



2.6.1. Programme outcomes, Programme specific outcomes and course outcomes for all Programme offered by the institution are stated and displayed on website and communicated

DEPARTMENT OF MATHEMATICS

B.Sc. Mathematics

Programme outcomes

- PO1: A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
- PO2: A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
- PO3: A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
- PO4: A student will be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
- PO5: A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture.

Programme specific outcomes

- PSO1: Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
- PSO2: Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.

PSO3: Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

PSO4: Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study. Students acquired the knowledge of applications of different plants in various industries

Course outcomes

F. Y. B.Sc.

MT 101: Algebra and Geometry

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

CO1: The mathematical maturity of students in their current and future courses shall develop.

CO2: The student develops theoretical, applied and computational skills.

CO3: The student gains confidence in proving theorems and solving problems.

MT 102: Calculus and Differential equations

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

CO1: The mathematical maturity of students in their current and future courses shall develop.

CO2: The student develops theoretical, applied and computational skills.

CO3: The student gains confidence in proving theorems and solving problems.

MT 103: Mathematics Practical

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

CO1: The mathematical maturity of students in their current and future courses shall develop.

CO2: The student develops theoretical, applied and computational skills.

CO3: The student gains confidence in proving theorems and solving problems.

Course Outcomes S. Y. B.Sc.:

MT 211: Multivariable Calculus I

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

CO1: The mathematical maturity of students in their current and future courses shall develop.

CO2: The student develops theoretical, applied and computational skills.

CO3: The student gains confidence in proving theorems and solving problems.

MT212(B): Laplace Transform and Fourier Series

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

- CO1: The mathematical maturity of students in their current and future courses shall develop.
- CO2: The student develops theoretical, applied and computational skills.
- CO3: The student gains confidence in proving theorems and solving problems.

MT213: Practical based on MT211,MT212

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

- CO1: The mathematical maturity of students in their current and future courses shall develop.
- CO2: The student develops theoretical, applied and computational skills.
- CO3: The student gains confidence in proving theorems and solving problems.

MT 221: Linear Algebra

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

- CO1: The mathematical maturity of students in their current and future courses shall develop.
- CO2: The student develops theoretical, applied and computational skills.
- CO3: The student gains confidence in proving theorems and solving problems.

MT 222(A): Multivariable Calculus II

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

- CO1: The mathematical maturity of students in their current and future courses shall develop.
- CO2: The student develops theoretical, applied and computational skills.
- CO3: The student gains confidence in proving theorems and solving problems.

MT223: Practical based on MT221,MT222

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

- CO1: The mathematical maturity of students in their current and future courses shall develop.
- CO2: The student develops theoretical, applied and computational skills.
- CO3: The student gains confidence in proving theorems and solving problems.

B.Sc. Physics

Programme Outcomes

After completion of Degree in B.Sc. Physics, student's should be able to

- PO1 : Understand the physical significance of major concepts in Physics by solving and demonstration of different problems
- PO2 : Students should think independently and draw a conclusion during problem solving
- PO3: To develop logical view and scientific attitude towards design ,carry out and analyze the results of Physics experiments.
- PO4: Use modern Physics techniques and equipment for study of different concepts in Physics.
- PO6: To inculcate the scientific temperament in the students and outside the scientific community.
- PO7: Understood the basic concepts, fundamental principles and the theories related to various scientific phenomena.
- PO8: Acquire the skills of handling scientific instruments and performing in laboratory experiments.
- PO9: To train students in skills related to research, education , industry and market.
- PO10: Enhance critical thinking through self-exploration and class experiences.

Programme specific outcomes

- PSO1: Students have acquired the knowledge of application of different laws in Physics
- PSO2: Students get sufficient knowledge of instrument handling and safety.
- PSO3: Students develop aptitude of doing research through undertaking small projects.
- PSO4: Students gain the basic knowledge of Physics through theory and practical.
- PSO5: Student can write project reports independently in order to enhance research oriented interest and ideas.
- PSO6: Students have developed interdisciplinary approach and can pursue higher studies in subjects other than Physics.
- PSO7: Students will learn about the significance of electric components ,circuit connections of various circuits and the functions.
- PSO8: Students will be able to explain the various concepts of electromagnetic and relation between electromagnetism theory
- PSO9: Students will be able to distinguish between Classical, Quantum and statistical theory.
- PSO10: Awareness of renewable and non renewable energy sources .
- PSO11: Knowledge of C programming language and able to write various programs for different mathematical problems .
- PSO12: Understand Physics behind various phenomenon like optical, natural, nuclear etc.

Course outcomes

F. Y. B.Sc.

Semester I: Physics Course 1: Mechanics

After successfully completing this course, students will be able to:

- CO1: Knowledge of Newton's Laws of motion
- CO2: Get idea of fundamental forces in nature
- CO3: Concepts of pseudo forces, conservative and non conservative forces.
- CO4: Can solve the problems on the basis of Newton's laws of motion
- CO5: Concepts of elasticity, elastic moduli and their calculation
- CO6: Surface tension, Methods of determination of surface tension and applications
- CO7: Concepts of viscosity, Pascal's law, Bernoulli's equation and applications

Physics Course 2: Physics principles and Applications

After successfully completing this course, students will be able to:

- CO1: Physics of atom, atomic spectra, Bohr theory, Frank Hertz experiment
- CO2: Concepts of Laser, action of Laser, applications of Laser
- CO3: Knowledge of bonding mechanisms: ionic bonds, covalent bonds, van der Waal's bonds, Hydrogen bond, metallic bond
- CO4: Concepts of rotational and vibrational energy levels of diatomic molecule
- CO5: Historical perspective of electromagnetic waves
- CO6: Production of electromagnetic waves, Hertz experiment
- CO7: concept of Electromagnetic Spectrum and source of electromagnetic waves such as Radio waves, UV-VIS-IR waves, X-Rays and Gamma rays etc.
- CO8: Application of electromagnetic waves such as Microwave oven, Radar, Pyroelectric Thermometer and Solar cells.

Semester II:

Physics Course 1: Heat and Thermodynamics

After successfully completing this course, students will be able to:

- CO1: Concept of state, Equation of state, Reduced equation of state and van der Waal's Equation of state
- CO2: Andrew's experiment, Amagat's experiment, Joule Thomson porous plug experiment, etc.
- CO3: Thermodynamic state of state and equilibrium, adiabatic and isothermal changes
- CO4: Knowledge of Laws of thermodynamics, reversible and irreversible process
- CO5: Concepts of Carnot's heat engine, Carnot's cycle and its efficiency, Entropy
- CO6: Idea of Heat engines, Otto cycle and its efficiency, Diesel cycle and its efficiency
- CO7: Get knowledge of Principle, working and structure of refrigerator and air conditioner
- CO8: Knowledge of thermometry and different types of thermometer

Physics Course 2: Electromagnetics

After successfully completing this course, students will be able to:

- CO1: Revision of Coulomb's laws
- CO2: Gauss's laws and application in cylindrical, planar and spherical symmetry
- CO3: Dielectrics : electric dipole and dipole moment, polar and non polar molecules
- CO4: Concepts of magnetostatics, Biot –Savart's law, Ampere's circuital law
- CO5: Concepts of magnetic flux and Gauss's law for magnetism
- CO6: Idea of magnetic properties of materials, magnetization, magnetic intensity, magnetic induction, magnetic susceptibility and permeability

Physics Course: Practical -I

After successfully completing this course, students will be able to:

- CO1: Knowledge of least count, calculation of least counts for different instruments
- CO2: Calculation of MI of flywheel, disc and ring
- CO3: Calculation of modulus of rigidity and Young's modulus of flat spiral spring
- CO4: Thermal conductivity of bad conductor
- CO5: Young's modulus by bending
- CO6: Calculation of wavelength of Laser
- CO7: Verification of Kirchhoff's laws
- CO8: Charging and discharging of capacitor
- CO9: To draw LR vector diagram
- CO10: To calculate band width by LCR series circuit
- CO11: To calculate angle of prism

Course Outcomes S. Y. B.Sc.

Physics: 211: Mathematical Methods in Physics

After successfully completing this course, students will be able to:

- CO1: Define complex numbers, algebra, different forms, trigonometric and hyperbolic function and applications of complex number
- CO2: Partial differentiation, total differentiation, exact differentiation, theorems of differentiation
- CO3: Scalar and vector quantity, dot product and cross product, scalar and vector triple Product and their physical significance
- CO4: vector operator del, scalar operator Laplacian operator, Gradient of scalar, divergence of vector and curl of vector, vector identities
- CO5: To decide order, degree homogeneity and linearity of differential equation
- CO6: To check the singularity of differential equation-ordinary and singular point

Physics 2A1: Electronics

After successfully completing this course, students will be able to:

- CO1: Analysis of circuit theorems, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, super position theorem and solve the problems

- CO2: Knowledge of transistor , its configuration, characteristics, biasing methods, concepts of DC and AC load lines
- CO3: Knowledge of UJT: Construction, working and characteristics
- CO4: Concepts of operational amplifier
- CO5: Knowledge of Oscillators: positive and negative Feedback, applications
- CO6: Study of regulated and unregulated power supply, rectifiers, filters, zener as a regulator
- CO7: Concepts of number system, algebra of binary number system
- CO8: Idea of logic gates, different types of gates and their truth tables, De Morgan's theorem

Physics 212: Oscillations, Waves and Sound

After successfully completing this course, students will be able to:

- CO1: Define undamped SHM and obtain differential equation and solve it.
- CO2: Composition of SHM and applications
- CO3: Define damped SHM, differential equation and solve it.
- CO4: Define forced SHM, set differential equation and solve it.
- CO5: Concept of resonance, examples of resonance and applications of forced SHM
- CO6: To understand concepts of waves, types , velocity of transverse and longitudinal Waves, study of Seismic waves
- CO7: Different terms related to sound, reverberation of hall, experiments, etc.

Physics 222: Optics

After successfully completing this course, students will be able to:

- CO1: Students get knowledge of geometrical optics and study of different types of lenses.
- CO2: Get idea of working and construction of different eyepiece and telescopes.
- CO3: Knowledge of reflection, refraction and interference .
- CO4: Applications of reflection, refraction and interference.
- CO5: Get idea about diffraction pattern .
- CO6: Idea of diffraction phenomenon by single slit, double slit and number of slits.
- CO7: Understand polarization in light .
- CO8: Nature of transverse waves .

Physics 232: Practical Paper III

After successfully completing this course, students will be able to:

- CO1: To determine frequency of light by sonometer
- CO2: To determine log decrement
- CO3: To study coupled oscillator
- CO4: To calculate velocity of sound through air
- CO5: Study of directional characteristics of microphone
- CO6: Calculation of thickness of thin object
- CO7: Study of network theorems
- CO8: Study of logic gates
- CO9: To determine characteristics of transistor and inverting, non inverting amplifier
- CO10: Study of different oscillator circuits
- CO11: Use of Ms-Excel for plotting different functions

CO12: Use of Ms-Excel For matrix determinant and inverse

T. Y. B.Sc. Physics:

After successfully completing these courses, students should be able to

PH-331 Mathematical Methods in Physics:

- CO1. Know the Cartesian, spherical polar and cylindrical co-ordinates systems.
- CO2. To understand the Special Theory of Relativity.
- CO3. Discuss the Michelson- Morley Experiment.
- CO4. To obtain the series solution by Frobenius method.
- CO5. Study the Generating function for Legendre, Hermite polynomials

PH 332: Solid State Physics

- CO1. Know the principles of structures determination by diffraction
- CO2. To understand the principles and techniques of X-rays diffraction
- CO3. Know the fundamental principles of semiconductors and be able to estimate the charge carrier mobility and density
- CO4. To give an extended knowledge about magnetic properties like diamagnetic, paramagnetic, ferromagnetic, ferrites and superconductors
- CO5. To understand the concept of band formation by using ideas of reciprocal lattice and Brillouin Zone

PH-333: Classical Mechanics

- CO1. Understand Newton's Laws of motion and their applications such as projectile and rocket Motion, charged particles in electric, magnetic and electromagnetic fields.
- CO2. Gain the knowledge of motion in central force field
- CO3. Classify elastic and inelastic scattering
- CO4. Know the difference between Laboratory and centre of mass system
- CO5. Understand Lagrangian and Hamiltonian formulation
- CO6. Solve the problems using Lagrangian and Hamiltonian formulation
- CO7. Get knowledge of canonical transformation and Poisson's bracket

PH-334: Atomic and Molecular Physics

- CO1. To know the Rutherford Experiment of atom.
- CO2. To understand molecular spectra of atom.
- CO3. To study the Raman spectra.
- CO4. To study the Zeeman Effect.
- CO5. To understand the Quantum Numbers.

PH-335: Computational Physics

- CO1. Write algorithm and flow chart for any programming language.
- CO2. To understand basic concepts of C language
- CO3. Use of iterative, decision making and the jump statement.

- CO4. Understand the concept of arrays and pointers.
- CO5. Study of user defined functions and program structures.
- CO6. Able to use the concept graphics in c language.
- CO7. Study of Numerical methods to find root of transcendental equation and integration

PH-336 B: Elements of Materials Science

- CO1. To study the Mechanical, Electrical and Thermal Properties of material.
- CO2. Discuss the type of Phase Diagrams.
- CO3. Know the solid solution and types of solid solution.
- CO4. Understanding the Point Defect, Line Defect with example.
- CO5. Study the Diffusion Mechanism.
- CO6. Know the difference between Elastic and Plastic Deformation.
- CO7. To understand the Polymer Vulcanization of rubber.
- CO 8. Know the AX-type crystal structure – eg. NaCl, ZnS etc.

Semester-IV

PH-341 Classical Electrodynamics

- CO1. Understand concepts of Coulomb's law, Gauss's law, electric field and potential
- CO2. Knowledge of magnetic induction, magnetic flux, magnetic field
- CO3. Applications of Biot-Savart law, Ampere's law, Ampere's circuital law
- CO4. Physical significance of Maxwell's equation, polarization of dielectric
- CO5. Understand concept of Poynting theorem and Poynting vector and microscopic form of Ohm's law
- CO6. Knowledge of magnetic susceptibility and permeability, hysteresis loss B-H curve
- CO7. Applications of magnetic induction due to straight current carrying conductor and magnetization of matter

PH-342: Quantum Mechanics

- CO1. Understand De-Broglie hypothesis and Uncertainty principle
- CO2. Derivation of Schrodinger's time dependent and independent equations
- CO3. Solve the problems using Schrödinger's steady state equation
- CO4. Get knowledge of rigid rotator
- CO5. Understand different operators in Quantum Mechanics

PH-343: Thermodynamics and Statistical Physics

- CO1: To study kinetic theory of Gases and Transport phenomenon
- CO2: To study Maxwell Relations and its Application.
- CO3: Know the elementary concept of statistics random walk problem.
- CO4: Understand statistical distribution of system of particles.
- CO5: To study statistical ensembles.
- CO6: To study Quantum statistics, Fermi Dirac Statistics, Bose Einstein statistics and comparison between MB, FD, BE statistics

PH-344: Nuclear Physics

CO1: Know the properties of nucleus like binding energy, magnetic dipole moment and electric quadrupole moment

CO2: To understand the concept of radioactivity and decay law

CO3: To study achievement of Nuclear Models of Physics and its limitations

CO4: To give an extended knowledge about nuclear reactions such as nuclear fission and fusion

CO5: To understand the basic concept of Particle Physics

PH-345: Electronics

CO1: Know the special purpose Diode.

CO2: To study the Transistor Amplifier.

CO3: To understand the FET, JFET, MOSFET.

CO4: To study the Operational Amplifier and their types.

CO5: To know the Timer IC- 555 and its classification.

CO6: To study the Regulated Power supply.

CO7: To understand the Sequential Logic Circuits.

PH-346 K: Lasers

CO1: Know the history of LASERS and its basic concepts.

CO2: Understand the basic principle and working of different types of lasers.

CO3: Know the applications of lasers in various fields.

CO4: Understand the characteristics of LASERS.

CO5: Learn safety precautions and measures while handling the laser.

Physics Practical Paper I:

After completing this practical course the students are able to

CO1: To determine viscosity, surface tension

CO2: To determine Young's modulus, g gravitational acceleration

CO3: To determine energy gap, thermal conductivity,

CO4: Can find Stefan's constant, Planck's constant

CO5: Can study of interference, diffraction

CO6: Determination of refractive index

CO7: Determination of Hall Coefficient

Physics Practical Paper II:

After completing this practical course the students are able to

CO1: To get knowledge of C programming and write C programs for different problems like factorial of number, prime numbers, integration, root of equation, pressure, to use graphics, etc

CO2: To study Laser and its applications, characteristics

CO3: To study regulated power supply, load and line regulation

CO4: To calculate velocity of sound in air and in liquid by different instruments

CO5: To study frequency response of microphone

CO6: To study IC 555 as Astable multivibrator

Physics Practical Paper III:

After successfully completing this course, students will be able to:

Practical Paper III is a project course. The students undertake the project on different concepts of physics like electronics, mechanical, solar energy, C- programming, etc. They have to do the project throughout the year, take the observations, do calculations and interpret the result. Students have to write the project report and submit for the final practical examination. Thus after completion of this course, students are able to do the project on any concept, interpret the result and write the report.

DEPARTMENT OF CHEMISTRY

B.Sc. Chemistry

Programme Outcomes

After completion of Degree in B.Sc. Chemistry, students should be able to

PO1: To understand basic concept of Physical, Organic, Inorganic and Analytical chemistry.

PO2: To impart practical skills and learn basics behind experiments.

PO3: To prepare background for advanced and applied studies in chemistry. Students should think independently and draw a conclusion during problem solving

PO4: To develop logical view and scientific attitude towards design, carry out and analyze the results of experiments.

PO4: Use modern techniques and equipment for study of different concepts in Chemistry.

PO6: To inculcates the scientific temperament in the students and outside the scientific community.

PO7: Understand the basic concepts, fundamental principles and the theories related to various

scientific phenomena.

PO8: Acquire the skills of handling scientific instruments and performing in laboratory experiments.

PO9: To train students in skills related to research, education, industry and market.

PO10: Enhance critical thinking through self-exploration and class experiences.

Programme specific outcomes

PSO1: Gain the knowledge of Chemistry through theory and practical

PSO2: Get knowledge of instrument handling and safety.

PSO3: Develop aptitude of doing research through undertaking small projects.

PSO4: Use modern chemical tools, Models, Chem-draw, Charts and Equipment.

PSO5: Student can write project reports independently in order to enhance research oriented interest and ideas.

PSO6: Understand good laboratory practices and safety.

PSO7: Identify chemical formulae and solve numerical problems

PSO8: To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions

PSO9: Various theories and principles applied to reveal atomic structure, Origin of quantum mechanics

Course outcomes

F. Y. B.Sc.

Semester I:

CH- 101: Physical Chemistry:

After successfully completing this course, students will be able to:

CO1: Apply thermodynamic principles to physical and chemical process, Variation of enthalpy with temperature –Kirchhoff's equation, Third law of thermodynamic and its applications

CO2: Relate between Free energy and equilibrium and factors affecting on equilibrium constant, molecular interpretation of equilibrium constant, Van't Haff equation and its application.

CO3: Concept to ionization process occurred in acids, bases and pH scale, Degree of hydrolysis and pH for different salts, buffer solutions.

CH- 102: Organic Chemistry:

After successfully completing this course, students will be able to understand:

CO1: Physical Effects, Nucleophiles and electrophiles. Aromaticity.

CO2: Stereochemistry, Conformations, Configuration, Isomerism, Concept of chirality, CIP Rules.

CO3: Preparations and reactions of Alkane, Alkene, Alkynes.

CH- 103: Chemistry Practical Course I

CO 1: Importance of chemical safety and Lab safety while performing experiments in laboratory.

- CO 2: Determination of thermochemical parameters and related concepts.
- CO 3: Techniques of pH measurements.
- CO 4: Preparation of buffer solutions.
- CO 5: Elemental analysis of organic compounds.
- CO 6: Chromatographic Techniques for separation of constituents of mixtures.

Semester II

CH-201: Inorganic Chemistry:

After successfully completing this course, students will be able to understand:

- CO1: atomic structure - Origin of quantum mechanics, Schrodinger equation for hydrogen atom, Radial and angular part of hydrogenic wave functions, Significance of quantum numbers, Shapes of orbitals
- CO2: Aufbau's principle, Pauli exclusion principle, Hund's rule of maximum multiplicity, Design Skeleton of long form of periodic table
- CO3: Chemical Bonding- various types of chemical bonds, Born-Lande equation and Born-Haber cycle, Fajan's rule, bond moment, dipole moment and percent ionic character, VSEPR theory.

CH- 202: Chemistry

After successfully completing this course, students will be able to understand the concepts of:

- CO1: analytical Chemistry, the analytical perspectives, Common analytical problems.
- CO2: Calculations used in Analytical Chemistry: Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution
- CO3: Qualitative Analysis of Organic Compounds-Basics of type determination, characteristic tests and classifications, reactions of different functional
- CO4: Chromatographic Techniques – Paper and Thin layer Chromatography
- CO5: pH metry i. pH meter and electrodes for pH measurement

CH- 203: Chemistry Practical –II

- CO1: Inorganic Estimations using volumetric analysis
- CO2: Synthesis of Inorganic compounds
- CO3: Analysis of commercial products
- CO4: Purification of organic compounds

CO5: Preparations and mechanism of reactions involved

S. Y. B.Sc.

Semester I

Paper 1: CH-211: Physical Chemistry and Analytical Chemistry

After successfully completing this course, students will be able to understand the concepts of:

CO1: Elementary Chemical Kinetics- Introduction to Chemical kinetics, order of reaction, pseudomolecular reactions

CO2: Photochemistry- laws of photochemistry, photophysical process

CO3: Distribution law- Nernst distribution law

CO4: Introduction to Analytical Chemistry- Chemical analysis

CO5: Errors in Quantitative Analysis- Error, Accuracy, precision

CO6: Inorganic Qualitative Analysis- Basic principle, common ion effect, solubility, solubility product

CO6: Analysis of Organic Compounds by Qualitative & Quantitative methods

Paper 2: CH-212 Organic Chemistry and Inorganic Chemistry

After successfully completing this course, students will be able to understand the:

CO1: Stereoisomerism- optical isomerism, Structures of geometrical isomers of dimethylcyclohexane

CO2: Organic reaction Mechanism - Introduction, types of reagents, Types of organic reactions, mechanism

CO3: General Principles of Metallurgy: Introduction, ores and minerals,

CO4: Metallurgy of Aluminium (Electrometallurgy)- Occurrence, Physiochemical principles,

CO5: Metallurgy of Iron and Steel (Pyrometallurgy)

CO6: Corrosion and Passivity: Definition of corrosion, Types of corrosion

Semester-II

Paper 3: CH-221: Physical Chemistry

After successfully completing this course, students will be able to understand:

CO1: Free Energy and Equilibrium- Helmholtz free energy, Gibb's-Helmholtz equation, Van't Hoff reaction isotherm, Clausius-Clapeyron equation

CO2: Solutions of Liquids in Liquids- Types of solutions, Raoult's law, Henry's law, temperature composition diagram

CO3: Introduction to volumetric analysis- Introduction, methods of expressing concentrations

CO4: Non Instrumental volumetric analysis- Indicators, Acid-Base titrations, Complexometric titrations:

Paper 4: CH-222: Organic Chemistry and Inorganic Chemistry

After successfully completing this course, students will be able to understand:

- CO1: Reagents in Organic Synthesis- Catalytic hydrogenation including liquid phase hydrogenation,
Oxidation reagents
- CO2: Chemistry of heterocyclic compounds with one hetero atom- Definition and classification of heterocyclic compounds
- CO3: Introduction of Bio-molecules- Carbohydrates, Polysaccharides, Amino acids, Proteins Properties and chemical reactions
- CO4: Chemistry of d-block elements- Position of d-block in periodic table, electronic configuration. Trends in properties
- CO5: Organometallic Chemistry- Definition of Organometallic compounds and Organometallic chemistry, methods of synthesis of binary metal carbonyls.
- CO6: Acids, Bases and Solvents- different theories of acids and bases.
- CO7: Chemical Toxicology- Toxic chemicals in the environment, Impact of toxic chemistry on enzymes

CH – 223: Practical Course in Chemistry

After successfully completing this course, students will be able to:

- CO1: Verify theoretical principles experimentally.
- CO2: Acquire skill of crystallization, record correct m. p. / b. p.
- CO3: Perform the complete chemical analysis of the given organic compound and should be able to recognize the type of compound.
- CO4: Write balanced equation for all the reactions, they carry in the laboratory
- CO5: Perform the given organic preparation according to the given procedure
- CO6: Follow the progress of the reaction by using TLC technique.
- CO7: Set up the apparatus properly for the given experiments.
- CO8: Perform all the activities in the laboratory with neatness and cleanness.
- CO9: Improve analytical skills
- CO10: Correlate the theory and experiments and understand their importance

T. Y. B.Sc. Chemistry:

Semester III

CH-331 Physical Chemistry:

After successfully completing this course, students will be able to understand:

CO-1: Chemical Kinetics- Third order reaction, Methods to determine order of reaction, Arrhenius equation,

CO-2: Electrolytic Conductance- Specific and equivalent conductance, Variation of equivalent conductance with concentration Kohlrausch's law and its applications Debye-Huckel –Onsager equation and its validity, fugacity and activity coefficient

CO-3: Investigations of Molecular Structure- Molar refraction, Electrical polarization of molecules, Determination of dipole moment, Molecular spectra - Rotational, vibrational and Raman spectra

CO-4: Phase Rule- Gibb's phase rule, one component and Two component systems

CH-332 Inorganic Chemistry:

After successfully completing this course, students will be able to:

CO1: Valence Bond theory, Molecular orbital theory, LCAO principle, M.O. Energy level diagram for homonuclear diatomic molecules.

CO2: IUPAC nomenclature of coordination compounds.

CO3: Werner's theory of coordination compounds, Stereoisomerism in complexes with C.N.4 and C.N. 6.

CO4: isomerism in complexes.

CO5: Sidgwick's model, Effective Atomic Number rule (EAN).

CO6: VB representation of complexes, Inner and outer orbital complexes, Electro neutrality principle, Multiple bonding($d\pi-p\pi$ and $d\pi-d\pi$).

CO7: Crystal Field Theory, Shapes and degeneracy of d orbital, Crystal Field Stabilization Energy (CFSE), d-d transitions and colour of the complexes, Jahn-Teller distortion theorem

CH-333: Organic Chemistry

After successfully completing this course, students will be able to:

CO1: Strength of organic acids and bases, pK_a and pK_b concepts.

CO2: Stereochemistry of di substituted cyclohexane, Geometrical isomerism, Optical isomerism.

CO3: Nucleophilic substitution, S_N1 reaction, S_N2 reaction, S_Ni reaction.

CO4: Reaction of Carbon-Carbon double bond, Orientation & reactivity, Rearrangements, Anti Markownikoff's addition.

CO5: Elimination Reactions, $E1$, $E2$ and $E1cB$ mechanism, Hoffmann and Saytzeff's elimination.

CO6: Aromatic Electrophilic and Nucleophilic substitution reactions, Addition-elimination (S_NAr), S_N1 , Elimination-addition (Benzynes) S_NR1 reactions.

CH-334: Analytical Chemistry

After successfully completing this course, students will be able to:

CO 1: Gravimetric Analysis, Common ion effect, solubility product principles, Electrogravimetry.

CO 2: Thermal methods of analysis, applications of TGA and DTA.

CO 3: Lambert's Law and Beer's Law, Spectrophotometric Titrations, Structure of organic.

CO 4: voltammetric methods of analysis, Dropping Mercury Electrode, Ilkovic equation.

CO 5: theory of atomic absorption spectroscopy, Spectral and Chemical Interferences.

CO 6: atomic emission spectroscopy, Standard addition method.

CH-335: Industrial Chemistry

After successfully completing this course, students will be able to understand:

CO1: Requirements of chemical industries, Quality control, quality assurance, batch and continuous process.

CO2: scope of agrochemicals, Pesticide formulation, Biopesticides.

CO3: modified Haber- Bosch process, Manufacture of sulphuric acid by contact Process, Ostwald's Process.

CO4: Petrochemicals and eco-friendly fuels, calorific value of fuel, octane number, cetane number, *Fuels and eco-friendly fuels*.

CO5: nutritive aspects of food constituents, Preservation and processing of food, Food additives.

CO6: Cement and glass industry, portland cement, reinforced concrete.

CH-336 A: Nuclear Chemistry

After successfully completing this course, students will be able to understand:

CO1: Properties of Nucleons and Nuclei, Binding energy, Magnetic quantum numbers, principal and radial quantum number.

CO2: The shell model, Rectangular well potential model, Harmonic oscillator, the liquid drop model.

CO3: Radioactivity, Decay schemes, decay kinetics, Geiger-Nuttals law, Fermi theory of beta decay, isomeric transitions, Auger effect.

CO4: Bethe's notation, Conservation of nuclear reactions, Photonuclear reactions, Thermonuclear reactions

T. Y. B.Sc. Chemistry

Semester IV

CH-341: Physical Chemistry

After successfully completing this course, students will be able to understand:

CO1: Reversible and irreversible cells, EMF and its measurements, Applications of EMF measurement

- CO2: Nuclear Chemistry- The atom, nucleus and outer sphere, classification of nuclides, Measurements radioactivity, Applications of radioactivity
- CO3: Crystal structure- Crystallization and fusion process, Crystallography, Crystal systems, Crystal structure analysis by X ray
- CO4: Quantum Chemistry-Concept of quantization, atomic spectra, time independent Schrodinger wave equation, Wave function and its Interpretation, Particle in a box

CH-342: Inorganic Chemistry

After successfully completing this course, students will be able to understand:

- CO1: Chemistry of f- block elements- Introduction of f-block elements on the basis of electronic configurations, occurrence and reactivity, F-block elements as Lanthanide and Actinide series
- CO2: Metals, semiconductors and Super conductors- Introduction, Metallic bonding, Band theory in metals, N & P type semiconductors, Super conductivity, Applications of superconductors,
- CO3: Ionic Solids- Crystalline and amorphous solids, crystal structures, Born-Haber cycle defects in Ionic solids
- CO4: Homogeneous Catalysis- Definition, types of homogeneous catalysts, Essential properties of homogeneous catalysts Catalytic Reactions
- CO5: Heterogeneous Catalysis- Definition, types of heterogeneous catalysts-metals, semiconductors, solid acid catalysts and supported catalysts, Essential properties of heterogeneous catalysts, Catalytic Reactions
- CO6: Bioinorganic Chemistry- Introduction, Role of metals in bioinorganic chemistry, Metalloproteins, Bioinorganic Chemistry of Fe and Co

CH-343: Organic Chemistry

After successfully completing this course, students will be able to understand:

- CO1: Carbanions and their reactions- Introduction, Formation and stability of Carbanion.
- CO2: Retrosynthetic analysis and applications-Introduction, Different terms used, Retrosynthesis and Synthesis of target molecules
- CO3: Rearrangement reactions-Introduction, Mechanism of rearrangement reaction involving carbocation, nitrene and oxonium ion intermediate
- CO4: Spectroscopic methods in structure determination of Organic compounds-UV Spectroscopy, IR Spectroscopy, PMR Spectroscopy
- CO5: Natural Products- Introduction, extraction, Purification, structure determination of Terpenoids, Alkaloids

CH- 347: Physical Chemistry Practical

After successfully completing this course, students will be able to:

- CO1: Verify theoretical principles of chemical kinetics experimentally.
- CO2: Determine the molecular weight of a high polymer by using viscosity
- CO3: Test the validity of Freundlich / Langmuir isotherm
- CO4: Determine the critical solution temperature of phenol water System
- CO5: Determine the specific refractivity's, molar refractivity of given liquids
- CO6: Determine λ_{\max} and concentration of unknown solution
- CO7: Determine the pka value of these and unknown solutions, formal redox potential, concentrations of strong acid and weak acid by potentiometrically
- CO8: Find pka value, degree of hydrolysis, dissociation constant by pH meter
- CO9: Estimate the amount of given substance, cell constant of the given cell, dissociation constant conductometric titration by using conductometer
- CO10: Study radioactivity using GM counter

CH-348: Inorganic Chemistry Practical

After successfully completing this course, students will be able to:

- CO1: Study the gravimetric and volumetric analysis of ores and alloy
- CO2: Prepare a various inorganic complexes and determine its % purity
- CO3: Perform the qualitative analysis of binary mixture
- CO4: Understand the chromatographic techniques

CH-349: Organic Chemistry Practical

After successfully completing this course, students will be able to:

- CO1: Separate the binary Mixtures and perform the qualitative analysis
- CO2: Prepare organic compounds, purify and to run TLC.
- CO3: Determine physical constant: Melting point, Boiling point.
- CO4: study different separation techniques

DEPARTMENT OF BOTANY

B.Sc. BOTANY

Programme Outcomes

- PO1 : Acquired the knowledge with various branches of botany such as morphology, anatomy, plant physiology, Angiosperm taxonomy, plant biotechnology, tissue culture, embryology, etc.
- PO2 : Students know different types of lower and higher plants their evolution in from algae to angiosperm and also their economic and ecological importance.
- PO3: Student can describe morphological and reproductive characters of plant and also identify different plant families and classification.
- PO4: Use modern Botanical techniques and equipments for study of life science.
- PO5 :They knows economic importance of various plant products and artificial methods of plant propagation.
- PO6: To inculcates the scientific temperament in the students and outside the scientific community.
- PO7: Understood the basic concepts, fundamental principles and the theories related to various scientific phenomena.
- PO8: Acquired the skills of handling scientific instruments and performing in laboratory experiments.
- PO9: Imbided ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
- PO10: Enhance critical thinking through self-exploration and class experiences.

Programme specific outcomes

- PSO1: Students acquired the knowledge of applications of different plants in various industries
- PSO2: Students get conceptual knowledge of mushroom cultivation, Biofertilizers and Biopesticides production, plant tissue culture laboratories, Enzyme production, Fermentation, Single cell proteins etc.
- PSO3: Acquired knowledge about various plant groups from primitive such as algae, fungi to highly evolved.
- PSO4: In the students development of laboratory skills related to sectioning, staining as well as budding, layering and grafting.
- PSO5: The students aware about conservation and sustainable use of plants.
- PSO6: Student can identify different plant groups such as algae, fungi, bryophytes, pteridophytes, gymnosperm and angiosperms.
- PSO7: Understand structural organization of plants like monocots and Dicot and identify dicots and monocots plants morphologically and anatomically.
- PSO8: Understand the techniques of multiplication plant and nanotechniques.
- PSO9: Students classify the angiospermic plants.
- PSO10: Apply knowledge for conservation of endemic, endangered, rare and medicinal plant species.

Course outcomes

F. Y. B.Sc.

Botany Course 111: Plant Diversity, Plant Morphology and Anatomy

After successfully completing this course, students will be able to:

- CO1: Outline cryptogams and phanerogams.
- CO2: Define general characters of cryptogams and Phanerogams.
- CO3: Classify the members of plants groups in to cryptogams and Phanerogams.
- CO4: Describe the Life cycle of plant forms of cryptogams and Phanerogams.
- CO5: Identify lichens and their economic value.
- CO6: Discuss morphology of vegetative and reproductive parts of plants.
- CO7: Describe anatomy of Monocot and dicot plants.
- CO8: Explain types of plant tissues.

Course 112: Industrial Botany

After successfully completing this course, students will be able to:

- CO1: Define industrial botany.
- CO2: Use the potential of plants for human welfare in day to day life.
- CO3: Describe botanical concepts, including plant anatomy.
- CO4: Differentiate usage of plants for food, medicine, building materials, stimulating beverages, and for their psychoactive effects.
- CO5: Discuss conservation and sustainable use of plants.
- CO6: Explain and demonstrate the impact that plants on human society
- CO7: Address the socio-economic challenges related to plant sciences.
- CO8: Demonstrate the methods of cultivation of mushrooms.

Course: Practical Botany -I

After successfully completing this course, students will be able to:

- CO1: Recognize the live forms of Cryptogamic and Phanerogamic plants.
- CO2: Analyse and describe botanical concepts, including plant anatomy.
- CO3: Differentiate usage for food, medicine, building materials, stimulating beverages, and for their psychoactive effects.
- CO4: Explain conservation and sustainable use of plants.
- CO5: Explain and demonstrate the impact that plants have on human society
- CO6: Illustrate the floral parts, fruits, leaves and their types.
- CO7: Identify industrial applications of plants resources for welfare of human being and their techniques.
- CO8: Categorize the plants into Monocot and Dicot on the basis of anatomical characters.

Course Outcomes S. Y. B.Sc.

Botany BO 211: Taxonomy of Angiosperms and plant community

After successfully completing this course, students will be able to:

- CO1: Define plant taxonomy and taxonomic related terminologies.
- CO2: Explain classification systems of angiosperms.
- CO3: Use required data sources for classification of angiosperms.

- CO4: Determine Botanical Nomenclature of angiosperm plants.
- CO5: Recognize ecological plant groups with examples.
- CO6: Explain plant families with examples.
- CO7: Apply proper herbarium methods - collecting, mounting, and keeping records.
- CO8: Execute computer knowledge in plant taxonomy and digital herbarium.

BO 212: Plant Physiology

After successfully completing this course, students will be able to:

- CO1: Define the terminologies: Plant water relations, Growth, Transpiration, Ascent of Sap, Plant growth regulators and Nitrogen metabolism.
- CO2: Explain processes of mineral nutrition, absorption of water, ascent of sap, mechanisms of water loss from plants.
- CO3: Demonstrate processes imbibition, Osmosis, Diffusion and Plasmolysis, measure growth by arc auxanometer, Bose Cresco graph.
- CO4: Describe Plant growth regulators and their types.
- CO5: Discuss nitrogen metabolism in plants
- CO6: Explain mechanisms and application of photoperiodism
- CO7: Explain Mechanism of vernalisation.
- CO8: Classify the plants based on Photoperiodism.

BO 213: Plant Anatomy, Embryology and Palynology

After successfully completing this course, students will be able to:

- CO1: Define terms related to plant Anatomy, Embryology.
- CO2: Describe various tissue systems in plants like epidermal, mechanical and vascular.
- CO3: Interpret the Principles involved in distribution of mechanical tissues.
- CO4: Explain the process of normal and abnormal secondary growth in plants.
- CO5: Differentiate between normal and abnormal secondary growth.
- CO6: Identify the process of pollination and fertilization.
- CO7: Discuss the Structure and development process of male and female gametophyte
- CO8: Illustrate the types of microspore, ovules, embryo, seed and endosperm.

BO 213: Plant Biotechnology

After successfully completing this course, students will be able to:

- CO1: Define the terminologies related to plant biotechnology.
- CO2: Describe the fermentation process.
- CO3: Explain enzyme technology and their industrial scale production.
- CO4: Interpret the production of Single cell proteins.
- CO5: Illustrate the concept of phytoremediation.
- CO6: Describe General method of gene isolation from the plants and their application.
- CO7: Explain Methods of gene, transfer in plants.
- CO8: Illustrate Application of plant genetic engineering and Nano-biotechnology in crop improvement.

BO 213: Practical Paper III

After successfully completing this course, students will be able to:

- CO1: Describe the plant specimens in botanical terms.

- CO2: Identify the plant families.
- CO3: Draw the floral formula and floral diagram of plants belonging to specific families.
- CO4: Demonstrate physiological experiments, fermentation and fermentation products.
- CO5: Calculate water holding capacity, pH of the soil sample
- CO6: Describe internal structure of plants and secondary growth.
- CO7: Describe the Transpiration process.
- CO8: Demonstrate the Electrophoresis and its use.
- CO9: Describe and demonstrate plasmolysis

DEPARTMENT OF ZOOLOGY

B.Sc. ZOOLOGY

Programme Outcomes

- PO1 : The course offers basic knowledge about general topics and classification of vertebrates
- PO1 : The course offers basic knowledge about general topics and classification of phylum arthropoda , mollusca and echinodermata
- PO1 : Understand the Main distinguishing characters between plant cell and animal cell.
- PO1 : The course offers basic knowledge about general topics and classification of invertebrates.
- PO1 : Some general topics are also included for better understanding of structure, function and diversity of various forms.
- PO1 : The course will help to study the distinguishing external as well as internal characters of non chordates.
- PO1 : To study earthworm by various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.
- PO1 : Understand the Scope of cell biology, because cell is the basic unit of life.
- PO1 : Understand the concept vital staining, distinguishing points between nuclear stain and cytoplasmic stain.

Programme specific outcomes

- PSO1: To study and understand the whole cell organelles with their structure and function.
- PSO2: Understand the cell cycle and know the importance of various cells in body of organisms.
- PSO3: The course will help to study the distinguishing external as well as internal characters of chordates.
- PSO4: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.
- PSO5: The course offers basic knowledge about heredity and variation.

- PSO6: The course will help to study the multiple alleles, polygenic inheritance, syndromes, eugenics etc.
- PSO7: To study earthworm by various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.
- PSO8: Understand the Characters of *Asterias* with help of YouTube or other internet sources.
- PSO9: Understand the internal as well as external morphology of that animal.
- PSO10: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.
- PSO11: These applied courses include Fisheries, Agricultural pests and their control methods.
- PSO12: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

Course outcomes

F. Y. B.Sc. Zoology

Course ZO 111: Animal Systematic and Diversity –I

On completion of the course, students are able to:

- CO1: The course offers basic knowledge about general topics and classification of invertebrates.
- CO2: Some general topics are also included for better understanding of structure, function and diversity of various forms.
- CO3: The course will help to study the distinguishing external as well as internal characters of non chordates.
- CO4: To study earthworm by various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

Course ZO 112: Fundamentals of Cell Biology:

On completion of the course, students are able to:

- CO1: Understand the Scope of cell biology, because cell is the basic unit of life.
- CO2: Understand the concept vital staining, distinguishing points between nuclear stain and cytoplasmic stain.
- CO3: Understand the Main distinguishing characters between plant cell and animal cell.
- CO4: Understand the Animal cells and various cell organelles by using microphotographs.
- CO5: To study and understand the whole cell organelles with their structure and function.
- CO6: Understand the cell cycle and know the importance of various cells in body of organisms.

Course ZO 112: Animal Systematic and Diversity –II

On completion of the course, students are able to:

- CO1: The course offers basic knowledge about general topics and classification of vertebrates.
- CO2: The course will help to study the distinguishing external as well as internal characters of chordates.
- CO3: Understand the Characters of Frog with help of YouTube or other internet sources.

CO4: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

Course ZO 112: Genetics

On completion of the course, students are able to:

CO1: This is the applied course of Genetics, which gives scope to students to apply their knowledge in solving the related problems and surveying genetic traits in the society.

CO2: The course offers basic knowledge about heredity and variation.

CO3: The topics like Mendelian inheritance, gene interaction are also included for better understanding of genes.

CO4: The course will help to study the multiple alleles, polygenic inheritance, syndromes, eugenics etc.

CO5: To study earthworm by various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

CO6: The course offers advanced information about genetic engineering, biotechnology and fingerprinting and cloning.

Course Outcomes S. Y. B.Sc. Zoology

ZO 211: Animal Systematic and Diversity –III

On completion of the course, students are able to:

CO1: Understand the Characters of Asterias with help of YouTube or other internet sources.

CO2: Understand the internal as well as external morphology of that animal.

CO3: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

CO4: To study and understand the concepts-Metamorphosis, regeneration and autotomy.

CO5: The course offers basic knowledge about general topics and classification of phylum arthropoda, mollusca and echinodermata

ZO 212: Applied Zoology I

On completion of the course, students are able to:

CO1: These applied courses include Fisheries, Agricultural pests and their control methods,

CO2: These courses give detailed theoretical knowledge of the subject.

CO3: The visits to the concerned institutes and interaction with the experts are also recommended for making the students well versed with the subjects.

ZO 212: Animal Systematic and Diversity –IV

On completion of the course, students are able to:

CO1: Understand the Characters of Scoliodon with help of YouTube or other internet sources.

CO2: Understand the various internal systems like Digestive system, nervous system with the help of charts, models, PowerPoint presentations etc.

CO3: The course offers basic knowledge about general topics and classification of class reptilia, aves and mammals.

ZO 212: Applied Zoology II

Understand the concepts of Apiculture and Sericulture.

CO1: To aware the students about honey bee, silkworm and its economical importance.

CO2: To aware the students and provides the economical importance of Apiculture and sericulture.

CO3: Understand the silkworm rearing, Bee keeping equipments and apiary management.

CO4: To study and understand the various species of Bees.

CO5: Study and understand the diseases, pest, parasites and predators of Honey Bee.

CO6: To study and aware the students for honey bee products and their uses.

DEPARTMENT OF ENGLISH

B. A. ENGLISH

Programme Outcomes

After successfully completing B.A. English Programme students will be able to:

PO1: After completion of B.A. English programme, students will be able to have in depth knowledge of language.

PO2: They became familiarize with contemporary and recent trends and advances in language and literature concepts. Student can describe morphological and reproductive characters of plant and also identify different plant families and classification.

PO3: Language competence improved.

PO4: Students got introduced to some advanced areas of language study.

PO5: They become confident to prepare to go for detailed study and understanding of literature and language.

PO6: Enhance critical thinking through class experiences.

PO7: Capable of oral and written communication, and will prove that they can think critically

PO8: Imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.

Programme specific outcomes

PSO1: Students will be able to apply knowledge of English language to improve skills in Listening, Speaking, Reading and Writing.

PSO2: Students will be able to understand the evolution of criticism and its application in language and literature.

PSO3: Students will be able to comprehend excellent pieces of prose and poetry in English literature

Course outcomes

Course: 1017 Compulsory English

After successfully completing this course, students will be able to:

- CO1: Recall parts of speech and apply the knowledge of language in day-to-day conversation.
- CO2: Summarize a poem..
- CO3: Recognize the themes of each lesson.
- CO4: Recite lines from poems.
- CO5: Identify various types of vocabulary
- CO6: Describe various characters of a short story.

Course: 1337 Additional English

After successfully completing this course, students will be able to:

- CO1: Identify different genres of literature.
- CO2: Analyse and criticise prose lessons.
- CO3: Evaluate short story as a genre of literature.
- CO4: Determine the elements of a one act play.
- CO5: Interpret poems and discuss the literary devices used in the poems.
- CO6: Analyse the sound system of the English language.
- CO7: Define different functions of language as a means of communication

S.Y.B.A. English

Course: 2017 Compulsory English

After successfully completing this course, students will be able to:

- CO1: Describe and give examples of different types of characters,
- CO2: Relate to real life situation. situations, and values of life.
- CO3: Summarize prose and poetic pieces for better comprehension.
- CO4: Demonstrate competence in usage of language in day to day life.
- CO5: Classify and transform different types of sentences.
- CO6: Define various parts of Speech
- CO7: Compose and draft letters and essays and reports.

Course: 2337 General II Study of English Language and Literature

After successfully completing this course, students will be able to:

- CO1: Compare and contrast various types of short stories.
- CO2: Apply brief history to the art and craft of short story writing.
- CO3: Categorize literary devices
- CO4: Explain and give examples of varied intonation pattern and varieties of English.
- CO5: Illustrate various elements of short story like plot, characterization, setting etc.
- CO6: Name and label different organs of speech and transcribe words in the phonetic

script. **Course:2338 Special I Appreciating Drama**

After successfully completing this course, students will be able to:

- CO1: Analyse independently different scenes and acts of the play.
- CO2: Interpret the prescribed plays by applying the theory of drama.
- CO3: Evaluate drama as a genre of literature.
- CO4: Define drama as a genre of literature and to identify different elements of drama.
- CO5: Evaluate the prescribed plays by categorizing their types.
- CO6: Compare and contrast different characters in the play

Course:2339 Special II Appreciating Poetry

After successfully completing this course, students will be able to:

- CO1: Summarize a poem
- CO2: Identify various elements of poetry.
- CO3: Describe the various types of poetry in English.
- CO4 Critically appreciate a poem
- CO5: Discuss various literary devices in a poem.
- CO6: Recall the basics of poetry as one of the literary forms.

T.Y.B.A. English

Course: 3017 Compulsory English

After successfully completing this course, students will be able to:

- CO1: Use literary language with reference to Indian
- CO2: List declarative, imperative and interrogative sentences.
- CO3: Define communicative use of language in Indian Context
- CO4: Give examples of selected diction of specific writer or poet.
- CO5: Outline the idea of varied cultural experiences. English
- CO6: Apply sentence transformation in given format.
- CO7: Determine basic difference between Indian English Poetry and British English

Poetry.

Course: 3337 General III Advanced Study of English Language and Literature

After successfully completing this course, students will be able to

- CO1: Analyse Indian English Poetry
- CO2: Define comparative study of language and literature.
- CO3: Describe types of sentences.
- CO4: List varied dialects in Indian English Poetry.
- CO5: Summarize selected poems from the prescribed text.
- CO6: Use creative use of language in Indian English Poetry.
- CO7: Illustrate ethos and cultural study with reference to Indian English Poetry.
- CO8: Identify advanced areas of language study.

Course: 3338 Special III Appreciating Novel

After successfully completing this course, students will be able to:

- CO1: Comprehend various elements of a novel with varied
- CO2: Discuss the evolution of novel as a genre.
- CO3: Define different types of novels. examples in the literary canon.
- CO4: Compare and contrast the prescribed novels in the syllabus.
- CO5: Associate the study of novel with reference to historical, social, political context
- CO6: Apply critical theories to the study of novel with reference to the prescribed texts.

Course:3339 Special IV Introduction to Literary Criticism

After successfully completing this course, students will be able to:

- CO1: Outline the history of English literary criticism
CO2: Evaluate different critics and their theories
CO3 :Develop literary competence in students to help them derive aesthetic pleasure from different genres of literature
CO4 : Compare and contrast different critical theories
CO5: Analyse independently prose passages and poems.

S.Y.B.Sc.

Course: Optional English

After successfully completing this course, students will be able to:

- CO1: Describe and give examples of different types of types of characters, situations, and values of life.
CO2: Summarize prose and poetic pieces.
CO3: Apply vocabulary in communication
CO4: Achieve competence oral and written communication
CO5: Students will be able to classify and transform different types of sentences
CO6: Draft letters and essays and reports.
CO7: Demonstrate competence in usage of language in day to day life.

DEPARTMENT OF MARATHI

B. A. MARATHI

Programme Outcomes

After successfully completing B.A. Marathi Programme students will be able to:

- PO1: विद्यार्थ्यांना मराठीतील कथा व कविता यांची ओळख करून देणे .
PO2: संवाद कौशल्य व प्रसार माध्यमांचे स्वरूप समजावून घेणे.
PO3: साहित्यातून जीवन विषयक समज विकसित करणे.
PO4: विविध भाषिक कौशल्य विकसित करणे.
PO5: विद्यार्थ्यांच्या साहित्यिक जाणिवा विकसित करणे.
PO6: शुद्धलेखनाची ओळख करून घेणे.
PO7: व्यक्तिमत्त्व विकासात भाषेचे महत्त्व स्पष्ट करणे संपादकीय कामकाजाची माहिती करून घेणे.
PO8: चरित्र व आत्मचरित्र यांचा परिचय करून घेणे प्रशासकीय व्यावहारात मराठी भाषेचा वापर कसा करावा याची माहिती करून घेणे.

Programme specific outcomes

- PSO1: विद्यार्थ्यांची सर्जनशक्ती विकसित करणे.
PSO2: विद्यार्थ्यांमध्ये मराठी भाषेचा प्रचार व प्रसार करणे.
PSO3: . विद्यार्थ्यांना भाषेचे महत्त्व पटवून देणे .
PSO4: विद्यार्थ्यांना भाषेचे महत्त्व पटवून देणे .

PSO5 :सोशल मीडिया मध्ये रोजगाराच्या संधी व मराठी भाषा याविषयी जागृती करणे .

Course outcomes

FYBA

Course: - Marathi General Paper. I. (G1) Vyavaharik and Upyojit Marathi

After successfully completing this course, students will be able to:

- CO1: Create interest in Marathi literature.
- CO2: Connect literature to real life experience.
- CO3: Importance of language in personality development.
- CO4: To understand basic concepts in linguistics and their uses.

SYBA

Marathi general paper II (G2) Sahitik Marathi and Upyojit Marathi:

- CO1. Introduce standard writing practices.
- CO2. Develop the skill of translation.
- CO3. Develop ability to appreciate and evaluate selected Biographies and autobiographies in modern Marathi literature.

Marathi general paper II (G2) Sahitik Marathi and Upyojit Marathi:

- CO1. Introduce standard writing practices.
- CO2. Develop the skill of translation.
- CO3. Develop ability to appreciate and evaluate selected Biographies and autobiographies in modern Marathi literature.

Marathi special paper II(S2) Arwachin Marathi Wangmayacha Abhayas:

- CO1. Understand various branches and movements of Marathi literature.
- CO 2. Impact the skill and develop the ability among them to use Marathi language.
- CO3. Develop interest among the students to appreciate and analyze drama independently

DEPARTMENT OF HINDI

B. A. HINDI

Programme Outcomes

After successfully completing B.A. Hindi Programme students will be able to:

- PO1: छात्रों में भाषा के वैज्ञानिक अध्ययन की दृष्टि निर्माण करना |
- PO2: छात्रों को हिंदी के प्रतिनिधि रचनाकारों एवं कावियों से परिचित करना |
- PO3: हिंदी साहित्य के प्रति छात्रों की रुचि बढ़ाना तथा साहित्य कि विविध विधाओं से परिचित करना |

- PO4: छात्रों को हिंदी कहानी एवं नई काविता कि विशेषताओं से परिचित कराना |
- PO5: भाषाविज्ञान के अंगों तथा भाषाविज्ञान की शाखाओं का परिचय कराना |
- PO6: छात्रों को हिंदी गद्य एवं पद्य के प्रतिनिधि रचनाकारों का परिचय देना|
- PO7: छात्रों में राष्ट्र के प्रति प्रेम एवं सामाजिक प्रतिबद्धता कि भावना निश्चित करना|
- PO8: छात्रों को भाषा कि परिभाषा विशेषताएँ, तथा भाषा कि विविध रूपों की जानकारी देना |

Programme specific outcomes

- PSO1: छात्रों की सर्जनात्मक शक्ति का विकास करना |
- PSO2: छात्रों में राष्ट्रभाषा हिन्दी का प्रचार-प्रसार करना |
- PSO3: . छात्रों को मानक लिपि एवं भाषा का महत्व स्पष्ट करना |
- PSO4: पत्रकारिता के क्षेत्र में रोजगार वृत्ति को बढ़ावा देना |

Course outcomes

FYBA

Course हिंदी सामान्य-1

- CO1 छात्रों को हिंदी गद्य एवं पद्य के प्रतिनिधि रचनाकारों का परिचय देना |
- CO2: . हिंदी साहित्य के प्रति छात्रों की रुचि बढ़ाना तथा साहित्य कि विविध विधाओं से परिचित कराना |
- CO3: कहानी कविता, एकाकी साक्षात्कार रेखाचित्र आदी विधाओं के माध्यम छात्रों का भावात्मक विकास कराना |
- CO4: छात्रों में राष्ट्र के प्रति प्रेम एवं सामाजिक प्रतिबद्धता कि भावना निश्चित करना|
- CO5: छात्रों में नैतिक मूल्य, राष्ट्रीय मूल्य, सामाजिक मूल्यों के प्रति आस्था निर्माण करना |

SYBA

Course हिंदी भाषा का विकास

- CO 1: छात्रों को हिंदी के प्रतिनिधि रचनाकारों एवं कावियों से परिचित कराना |
- CO 2: छात्रों को हिंदी कहानी एवं नई काविता कि विशेषताओं से परिचित कराना |
- CO 3 छात्रों को हिंदी के कार्यालयीन एवं व्यावहारिक पत्रों के स्वरूप का ज्ञान देना |
- CO 4 छात्रों को पारिभाषिक शब्द, विज्ञापन, भेटवार्ता, साक्षात्कार, रिपोर्ट लेखन आदि हिंदी भाषा के व्यावहारिक क्षेत्रों से परिचित कराना |
- CO 5 छात्रों को हिंदी शब्दयुग्म का ज्ञान कराना |
- CO 6 छात्रों को हिंदी के प्रतिनिधि रचनाकारों एवं कावियों से परिचित कराना

DEPARTMENT OF HISTORY

B.A. HISTORY

Programme Outcomes

Course outcomes

F. Y. B.A.

History General 1: Chatrapati Shivaji and His Times (1630 to 1707)

After successfully completing this course, students will be able to:

CO1: Students got knowledge of concept of Shivaji and his times.

CO2: Student view increased of Nationalism and Secularism.

CO3: Students got knowledge of administration of Shivaji Maharaj.

CO4: Introduced to student social, economic and religious condition.

S.Y.B.A.

History General 2: Modern India (1857-1950)

CO1: "History of Modern India" topic as a part of History is a very important section as far as the Syllabus of any competitive examination is possible, especially Civil Services exams.

CO2: Students understand of the stages of development in Modern India, why certain events happened and analysis of the consequences of such developments that paves an impact on our society, economy and our political system.

CO3: Modern Indian history Importance For competitive examination.

History Special 1: Ancient India (3000B.C. to 1260AD.)

CO1: Ancient Indian history is very importance for UPSC Examination.

CO2: When students doing study of ancient Indian history that time they know about original culture religion and society.

CO3: Increasing student's wideness.

CO4: Student capable for discuss any Social issue.

History Special 2: History of Modern Maharashtra (1818-1960)

CO1: Students got knowledge of concept History of modern Maharashtra.

CO2: Modern Maharashtra history is useful to student for MPSC examination.

CO3: National and social movement in Maharashtra Introduced to students.

CO4: Student got knowledge of Maharashtra Philosophers and their philosophy

T.Y.B.A.

History General 3: History of the World in 20th century

CO1: Students got knowledge of concept in world history.

CO2: Students got global event knowledge it is use for increased intellectual level.

CO3: World trend of thinking, Marxist, Communalism, Dictatorship, Emperialism, Nazizum, fascism, Terrorism, Feminism, Globalization, etc introduced to Students.

History Special 3: Introduction to History

CO1: Students known source of history,

CO2: Practically student known to how much write history.

CO3: Increased the knowledge of research in history

CO4: Students know external and internal Criticism.

CO5: Students know historian works.

History Special 4: History of Asia in 20th Century

CO1: Students know history of America.

CO2: Concept of American history introduced to Students

CO3: Students know causes of Great Depression and policy of New Deal and Fear Deal.

CO4: Students know American politics in world.

CO5: Students got knowledge of international relation with America.

DEPARTMENT OF POLITICAL SCIENCE

B.A. POLITICAL SCIENCE

Programme Outcomes

PO1 :Students enable to develop academic proficiency in the subfields of Indian Government and Politics, Comparative Government, International Relations, Public Administration, Political Theory, and Political Ideology.

PO2 : Students enable to develop and be able to demonstrate skills in conducting as well as presenting research in political science.

PO3: Students enable to analyze political and policy problems and formulate policy options.

PO4: Students enable to discuss the major theories and concepts of political science and its subfields, and also deliver thoughtful and well articulated presentations of research findings.

Programme specific outcomes

PSO1: Serve as a politician.

PSO2: Work as a teacher in colleges, schools and high schools

PSO3: Serve as political party member, political adviser, and well citizen of India.

PSO4: Work in elections and political as well as administrative system.

PSO5: Serve in forest department as forest conservator.

PSO6: Can admit to MA Politics, LLB, MSW, MBA.

PSO7: Work in NGOs.

PSO8: Can Prepare for Competitive exams.

Course outcomes

F. Y. B.A.

Indian Government and Politics (G-1)

After successfully completing this course, students will be able to:

CO1: Students enable to understand the philosophy of Indian constitutions.

CO2: Students enable to identify the causes, impact of British colonial rule.

CO3: Students enable to appreciate the various phases of Indian national movement.

CO4: Students enable to create value in young youth regarding the patriotism.

CO5: Students enable to understand the various Government of Indian acts their provision and reforms.

CO6: Students enable to know the salient features in making of Indian constitution

CO7: Students enable to appreciate the socio-economic political factors which lead to the freedom struggle.

CO8: Students enable to appreciate the fundamental rights and duties and the directive principle of state policy.

CO9: Students enable to evaluate the evolution, functioning and consequences of political parties in India.

CO10: Students enable to identify how electoral rules and procedure in India effect election outcomes.

S. Y. B.A.

Political Theory (G-2)

After successfully completing this course, students will be able to:

CO1: Students enable to understand the nature and scope of political theory.

CO2: Students enable to understand the significance of political theory.

CO3: Students enable to acquaint with the theories, approaches, concepts and principles of political theory.

CO4: Students enable to appreciate the procedure of different theoretical ideas in political theory.

CO5: Students enable to Interpret and assess information regarding a variety of political theory.

CO6: Students enable to understand the various traditional and modern theories of political science.

CO7: Students enable to evaluate the theories of origin of the state.

T. Y. B.A.

Political science G3: Modern Political Ideologies

After successfully completing this course, students will be able to:

CO1: Student enables to understand the difference between ideology and thought as well as between theory and ideology.

CO2: Students enable to understand the relationship between ideas and politics.

CO3: Student enables to understand the core doctrines of each of the ideologies and to make sense of politics through different ideological perspectives.

DEPARTMENT OF GEOGRAPHY

B. A. GEOGRAPHY

Programme Outcomes

After successfully completing B.A. Geography Programme students will be able to:

PO1: To acquire scientific temperament and respect diversity in the world.

PO2: To understand the physical setup of the world.

PO3: To get acquainted with the relationship between human activities and physical resources.

PO4: To relate the global level situation to the local level.

PO5: To be good planners and environmental conservator.

PO6: Enhance critical thinking through class experiences.

PO7: To understand natural and manmade disasters and their management.

PO8: Demonstrate acquisition of Weather chart/map, map aerial photograph and Image reading skill.

Programme specific outcomes

PSO1: Apply Statistical Techniques of Spatial Analysis.

PSO2: Demonstrate ability to apply knowledge learned in classroom to set and perform simple laboratory experiments in geography.

PSO3: Demonstrate and understanding of principles and theories of Geography. This include Geomorphology, Economic Geography, Human Geography, Agriculture Geography.

Course outcomes

F. Y. B. A.

Geography Course Gg110: Elements of Geomorphology (General -1)

The student who successfully completes this course can able to:

- CO1: Explain principal terms, definitions, Concept and theories of geomorphology.
- CO2: Demonstrate a geomorphological field investigation.
- CO3: Describe importance of latitude, longitude and the reasons why different countries have different time zone and date.
- CO4: Identify different Materials of the earth crust, rock types, types of weathering, mass movements and types of slope.
- CO5: Apply knowledge of basic landforms from tectonic, volcanic, fluvial and coastal environments.
- CO6: Evaluate exogenous and endogenous processes in the landscape, their importance in landform development, and distinguish the mechanisms that control these processes.
- CO7: Discuss development of micro to mega scale landforms.

S. Y. B. A.

Geography Course Gg-210: Geography of Disaster Management (General -2)

After successfully completing this course, students will be able to:

- CO1: Describe concepts of Disaster and its relations with Geography.
- CO2: Explain terminology and concepts of Disaster Management.
- CO3: Describe concepts of anthropogenic disaster, its types, causes and management.
- CO4: Explain standard operating procedure on government for disaster management.
- CO5: Implement concepts of hazards in different areas and its Management.
- CO6: Demonstrate Disaster Management at local level.
- CO7: Explain important global level disasters i.e, acid rain, ozone depletion and global warming.

Course Gg.220: Economic Geography (S-1):

After successfully completing this course, students will be able to:

- CO1: Define basic principles and concepts in Economic Geography.
- CO2: Describe dynamic aspect of economic geography.
- CO3: Explain Activities for global Economic development.
- CO4: List type of resources for economic development and its applications.
- CO5: Describe skill of planning the economic development and its management.
- CO6: Describe skill of industrial, agricultural transport and trade activities.
- CO7: Apply applications of economic geography in different areas of growth and development.

Course Gg230: Fundamentals of Geographical Analysis (S-2)

After successfully completing this course, students will be able to:

- CO1: Explain basic concepts of map and scale.
- CO2 : Explain about preparation of layout.

- CO3: Describe basic of Statistical data and the skill of graphical data representation.
- CO4: Identify different Types of Map Projections.
- CO5: Apply Surveying Techniques in Geography.
- CO6: Describe surveying instruments and their applications.
- CO7: Demonstrate preparation of drawing profile with the help of Dumpy Level.
- CO8: Conduct geographical field investigation and report writing.

T.Y.B.A.

Geography Course Gg 310: Human Geography (G-3)

After successfully completing this course, students will be able to:

- CO1: Describe nature of man-environment relationship and human capability.
- CO2: Explain conditions of living of human beings from primitive life to the modern era.
- CO3: Explain human evolution and different races existed since the beginning of living life.
- CO4: Describe different tribes and their culture in different geographical areas.
- CO5: Explain causes and effect of migration of mankind.
- CO6: Analyse relationship between population and available resources.
- CO7: Identify and explain spatial distribution pattern of population and environment
- CO8: Identify contemporary issues which the global community is facing.

Course Gg: 320 Agriculture Geography (S-3)

After successfully completing this course, students will be able to:

- CO1: Explain principal terms, definitions, nature and scope of Agriculture Geography.
- CO2: Discuss fundamental concept, land use, crops, agricultural production and development, determinants of agricultural activities, physical determinants, and socio-economic determinants.
- CO3: Explain different types of agriculture.
- CO4: Discuss problems and prospects of agriculture with Indian examples.
- CO5: Demonstrate knowledge of irrigation and watershed management.
- CO6: Evaluate allied areas in agriculture and agricultural development.
- CO7: Apply the geographical knowledge in the sustainable agriculture development and agriculture in India.

Course Gg-301 Techniques of Spatial Analysis (S-4)

After successfully completing this course, students will be able to:

- CO1: Explain basic concepts of statistical and remote Sensing.
- CO2: Identify different methods of Relief Representation.
- CO3: Describe basic of Statistical data and the skill of data representation.
- CO4: Describe weather instruments and their applications in Geographical phenomena.
- CO5: Interpret top sheet/ map, aerial photographs and analysis of toposheet/ map, aerial Photographs.
- CO6: Calculate Central Tendency, Variance and Standard Deviation, Correlation.

DEPARTMENT OF ECONIMICS

Programme Specific Outcomes

On completion of B.A (Economics), Students are able to:

- PSO1. Understand basic concepts of economics.
- PSO2. To able to analyze economic behavior in practice.
- PSO3. Understand the economic way of thinking.
- PSO4. The ability to analyze historical and current events from an economic perspective.
- PSO5. The ability to write clearly expressing an economic point of view.
- PSO6. Be exposed to alternative approaches to economic problems through exposure to coursework in allied fields.
- PSO7. To create students ability to suggest of the various economic program.

Course outcomes

F. Y. B. A.

ECO-1157- Indian Economy – Problems and Prospects (G-1)

On completion of the course, students are able to

- CO1: Understand nature, Basic Characteristics and Major issues of Indian economy
- CO2: Understand population & economic development
- CO3: Understand Poverty and Unemployment Concepts and their trends in Indian economy
- CO4: Understand role of agriculture, industrial sector in Indian economy.
- CO5: Understand economic planning in India
- CO6: Understand Salient Features of Economy of Maharashtra.
- CO7: Understand Role of Co-operative in Economic Development of Maharashtra.
- CO8: Understand Regional Imbalance Causes & Preventive Measures.

S. Y. B. A.

ECO-2157: Modern Banking (G2)

On completion of the course, students are able to

- CO1: Create the awareness among the students of Modern Banking System.
- CO2: Understand commercial banking system in India
- CO3: Understand working & operation of RBI
- CO4: Understand new development in Indian financial system periods
- CO5: Understand cooperative and rural banking in India
- CO 6: Understand non banking financial institutions & financial services in India
- CO7: Understand the Indian money market
- CO8: Understand the Indian capital market
- CO9: Able to understand international aspects of the Indian financial system

.T. Y. B. A.

ECO-3157: Economic Development and Planning (G3)

On completion of the course, students are able to

- CO1: Understand the differences between Economic growth and Development, Indicators of Economic Development.
- CO2: Understand Characteristics of Developing Countries.
- CO3: Understand Constraints on Development Process.
- CO4: Understand theories and Approaches of economic development.
- CO5: Understand some growth models
- CO6: To understand macroeconomic policies, roll of foreign capital and economic planning etc. in developing countries.

