3. Able to give the demonstration structure , hormones and function of Pineal organ, Pituitary gland and Thyroid gland with the help of Chart.
4. Give the presentation on the topic Parathyroid Ultimobranchial glands their structures, hormones and regulatory mechanisms , Understand the structure ,function and Hormones of Adrenal gland .

## **M.SC. ZOOLOGY SEMESTER - II**

### **Course Title: Molecular Biology and Biotechnology**

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

1. Able to define the concept Cot ½ and Rot ½ , DNA replication , DNA damage and repair, mismatch repair, recombination repair , double strand break repair and transcript coupled repair.
2. Understand Eukaryotic and prokaryotic transcription, Regulation of transcription Translation and mobile DNA element.
3. Get information about the Antisense and ribozymes technology , Isolation and sequencing of DNA, splicing and cloning and Hybridization techniques.
4. Get information about Medical biotechnology, application of restriction fragment length polymorphism in forensic science , Agricultural biotechnology .
5. Understand the Immunobiotechnology- Hybridoma technology and monoclonal antibodies and Industrial and environmental biotechnology..

## **M.SC. ZOOLOGY SEMESTER - II**

### **Course Title: Advanced Developmental Biology**

After completing this course, the student will be able to:

1. Understand the Implantation in Mammals, Foetal membrane, placenta and metamorphosis in Amphibia.
2. Know Regeneration in Vertebrate ,Apoptosis ,Ageing and polymorphism.
3. Get information about multiple ovulation and embryo transfer technology, embryonic sexing ,cloning and cloning of animals by nuclear transfer.
4. Understand the concept of Immunocontraception , classical contraceptive techniques, Anti-androgen and anti-spermiogenic compound and role of mutant and transgenic in Human welfare.

## **M.SC. ZOOLOGY SEMESTER - II**

### **ZOOLOGY LAB I:**

1. Students will have good laboratory skills, enabling them to take observations and
2. Measurements in a zoology laboratory and analyze the results to draw valid.
3. Students will adopt the skill of draw the neat and clean well labeled diagram.
4. Able to tell in detailed general characters and classification of specimen of Vertebrate.

## **M.SC. ZOOLOGY SEMESTER - III**

### **Course Title: Parasitology and Immunology**

After completing this course, the student will be able to:

1. Understand the life cycle , mode of transmission, infection and treatment of Vibrio cholera and clostridium titani , Yersinia pestis, Influenza and H1 N1 viruses , Dengue and Hepatitis .
2. Get the information about life cycle , modes of transmission , infection and treatment of Trypanosoma and Entomoeba, Leishmania, Malaria, Wuchereria and Trichinella. And Toxins and antitoxins.
3. Understand the concept Immune system , cells and organs of immune system, Major histocompatibility complex , complement system.
4. Understand the cytokine receptors, hypersensitivity reactions their type, mechanism
5. Know the Transplantation immunology and Tumour immunology and RIA and ELISA immunotechniques.

## **M.SC. ZOOLOGY SEMESTER - III**

### **Course Title: Special group- AQUACULTURE-I (FRESH WATER AQUACULTURE)**

After completing this course, the student will be able to:

1. Understand the concept of aquaculture- definition, importance and present status of India.
2. Learn to normal property of pond –soil, chemical condition and Ecosystem.
3. Understand the detail information of Fish breeding in wet and dry bundhs.
4. Know the Hatching techniques and types of hatcheries.

## **M.SC. ZOOLOGY SEMESTER - III**

### **Course Title: AQUACULTURE-II (AQUACULTURE AND RURAL DEVELOPMENT)**

After completing this course, students are expected to be able to:

1. Understand the concept of culturing zooplankton, prawn, crab, pearl, and oyster.
2. Know the development and advancement of aquaculture in India.
3. Study the breeding and care of fresh water aquarium fishes.
4. Know the role of FFDA in development of aquaculture in India.



### **M.SC. ZOOLOGY SEMESTER - III**

#### **Course Title: FOUNDATION –I (FRESH WATER FISHERIS)**

After completing this course, the student will be able to:

1. Understand the physic-chemical characteristics fresh water and construction of fish farm.
2. Know the brief outline of commercially important species of fresh water fishes and prawns and reverine fisheries.
3. Know the detailed information on fishery product and by product.
4. Study the fish seed production by chinese circular hatchery
5. Get information artificial feeds and their composition.

### **M.SC. ZOOLOGY SEMESTER - III**

#### **ZOOLOGY LAB-I:**

1. Students will have good laboratory skills, enabling them to take observations and knowledge.
2. Measurements in a zoology laboratory and analyze the results to draw valid in practical.
3. Students will adopt the skill of draw the neat and clean well labeled diagram.
4. Develop the Practical skill based on the practical gram positive and gram negative bacteria.

### **M.SC. ZOOLOGY SEMESTER - IV**

#### **Course Title: BIOTESCHNIQUES, BIOSTATISTICS , ETHOLOGY AND BIOINFORMATICS.**

After completing this course, the student will be able to:

1. Understand the Sterilization technique, Animal cell and tissue culture, basic principal of sedimentation and centrifugation.
2. Learn to solve the problems based on the Mean, mode and median and Probability , sampling its importance and example.
3. Understand the whole concept of Toxicology its scope Environmental toxicology and Toxicity test.
4. Understand the scope of bioinformatics, sequence alignment pair wise and multiple sequence alignment.
5. Get detailed information about the Biological databases and Phylogenetic analysis

### **M.SC. ZOOLOGY SEMESTER - IV**

#### **Course Title: Special group - AQUACULTURE –III (AQUACULTURE AND MANAGEMENT)**

After completing this course, students are expected to be able to

1. Study the whole concept of Pond management i.e. Pre-stocking and post- stocking management
2. Get the information about Nutritional requirement of culturable carps, transport of live fish seed, brood and food fish.
3. Study the different system of aquaculture i.e. Polyculture and integrated aquaculture.

4. Understand the concept Integrated fish farming, sewage fed fish culture , cold water fish culture , Extensive , intensive, semi-intensive and super – intensive culture..

#### **M.SC. ZOOLOGY SEMESTER - IV**

##### **Course Title: Special Group-Aquaculture- IV (FISH PATHOLOGY AND FISH GENETICS)**

After completing this course, the student will be able to:

1. Study the Biochemical composition and nutritional value of raw and preserved fish.
2. Understand the objective, principles and methods of Fish preservation.
3. Get detailed knowledge about the Fish decomposition, rigor mortis and fish spoilage.
4. Study the effect of water pollution on fishes and fish product and byproduct.
5. Get detailed information about the Fungal, bacterial and protozoan diseases.

#### **M.SC. ZOOLOGY SEMESTER - IV**

##### **Course Title: Applied Fresh Water fisheries**

After completing this course, students are expected to be able to

1. Get knowledge about the management of pond predators and their eradication , aquatic weeds and their control.
2. Know the Composition of fish farming, sewage fed fisheries and prawn culture.
3. Understand the Role of co-operative societies in fish marketing and fisheries extension services.
4. Able to give the presentation on the fresh water pearl culture and setting up of aquarium and its maintenance.

#### **M.SC. ZOOLOGY SEMESTER - IV**

##### **ZOOLOGY LAB-I:**

1. Students will have good laboratory skills, enabling them to take observations and knowledge.
2. Measurements in a zoology laboratory and analyze the results to draw valid in practical.
3. Students will adopt the skill of draw the neat and clean well labeled diagram.
4. Develop the Practical skill based on the practical gram positive and gram negative bacteria.

**DEPARTMENT OF GEOLOGY**  
**COURSE OUTCOMES (B.Sc.-Geology)**

**SEMESTER-I**

**Course Title: Paper I (Physical Geology)**  
**Course Code: USGEOT01**

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

- CO 1. Understand Geology, its definition, branches, and scope.
- CO 2. Know about the Earth and solar system.
- CO 3. Understand all the physical processes which are acting on Earth.
- CO 4. Understand how volcanism and earthquake takes place and what are its types and features.
- CO 5. Understand the geological work done by underground water and oceanic currents.
- CO 6. Understand the geological work done by wind river and glaciers

**Course Title: Paper II (Mineralogy and Elementary mineral optics)**  
**Course Code: USGEOT02**

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

- CO 1. Understand the concept and importance of learning mineralogy.
- CO 2. Know the rock forming and ore forming mineral.
- CO 3. Know all the physical and optical properties of minerals
- CO 4. Understand Chemical and physical properties and geological occurrences of the mineral groups such as quartz, feldspars, feldspathoids, micas and zeolites.
- CO 5. Understand the Chemical and physical properties and geological occurrences of the mineral groups, such as Pyroxene, Amphiboles, olivine, and aluminous silicates.
- CO 6. Know the functioning and parts of petrological microscope.

**GEOLOGY PRACTICAL: I**  
**Course Code: USGEOP01**

- CO 1. Students will learn to differentiate between rocks and minerals.
- CO 2. Students will learn the physical properties in hand specimen of minerals: Quartz, Orthoclase, microcline, albite, labradorite, nepheline, leucite, sodalite, natrolite, stilbite, apophyllite, muscovite, biotite, chlorite, hypersthene, augite, diopside, hornblende, tremolite, actinolite, asbestos, olivine, garnet, kyanite, sillimanite, topaz, etc.
- CO 3. Students will learn about different varieties of quartz.

## **SEMESTER-II**

### **Course Title: Paper I (GENERAL GEOLOGY)**

#### **Course Code: USGEOT03**

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

CO 1. Understand concepts regarding origin of the earth, Convection in Earths' core and production of its magnetic field.

CO 2. Learn radiometric methods of determination of the age of the earth: Uranium method, Rb-Sr method, K-Ar method and Carbon 14 method..

CO 3. Application of geophysics in understanding the dynamics of the earth: Internal structure of the Earth.

CO 4. Understand The geomorphology, Diastrophism- Epeirogenic and orogenic movements, evidences of elevation and depression of land, eustatic changes

CO 5. Learn about Continental drift theory: evidences and causes. Evolution of plate tectonic theory: nature and types of plate margins, sea floor spreading, origin and significance of mid-oceanic-ridges and trenches, origin and distribution of island arcs.

### **Course Title: Paper II (Crystallography and optical mineralogy)**

#### **Course Code: USGEOT04**

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

CO 1. Understand what is crystal, its structure, crystal faces, edges, solid, angles and zones.

Crystallographic axes and axial angles. Crystal notations: Miller indices and Weiss parameters.

CO 2. Understand Crystal symmetry and classification of crystals into six system

CO 4. Understand Beryl class of hexagonal system, Gypsum class of Monoclinic system and Axinite class of Triclinic system.

CO 5. Learn the microscopic Properties under plane polarized light and crossed Nicol: colour, cleavage, relief, form, pleochroism, twinkling, isotrophism and anisotrophism, extinction and extinction angle, twinning, birefringence, interference colours.

CO6. Learn the optical properties of following minerals: Quartz, microcline, orthoclase, albite, labradorite, muscovite, biotite, chlorite, hornblende, augite, olivine, garnet, calcite, kyanite, sillimanite, tourmaline, epidote, tremolite and actinolite.

## **GEOLOGY PRACTICAL: II**

### **Course Code: USGEOP02**

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

CO 1. Learn the elements of symmetry and description of various forms of crystals from normal classes of six crystal systems.

CO 2. Learn the optical characters of minerals listed for theory course using polarizing microscope

## **SEMESTER-III**

### **Course Title: Paper I (Igneous Petrology)**

## **Course Code: USGEOT05**

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

- CO 1. Understand the basics of petrology, classification of rocks, composition of crust, and rock cycle.
- CO 2. Understand what igneous petrology is, intrusive and extrusive igneous rocks and their structures.
- CO 3. Understand the mineralogical characteristics of acid, alkaline, basic and ultra basic igneous rocks.
- CO 4. Understand the role of magma in the formation of igneous rocks.
- CO 5. Learn Basic principles of phase equilibria in Crystallization of uni-component and bi-component magma.

## **Course Title: Paper II (Palaentology)**

### **Course Code: USGEOT06**

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

- CO 1. Know the definition, scope and importance of paleontology.
- CO 2. Understand the process of fossilization and Preservation of organisms.
- CO 3. Understand Classification, diagnostic morphological characters, environment and geological distribution of Brachiopoda, Pelecypoda, Gastropoda, Cephalopoda, Foraminifera, Graptoloidea, Echinoidea Crinoidea, Anthozoa, Trilobita and Plants of Gondwana period.

## **GEOLOGY PRACTICAL: III**

### **Course Code: USGEOP03**

- CO 1. Students will learn the megascopic properties of igneous rocks: Granite, Granodiorite, Diorite, Anorthosite, Lamprophyre, Porphyries, Gabbro, Norite, Dolerite, Diabase, Peridotite, Dunite, Pyroxenite Obsidian, Pitchstone, Pumice, Trachyte, Andesite, Phonolite, Tuff, Basalt, Rhyolite, Charnockite.
- CO 2. Students will learn the Morphological characters, identification, age and sketches of the following fossils: Nummulite, Rhyconella, Terebratula, Productus, Spirifer, Pecten, Ostrea, Trigonina, Cerithium, Conus, Turritella, Physa, Ceratites, Orthoceras, Nautilus, Belemnites, Monograptus, Cidaris, Hemiaster, Paradoxide, Calymene, Zaphrentis, Cyathophyllum, Calceola. Alethopteris, Lepidodendron, Calamites, Glassopteris, Gangamopteris, Vertibraria, Cordiates, Ptilophyllum.

## **SEMESTER-IV**

### **Course Title: Paper I (Sedimentary Petrology and Metamorphiuc Petrology)**

#### **Course Code: USGEOT07**

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

- CO 1. Learn basics of sedimentary petrology .
- CO 2. Learn the process involved in formation of sedimentary rocks: Weathering, transportation, deposition , consolidation , lithification and diagenesis
- CO 3. Understand Sedimentary textures, structures and mineralogy of sedimentary rocks.
- CO 4. Learn the classification of sedimentary rocks in residual, clastic, chemical and organic chemical deposits,
- CO 5. Understand metamorphism Agents,kinds and products of metamorphism,
- CO 6. Learn the classification of sedimentary rocks, its textures and structures.
- CO 7. Understand the concept facies and grade of metamorphism

CO 8. Learn the concept of Metasomatism, metasomatic processes, granitisation and migmatitisation with suitable Indian examples.

**Course Title: Paper II (Indian Stratigraphy)**

**Course Code: USGEOT08**

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

CO 1. Understand the principles of stratigraphy, Geological time scale and method for collecting stratigraphic data.

CO 2. Understand the Classification, geographic distribution, lithological Characteristic, and economic importance of - Sausar Group, Sakoli Group, Dongargarh Supergroup, Aravalli Supergroup and associated gneissic rocks, Iron Ore Group. Cuddapah Supergroup of Cuddapah basin, Kaladgis, Pakhals, Penganga Formation, Delhi Supergroup, Shimla Formation. Vindhyan Supergroup of Vindhyan basin , Kurnool Supergroup, Chattisgarh Supergroup.

CO 3. Understand the Classification, geographic distribution, lithological characteristics, fossil content and economic importance of the Palaeozoic succession of Spiti valley, Gondwana Supergroup. Triassic of Spiti, Jurassic of Kutch, Rajasthan and Spiti.

CO 4. Understand the Classification, geographic distribution, lithological characteristics, fossil content and economic importance of Cretaceous of Narmada valley, Trichinopoly, Spiti and Lameta Formation.

CO 5. Understand the classification lithological characteristics and economic importance of Deccan Traps, Tertiary of Assam and coastal areas of India, Siwalik Group, Karewa Formation of Kashmir.

CO 6. Learn the stratigraphy of Maharashtra.

**GEOLOGY PRACTICAL: IV**

**Course Code: USGEOP04**

CO 1. Students will learn the microscopic properties of different igneous rocks: Granite, Granodiorite, Diorite, Anorthosite, Lamprophyre, Porphyries, Gabbro, Norite Dolerite, Diabase, Peridotite, Dunite, Pyroxenite, Obsidian, Pitchstone, Pumice, Trachyte Andesite, Phonolite, Tuff, Basalt, Rhyolite, Charnockite.

CO 2. Students will learn the megascopic and microscopic properties of Sedimentary Rocks: Conglomerate, Breccia, Grit, Arkose, Graywacke, Arenite, Sandstone, Shale, Clay, Marl, Limestone, Bauxite, laterite, Agglomerate, Tufa, Chert, Coal.

CO 3. Students will learn megascopic and microscopic properties of metamorphic rocks: Hornfels, slate, phyllite, Schist, Gneiss, Granulite, Amphibolite, Quartzite, Marble, Khondalite, Gondite, Kodurite, Mylonite, Eclogite.

## Department of Microbiology

### Program outcomes, Program specific outcomes and course outcomes

#### B. Sc (Three Years Degree Course in Choice based Credit System)

<b>Program Title;- B.SC (Three Years Degree Course in Credit System )</b>	
<b>Program Outcomes (POs)</b>	
<b>PO1</b>	The students understood the basic fundamentals concepts of Virology, Bacteriology.
<b>PO2</b>	Interdisciplinary related approach among students has been developed.
<b>PO3</b>	Enhance confidence of scientific responsibilities, social and environment awareness have been increased among the students.
<b>PO4</b>	Students built-up a progressive and successful career in academics and industry.
<b>PO5</b>	Students are able to understand the microbiology concepts and its need.
<b>PO6</b>	Students are able to learn latest and innovative things in microbiology.
<b>PO7</b>	Ability to related various interrelated physiological and metabolic events.
<b>PO8</b>	Good experiment and quantitative skills encompassing preparation of laboratory reagents, conducting experiments , satisfactory analyses of data and interpretation of results.
<b>PO9</b>	A general awareness of current development at the forefront in microbiology and allied subject.
<b>PO10</b>	Overall knowledge of the avenues for research and higher academic achievements in the field of microbiology and allied subject.

<b>PO1 1</b>	<p><b>Research –related skills;</b> - a) Ability to evaluate the strength and weaknesses in scholarly texts spotting flaws in their arguments.</p> <p>b) Ability to use critics and theorists to create a framework and to substantiate one’s arguments in one’s reading of scientific text.</p>
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### Program Specific Outcome (PSOs)

<b>PSO 1</b>	An ability to acquire in depth theoretical and practical knowledge of microbiology and the ability to apply the acquired knowledge to provide cost efficient solution in Microbiology.
<b>PSO 2</b>	An ability to properly understand the technical aspects of existing technologies that helps in addressing the biological and medical challenges faced by humankind.
<b>PSO 3</b>	An ability to translated knowledge of microbiology to address environmental, intellectual, social and ethical issue through case studies presented in the class



## COURSE OUTCOME

### B.SC SEMISTER-I MICROBIOLOGY

PAPER CODE	CORE PAPER	TITLE OF PAPER	COURSE SPECIFIC OUTCOME
USMBT-C01	I	FUNDAMENTALS OF MICROBIOLOGY	<ul style="list-style-type: none"><li>● Gain the knowledge of history and development in microbiology.</li><li>● To understand the concept of Abiogenesis and Biogenesis theory.</li><li>● Gain the knowledge of concepts of Prokaryotes and Eukaryotes and Bacterial Cells structure.</li><li>● How bacteria are classified into different groups with the help of bacterial taxonomy.</li><li>● Learn various methods of bacterial classification i.e., Intuitive, Numerical, Taxonomy and Genetic relatedness.</li><li>● Gain the Knowledge of classification, structure and general characters of viruses.</li></ul>
USMBT-C02	II	MICROBIAL TECHNIQUES	<ul style="list-style-type: none"><li>● Demonstrate theory of Microscopy and detail knowledge about Microscope.</li><li>● Demonstrate theory and practical skill of staining techniques including, simple staining, Gram staining, endospore staining etc</li><li>● Gain the knowledge</li></ul>

			<p>about cultivation of bacteria, microbial nutrition, basic nutritional requirements, nutritional categories of microorganisms.</p> <ul style="list-style-type: none"> <li>● Demonstrate the theory of method of isolation of pure culture: Streak plate, pour plate, and Spread plate methods, Spiral plate method.</li> <li>● To gain the Knowledge of systematic study pure culture and methods of preservation of pure culture.</li> <li>● Microbial control, various techniques for microbial control i.e., physical and chemical agents.</li> <li>● Demonstrate the theory of sterilization, disinfection, antiseptic and sanitization.</li> </ul>
		<b>PRACTICALS</b>	Based on paper I and II papers

## B.SC SEMISTER-II MICROBIOLOGY

PAPER CODE	CORE PAPER	TITLE OF PAPER	COURSE SPECIFIC OUTCOME
USMBT-C03	III	GENERAL BIOCHEMISTRY	<ul style="list-style-type: none"> <li>● Demonstrate the theory of acids, bases and buffers, Isoelectric pH. Buffer capacity, Mechanism of buffer action, Henderson-Hasselbalch equation, Biochemically and Physiologically important buffers. Titration curve of weak acids, Titration curve of amino acids. Electrometric determination of pH (pH Meter).</li> <li>● Types of Isomers and their importance in biology.</li> <li>● Types of bonds and their importance: Electrovalent, Covalent, Non covalent, Ester, Phospho-diester, Thio-ester, Peptide, Glycosides.</li> <li>● Gain the Knowledge of amino acids, proteins and their structure and classifications.</li> <li>● Definition and Classification of Carbohydrates and Lipids.</li> <li>● Structure and examples of Monosaccharides, Triose, Tetrose, Pentose, Hexose.</li> <li>● Chemical structures and base composition of nucleic acids, structure of purines and pyrimidines, nucleosides, nucleotides. Stability and Formation of Phospho-diester linkage. Chargaff's rules. Double helical structures, Watson-Crick model, and other DNA helix(A- and Z-DNA)</li> </ul>

<p><b>USMBT-C04</b></p>	<p><b>IV</b></p>	<p><b>APPLIED MICROBIOLOGY</b></p>	<ul style="list-style-type: none"> <li>• Composition of air and source of microorganisms in air, enumeration of microorganisms in air: solid and liquid impingement techniques (Lemons sampler, Anderson sampler).</li> <li>• Demonstrate the theory of room sterilization techniques (Radiation, Fumigation, Laminar air flow).</li> <li>• To study the droplet infection, air borne diseases and their causative organisms.</li> <li>• Demonstration of theory of collection and handling of water samples for analysis.</li> <li>• Bacteriological analysis of water for coliforms and identification of faecal and non-faecal coliforms by (IMViC and Eijkmann test)</li> <li>• Types, Composition and strength of Sewage (BOD, COD, ThOD). Microbiology of Sewage and Sewage treatment methods.</li> <li>• Bacteriological examinations of milk by SPC, DMC, Reductase test(MBRT), checking of pasteurization of milk by phosphatase test. Production of milk products: Cheese, Yoghurt.</li> </ul>
		<p><b>PRACTICALS</b></p>	<p>Based on paper III and IV Paper</p>

## B.SC SEMISTER-III MICROBIOLOGY

PAPER CODE	CORE CODE	TITLE OF PAPER	COURSE SPECIFIC OUTCOME
USMBT-C05	V	MICROBIAL PHYSIOLOGY AND METABOLISM	<ul style="list-style-type: none"> <li>● Concepts of growth, growth curve and its phases.</li> <li>● Demonstrate History, and different terms like, Enzyme, Apoenzyme, Holoenzyme, Prosthetic group, Enzyme specificity, Turnover number, IU, Coenzyme and Cofactor.</li> <li>● Classification of enzymes in to six major classes with an example of each class, nomenclature of enzymes, Specificity of enzyme action (Lock and key model and Induced fit model). Enzyme catalysis:- Proximity and Orientation effect, covalent catalysis, acid-base catalysis, metal ion catalysis.</li> <li>● Demonstration of theory of Glycolysis, reactions of glycolysis, fates of pyruvate, feeder pathways for glycolysis, galactosemia. Gluconeogenesis - Synthesis of glucose from non-carbohydrate sources, reciprocal regulation of glycolysis and gluconeogenesis.</li> <li>● Citric acid cycle -Production of acetyl CoA, reactions of citric acid cycle, anaplerotic reactions, amphibolic role, regulation of citric acid cycle, Structure of mitochondria, oxidative and substrate level phosphorylation, Electron transport chain - its</li> </ul>

			<p>organization and function, Sites of ATP synthesis.</p> <ul style="list-style-type: none"> <li>● Phosphorylation: Oxidative phosphorylation and electron transport chain, cytochromes, NADH and succinate dehydrogenate, chemoistic coupling hypothesis.</li> <li>● Cyclic and non cyclic Phosphorylation.</li> <li>● General concepts of respiration and fermentation: Alcohol, lactic acid, acetone butanol and mixed acid fermentation.</li> </ul>
<b>USMBT-C06</b>	<b>VI</b>	<b>FOOD, SOIL MICROBIOLOGY AND MICROBIAL ECOLOGY</b>	<ul style="list-style-type: none"> <li>● Demonstrate the theory about microbial examination of food, spoilage and its types</li> <li>● Demonstrate the theory of preservation of food and food borne diseases. Concept of HACCP.</li> <li>● Gain the knowledge about soil and their composition types etc.</li> <li>● To study the elementary transformation i.e. Carbon Cycle, Nitrogen Cycle, Sulphur Cycle, Phosphorus Cycle.</li> <li>● To learn composting method like aerobic and anaerobic.</li> <li>● Different stages of nitrogen cycle i.e. biological nitrogen fixation, ammonification, nitrification, denitrification .</li> <li>● Atmospheric CO<sub>2</sub> fixation, carbon compound assimilation.</li> </ul>
		<b>PRACTICAL</b>	<ul style="list-style-type: none"> <li>● Based on V and VI paper</li> </ul>

## B.SC SEMISTER-IV MICROBIOLOGY

PAPER CODE	CORE CODE	TITLE OF PAPER	COURSE SPECIFIC OUTCOME
USMBT06	VII	INDUSTRIAL MICROBIOLOGY	<ul style="list-style-type: none"><li>● Gain the knowledge about scope and development of industrial microbiology.</li><li>● To learn the process of fermentation i.e. batch and continues, solid and liquid state, surface culture and submerged culture, single, dual culture.</li><li>● To gain the knowledge about which type of raw material are used for fermentation process with composition.</li><li>● Type of fermenter i.e. continuous stirred tank fermenter, bubble column reactors, air lift fermenter, tower fermenter, fluidized bed fermenter, packed bed reactor.</li><li>● Industrially important microorganisms and their products.</li><li>● Demonstration of theory of upstream process i.e. primary and secondary screening, strain improvement, inoculum build up, scale up of fermentation process and tolerance studies.</li><li>● To learned the process of downstream processing i.e. cell mass removal by precipitation, filtration and centrifugation.</li><li>● Concept of chromatographic separation, industrial product recovery, solvent recovery process, drying and crystallization, quality testing and packing of product.</li><li>● To learn the process of fermented product, fermentation media,</li></ul>

			microbes involve, biochemistry, fermentation conditions, product recovery and its uses.
<b>USMBT-C08</b>	<b>VIII</b>	<b>MICROBIAL GENETICS AND MOLECULAR BIOLOGY</b>	<ul style="list-style-type: none"> <li>● To study the concept of gene regulation and gene action i.e. intron, exon, recon, muton, cistron-mono and polycistron, structural organization of DNA in cell ( Nucleosome Model)</li> <li>● Central dogma of gene action in brief, regulation of gene expression-repression, induction, positive and negative control.</li> <li>● To learned the types of mutation and replication-point mutation, frame shift mutation, nonsense mutation, missense mutation, silent mutation, suppressor mutation, transition and transversion.</li> <li>● Demonstrate the theory of replica plating technique and Ame’s test.</li> <li>● To learn RNA synthesis, processing and translation – RNA polymerase, sigma factor, pribnow box, mechanism of transcription and reverses transcription.</li> <li>● Demonstration of theory of genetic recombination, transduction, conjugation, transformation.</li> </ul>
		<b>PRACTICAL</b>	<b>Base on VII and VIII Papers</b>



**Dr. Ambedkar College of Arts, Commerce and Science, Chandrapur**

**Faculty of Humanities**

**Course Outcomes**

**DEPARTMENT OF ENGLISH**

**B.A. I SEMESTER I**

**Course title: Compulsory English**

**Course Outcomes:**

1. The main purpose of this course is to equip the students with the nuances of the English language which includes proficiency in grammar and its effective usage in speaking and writing.
2. It further assists them to prepare for various competitive exams and to keep up with the increasing demand for English in Indian society and at the global level. It also develops their overall confidence and personality.
3. The students get a fair understanding of communication skills like narration, description, etc.
4. The study of prose and poems create an awareness of human values
5. The language competence is improved

**B.A. I SEMESTER II**

**Course title: Compulsory English**

**Course Outcomes:**

1. To create an interest in literature and to develop language skills.
2. To teach prose and verse that would encourage students to reflect and express themselves creatively and effectively.
3. The language component of the course tests the skills of composition, vocabulary and basic grammar.

**B.A. II SEMESTER III**

**Course title: Compulsory English**

**Course Outcomes:**

1. Helped the students getting well acquainted with the Communicative basics like Speaking, Listening,
2. Writing and Reading at advanced level

**B.A. II SEMESTER IV**

**Course title: Compulsory English**

**Course Outcomes:**

1. To introduce the students various skills of communication
2. To help the students to acquire various sub-skills for better communication
3. To enhance the students ability to use language Effectively
4. To create awareness about the socio-political issues of the period and provoke them to assess it critically
5. To motivate the students to find various solutions in their personal as well as social lif

### **B.A. III SEMESTER V**

**Course title: Compulsory English**

**Course Outcomes:**

1. To introduce students drama as a major form of literature.
2. To trace the origin and various stages in the development of drama
3. To study various elements of drama
4. To focus on various types of drama
5. To assess drama thoroughly and understand it as a piece of literature
6. To differentiate between the dramatic productions of different nations
7. To develop analytical skills through the interpretation of plays

### **B.A. III SEMESTER VI**

**Course title: Compulsory English**

**Course Outcomes:**

1. Helped the students getting well acquainted with Speech mechanism, the basic sounds in English language, word transcription and word stress, the word-formation processes; word classes, types of phrases and their form and function.

### **B.A. I SEMESTER I**

**Course title: English Literature**

**Course Outcomes:**

1. To know the beauty of the coherence of Language and Literature
2. To demonstrate the awareness of evolution theory of language by varied culture
3. To study the formation of new words
4. To apply literary terminology for Narrative, Poetic and Dramatic genres
5. To explore literary elements
6. To identify and use the figures of speech
7. To appreciate literary form and structure in shaping a text's meaning

### **B.A. I SEMESTER II**

**Course title: English Literature**

**Course Outcomes:**

1. To recognize poetry from a variety of cultures, languages and historic periods
2. To understand and appreciate poetry as a literary art form
3. To analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, etc.
4. To help the students to improve their understanding of the world the poets lived in
5. To recognize the rhythms, metrics and other musical aspects of poetry

6. To apply the principles of literary criticism to the analysis of poetry

### **B.A. II SEMESTER III**

**Course title: English Literature**

**Course Outcomes:**

1. To broaden their vocabularies and to develop an appreciation of language
2. To kindle their critical thinking skills
3. To inculcate a deeper appreciation of cultural diversity by introducing them to poetry from a variety of cultures throughout the world
4. To enhance their own creativity
5. To facilitate their writing skills

### **B.A. II SEMESTER IV**

**Course title: English Literature**

**Course Outcomes:**

1. Understand the structure of a play and learn the dramatic devices used in writing a play Become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.
2. Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language in the current information intensive society.
3. Raise significant questions, gather relevant evidence, reach well-reasoned conclusions, weigh alternative systems of thought, and write as means of intellectual inquiry and creative expression.
4. Discern the various cultural and moral values associated with the texts which help them to become ethical communicators.

### **B.A. III SEMESTER V**

**Course title: English Literature**

**Course Outcomes:**

1. Understand the structure of a play and learn the dramatic devices used in writing a play Become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.
2. Learn the elements of fiction – Narrative Technique, Setting, Point of view, Style and Detective fiction.
3. Become well acquainted with the literary genre of Novel and Short Story and literary devices of allegory and metaphor, satire, and stream of consciousness technique
4. Enhance Reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.
5. Understand the social, historical and political backgrounds of the world of the novelists and short story writers through the elaborate and allegorical descriptions in the prescribed novels.

### **B.A. III SEMESTER VI**

**Course title: English Literature**

#### **Course Outcomes:**

1. Comparative study broadens the horizon of knowledge
2. Deepens knowledge in English literature for higher studies
3. Facilitate them to choose an alternative career in dramatics, film - making and writing
4. Inculcate the significance of ICT in teaching and learning
5. Cultivates a value - added life to face challenges and achieve excellence
6. Kindles creative mind with innovative thoughts
7. Enable them to enjoy life through literature

### **B.COM.I SEMESTER I**

**Course Title: Compulsory English**

#### **Course Outcomes:**

1. Accurately and precisely communicate– both in speaking and writing – in a variety of contexts and genres.
2. The ability to read texts closely and to articulate the value of close reading in the study of literature and rhetoric.
3. The ability to explicate texts written in a wide variety of forms, styles, structures, and modes.

### **B.COM.I SEMESTER II**

**Course Title: Compulsory English**

#### **Course Outcomes:**

1. The ability to respond imaginatively to the content and style of texts.
2. The ability to write clearly, effectively, and imaginatively, and to accommodate writing style to the content and nature of the subject.

### **B.COM.II SEMESTER III**

**Course Title: Compulsory English**

#### **Course Outcomes:**

1. An understanding of the twofold nature of textual analysis:
2. Accurately and precisely communicate– both in speaking and writing – in a variety of contexts and genres.
3. To improve spoken communication and written communication.
4. Writing of Resume, letters of application, business letters.
5. To learn the basics of grammar.
6. Narration of experience, daily routine.

## **B.COM.II SEMESTER IV**

### **Course Title: Compulsory English**

#### **Course Outcomes:**

1. Students will become accomplished, active readers who appreciate ambiguity and complexity, and who can articulate their own interpretations with an awareness and curiosity for other perspectives.
2. Students will be able to write effectively for a variety of professional and social settings. They will practice writing as a process of motivated inquiry, engaging other writers' ideas as they explore and develop their own.

## **B.SC. I SEMESTER – I**

### **Course title: Compulsory English**

#### **Outcomes:**

1. To expose to a range of contexts where the language is used to meet a variety of real life communication needs.
2. To equip with the practical, emotional, intellectual and creative aspects of language by integrating knowledge and skills.
3. To enhance practice in objective and subjective writing.
4. To learn the use rather than usage of English.
5. To develop their critical thinking capabilities focused through the course as an important need.

## **B.SC. I SEMESTER – II**

### **Course title: Compulsory English**

#### **Outcomes:**

1. To improve spoken communication and written communication.
2. Writing of Resume, letters of application, business letters.
3. To learn the basics of grammar.
4. Narration of experience, daily routine.
5. Interview Techniques.
6. Understanding and interpretation of poem, prose, essay , short stories, etc.

## **M.A. ENGLISH SEMESTER I**

### **COURSE CODE: CC1 ENGLISH POETRY FROM CHAUCER TO MILTON**

#### **COURSE OUTCOMES:**

1. Students will learn literary work of Geoffrey Chaucer, Edmund Spenser, sonnets of William Shakespeare.
2. Students will learn metaphysical poems of John Donne, George Herbert and Andrew Marvell.
3. Student will learn paradise lost of John Milton.
4. Students will know the social, political and economic and religious condition of the 14<sup>th</sup> century.

### **M.A. ENGLISH SEMESTER I**

**Course Code: CC2 : Restoration and romantic Literature**

#### **COURSE OUTCOMES:**

1. Student will learn Alexander Pope's Rape of the Lock and follies of the contemporary society and literariness of the work
2. Students will learn Jane Austen's Mansfield Park
3. Students will learn Romantic poetry of William Wordsworth and s. t. Coleridge
4. Students learn the style and characteristics of the work
5. Students learn the sensuousness in the poetry of John Keats and P. B. Shelley

### **M.A. ENGLISH SEMESTER I**

**Course Code: EC5 : English Drama**

#### **COURSE OUTCOMES:**

1. Students are formed into skilled, knowledgeable, and ethical interpreters of literary texts in English by nurturing their ability to understand drama.
2. Students learn historical contexts, psycho-social aspects and discern the various cultural and moral values associated with the texts.
3. They become well acquainted with the literary genre of Drama. The rhetorical aspect of drama help them understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.
4. They learn the structure of a full length play and one act play, the dramatic devices and analyze the effect it creates in the audience.
5. They learn to raise significant questions, reach well-reasoned conclusions, weigh alternative systems of thought, and enhance their creative expression.
6. Students learn to think and communicate effectively in the current information-intensive society.
7. Students also obtain a value orientation by means of poetic justice in tragedy or comedy and comprehend human actions and their consequences in life.

### **M.A. ENGLISH SEMESTER I**

**Course Code: EC6 Indian Literature in Translation.**

#### **COURSE OUTCOMES:**

1. To introduce students to the India's best fictions in translation.
2. To generate a broad vision of life by making the students to come to grips with universal problems and varied life situations.
3. To make the students to have a feel of excellent classics in translation in various genres by a judicious selection. It should instill in the students a spirit of enquiry and further exploration

## **M.A. ENGLISH SEMESTER II**

**Course Code: CC3 Victorian Literature**

### **COURSE OUTCOMES:**

1. Students are introduced to authors and their select works and they get firsthand knowledge of the important literary works of the period.
2. Students observed the evaluation of literary forms and literary movement and other works.
3. The learn of literature is revealed with vivid insight into restoration and classicism

## **M.A. ENGLISH SEMESTER II**

**Course Code: CC4 Modern British Literature.**

### **COURSE OUTCOMES:**

1. The student will be familiar with work of Alfred Tennyson, Robert Browning, and Matthew Arnold.
2. Finally the learner would be exploring The World, the Text, and the Critic in Modern Criticism and Theory.
3. The student would read and understand unfamiliar Thomas Carlyle's Hero as a Poet, John Ruskin's Sesame and Lilies.

## **M.A. ENGLISH SEMESTER II**

**Course Code: EC10 Structure of Modern English**

### **COURSE OUTCOMES:**

1. Students learnt language as a symbolic system, features of language, difference between language and animal communication varieties of language.
2. Students learnt basic sentences patterns, word classes in English, noun and the noun phrases, verb and the verb phrase.
3. Students learnt English phonology, phonetics and organs of speech and production of speech sounds, IPA and phonetic transcription, standards of pronunciation, RP and GIE.

## **M.A. ENGLISH SEMESTER II**

**Course Code: EC12 English Novel**

### **COURSE OUTCOMES:**

1. The course offers an Introduction to The Rise of Novel; The Gothic Novel; Realism- Naturalism; Bildungsroman; Stream of Consciousness; Magic Realism besides providing The Art, craft and the elements of Fiction.
2. It enables the students to analyze literature and fiction using appropriate theoretical, historical, and cultural apparatus.
3. Students get to know various cultures and construction of gender, nation and race throughout the history.
4. The prescribed fiction helps the students to learn human values and the behavioral patterns from great works of art, and develops the ability to understand human race.

### **M.A. ENGLISH SEMESTER III**

**Course Code: CC5 Indian Writing in English—I**

#### **COURSE OUTCOMES:**

1. Students get familiarize with the view about Indian English writers
2. Students came to know how native and non-native writers have presented their work in English.
3. Students get acquainted with the history of India movement.
4. Students are introduced with the problem using English language in the Indian Society.

### **M.A. ENGLISH SEMESTER III**

**Course Code: CC6 Literary Criticism -I**

#### **COURSE OUTCOMES:**

1. The course introduces literary theories such as New Criticism; New Historicism; Structuralism and Post-structuralism; Reader Response Theory: Classes, Nations, Literatures Theories; Psychoanalytical Criticism.
2. The student will be Familiar with the basic theories, knowledge areas, and analytical tools of the field through a number of contemporary and historical schools of literary world.
3. Finally the learner would be exploring The World, the Text, and the Critic in Modern Criticism and Theory.
4. The student would read and understand unfamiliar articles on current research, theories, and analyses theories and discipline-specific skills to teach, edit and other professional areas.

### **M.A. ENGLISH SEMESTER III**

**Course Code: EC14 American Literature—I**

#### **COURSE OUTCOMES:**

1. The students will be introduced to Puritanism; Transcendentalism; The American Romantics and American Frontier.
2. It gives the glimpse of American Literature, Culture, Theory and the Renaissance.
3. Students will have an awareness of the social, historical, literary and cultural elements of the changes in American literature by identifying and describing distinct literary characteristics of American literature and analyze literary works of eminent American writers.

### **M.A. ENGLISH SEMESTER III**

**Course Code: EC15 Teaching of English Language-I**

#### **COURSE OUTCOMES:**

1. This course aims to familiarize the students with the theories, approaches, methods, and specific techniques concerning the teaching of English language.
2. This introductory course on English Language Teaching (ELT) combines the principles of ELT with practice to enable students to perceive and perpetuate a model of classroom interaction and effective teaching.
3. The learner will be able to use English language with ease, and students engage in innovative teaching



techniques and digital learning tools to read fluently, to enrich their vocabulary and to enjoy reading, writing and further teaching

#### **M.A. ENGLISH SEMESTER IV**

**Course Code: CC7 Indian Writing In English -II**

##### **COURSE OUTCOMES:**

1. Students get familiarize with the view about Indian English writers
2. Students came to know how native and non-native writers have presented their work in English.
3. Students get acquainted with the history of India movement.
4. Students are introduced with the problem using English language in the Indian Society

#### **M.A. ENGLISH SEMESTER IV**

**Course Code: CC8 Literary Criticism-II**

##### **COURSE OUTCOMES:**

1. The course introduces literary theories such as New Criticism; New Historicism; Structuralism and Post-structuralism; Reader Response Theory: Classes, Nations, Literatures Theories; Psychoanalytical Criticism.
2. The student will be Familiar with the basic theories, knowledge areas, and analytical tools of the field through a number of contemporary and historical schools of literary world.
3. Finally the learner would be exploring The World, the Text, and the Critic in Modern Criticism and Theory.
4. The student would read and understand unfamiliar articles on current research, theories, and analyses theories and discipline-specific skills to teach, edit and other professional areas.

#### **M.A. ENGLISH SEMESTER IV**

**Course Code: EC20 American Literature -II**

##### **COURSE OUTCOMES:**

1. Students learnt important movements in drama, poetry, fiction, and criticism took shape in the years before, during, and after World War I.
2. Students learnt the eventful period that followed the war left its imprint upon books of all kinds
3. Literary forms of the period which were extraordinarily varied, and in drama, poetry, and fiction the leading authors tended toward radical technical experiments.

#### **M.A. ENGLISH SEMESTER IV**

**Course Code: EC20 American Literature -II**

##### **COURSE OUTCOMES:**

1. This course aims to familiarize the students with the theories, approaches, methods, and specific techniques concerning the teaching of English language.
2. This introductory course on English Language Teaching (ELT) combines the principles of ELT with practice to

enable students to perceive and perpetuate a model of classroom interaction and effective teaching.

3. The learner will be able to use English language with ease, and students engage in innovative teaching techniques and digital learning tools to read fluently, to enrich their vocabulary and to enjoy reading, writing and further teaching

## **DEPARTMENT OF MARATHI**

### **B.A. I SEMESTER I**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. Understanding the interrelation between literature and society.
2. Explaining the nature of language and literature.
3. Obtaining the skills of literary criticism.
4. Imbuing the essay writing skills.
5. Illustrating the nature of literary forms like one-act-play, travelogue and short story.

### **B.A. I SEMESTER II**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. Introduction of the medieval Marathi language and literature.
2. Introduction of the contemporary literary works.
3. Acquiring the skill of translation.
4. Explanation of the need and significance of editing.

### **B.A. II SEMESTER III**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. Acquaintance with oriental poetry.
2. Understanding the nature and features of poetry.
3. Creating the skill of critical appreciation of a poem.
4. Developing the poetic devices and their usages.

### **B.A. II SEMESTER IV**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. To enrich the linguistic competence of the students.
2. To increase the interest for literature among the students.

3. To introduce the students with different literary genres, literary traditions and literary theories.

#### **B.A. II SEMESTER V**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. To create the awareness about value education and National Integrity.
2. To improve the overall personality of the students through value education.

#### **B.A. III SEMESTER VI**

**Course title: Compulsory Marathi**

**Course Outcomes:**

1. To give proper guidance of writing skills for media and film industry.
2. To develop Learning, Speaking, Reading and Writing skills of students.
3. To introduce the students with poetics and prosody.

#### **B.A. I SEMESTER I**

**Course title: Marathi Literature**

**Course Outcomes:**

1. Acquaintance with oriental poetry.
2. Understanding the nature and features of poetry.
3. Creating the skill of critical appreciation of a poem.
4. Developing the poetic devices and their usages.

#### **B.A. I SEMESTER II**

**Course title: Marathi Literature**

**Course Outcomes:**

1. To enrich the linguistic competence of the students.
2. To increase the interest for literature among the students.
3. To introduce the students with different literary genres, literary traditions and literary theories.

#### **B.A. II SEMESTER III**

**Course title: Marathi Literature**

**Course Outcomes:**

1. To introduce the students with renaissance movement in Marathi literature.
2. To inform about the history of Medieval Marathi literature.

#### **B.A. II SEMESTER IV**

**Course title: Marathi Literature**

**Course Outcomes:**

1. To develop attitude of Marathi Linguistics and Grammar.
2. To introduce the students with Dalit literature and rural literature.

3. To create the awareness about value education and National Integrity.
4. To improve the overall personality of the students through value education.

#### **B.A. III SEMESTER V**

##### **Course title: Marathi Literature**

##### **Course Outcomes:**

1. To enrich the linguistic competence of the students.
2. To increase the interest for literature among the students.

#### **B.A. III SEMESTER VI**

##### **Course title: Marathi Literature**

##### **Course Outcomes:**

1. To introduce the students with different literary genres, literary traditions and literary theories.
2. To introduce the students with renaissance movement in Marathi literature.
3. To inform about the history of Medieval Marathi literature.
4. To introduce the students with Dalit literature and rural literature.
5. To develop attitude of Marathi Linguistics and Grammar.

#### **B.COM.I SEMESTER I**

##### **Course Title: Compulsory Marathi**

##### **Course Outcomes:**

1. Students get learnt various types of texts and enrich vocabulary and understand men and manners.
2. Students instilled poetic sense through reading of poetry.
3. Students upgraded grammatical aspects of Marathi language.

#### **B.COM.I SEMESTER II**

##### **Course Title: Compulsory Marathi**

##### **Course Outcomes:**

1. Students got an opportunity to learn language elements and their application in practice.
2. Students developed competency regarding communication skills and to develop among them the ability to communicate effectively in Marathi.
3. Students got inspiration to use various soft skills regarding use of Marathi in business world.

#### **B.COM.II SEMESTER III**

##### **Course Title: Compulsory Marathi**

##### **Course Outcomes:**

1. To enable and inspire the students to read and learn various types of texts and enrich vocabulary and understand men and manners.
2. To provide an opportunity to students to learn language elements and their application in practice.

## **B.COM.II SEMESTER IV**

### **Course Title: Compulsory Marathi**

#### **Course Outcomes:**

1. To instil poetic sense among students through reading of poetry.
2. To upgrade student's grammatical sense and master the basic grammatical aspects of Marathi language.
3. To develop reading, writing and communication skills of students.

## **B.SC. I SEMESTER I**

### **Course Title: Compulsory Marathi**

#### **Outcomes:**

1. Understanding the interrelation between literature and society.
2. Explaining the nature of language and literature.
3. Obtaining the skills of literary criticism.
4. Imbuing the essay writing skills.
5. Illustrating the nature of literary forms like one-act-play, travelogue and short story.

## **B.SC. I SEMESTER II**

### **Course Title: Compulsory Marathi**

#### **Outcomes:**

1. Introduction of the medieval Marathi language and literature.
2. Introduction of the contemporary literary works.
3. Acquiring the skill of translation.
4. Explanation of the need and significance of editing.

## **M.A. MARATHI (SEMESTER I, II)**

### **Marathi Vaicharik Nibandh :**

1. To make awareness of form 'Nibandh' in Post- Independence Era.
2. To inform about various ideas and Isms of modern Indian society through literature.

## **M.A. MARATHI (SEMESTER I, II)**

### **Arvachin Kavita :**

1. To inform the students about changing nature of Marathi Poetry after 18<sup>th</sup> century.
2. To arise interest of Marathi poetry.
3. To inform various forms of poetry.

## **M.A. MARATHI (SEMESTER I, II)**

### **Loksahitya :**

1. To know the concept of folk-literature.
2. To know the co-relation between folk literature and other branches.
3. To know the new trends study of folk literature in new era.

4. To know the tradition of folk literature in Vidarbha region such as Zadipatti Lok Rangbhoomi.

#### **M.A. MARATHI (SEMESTER I, II)**

##### **Sahityashastra :**

1. To know the importance of criticism.
2. To increase vision regarding literary value.
3. To know the concept and process of literature.
4. To inform about origin of literature.

#### **M.A. MARATHI (SEMESTER III, IV)**

##### **Prachin va Madhyayugin Kavita :**

1. To give Information about Sant, Pandit & Sahir Medieval Marathi Literature.
2. To provide Information Well Known poet Sant Dnyaneshwar, Sant Tukaram Sant Eknath & Ramdas .
3. To inform the whole background of Ancient poetry.

#### **M.A. MARATHI (SEMESTER III, IV)**

##### **Vishesh Granthakar Annabhau Sathe :**

1. To know the literary contribution of the writer.
2. To know the life value among the literature.
3. Introduction of writer.
4. To study life and literary value of Annabhau's Povada And Lavani
5. Study of Annabhau's folk- Drama and Novel.

#### **M.A. MARATHI (SEMESTER III, IV)**

##### **Bhashavidnyan :**

1. To know the importance of language in human life.
2. To know the various methods of the study of language.
3. To understand the communication process and method.
4. To inform various theories of literature.

#### **M.A. MARATHI (SEMESTER III, IV)**

##### **Nave Vangmay Pravah (Dalit, Strivadi, Gramin & Adivasi) :**

1. To introduce the students with Dalit literature.
2. To know the importance of feminism and the characteristics of feminine literature.
3. To introduce the students with Gramin literature and its trends.
4. To know the life, culture, various dialects of Adivasis through their literature.

## **DEPARTMENT OF PALI**

### **B.A. I SEMESTER I**

**Course title: Pali**

#### **Course Outcomes:**

1. From this segment of the syllabus student learn about the first five students of Buddha from Pachha vagiya katha.
2. They learn morals from Jataka tales.
3. Students came to know that the theri gatha is the first poem book of women.
4. Students get to know Pali grammar like Alphabets, Noun and Pronoun.
5. Students learn Buddha's Philosophy from the Milind prashna book.
6. They learn values of life from Vishudhi magga.

### **B.A. I SEMESTER II**

**Course title: Pali**

#### **Course Outcomes:**

1. From this paper student can get idea about the friendship and we should not have pride.
2. Students learn about Buddha's idea about equal value of girl and boy from sanyuktnikay.
3. In ther gatha students learn about giving respect to everyone without any discrimination race, caste, colour, religion by example of sunit ther.
4. Students aware about 24 Buddhas from chariypitak.
5. Student learn wisdom and modesty from vishudhi magga and Milind prashna.
6. In Pali Grammer we learn Case, Present Tense and Translation from Pali to Marathi and from Marathi to Pali.

### **B.A. II SEMESTER III**

**Course title: Pali**

#### **Course Outcomes:**

1. In this text students learn to help others, about best friendship.
2. Students came to know about Buddha's rebuttal againt four Varnas from vasal sutta.
3. Students learn that eating meat is not bad but bad deeds and thinking is more bad from amagandhasutta.
4. They know about Buddha's first teaching from dhammacakkappavattana sutta.
5. Here we learn Future Tense, Verb and Formation of sentence.

### **B.A. II SEMESTER IV**

**Course title: Pali**

#### **Course Outcomes:**

1. Students learn about concept that who should be made Monks for the beneficial of society.
2. Students come to know about the first lady monk that is Mahaprajapati Gautami.

3. Students learn what is eatable and what is not, Buddha teaches that Unseen, Unheard, unknown meat is eatable.
4. Students learn to make a sentence in Present tense and Future tense.

#### **B.A. III SEMESTER V**

**Course title: Pali**

**Course Outcomes:**

1. Students get the idea about sixty two ideology other than Buddha from sippa sutta.
2. Students learn about the seven Bodhi parts.
3. They learn that satisfaction in martial life is important from nakul pita sutta.
4. Students learn about the thirty two principles of helping people from mahamangal sutta.
5. They learn not the stash the money from nidhikanda sutta.
6. Students here learn about Adverb.

#### **B.A. III SEMESTER VI**

**Course title: Pali**

**Course Outcomes:**

1. Students learn about the best life thoughts of Buddha.
2. They learn right view from Samadikika sutta.
3. They learn about right mind, good self from Dhammapada.
4. Students here learn about Adverb.

#### **B.A. I SEMESTER I**

**Course title: Pali Literature**

**Course Outcomes:**

1. From this segment of the syllabus student learn about the history of Pali language.
2. They came to know about the edicts of Ashoka.
3. Students learn the middle path of Buddha. And his teaching about four noble truths and eight fold path.
4. Students get to know Pali grammar like Alphabets, Noun and Pronoun.

#### **B.A. I SEMESTER II**

**Course title: Pali Literature**

**Course Outcomes:**

1. From this paper student can get idea about the past lives of Bhodhisatava.
2. This paper gives student idea of mahabhinishkramana (the event of leaving home) taught by Buddha himself.
3. In appamada vagga of Dhammpad students learns to avoid laziness in life.
4. Students aware about the rules of Monk.
5. In Pali Grammer we learn Case, Present Tense and Translation from Pali to Marathi and from Marathi to Pali.



### **B.A. II SEMESTER III**

**Course title: Pali Literature**

**Course Outcomes:**

1. In this text students learn about the concept of No-self from *Anattalakkhaṇa Sutta*.
2. Students learn about thoughts of Buddha on farming from kasi bharadvaja sutta.
3. Students learn friendship from metta sutta.
4. From dhammpad they learn good human morals.
5. Here we learn Future Tense, Verb and Formation of sentence.

### **B.A. II SEMESTER IV**

**Course title: Pali Literature**

**Course Outcomes:**

1. Students learn about concept eating meat from Jivak sutta.
2. Buddha's message of living in present from bhaddekaratta sutta encourage students to live in present.
3. Students came to know about seven types of bride from Bhariya sutta.
4. Students learn the need and benefits of controlling mind from chitta vaga.
5. Students learn to make a sentence in Present tense and Future tense.

### **B.A. III SEMESTER V**

**Course title: Pali Literature**

**Course Outcomes:**

1. Students learn about the 'mahaparinibbana sutta' (the last journey of Buddha).
2. They study about the thoughts of monks on Nature in ther gatha .
3. Students learn about greed and desire in Itivuttaka .
4. Students here learn about Adverb.

### **B.A. III SEMESTER VI**

**Course title: Pali Literature**

**Course Outcomes:**

1. Students learn about the 'mahaparinibbana sutta' (the last journey of Buddha).
2. They study about the thoughts of monks on Nature in **ther gatha** .
3. Students learn about greed and desire in Itivuttaka .
4. Students here learn about Adverb.
5. Students here learn about Nibbana, Four Noble Truth and Eight Fold Path.

## **DEPARTMENT OF ECONOMICS**

### **B.A. I SEMESTER I**

**Course title: Economics**

**Course Outcomes:**

1. Understand the meaning of economics and difference between micro and macroeconomics.
2. Understand the demand and supply theory and Geffen paradox.
3. Understand the production function and Isoquant curve.
4. Understand the consumer's behavior with the help of utility analysis and indifference curve analysis.

### **B.A. I SEMESTER II**

**Course title: Economics**

**Course Outcomes:**

1. Understand the cost and revenue analysis and its inter-relationship.
2. Understand the market structure and perfect competition market Equilibrium of short and long run firm.
3. Understand the concept of monopoly and imperfect competition market.
4. Understand the factors pricing and statistics for economics.

### **B.A. II SEMESTER III**

**Course title: Economics**

**Course Outcomes:**

1. Understand the introduction to macroeconomics and its model
2. Understand the Inflation-Dis-Inflation, Index Number and Trade cycle.
3. Understand the concept of the money and value of money.
4. Understand the theories of determination of value of money.
5. Understand the concept of Employment and its theories.

### **B.A. II SEMESTER IV**

**Course title: Economics**

**Course Outcomes:**

1. Understand the commercial and central bank functions and its credit control.
2. Understand the public Finance, monetary policy and modern banking system.
3. Understand the Financial, money and capital market.
4. Understand the International trade and International Financial Institutes.

### **B.A. III SEMESTER V**

**Course title: Indian Economy**

**Course Outcomes:**

1. To able to understand nature of Indian economy

2. To able to understand population & economic development
3. To able to understand poverty in India, Inequality, problems of unemployment India
4. To able to understand industrial sector and Service Sector in India.
5. To able to understand role of agriculture in Indian economy

### **B.A. III SEMESTER VI**

**Course title: Indian Economy**

**Course Outcomes:**

1. To able to role of industry and labor.
2. To able to understand economic planning in India
3. Able to understand Economic Development and Economic Growth.
4. To able to understand Environment, Ecology and pollution control.

### **M.A. ECONOMICS SEMESTER - I**

**Course title: PAPER I: MICRO ECONOMIC ANALYSIS-I**

**Learning Outcomes:**

1. Analysis of the economic behavior of individuals, firms and markets.
2. Rigorous and comprehensive study of various aspects of consumer behavior and demand analysis, production theory and behavior of costs, the theory of traditional markets and equilibrium of firm in modern non-profit maximizing framework in theory and applications as well.
3. Deep study of the micro and macro theories of distribution, welfare economics, and general equilibrium in closed and open systems and analysis of economic behavior under uncertainty.

### **M.A. ECONOMICS SEMESTER - I**

**Course title: PAPER II-MACRO ECONOMIC ANALYSIS-I**

**Learning Outcomes:**

1. Analysis of the establishment of the functional relationship between the large aggregates.
2. Understanding the macroeconomic theoretical structure that is considered essential for the proper comprehension of the different issues and policies.
3. Study of Macroeconomics and analysis of body of empirical economic knowledge.
4. Understanding the systemic facts and latest theoretical developments for empirical analysis.

### **M.A. ECONOMICS SEMESTER - I**

**Course title: PAPER III – AGRICULTURAL ECONOMICS ANALYSIS-I**

**Learning Outcomes:**

1. Providing a detailed treatment of issues in agricultural economics to those intending to specialize in this area.
2. Analysis of the issues related with agricultural and economic development, agricultural production function, agricultural demand and supply, farm management and agricultural risk management

### **M.A. ECONOMICS SEMESTER - I**

#### **Course title: PAPER III –STATISTICS FOR ECONOMICS-I**

##### **Learning Outcomes:**

1. Able to understand meaning, scope & importance of statistics
2. Able to understand measuring central tendency
3. Able to understand dispersion and co-efficient
4. Able to understand methods of correlation
5. Able to understand measures and types of price index

### **M.A. ECONOMICS SEMESTER - I**

#### **Course title: PAPER IV –PUBLIC ECONOMICS**

##### **Learning Outcomes:**

1. Understanding the role and functions of the Government in an economy have been changing with the passage of time.
2. Study of policies and operations which involve the use of tax and expenditure measures while budgetary policy is an important part to understand the basic problems of use of resources, distribution of income, etc.
3. Understanding fiscal institutions – tax systems, expenditure programs, budgetary procedures, stabilization instruments, debt issues, levels of government, etc., which raise a spectrum of issues arising from the operations of these institutions. Further, the existence of externalities, concern for adjustment in the distribution of income and wealth, etc. require political processes for their solution in a manner, which combines individual freedom and justice.

### **M.A. ECONOMICS SEMESTER - II**

#### **Course title: PAPER I: MICRO ECONOMIC ANALYSIS-II**

##### **Learning Outcome:**

1. Getting known with the theories of growth and development, social and institutional aspects of development, importance of agriculture, and the rationale and pattern of industrialization in developing countries.
2. Getting knowledge of infrastructure- linkages, role of international trade, importance of domestic macroeconomic policies, investment criteria, and relevance of planning have been included in the paper.)

### **M.A. ECONOMICS SEMESTER - II**

#### **Course title: PAPER II: MACRO ECONOMIC ANALYSIS-II**

##### **Learning Outcomes:**

1. Providing a deep understanding about the broad principles and theories, which tend to govern the free flow of trade in goods, services and capital – both short term and long term – at the global level.
2. Preparing for the relevance and limitations of the principles, lay stress on the theory and nature of the subject which, in turn, will greatly help them to examine the impact of the trade policies followed both at the national and international levels as also their welfare implications at macro level and the distribution of gains from

trade to North and South.

3. Access to train the students about the various issues about the trade and likely consequences on income, employment and social standards and possible policy solutions as the world will move into the 21st century

#### **M.A. ECONOMICS SEMESTER - II**

##### **Course title: PAPER III – AGRICULTURAL ECONOMICS ANALYSIS-I**

##### **Learning Outcomes:**

1. To able to understand rural Labor Market, rural unemployment and Agriculture wages in India.
2. To able to understand rural credit and Institutions, Agricultural cooperatives in India.
3. To able to understand concepts of Agriculture markets and Regulated Markets objectives of agricultural price policy.
4. To able to understand Recent trends in agricultural growth in India, Role of public investment and World trade Organization.

#### **M.A. ECONOMICS SEMESTER - II**

##### **Course title: PAPER III –STATISTICS FOR ECONOMICS-II**

##### **Learning Outcomes:**

1. Students will be able to understand Binomial,poisson,Normal t-test,chi-square,t-test
2. Students will be able to understand Types of estimators and their properties. Point and Interval estimation and Tests significance.
3. Students will be able to understand the Nature and decomposition of a time series-trend.
4. Students will be able to understand Index Numbers, price and Cost of Living Index Numbers.

#### **M.A. ECONOMICS SEMESTER - II**

##### **Course title: PAPER IV – INDUSTRIAL ECONOMICS**

##### **Learning outcomes:**

1. Students will be able to understand Industrial Economics, Industries Profile and integration, Industrial Combinations..
2. Students will be able to understand the Role and pattern of Industrialization in india, Regional industrial growth in India and Industrial economic concentration.
3. Students will be able to understand Sources of Industrial Finance, FDI and Economic Reforms
4. Students will be able to understand Trade Union Movement in India , Industrial Disputes and Labour market Reforms.

#### **M.A. ECONOMICS SEMESTER - III**

##### **Course title: PAPER I –ECONOMICS OF GROWTH AND DEVELOPMENT-I**

##### **Learning outcomes:**

1. Getting known with the theories of growth and development, social and institutional aspects of development, importance of agriculture, and the rationale and pattern of industrialization in developing countries.

2. Getting knowledge of infrastructure- linkages, role of international trade, importance of domestic macroeconomic policies, investment criteria, and relevance of planning have been included in the paper.)

### **M.A. ECONOMICS SEMESTER - III**

#### **Course title: PAPER II-INTERNATIONAL TRADE AND FINANCE-I**

##### **Learning Outcomes:**

1. Providing a deep understanding about the broad principles and theories, which tend to govern the free flow of trade in goods, services and capital – both short term and long term – at the global level.
2. Preparing for the relevance and limitations of the principles, lay stress on the theory and nature of the subject which, in turn, will greatly help them to examine the impact of the trade policies followed both at the national and international levels as also their welfare implications at macro level and the distribution of gains from trade to North and South.
3. Access to train the students about the various issues about the trade and likely consequences on income, employment and social standards and possible policy solutions as the world will move into the 21st century

### **M.A. ECONOMICS SEMESTER - III**

#### **Course title: PAPER III –RESEARCH METHODOLOGY-I**

##### **Learning Outcomes:**

1. To able to understand methods of data collection & analysis
2. To able to understand contents of report writing
3. To able to understand concepts of research designing
4. To able to understand concepts of hypothesis testing methods.

### **M.A. ECONOMICS SEMESTER – III**

#### **Course title: PAPER IV –LABOUR ECONOMICS-I**

##### **Learning Outcomes:**

1. Study of issues pertaining to the labor market, wage theories, employment policies, trade unions and collective bargaining in the globalized economy have become vitally important for developing countries.
2. Knowing about the importance of issues such as employment and unemployment as well as livelihood and social security for the growing millions continues to assume significance
3. Exposure to theoretical as well as empirical issues relating to the labor market with special reference to India

### **M.A. ECONOMICS SEMESTER - IV**

#### **Course title: PAPER I – ECONOMICS OF GROWTH AND DEVELOPMENT-II**

##### **Learning Outcomes:**

1. To able to understand the economic growth & technological changes
2. To able to understand some growth models
3. To able to understand the Neo- Classical & Cambridge models of growths
4. To able to understand issues & techniques of economic growth

**M.A. ECONOMICS SEMESTER - IV,**

**Course title: PAPER II – -INTERNATIONAL TRADE AND FINANCE-II**

**Learning Outcomes:**

1. To able to understand trade policies in India
2. To able to understand international financial institutions
3. To able to understand foreign direct investments
4. To able to understand foreign exchange market

**M.A. ECONOMICS SEMESTER - IV**

**Course title: PAPER III – RESEARCH METHODOLOGY-II**

**Learning Outcomes:**

1. Students will know the Classification, Tabulation, Representation and Statistical Analysis of Data.
2. Students will able to better understand about Measures of Central Tendency and Annual Survey of Industries.
3. Students will know the Procedure and use of Statistical Techniques for Testing of Hypotheses, Language ,Analysis and interpretation of Data presentation of Data.

**M.A. ECONOMICS SEMESTER – IV**

**Course title: PAPER IV – RURAL DEVELOPMENT**

**Learning Outcomes:**

1. Students will know the various basic concepts, objectives and Importance in Rural Development
2. Students will know the concepts in Rural poverty and Rural Unemployment in India.
3. Students will know the Growth of Agriculture, Rural Development in India and Rural Financial Structure.

**DEPARTMENT OF HISTORY**

**B.A. I SEMESTER I**

**Course title: Indian History (Earliest Time to 1351 A.D)**

**Course Outcomes:**

1. From this segment of the syllabus student learn about the history of Ancient Civilizations of India
2. Sources of ancient, Mediaeval India, Civilizations like Indus and Aryan, political and religious changes in 6th to century B.C to 14<sup>th</sup>. Mauryan Empire etc. are studied.
3. From this segment of the syllabus student aware about the history of Ancient India from 300 A.D. TO 1200 A.D.

### **B.A. I SEMESTER II**

**Course title: Indian History (1526 to 1761 A.D)**

**Course Outcomes:**

1. From this paper student can get idea about Islamic (1206-1526) role in India.
2. This paper deals with political, economic and social changes of India
3. Students can demonstrate knowledge and comprehension of social change, Social Control, stratification and social structure. Of Medieval India

### **B.A. II SEMESTER III**

**Course title: MODERN INDIA (1757 to 1920 A.D.)**

**Course Outcomes:**

1. This paper studies about Formation, Expansion and Consolidation of British Empire in India under East India Company
2. Student can learn about the Development of indigenous science and technology of India before the advent of east India company
3. Student will be able to understand and describe the concept of Political & social problems, Indian Society, and how to fight

### **B.A. II SEMESTER IV**

**Course title: MODERN INDIA (1920 to 1971 A.D.)**

**Course Outcomes:**

1. This paper gives an idea about the British Empire in India under the British Crown and also the consequences of national Movement of India.
2. Student will obtain proper knowledge and Evaluate consolidation of English Power in India
3. Analyses social religious consciousness in India
4. Comparison of Nationalist movements- Pre-Gandhian and Post- Gandhian Era
5. Student will be able to describe and understand the basic concepts and Salient Features of Indian Constitution

### **B.A. III SEMESTER V**

**Course title: Modern World - 1775 to 1920 A.D**

**Course Outcomes:**

1. Introduction to landmark events in World history.
2. Student will be able to describe and understand and deals with changes of Europe after the American, French and Russian Revolution and political changes in the countries like Prussia, Italy and Russia etc
3. Understand policy of imperialism and changes in world political order.
4. Emergence of State of Germany and its diplomatic policy.
5. Critically analyze background of First World War and international peace making attempts that followed.



6. This paper balances political, economic, religious, and cultural history of Continental Europe Till the early modern period.
7. Focus on what happened during a specific time period to a focus on putting that period into its Broader, dynamic context and then to considering how we use the past to help make sense of the Present

**B.A. III SEMESTER VI**

**Course title: Modern World - 1920 A.D to 2000 A.D**

**Course Outcomes:**

1. Analyses causes for the rise of dictatorship in Europe.
2. Understand international crisis; inter world war period politics and events leading to Second World War and its aftermath.
3. Understand world politics after World War and attempts to restore World peace.
4. Introduction to political shifts in West Asia.
5. It also introduced the ideas that shape the modern institutions and modern world and taught
6. The students to analyze and critique the ideas. This paper deals with political, economic and Social changes of European countries like America, Germany, France, Spain, Austria, Russia, Japan etc.
7. Students understand the world development of Science and Technology & able to Acquire Knowledge about 20th century world.

**M.A. HISTORY SEMESTER - I**

**Course title: Paper –I: Historiography**

**COURSE OUTCOMES**

1. The course introduced to the students ‘what exactly is history’.
2. It teaches the students, how to study history.
3. The acquainted the students with the methodological framework within which historianswork.
4. The course introduces the different historical school of thought to the students
5. It prepared the students for their research work in the future
6. Developed their ability to assess critically historical analysis and argument, past and present

**M.A. HISTORY SEMESTER - I**

**Course title: Paper –II India under the Sultanate Period**

**LEARNING OUTCOMES**

1. The Delhi Sultanate refers to the five short-lived Muslim kingdoms of Turkic and Pashtun (Afghan) origin that ruled the territory of Delhi between 1206 and 1526 CE.
2. The early rulers of the Delhi Sultanate are often viewed as iconoclastic pillagers, best known for their indiscriminate destruction of Hindu, Buddhist, and Jain temples and enacting prohibitions of anthropomorphic representations in art.

3. The Delhi Sultanate's greatest contribution to Indian fine arts , however, was the introduction of Islamic architectural features, including true domes and arches , and the integration of Indian and Islamic styles of architecture.
4. Built by the first sultan of Delhi, the Qutb Minar is the tallest minaret in India, the walls of which are covered with Indian floral motifs and verses from the Quran.
5. The Alai Darwaza is the main gateway on the southern side of the Quwwat-ul-Islam mosque in the Qutb complex; built in 1311 CE, it features the earliest surviving true dome in India.
6. There is little architecture remaining from the Sayyid and Lodi periods, but a few fine examples survive in the Lodi Gardens in Delhi, including the tomb of Mohammad Shah, the last sultan of the Sayyid Dynasty, built in 1444.
7. Students able to understand the administrative setup of Sultanate from central to local level.
8. Students able to understand the nature of village community & the relationship between the different sections of society

#### **M.A. HISTORY SEMESTER - I**

##### **Course title: Paper –III India under the Mughal Period**

##### **LEARNING OUTCOMES**

1. Students will understand from this course is to provide the students with a firm basis for the understanding of South Asia during the Mughal period from the sixteenth to the eighteenth centuries.
2. By discussing the nature of the social, political, and religious foundations of Mughal India as a dynamic process,
3. The students will acquire a multifaceted understanding of the factors that shaped state and society in early modern South Asia and that were carried into the later colonial state.
4. The course provides an overview of the main trends and developments in India during the Mughal period (1526-1757).
5. The course acquainted the students the knowledge of socioeconomic and political history, focusing on the continuity and change from the Hindu to the Muslim period
6. Understand the political situation of India on the eve of Babar's invasion.
7. Students able to understand comprehend the basic features of Mansabdari & change in it during 17th century.
8. Students able to understand Grasp the Mughal concept at divine theory of kingship & state

#### **M.A. HISTORY SEMESTER - I**

##### **Course title: Paper –IV Modern World: 1914 - 1950**

##### **LEARNING OUTCOMES**

1. This paper balances political, economic, religious, and cultural history of Continental Europe till the early modern period.
2. Beginning with the fifteenth-century conquest of the "Atlantic Mediterranean", it imparts the knowledge on

the emergence of Europe as the first truly global power.

3. The course introduced to the students, the people who shaped the modern world.
4. It also introduced the ideas that shape the modern institutions and modern world and taught the students to analyze and critique the ideas.
5. The course acquaints the students, the forces and events that have shaped the character and institution of the modern world.
6. The course imparted knowledge on the students, the political transformations of the modern world that took place from the nineteenth century till the end of the Second World War.
7. Understand the importance of world peace right after the world war Ist
8. Students will able to explain the aftermaths of the World War II on the world politics

## **M.A. HISTORY SEMESTER - II**

### **Course title: Paper –I: Trend and Theories of History**

#### **LEARNING OUTCOMES**

1. The student's ability to compare and contrast different processes, modes of thought, and modes of expression from different historical time periods and in different geographic areas.
2. Students will distinguish between primary and secondary sources and identify and evaluate evidence
3. Learn the theory and practice of historical research as practiced by professionals in the field, including traditional and current research methodologies;
4. Learn to develop a thesis/argument, evaluate its historical probability, place that argument in a historiography context;
5. Gain a knowledge of the diverse sources available to historians;
6. Develop a mastery of standard scholarly writing and citation style in accord with the Chicago Manual of Style.
7. Reflect on the purposes, goals, motives, and assumptions historians bring with them to the study of history
8. Students will Produce the draft of a work original research that meets the standards of the historical profession (which might be, in part, a thesis proposal) based on the extensive use of primary sources

## **M.A. HISTORY SEMESTER - II**

### **Course title: Paper –II Society, Economy and Culture Under the Sultans**

#### **LEARNING OUTCOMES**

1. Understand the aspects of fiscals & monetary system under the Sultanat
2. It also inculcated to the students, the socio- economic developments of the said areas and periods.
3. It introduced the culture, traditions, customs and practices of the medieval period focusing on the continuity and change through time.
4. Understand the nature of village community & the relationship between the different sections of society.

5. The course imparts the knowledge of the political developments and developed the skills of the students by giving new arguments and interpretations.
6. It introduced to the students, the elements of change and continuity in Indian history as a whole from the medieval period.
7. The course imparts the knowledge of medieval period land revenue system, women's social condition, different cults and its importance.
8. Students will be able to know the system of trade & commerce during the period of Sultanate
9. Students will be able to understand early difficulties of Sultans in India

#### **M.A. HISTORY SEMESTER - II**

##### **Course title: Paper–III Society, Economy and Culture Under the Mughal**

##### **LEARNING OUTCOMES**

1. The course provides an overview of the main trends and developments in India during the Mughal period (1526-1757).
2. The course gathered, organized and reinterprets the existing sources, both primary and secondary.
3. The course acquainted the students the knowledge of socioeconomic and political history, focusing on the continuity and change from the Hindu to the Muslim period.
4. It also enlightened the students on the cultural patterns, the change and continuity of the over time.
5. The course brought an understanding of the socio-economic and cultural patterns in understanding the polity and society as they took shape in the periods under study.
6. Understand the nature of village community.
7. Grasp the some aspects of fiscals & monetary system of Mughals.
8. Know the system of trade & commerce during the period of Mughals

#### **M.A. HISTORY SEMESTER - II**

##### **Course title: Paper –IV Contemporary World: 1950 to 2000**

##### **LEARNING OUTCOMES**

1. This paper balances political, economic, religious, and cultural history of Continental Europe till the early modern period.
2. Beginning with the fifteenth-century conquest of the "Atlantic Mediterranean", it imparts the knowledge on the emergence of Europe as the first truly global power.
3. The course introduced to the students, the people who shaped the modern world.
4. It also introduced the ideas that shape the modern institutions and modern world and taught the students to analyze and critique the ideas.
5. The course acquaints the students, the forces and events that have shaped the character and institution of the modern world.

### **M.A. HISTORY SEMESTER - III**

#### **Course title: Paper –I: Emergence of Maratha Power in 17th Century**

##### **LEARNING OUTCOMES**

1. Students will be able to Understand the formation of welfare state during the Maratha rule
2. Students will be able to understand the industrial and agricultural aspects of Chhatrapati Shivaji's regime
3. Students will be able to Understand the administrative aspect of the Swarajya.
4. Students will be able to understand the conflict for throne after the death of Chhatrapati Shivaji.
5. Understand the inspiration behind the establishment of swarajya.
6. Explain the reasons behind Chatrapati Shivaji's early conflicts with the regional lords and the outsiders.
7. Know about the administrative need and the importance of grand coronation Of Chatrapati Shivaji

### **M.A. HISTORY SEMESTER - III**

#### **Course title: Paper –II State In Ancient and Medieval**

##### **LEARNING OUTCOMES**

1. Nature of state has to be studied in the context of perspective building for the civil servants.
2. And to learn from the mistakes and successes of that past in building a strong, durable, prosperous and inclusive nation state.
3. State formation: a natural transition from a tribal society to a segmentary state to a republic, to monarchies to empires
4. In ancient India, kingdom (rajya) is constituted of seven elements (sapta-prakrtayah) or seven limbs (sapta-anga) • According to Manu-Smriti (1-2 century AD), these were : - King (swamin) - Minister (amatya) - City (pura) - Domain/ territory (rastra) - Treasury (kosa) - Army (danda) - Ally (suhrd/ mitra)
5. Delhi is central because it was the paradigm for the shape of the things to come in the rest of the subcontinent
6. Political economy based upon organized military & state building institutions
7. Delhi's importance grew as the nuclei for the Turko-Persian elite following the Mongol invasions
8. State formation assisted by: invasions, garrison towns, long distance trade, flow of bullion
9. Students will able to know about the Mourya, Gupta, Sangam age, the Cholas, Pallavas, Chalukyas and Sultante, Mughal dynasty

### **M.A. HISTORY SEMESTER - III**

#### **Course title: Paper –III Economic History of India: 1757 – 1857**

##### **LEARNING OUTCOMES**

1. Students will be able to understand **destruction of Indian Handicrafts**, The Industrial Revolution in England created a serious impact on Indian economy as it reversed the character and composition of India's foreign trade.
2. The destruction of Indian handicrafts created a vacuum in Indian markets which was subsequently fed by British manufactured goods.

3. Students will be able to understand the British Government introduced the land settlement which led to introduction of zamindari system this system destruction of the organic village community in India.
4. Students will be able to understand the commercialization of Indian agriculture during the British period created a serious impact on the Indian economy.
5. The development of an elaborate railway network primarily intensified the commercialization of agriculture and on the other hand brought foreign machine made manufactures to India. This sharpened the competition of machine made goods with Indian handicrafts which resulted into total destruction of Indian handicrafts industry.
6. Students will be able to understand the Transforming Trade Pattern and huge economic drain of India weakening the base of Indian economy.
7. Students will be able to understand identify the various methods used by the British to colonize India;
8. Students will be able to understand identify the reasons for the protest movements that took place under their rule before the revolt of 1857.

#### **M.A. HISTORY SEMESTER - III**

**Course title: Paper –IV History of Medieval Vidarbha**

##### **LEARNING OUTCOMES**

1. The students will develop a comprehensive understanding of the Emergence of Gond Power rule in early medieval Vidharbha. They will also study the political changes in the Vidharbha.
2. To understand the political and administrative scenario of the medieval period in Vidharbha.
3. Students will be able to understand Establishment of Bhosla Rule and its administration.
4. Establishment of Bhosla Rule.
5. The students will able to know how to Annexation of Nagpur by British from bhosala king and Nagpur during the revolt of 1857
6. Students able to understand the Relation of Bhosala with Peshwa and Nizam

#### **M.A. HISTORY SEMESTER - IV**

**Course title: PAPER –I: EXPANSION OF MARATHA POWER: 1707 –1818**

##### **LEARNING OUTCOMES**

1. Students will able to understand the importance of the Maratha history in 18th century.
2. Students will able to Asses the circumstances under which rise of the Peshwas took place.
3. Students will able to Understand the political scenario of the Maratha power in the early 18th century
4. Students will able to understand the policies adopted by early Peshwas.
5. Explain the circumstances of the Maratha power after the battle of Panipat.
6. Know the reasons of political disintegration of the Marathas.
7. Understand the nature of Aglo-Maratha relations.
8. Understand the central and provincial administration of Marathas under the Peshwas.

#### **M.A. HISTORY SEMESTER - IV**

**Course title: Paper –II State In British India**

##### **LEARNING OUTCOMES**

1. Students will be able to distinguish the detail account of British raj as well as its overall impacts on the Indian society.
2. Recognize the integration of Indian states and Sardar Vallabai Patel's effort.
3. Analyse the salient features of Indian Council Act of 1909.
4. Highlight the significance of Government of India Act of 1935.
5. Evaluate the establishment of the British rule its nature and apparatus.
6. Understand some of the early resistance to British rule.
7. Students will understand the British Policy Towards Native States 1857 - 1947
8. Students will be able to understand Civil Administration - Police, Civil Services, and concept of Swarajya, Home Rule, and Two - Nation Theory and reorganization of State.
9. Students will be able to understand the evolutionary processes of constitutional developments

#### **M.A. HISTORY SEMESTER - IV**

**Course title: Paper –III Society, Economic History of India: 1857 – 1947**

##### **LEARNING OUTCOMES**

1. The British rule stunted the growth of Indian enterprise.
2. The economic policies of British checked and retarded capital formation in India.
3. The Drain of Wealth financed capital development in Britain.
4. Indian agricultural sector became stagnant and deteriorated even when a large section of Indian populace was dependent on agriculture for subsistence.
5. The British rule in India led the collapse of handicraft industries without making any significant contribution to development of any modern industrial base.
6. Some efforts by the colonial British regime in developing the Plantations, mines, jute mills, banking and shipping, mainly promoted a system of capitalist firms that were managed by foreigners. These selfish motives led to further drain of resources from India
7. After studying this lesson, students will be able to discuss the reasons for the British to come to India;
8. study the economic impact during the British rule; describe the British impact on Indian society and culture;

#### **M.A. HISTORY SEMESTER - IV**

**Course title: Paper –IV History of Modern Vidarbha**

##### **LEARNING OUTCOMES**

1. The students will have an overview of the process of establishment of British rule in Vidharbha.
2. The students will be able to develop an understanding of the intellectual trends and efforts towards social reforms in the Vidharbha.

3. To analyse the political developments in Vidharbha during this period.
4. To understand the growth of education and press and its role in the socio-political developments of the Vidharbha.
5. To understand the transition of Vidharbha from the rule of Bhosala to the British.
6. The students will have an overview of the process and role of social welfare activities of institution to uplift the downtrodden people of Vidharbha.
7. Students Understand about the role of moderates and extremists in the freedom movement in Vidharbha.
8. The students will have an overview of the process Formation and Administration of Central Provinces & Berar
9. Students will develop a historical perspective to the process of urban development in Vidharbha. They will comprehend the formation of Modern Vidharbha identity.

## **DEPARTMENT OF GEOGRAPHY**

### **B.A. I SEMESTER I**

#### **Course title: INTRODUCTION TO GEOGRAPHY**

##### **Course Outcomes:**

1. Understand the meaning, Nature, Scope, approach, objectives and relevance of Geography.
2. Understand the concepts of Earth rotation, revolution and its effects.
3. Describe the main environment relationship and environmental issues.
4. Understand the concept of ecology and ecosystem, and it's important in human life.
5. Understand the importance of application of GIS, GPS and remote sensing in modern time for collecting data and map making.
6. Understand the recent trends in Geography and career opportunities to Geographers.
7. Construct the linear, comparative and diagonal scale.
8. Understand the use of central tendencies for analyzing data in research work.

### **B.A. I SEMESTER II**

#### **Course title: CLIMATOLOGY**

##### **Course Outcomes:**

1. Understand the meaning and scope of climatology
2. Understand the concept of Insolation, Temperature, Atmospheric composition and structure.
3. Classify the winds, explain the role of winds in changing climatic conditions.
4. Understand the importance of Atmospheric Humidity in formation of cloud and perception.
5. Understand the role of climate in human life.
6. Understand the causes, consequences and measures of control of Global warming.



7. Construct the climatic maps and diagrams.
8. Describe the Indian daily weather maps.

### **B.A. II SEMESTER III**

**Course title: GEOMORPHOLOGY**

#### **Course Outcomes:**

1. Understand the meaning, Nature and Scope of physical Geography.
2. Understand the concept of continental drift, plate tectonic and Isostasy in modern time.
3. Understand the rock types, origin and composition.
4. Understand the formation of various land forms caused by Internal and External forces.
5. Describe the various Topographical maps of plane, plateau and mountain Region.
6. Draw various topographical features by using contours.

### **B.A. II SEMESTER IV**

**Course title: OCEANOGRAPHY**

#### **Course Outcomes:**

1. Describe the meaning, Nature and Scope of Oceanography.
2. Describe the glaciers.
3. Explain the distribution of temp. & salinity of oceans.
4. Explain the El Nino & La Nino effect on atmosphere.

### **B.A. III SEMESTER V**

**Course title: GEOGRAPHY OF MAHARASHTRA**

#### **Course Outcomes:**

1. Explain the physical, and administrative of Maharashtra.
2. Classify the Agro based industries and mineral based industries.
3. Describe the regional and seasonal variations of the Climatic regions of Maharashtra.
4. Discuss the population growth and various types of population Density.
5. Solve the problem of growth of population and urbanization.
6. Construct the Reduced and enlarged maps.
7. Construct maps by using Prismatic survey.

### **B.A. III SEMESTER VI**

**Course title: INDIA –A GEOGRAPHICAL ANALYSIS**

#### **Course Outcomes:**

1. Explain: India is a land of diversities and unity within diversities.
2. Compare the eastern drainage system and western drainage systems with the help of map.
3. Describe the Origin of monsoon and show climatic regions of India in the map.

4. Discuss the spatial distribution of population and its problems.
5. Explain the various mineral resources and its conservation for sustainable development.
6. Explain the various Industries and Industrial regions of India.
7. Calculate the R. L, drawing of profile by using Dumpy level survey data.
8. Analyses the data collected by the socio - economic survey and write reports.

#### **M.A. GEOGRAPHY SEMESTER - I**

##### **Course title: PAPER I: History of Geographical Thought**

##### **Learning Outcomes:**

1. Main objectives of this course are to acquaint the students with the philosophy.
2. Also teach the Methodology and historical development of geography as a professional field.
3. The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production.
4. The course aims at developing critical thinking and analytical approaches.
5. Students will acquire an understanding of and appreciation for the relationship between geography and culture.

#### **M.A. GEOGRAPHY SEMESTER - I**

##### **Course title: PAPER II: Climatology**

##### **Learning Outcomes:**

1. The broad objective of the course is to introduce to the students the fundamentals of atmospheric phenomena, global climate systems and climate change.
2. The atmosphere and climate are a critical part of the earth system, and climatic variability and change are central to the issue of current and future global environmental change.
3. To grasp the techniques for modelling the climate, covering both theoretical and technical aspects.
4. To understand the dynamics of the atmosphere, the ocean and the overall climatologically system.
5. To be able to analyses and interpret climatic data.

#### **M.A. GEOGRAPHY SEMESTER - I**

##### **Course title: PAPER III - Oceanography**

##### **Learning Outcomes:**

1. Define, explain and summarize the basic principles of Oceanography, including the basic tenets of the sub-disciplines, and to explain complex phenomena in their own subdiscipline
2. Evaluate the hypotheses, methods, results and conclusions of published scientific literature and apply conclusions to their own work
3. Present and defend their scientific findings in front of public audiences
4. Write a scientific thesis which contributes to the field

## **M.A. GEOGRAPHY SEMESTER - II**

### **Course title: PAPER I: Research Methodology**

#### **Learning Outcome:**

1. Students should be able to distinguish a purpose statement, a research question or hypothesis, and a research objective.
2. Students should be able to define the meaning of a variable, and to be able to identify independent, dependent, and mediating variables.
3. Students should be able to distinguish between categorical and continuous measures.
4. Students should be able to design a good quantitative purpose statement and good quantitative research questions and hypotheses.
5. Students should understand the link between quantitative research questions and data collection and how research questions are operationalized in educational practice.
6. Students should be familiar with the steps involved in identifying and selecting a good instrument to use in a study.

## **M.A. GEOGRAPHY SEMESTER - II**

### **Course title: PAPER II: Geomorphology**

#### **Learning Outcomes:**

1. Describing human-environment, and nature-society interactions as well as global human and environmental issues.
2. Identifying and explaining the planet's human and physical characteristics and processes, from global to local scales.
3. Evaluating the impacts of human activities on natural environments.
4. Applying knowledge of global issues to local circumstances to evaluate the local effects of the issues.
5. Showing an awareness and responsibility for the environment.

## **M.A. GEOGRAPHY SEMESTER - II**

### **Course title: PAPER III - Resource geography**

#### **Learning Outcomes:**

1. Students will become sensitized to concept of resources.
2. Students will become sensitized the classification of resources.
3. Learn about use and misuse of resources.
4. Will learn conservation methods and techniques.
5. Showing an awareness and responsibility for the environment.

### **M.A. GEOGRAPHY SEMESTER - III**

#### **Course title: PAPER I – Geography of Manufacturing & Transport**

##### **Learning outcomes:**

1. Students shall learn about the significance of transport in multifaceted development.
2. Significance of various models.
3. Role of theories related to transport network.
4. About the Accessibility, connectivity and policy interventions.
5. They will be applying the various approaches of transport in daily life.

### **M.A. GEOGRAPHY SEMESTER - III**

#### **Course title: PAPER II AGRICULTURAL GEOGRAPHY**

##### **Learning Outcomes:**

1. Examining the introduction to agriculture, nature, scope, significance and development of agriculture geography, approaches to study.
2. Understand the fundamental concept, land use, crops, agricultural production and envelopment and study the determinants of agricultural activities, physical determinants, and socio-economic determinants.
3. To understand the agricultural system its meaning and concept, whittlesey's classification of agricultural system, types of agricultural, study of the following types of agricultural in respect of area, salient features and their problems.
4. Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories.
5. Understand the agricultural statistics & land use survey techniques and agrarian revolution, meaning & merit and demerit of green revolution and white revolution.

### **M.A. GEOGRAPHY SEMESTER - III**

#### **Course title: PAPER III – POPULATION GEOGRAPHY**

##### **Learning Outcomes:**

1. Understand the distribution of population.
2. Population distribution and its problems.
3. Population dynamics
4. Understand population policies & its importance.
5. Students aware about the population policies.

## **M.A. GEOGRAPHY SEMESTER - IV**

### **Course title: PAPER I – GEOGRAPHY OF SETTLEMENT**

#### **Learning Outcomes:**

1. Build an idea about urban and rural settlements, and its relationship with environment and also different theories related to settlement geography.
2. Know about classification and morphology of settlements.
3. Understand the trends and patterns of world urbanization.
4. Know about different theories of urban growth.

## **M.A. GEOGRAPHY SEMESTER - IV**

### **Course title: PAPER II – SOCIAL GEOGRAPHY**

#### **Learning Outcomes:**

1. Understand the nature, scope, and concept, relationship between culture and social environment, and right of information act.
2. Understand the concept of space and social process and present status.
3. To examining the cultural complex and traits of culture and its concepts.

## **M.A. GEOGRAPHY SEMESTER - IV**

### **Course title: PAPER III – REGIONAL GEOGRAPHY**

#### **Learning Outcomes:**

1. Students know and understand historical and contemporary planning, including fundamental concepts, key figures, theories, and current best practices.
2. Students interpret case laws relevant to the field of urban and regional planning and apply established case law to realistic hypothetical situations.
3. Students understand the history of human settlements and are able to identify the social, cultural, economic and political forces that shape the built and natural environments and influence resource management.
4. Students identify and understand the scientific theories and processes of the physical environment and the natural world.
5. Students understand the relationships of scientific theories and concepts to human behavior and development.
6. Students appreciate the different scales and flows of people and materials, including comprehension of global, regional, and local systems.

## **DEPARTMENT OF POLITICAL SCIENCE**

### **B.A. I SEMESTER I**

**Course title: INDIAN DEMOCRACY**

**Course Outcomes:**

1. Acquiring the knowledge about Democracy & Indian Constitution.
2. Explaining the meaning, nature, elements & types of democracy.
3. Introducing the Indian Constitution with a focus on the role of the Constituent Assembly and examining the essence of the Preamble.
4. Assessing the nature of Indian Federalism with focus on Union-State Relations.
5. 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: RajyaSabha, LokSabha, Speaker, Committee System, State Legislature, the Judiciary: Supreme Court and the High Court's: composition and functions- Judicial Activism.

### **B.A. I SEMESTER II**

**Course title: LOCAL SELF GOVERNMENT**

**Course Outcomes:**

1. Study of the local self-government system of the nation.
2. Getting information about rural & urban local self-government.
3. Study of the role of rural & urban local self-government in development.
4. Study of the Right to information act & Human rights impact on Indian political system.

### **B.A. II SEMESTER III**

**Course title: POLITICAL THOERY**

**Course Outcomes:**

1. Explaining the meaning, nature, significance & approaches (Tradition & Modern) of the Political theory.
2. Study of the meaning, definition & elements of state.
3. Assessing the theories of State: Contract, Divine and Historical theories.
4. Explaining the Concept of State Sovereignty: Monistic and Pluralistic Theories.
5. Analyzing the changing concept of Sovereignty in the context of Globalization.
6. Study of the meaning, definition & elements of social change.
7. Explaining the theory of social change: Cyclic, Idealist & Marxist theory.

### **B.A. II SEMESTER IV**

**Course title: POLITICAL ANALYSIS& CONCEPTS**

**Course Outcomes:**

1. Explaining the meaning, definition, types, nature & subjects of the Political analysis.

2. Study of the meaning, definition, nature & forms of concepts the power, authority & legitimacy.
3. Understanding basic concepts of Liberty, Equality, Rights, Law and Justice
4. Explaining the Concept of Political Elite, Political Leadership & Ideology.

#### **B.A. III SEMESTER V**

##### **Course title: INDIAN POLITICAL THOUGHT**

##### **Course Outcomes:**

1. Tracing the evolution of Indian political thought from ancient India to modern India.
2. To appreciate the various social and political ideas of Indian political thinker.
3. Discussing the thoughts of Nationalism, Hinduism & revolutionary approaches of B.G.Tilak & V.D. Sawarkar.
4. To inculcate the spirit of Truth, Nonviolence, Satyagraha & Sarvodaya through Gandhi ideology.
5. Describing the thoughts on Education, Equality, Democracy & Social Justice of Jyotiba Phule & Dr. B. R. Ambedkar.
6. Analyzing the thoughts on Socialism, State system & Foreign policy of J. M. Nehru & R. M. Lohia.

#### **B.A. III SEMESTER VI**

##### **Course title: WESTERN POLITICAL THOUGHT**

##### **Course Outcomes:**

1. Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato.
2. Study of the thoughts on theory of Social contract & Government of Thomas Hobbes, John Locke & Jean Rousseau.
3. Describing the thoughts on Utilitarianism, Law, Justice & liberty of Jeremy Bentham & Stuart Mill.
4. Critically examining Karl Marx & Lenin's contributions to the theory of communism, Class Struggle & Capitalism.

#### **M.A. POLITICAL SCIENCE SEMESTER - I**

##### **Course title: PAPER I: MODERN INDIAN POLITICAL THOUGHT**

##### **Learning Outcomes:**

1. Study of the Indian Political Thinking and their thoughts.
2. Discussing the thoughts on Nationalism, Hinduism & revolutionary approaches of V.D. Sawarkar.
3. To inculcate the spirit of Truth, Nonviolence, Satyagraha & Sarvodaya through Gandhi ideology.
4. Describing the thoughts on Education, Equality, Democracy & Social Justice of Jyotiba Phule & Dr. B. R. Ambedkar.
5. Analyzing the thoughts on Socialism, State system & Foreign policy of J. M. Nehru & R. M. Lohia.
6. Analyzing the nationalist thought of Raja Ram Mohan Roy & Aurobindo Ghosh.
7. Discussing the Political thought of Vinobha Bhave, M. N. Roy and Jayprakash Narayan.

### **M.A. POLITICAL SCIENCE SEMESTER - I**

**Course title: PAPER II-POLITICS OF MAHARASHTRA**

#### **Learning Outcomes:**

1. Getting information about the historical survey the formation of Maharashtra State.
2. Study of the socio-cultural, Economic determinants of Maharashtra politics & local governing mechanism.
3. Developing leadership at local level in various Political party in Maharashtra.
4. Study of the emerging issues in politics of Maharashtra.

### **M.A. POLITICAL SCIENCE SEMESTER - I**

**Course title: PAPER IV –PUBLIC ADMINISTRATION**

#### **Learning Outcomes:**

1. Explaining the Meaning, scope and evolution of Public Administration.
2. Analyzing the theories of Decision –making, Human relations, Scientific Management.
3. Analyzing the major Concepts in Public Administration.
4. Examining the Institutions of Financial Administration in India.
5. Study of the Personnel Administration: Recruitment, Training, Appraisal & Promotion.
6. Getting information about Issues & New Trends in Public Administration.

### **M.A. POLITICAL SCIENCE SEMESTER - II**

**Course title: PAPER I: INTERNATIONAL RELATIONS**

#### **Learning Outcome:**

1. Explaining the Meaning, Nature, Development and scope of International Relation.
2. Analyzing the theories of International Relation.
3. Analyzing the basic Concepts in International Relation.
4. Study of the Phases & Issues in world Politics.
5. Study of the International & Regional organizations.
6. Study of the relations of India with neighboring countries.

### **M.A. POLITICAL SCIENCE SEMESTER - II**

**Course title: PAPER II: WESTERN POLITICAL THOUGHT**

#### **Learning Outcomes:**

1. Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato.
2. Study of the thoughts on theory of Social contract & Government of Thomas Hobbes, John Locke & Jean Rousseau.
3. Describing the thoughts on Utilitarianism, Law, Justice & liberty of Jeremy Bentham & Stuart Mill.
4. Critically examining Hegel & Karl Marx's contributions to the theory of communism, Class Struggle & Capitalism.



## **M.A. POLITICAL SCIENCE SEMESTER - II**

### **Course title: PAPER III -POLITICAL SOCIOLOGY**

#### **Learning Outcomes:**

1. Students will understand the basic concepts in political sociology.
2. Students will orient to various theoretical approaches to political sociology.
3. Students will analyze the social stratification and political processes.
4. Students will orient to political process and political parties in India.
5. Students will analyze the concepts of political participation, socialization, political socialization & political Culture.

## **M.A. POLITICAL SCIENCE SEMESTER - II**

### **Course title: PAPER IV – RESEARCH METHODOLOGY**

#### **Learning outcomes:**

1. Students will be able to understand and describe the nature of social research, problems of objectivity, research design, difference between quantitative and qualitative research.
2. Students will be able to understand the general principles and methods involved in doing political & social research.
3. Students can demonstrate an understanding of data collection and analysis techniques that social science use to gather and evaluate empirical data.

## **M.A. POLITICAL SCIENCE SEMESTER - III**

### **Course title: PAPER I – INDIAN DEMOCRACY & POLITICAL PROCESS**

#### **Learning outcomes:**

1. Acquiring the knowledge about Democracy & Indian Constitution.
2. Explaining the meaning, nature, elements & types of democracy.
3. Introducing the Indian Constitution with a focus on the role of the Constituent Assembly and examining the essence of the Preamble.
4. Assessing the nature of Indian Federalism with focus on Union-State Relations.
5. 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 Court's: composition and functions- Judicial Activism.

## **M.A. POLITICAL SCIENCE SEMESTER - III**

### **Course title: PAPER II – PRESSURE GROUPS AND SOCIAL MOVEMENTS**

#### **Learning Outcomes:**

1. Students will analyze the Group theory & their significance in politics.
2. Provide an understanding about Evolution, Kinds & Techniques of Pressure groups.

3. Students will be able to relationship between Pressure groups & Political Parties.
4. Acquiring the knowledge about dynamics of social movements.
5. Study of the future of Pressure groups & social movements.

#### **M.A. POLITICAL SCIENCE SEMESTER - III**

##### **Course title: PAPER III – INTERNATIONAL LAW**

##### **Learning Outcomes:**

1. Students will understand the origin, development & Sources of International Law.
2. Students will understand the Subjects of International Law: States, International Organizations, Rights & Duties of Individuals.
3. Acquiring the knowledge about Recognition and Jurisdiction of State, Treaty Obligations, Law of the Sea, State Territory, Acquisition, & Loss of Territory, State Succession, Intervention.
4. Study of the Piracy, Hijacking, Extradition, Asylum, Laws of War, War Crimes, Prisoners of War and Refugees.
5. Students will understand the Laws of Neutrality, Blockade, Right of Visit & Search, International Court of Justice, International Criminal Court.

#### **M.A. POLITICAL SCIENCE SEMESTER - III**

##### **Course title: PAPER IV – DIPLOMACY & FOREIGN POLICY**

##### **Learning Outcomes:**

1. Students will understand the Meaning, Nature and Scope of Diplomacy & Foreign Policy
2. Evolution of Diplomatic Practices and methods, Diplomatic Offices & Agents, Diplomatic Language.
3. Describing the Negotiations, Treaties, Alliance; Different Types of Diplomacy.
4. Explaining Internal & External Determinants of Foreign Policy & Making of Foreign Policy.
5. Examining Diplomacy and Foreign Policy in the Era of Globalization.
6. Describing Impact of Technology & Diaspora on Diplomacy and Foreign Policy.

#### **M.A. POLITICAL SCIENCE SEMESTER - IV**

##### **Course title: PAPER I – MODERN POLITICAL IDEOLOGIES**

##### **Learning Outcomes:**

1. Students will be able to make understand the Ideologies of Social Democracy & Libertarianism.
2. Students will know and aware the Ideologies of Feminism & Conservatism.
3. Students will be able to make understand the Ideologies Environmentalism & Post-Modernism.
4. Students will know and aware the Ideologies of Fascism & Radicalism.

#### **M.A. POLITICAL SCIENCE SEMESTER - IV**

##### **Course title: PAPER II – STATE POLITICS IN INDIA**

##### **Learning Outcomes:**

1. Students will be able to understand the Significance & Socio-economic determinants of state politics.
2. Students will be able to better understand about Centre-State Political and Economic relationship; Impact of national politics on state politics; Role of Regional Political Parties.
3. Students will know and be aware of the Local politics and Impact of 73rd & 74th Amendments.
4. Students will analyze the Issues in State Politics: Demand of autonomy and small states, terrorism, border and river disputes.
5. Students will be able to better understand about Manifestations of the sub-regional imbalances in the era of economic liberalization, Human Development issues: literacy, sex ratio, poverty, unemployment.

#### **M.A. POLITICAL SCIENCE SEMESTER - IV**

##### **Course title: PAPER III – HUMAN RIGHTS: PROBLEMS AND PROSPECTS**

##### **Learning Outcomes:**

1. Students will know and be aware of the concepts of Human Rights and its Historical Development.
2. Students will be able to better understand about Human Rights and the United Nations: Charter Provisions, Universal Declaration of Human Rights and the various other Conventions.
3. Students will analyze the Issues of Human Rights in the West and in Developing countries.
4. Students will be able to understand the Collective Rights: The Right of Self Determination; Individual Human Rights; Rights of Women; Children & deprived sections.
5. Students will analyze the Human Rights in World Perspective - Problems and Prospects.

#### **M.A. POLITICAL SCIENCE SEMESTER - IV**

##### **Course title: PAPER IV – GLOBALIZATION AND ITS IMPACT ON THE POLITICAL SYSTEM**

##### **Learning Outcomes:**

1. Students will understand the Concept of Globalization and its contours.
2. Students will analyze the Internationalization of the Nation State and the Question of National Sovereignty.
3. Students will be able to understand the Political Economy and Globalization - Role of TNCs and MNCs.
4. Students will be able to better understand about Role of WTO, IMF and IBRD in era of Globalization.
5. Students will analyze the Global Conflicts and their Management - Military Power and National Security, Coercive Diplomacy and intervention.
6. Students will analyze the Critics of Globalization, Alternative models as an answer to Globalization.

## **DEPARTMENT OF SOCIOLOGY**

### **B.A. I SEMESTER I**

#### **Course title: INTRODUCTION TO SOCIOLOGY**

##### **Course Outcomes:**

After successful completion of the course,

1. Students will be able to analyze a specific social concept as it pertains to the operation of social institutions.
2. Students can demonstrate knowledge and comprehension of culture and socialization.
3. Students can define and explain the relevance of each concept.
4. Student will be able to describe the inter-linkage of institutions and their effects on individuals.

### **B.A. I SEMESTER II**

#### **Course title: INTRODUCTION TO SOCIOLOGY**

##### **Course Outcomes:**

After successful completion of the course,

1. Students can demonstrate knowledge and comprehension of social change, Social Control, stratification and social structure.
2. Students can define and explain the relevance of each concept.
3. Student will be able to explain how cast based social stratification affect social structures and individuals.

### **B.A. II SEMESTER III**

#### **Course title: THE STRUCTURAL ISSUES**

##### **Course Outcomes:**

After successful completion of the course,

1. Student will be able to understand and describe the concept of social problems, Indian Society, Structure and Inequality and rural community.
2. Student will be able to identify structural issues and problems and offer analysis on the core reasons the issue has developed.
3. Student will be able to understand how social problems and their processes interact with, and can maintain, social inequalities in society.

### **B.A. II SEMESTER IV**

#### **Course title: SOCIAL PROBLEMS IN CONTEMPORARY INDIA**

##### **Course Outcomes:**

After successful completion of the course,

1. Student will be able to describe and understand the basic concepts of intolerance, riot & crime, corruption, population explosion, displacement and rehabilitation.
2. Student will be able to evaluate social problems from differing viewpoints and perspectives and identify the

strengths and flaws of each stance.

3. Student will be able to apply sociological analysis of social problems to policy making for eradication of problems.

#### **B.A. III SEMESTER V**

**Course title: SOCIOLOGY OF TRIBAL SOCIETY**

##### **Course Outcomes:**

After successful completion of the course,

1. Students will get introduced to the tribal society as a major segment of Indian society.
2. Student will obtain proper knowledge about the concept of tribes, tribal social organizations, tribal economy and tribal mobility and change in India.
3. Students will be aware about culture and demographic profile of tribes.

#### **B.A. III SEMESTER VI**

**Course title: SOCIOLOGY OF TRIBAL SOCIETY**

##### **Course Outcomes:**

After successful completion of the course,

1. Student will obtain proper knowledge about tribal laws and justice, tribal religion and magic, tribal movement.
2. Students will be aware about various tribal problems and issues and the welfare schemes and programs that are meant for tribal people.
3. Students will get knowledge about the major tribes and their customs in the Vidharbha region.

#### **M.A. SOCIOLOGY SEMESTER - I**

**Course title: PAPER I: CLASSICAL SOCIOLOGICAL THEORY**

##### **COURSE OUTCOMES:**

After successful completion of the course,

1. Students will be able to identify the philosophical, economic and political developments that lead to the development of classic social theory.
2. Students will identify the function of theory in the social sciences.
3. Students will be able to understand how the sociologist conceived the discipline of sociology.

#### **M.A. SOCIOLOGY SEMESTER - I**

**Course title: PAPER II: METHODOLOGY OF SOCIAL RESEARCH-I**

##### **COURSE OUTCOMES:**

After successful completion of the course,

1. Students will be able to understand and describe the nature of social research, problems of objectivity, research design, difference between quantitative and qualitative research.
2. Students will be able to understand the general principles and methods involved in doing social research.

3. Students can demonstrate an understanding of data collection and analysis techniques that sociologists use to gather and evaluate empirical data.

#### **M.A. SOCIOLOGY SEMESTER - I**

##### **Course title: PAPER III - RURAL SOCIETY IN INDIA**

##### **COURSE OUTCOMES:**

After successful completion of the course,

1. Student will be able to know the trends of rural development and change in Indian society.
2. This will enable the student to understand the Indian rural society, its culture, institutions and their changes.
3. Students can demonstrate and understand the problems of rural society.

#### **M.A. SOCIOLOGY SEMESTER - I**

##### **Course title: PAPER IV – SOCIAL MOVEMENTS IN INDIA**

##### **COURSE OUTCOMES:**

After successful completion of the course,

1. Student will understand the concept of social movements and how it initiates social change and transformation in India.
2. It would be possible for the students to judge the role of leadership in social movements.
3. Students will be able to comprehend the variety of new social movements in India.
4. They will also understand the various theories of social movements.

#### **M.A. SOCIOLOGY SEMESTER - II**

##### **Course title: PAPER I: PERSPECTIVES ON INDIAN SOCIETY**

##### **COURSE OUTCOMES:**

After successful completion of the course,

1. Students will be able to have adequately comprehensive understanding of Indian society in terms of its diverse and interrelated theoretical perspectives.
2. Students will identify the function of theory in the social sciences.
3. Students will be able to understand how Indian sociologists conceived the discipline of sociology.

#### **M.A. SOCIOLOGY SEMESTER - II**

##### **Course title: PAPER II: METHODOLOGY OF SOCIAL RESEARCH-II**

##### **COURSE OUTCOMES:**

1. Students will be able to understand the general principles and methods and statistics involved in doing social research.
2. Students can demonstrate and understand data analysis and interpretation techniques by using computer application.
3. Students will enhance their ability to write good research reports.

### **M.A. SOCIOLOGY SEMESTER - II**

**Course title: PAPER III - URBAN SOCIETY IN INDIA**

#### **COURSE OUTCOMES:**

1. Student will be able to acquaint with the concepts and trends of urban society.
2. Students will understand process of urbanization and their concomitant changes.
3. Students will realize the urban problems, planning and development in India.

### **M.A. SOCIOLOGY SEMESTER - II**

**Course title: PAPER IV – SOCIOLOGY OF KINSHIP, MARRIAGE AND FAMILY**

#### **COURSE OUTCOMES:**

1. The student will come to know the meaning and concepts of kinship, marriage and family.
2. The student will realize how the study of kinship system in different ethnographic settings can facilitate a comparative understanding of societies and social institutions.
3. Students can demonstrate the universally acknowledged social importance of kinship, marriage and family.

### **M.A. SOCIOLOGY SEMESTER - III**

**Course title: PAPER I – THEORETICAL PERSPECTIVES IN SOCIOLOGY-I**

#### **COURSE OUTCOMES:**

1. Students will be able to understand the basic theoretical approaches and their sociological thoughts.
2. Students will be able to understand and demonstrate various sociological theories in order to pursue advanced courses in sociology.
3. Students will know and be aware of the contribution of various thinkers and their theories in the development of sociology.

### **M.A. SOCIOLOGY SEMESTER - III**

**Course title: PAPER II – SOCIOLOGY OF CHANGE AND DEVELOPMENT-I**

#### **COURSE OUTCOMES:**

1. It is hoped that exposure to the course will lead to a better understanding of the changing conceptions of development and its issues.
2. Provide a understanding about Paths and Agencies of Development, theories and factors of social change.
3. Students will be able to develop a critical understanding regarding critical perspectives on development.

### **M.A. SOCIOLOGY SEMESTER - III**

**Course title: PAPER III – INDUSTRY AND SOCIETY IN INDIA-I**

#### **COURSE OUTCOMES:**

1. Students will understand industrial organizations and the relations that characterize such settings
2. Students will be able to familiarize themselves with organizational sociology in the context of industries.
3. They will get the essential sociological knowledge about managements and organization, work and workers in industrial community.

### **M.A. SOCIOLOGY SEMESTER - III**

#### **Course title: PAPER IV – POLITICAL SOCIOLOGY-I**

##### **COURSE OUTCOMES:**

1. Students will understand the basic concepts in political sociology.
2. Students will orient to various theoretical approaches to political sociology.
3. Students will analyze the political behavior and political processes.

### **M.A. SOCIOLOGY SEMESTER - IV**

#### **Course title: PAPER I – THEORETICAL PERSPECTIVES IN SOCIOLOGY-II**

##### **COURSE OUTCOMES:**

1. Students will be able to make understand the basic theoretical approaches and develop their sociological thinking.
2. This will provide the basic understanding of sociological theories in order to prepare them to pursue advanced courses in sociology.
3. Students will know and aware the contribution of various thinkers and their theories in the development of sociology.

### **M.A. SOCIOLOGY SEMESTER - IV**

#### **Course title: PAPER II – SOCIOLOGY OF CHANGE AND DEVELOPMENT-II**

##### **COURSE OUTCOMES:**

1. Students will acquaint with methodology and conclusion of the theoretical perspectives in understanding social structure and change.
2. It is hoped that exposure to the course will lead to a better understanding of the social change and its trends in contemporary India.
3. Students will be able to understand social structure and experience of development.
4. Students will develop a critical understanding regarding formulating social policies and programs in India

### **M.A. SOCIOLOGY SEMESTER - IV**

#### **Course title: PAPER III – INDUSTRY AND SOCIETY IN INDIA-II**

##### **COURSE OUTCOMES:**

1. Students will expose the knowledge of on Industrial society and sociological order, industrialization process, industrial tours and also on industrial organizations.
2. Students will be able to better understand about types of productive system, development of factory system of production, social and environmental issue.
3. The very aim of this paper is to impress upon the students of sociology the role they can play in creating effective industrial relations with their knowledge of sociology.



**M.A. SOCIOLOGY SEMESTER - IV**

**Course title: PAPER IV – POLITICAL SOCIOLOGY-II**

**COURSE OUTCOMES:**

1. Students will know the various basic concepts in political sociology.
2. Students will orient to political process and political parties in India.
3. Students will analyze the political participation, political behavior and political processes.

**Dr. Ambedkar College of Arts, Commerce and Science, Chandrapur**

**Faculty of Commerce & Management**

**COURSE OUTCOMES**

**B.COM.I SEM I**

**Course Title: Principle of Management**

**Course Code: UCAIC05**

**Course Outcomes:**

1. Discuss and communicate the management evolution and how it will affect future managers.
2. Observe and evaluate the influence of historical forces on the current practice of management.
3. Identify and evaluate social responsibility and ethical issues involved in business situations and logically articulate own position on such issues.
4. Explain how organizations adapt to an uncertain environment and identify techniques managers use to influence and control the internal environment.
5. Practice the process of management's four functions: planning, organizing, leading, and controlling.

**Course Title: Business Economics**

**Course Code: UCAIC04**

**Course Outcomes:**

1. Apply the concept of opportunity cost
2. Employ marginal analysis for decision making
3. Analyze operations of markets under varying competitive conditions
4. Analyze causes and consequences of unemployment, inflation and economic growth

**Course Title: Financial Accounting**

**Course Code: UCAIC03**

**Course Outcomes:**

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. Identify the main financial statements and their purposes.

**Course Title: Statistical Analysis**

**Course Code: UCAIC06**

**Course Outcomes:**

1. To familiarizes the concept of statistics
2. To provide practical exposure on calculation of measures of average

3. To provide practical exposure on calculation of measures of correlation and regression
4. To introduce the students about the concept of probability
5. To provide practical exposure on calculation of trend analysis

**Course Title: Basic of Marketing Management**

**Course Code: UCAIEBI**

**Course Outcomes:**

1. Establish a professional presence online incorporating the key disciplines of social media, search engine optimization, analytics, online navigation and user experience in order to drive traffic to an organization's website.
2. Employ digital tools to analyze the effectiveness of a marketing campaign.
3. Formulate a marketing plan including marketing objectives, marketing mix, strategies, budgetary considerations and evaluation criteria.
4. Write a business plan for an entrepreneurial start-up venture.

**B.COM.I SEM II**

**Course Title: Business Economics-I**

**Course Code: UCA2C04**

**Course Outcomes**

1. Understand how households (demand) and businesses (supply) interact in various market structures to determine price and quantity of a good produced.
2. Understand the links between household behaviour and the economic models of demand.
3. Represent demand, in graphical form, including the downward slope of the demand curve and what shifts the demand curve.
4. Understand the links between production costs and the economic models of supply.
5. Apply the concept of opportunity cost
6. Analyze operations of markets under varying competitive conditions

**Course Title: Principle of Management-II**

**Course Code: UCA2C05**

**Course Outcomes**

1. To develop knowledge about evolution of management thoughts
2. To better understanding of planning and decision making
3. To give an idea about organisation structure and different types of organization
4. To make them familiarize with recruitment process and stages in selection
5. To provide idea about motivation, importance of communication and Principles of coordination.

**Course Title: Financial Account –II**

**Course Code: UCA2C03**

**Course Outcomes:**

1. To Familiarize the concept of Branch account and its system
2. To Understand the Scope of departmental accounting
3. To Introduce the system of Hire Purchasing
4. To Enable the students to understand partnership account from admission to dissolution

**Course Title: Statistical Analysis-II**

**Course Code: UCA2C06**

**Course Outcomes:**

1. Student will able to interpret the meaning of the calculated statistical indicators
2. Student will able to choose a statistical method for solving practical problems
3. Student will able to explain probability theory and probability distributions in relation to general statistical analysis.
4. Student will able to Understand and appreciate the need to solve a variety of business related problems using a systematic approach involving accepted statistical techniques.

**Course Title: Marketing Management -II**

**Course Code: UCA21 M2**

**Course outcomes:**

1. Demonstrate ethical and socially responsible behaviour.
2. Integrate appropriate technologies in developing solutions to business opportunities and challenges.
3. Build effective internal and external relationships using influencing, communication and consultative skills.
4. Evaluate the dynamic of the global business environment from a competitive and economic perspective.

**B.COM.II SEM III**

**Course Title: COST ACCOUNTING**

**Course Code: SEC-I UCA3F02**

**Course Outcomes:**

1. To Aimed to familiarize the concept of cost accounting
2. To Helps to gather knowledge on preparation of cost sheet in its practical point of view
3. To facilitate the idea and meaning of material control with pricing methods
4. To Develop the knowledge about remuneration and incentives
5. To introduce the concept of overhead cost

**Course Title: CORPORATE ACCOUNTING**

**Course Code: UCA3C06**

**Course Outcomes:**

1. To enabling the students to understand the features of Shares and Debentures
2. To develop an understanding about redemption of Shares and Debenture and its types
3. To give an exposure to the company final accounts
4. To provide knowledge on Goodwill
5. To students can get an idea about internal reconstruction

**Course Title: Monetary Economics**

**Course Code: UCA3C05**

**Course Outcomes:**

1. To identify the role of financial intermediaries in general, and the banking sector in particular, on investment and savings.
2. To describe the performance of banks as firms: to analyse the bank's balancesheet, its financial accounts, the main ratios used to manage the bank, indicators of size, efficiency and productivity. To know the methods for the analysis of bank's profitability.
3. To describe the monetary policy strategies implemented by the main central banks and to be familiar with how monetary policy decisions are implemented and transmitted to the economy.
4. To elaborate and discuss a paper on a topic related to the financial and banking sector.

**Course Title: Company Law**

**Course Code: UCA3C04**

**Course Outcomes:**

1. Explain the main concepts that underpin company law, including separate legal personality and limited liability
2. Comprehend the policy issues that arise regarding the regulation of companies, including the views of different commentators about those policy issues
3. Discuss the main principles and rules that seek to regulate and protect different participants within companies, especially their directors, shareholders and creditors
4. Summarise the issues that arise in respect of large, widely owned, public companies and the strategies that have been developed to ensure such companies are well governed
5. Identify the legal issues raised by complex hypothetical 'problem question' scenarios, and apply their knowledge of the main principles and rules of company law to articulate well-argued solutions to those questions

**Course Title: Advertisement Management**

**Course Code: UCA3EM3**

**Course Outcomes:**

1. To introduce students to the principle and basic concept of marketing communication process in a streamlined integrated marketing strategy.
2. To provide an understanding of integrated marketing communications (IMC) and its influences on other marketing functions and other promotional activities.
3. To analyze and evaluate the fast-changing field of advertising and promotion which affects global marketing, society and economy.
4. To develop positive communication skills by extending the marketing communication approaches and techniques into effective marketing strategy and programs which are necessary to communicating to target audiences.

**B.COM.II SEM IV**

**Course Title CORPORATE ACCOUNTING**

**Course Code: UCA3EM3**

**Course Outcomes:**

1. Enable the students to understand about amalgamation , absorption and external reconstruction
2. To make them aware about accounts of banking companies
3. Keep them aware about accounts of insurance companies
4. Enable the students to gain an idea of liquidation of companies
5. To introduce and develop knowledge of holding companies accounts

**Course Title Management Accounting**

**Course Code: UCA4F02**

**Course Outcomes:**

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

**Course Title: Sales & Distribution Management**

**Course Code: UCA4EM4**

**Course outcomes:**

1. Recognise and demonstrate the significant responsibilities of sales person as a KEY individual.
2. Describe and Formulate strategies to effectively manage company's sales operations.
3. Evaluate the role of Sales manager and his/ her responsibilities in recruiting, motivating, managing and

leading sales team.

4. Illustrate the fundamentals of Distribution channels, Logistics and Supply Chain Management.

**Course Title: Secretarial Practice**

**Course Code: UCAGE03**

**Course Outcomes:**

1. Use international trade terms and concepts when communicating.
2. Explain the international trade concepts used in making decision.
3. Use effective communication skills to promote respect and relationship for secretarial practice.
4. Utilize information by applying a variety of business and industry software and hardware to major voting and proxy.
5. Get a basic understanding of different type of meeting of board of directors.

**Course Title: Monetary Economics**

**Course Code: UCA4C05**

**Course Outcomes:**

1. By studying this paper the students can understand basic models of the behaviour of firms and industrial organization and how they can be applied to policy issues.
2. They able to manipulate these models and be able to solve analytically problems relating to Monetary economics.

**B.COM.III SEM V**

**Course Title: Auditing**

**Course Code: UCA5F01**

**Course Outcomes:**

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

**Course Title: Business Communication Management**

**Course Code: UCA5C03**

**Course Outcomes:**

1. To make effective and impressive communication.
2. To make communication in ethical manner.
3. Capable to make persuasive digital communication.
4. Capable to make abstract & summaries of proposals.
5. Better presentation and communication using proper body language.

**Course Title: Commercial Law**

**Course Code: UCA5C03**

**Course Outcomes:**

1. Make the students understand about business and corporate law
2. Develop knowledge on contract and various types of contracts
3. To help the students to understand the concept of sale of goods
4. Make the students understand about companies and its types
5. To equip the students with proper knowledge about Foreign exchange\

**Course Title: Advance Accounting-I**

**Course Code: UCA5C04**

**Course Outcomes:**

1. Students will recognize commonly used financial statements, their components and how information from business transactions flows into these statements
2. Discuss and solve accounting issues that arise from inter-entity relationships.
3. Explain the consolidation process and prepare consolidated financial statements based on relevant accounting Standards.
4. Demonstrate the ability to perform complex accounting techniques and methods as required by the relevant accounting standards.

**Course Title: Industrial Marketing**

**Course Code: UCA5EM5**

**Course Outcomes:**

1. Define the industrial marketing concepts and principles.
2. Define industrial marketing concept.
3. Define the developments in marketing process and locate various companies in the process.
4. Analyze the consumer and industrial market.
5. Define the market concept.



## **B.COM.III SEM VI**

**Course Title: INCOME TAX LAW AND PRACTICE – I**

**Course Code: UCA6C05**

**Course Outcomes:**

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

**Course Title: INDIAN ECONOMICS**

**Course Code: UCA61E02**

**Course Outcomes:**

1. Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.
2. Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.
3. Grasp the importance of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government.
4. Understand agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole.

**Course Title: BUSINESS COMMUNICATION**

**Course Code: UCA6C03**

**Course Outcomes:**

1. To develop the ability of the students
2. To communicate clearly and correctly in English and regional languages on the matters relevant to day to day business operation with emphases on quality of presentation.
3. To help the students for general understanding of the various aspects of business communication and business environment of the country.

**Course Title: Advance Accounting**

**Course Code: UCA6C04**

**Course Outcomes:**

1. Read and analyse consolidated financial statements including accounting policies and other information disclosures.
2. Conduct practical research in the accounting discipline.
3. Critical thinking and problem solving.
4. Deep discipline knowledge

**Course Title: Corporate Law**

**Course Code: UCA6F01 UCA61EM6**

**Course Outcomes:**

1. The paper gives the students the ability to understand the parameters to assess opportunities and constraints for new business ideas.
2. Understand the systematic process to select and screen a business idea.
3. Design strategies for successful implementation of ideas and they can write a business plan.

**Course Title: Service Marketing**

**Course Code: UCA61EM6**

**Course Outcomes:**

By completing this course, students will:

1. Appreciate the challenges facing the services marketing in traditional commercial marketing, e-marketing and non-commercial environments.
2. Appreciate the difference between marketing physical products and intangible services, including dealing with the extended services marketing mix, and the four unique traits of services marketing.
3. Recognise the challenges faced in services delivery as outlined in the services gap model; Develop professional business writing skills.

**Course Title : PROJECT**

**Course Code:**

**Course Outcomes:**

By completing this course, students will:

1. Appreciate the challenges facing the research and various projects.

**M. COM. I SEM-I**

**Core Course**

**Course Title: Advance Financial Accounting**

**Course Code: PCC1C01**

**Course Outcomes :**

On successful completion of this course, students will be able to

- 1) Identify and describe different types of inter-entity relationships based on relevant Indian Accounting Standards.
- 2) Conduct practical research in the accounting discipline.
- 3) Deep discipline knowledge.
- 4) Critical thinking and problem solving

- 5) Self-awareness and emotional intelligence
- 6) Demonstrate the ability to perform complex accounting techniques and methods as required by the relevant accounting standards.

**Course Title: Indian Financial System**

**Course Code: PCC1C02**

**Course Outcomes:**

On successful completion of this course, students will be able to

- 1) Describe the context of banking: the financial system.
- 2) Elucidate the broad functions of banks.
- 3) Attain the advantages and knowledge of public investments and other government expenditures. Understand the causes of growing public expenditures for various programmes and policies within and outside the country.
- 4) Understand the needs of public and Government and non-government borrowing from all possible sources to meet necessary public investment/expenditures. Also be alerted to find sources for repayment.
- 5) Understand the sources of finance both public and private.

**Compulsory Foundation Course**

**Course Title: Managerial Economics**

**Course Code: PCC1F03**

**Course Outcomes :**

On successful completion of this course, students will be able to

- 1) Understand the roles of managers in firms
- 2) Design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets.
- 3) Make optimal business decisions by integrating the concepts of economics, mathematics and statistics.
- 4) Understanding the economic goals of the firms and optimal decision making.

**Course Title: Marketing Management**

**Course Code: PCC1F04**

**Course Outcomes:**

On successful completion of this course, students will be able to

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

## **M. COM. SEM-II**

### **Core Course**

**Course Title: Advance Cost Accounting**

**Course Code: PCC2C02**

#### **Course Outcomes :**

On successful completion of this course, students will be able to

- 1) Conduct Industrial Knowledge to more developed cost segment.
- 2) Deep discipline knowledge.
- 3) Critical thinking and problem solving
- 4) Solve problems and make decisions based on the results of the solutions to the problems.

**Course Title: Research Methodology**

**Course Code: PCC2C01**

#### **Course Outcomes:**

On successful completion of this course, students will be able to

- 1) Students should understand a general definition of research design
- 2) Students should be familiar with conducting a literature review for a scholarly educational study.
- 3) Students should know the steps in the process of quantitative data collection.
- 4) Students should know how to conduct a statistical test of a hypothesis
- 5) Critically assess research methods pertinent to technology innovation research.

### **Compulsory Foundation Course**

**Course Title: Co-operation & Rural Development**

**Course Code: PCC2F03**

#### **Course Outcomes :**

On successful completion of this course, students will be able to

- 1) Gain insight into the socio-economic structure of rural India
- 2) Understand the prospects and problems of rural development in India
- 3) To Developed interest in rural area.
- 4) To helps to work in cooperation sector smoothly.

**Course Title: Human Resource Management**

**Course Code: PCC2F04**

#### **Course Outcomes:**

On successful completion of this course, students will be able to

- 1) To aiming to enable the students in Human Resources Management
- 2) To introduce the students about placement and training

- 3) To facilitate the knowledge about performance appraisal and different methods
- 4) To provide an idea about different compensation policies

## **M. COM. SEM-III**

### **Core Course**

**Course Title: Tax procedures & Practices**

**Course Code: PCC3C02**

#### **Course Outcomes :**

On successful completion of this course, students will be able to

- 1) Define the procedure of direct tax assessment.
- 2) Able to file IT return on individual basis.
- 3) Able to compute total income and define tax complications and structure.
- 4) Able to understand amendments made from time to time in Finance Act.
- 5) Differentiate between direct and indirect tax assessment.

**Course Title: Statistical Techniques**

**Course Code: PCC3C01**

#### **Course Outcomes:**

On successful completion of this course, students will be able to

- 1) Students will formulate complete, concise, and correct mathematical proofs.
- 2) Students will frame problems using multiple mathematical and statistical representations of relevant structures and relationships and solve using standard techniques.
- 3) Students will clearly communicate quantitative ideas both orally and in writing to a range of audiences.
- 4) Students will create quantitative models to solve real world problems in appropriate contexts.

### **Compulsory Foundation Course**

**Course Title: Service Sector Management**

**Course Code: PCC3F03**

#### **Course Outcomes:**

On successful completion of this course, students will be able to

- 1) An understanding of the different types of operations process types on which operational capability can be based and the strategic implications of the process choice decision.
- 2) Knowledge and understanding of the key operational levers that can be applied to the management of service operations and the proactive management of customer experience.
- 3) Knowledge and understanding of the application of strategic and value based approaches to procurement.

- 4) Knowledge, understanding and skills in the development of an Acceptance Sampling based Quality Control strategy.

**Course Title: Computer Application in Commerce**

**Course Code: PCC3F04**

**Course Outcomes:**

On successful completion of this course, students will be able to.

- 1) Post Graduate students will be able to develop strong understanding of core Commerce and Computer Application.
- 2) Able to take up challenging career options in Commerce and IT sector.
- 3) Motivated to pursue higher education.
- 4) Gain updated knowledge to take up employment.
- 5) Become ethically and socially responsible commerce graduates with computer application knowledge.

**M. COM. SEM.-IV**

**Core Course**

**Course Title: Advanced Management Accounting**

**Course Code: PCC4C01**

**Course Outcomes:**

On successful completion of this course, students will be able to

- 1) To provide introduction to Financial Management
- 2) To create an awareness about capital structure and theories of capital structure
- 3) To provide knowledge about dividend policies and various dividend models.
- 4) To enable them to understand working capital management
- 5) To make them understand the cost of capital in wide aspects

**Compulsory Foundation Course**

**Course Title: Research Project & Seminar**

**Course Code: PCC4F0P**

**Course Outcomes:**

On successful completion of this course, students will be able to

- 1) Student Should work in Govt., Non-Govt. Cooperation Sector
- 2) This Course helps to habit of Research.
- 3) On successful completion of this course the student are enabled with the Knowledge in Business analysis, Research methods.

## **Elective Course**

**Course Title: ENTREPRENEURIAL DEVELOPMENT**

**Course Code: -----**

### **Course Outcomes:**

On successful completion of this course, students will be able to

- 1) To aiming to develop students about Entrepreneurship development
- 2) To create an awareness on various Entrepreneurship Development Programme
- 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