

**Bharati Vidyapeeth's
Dr. Patangrao Kadam Mahavidyalaya, Sangli**

Department of Chemistry

Program Outcomes:

1. Student will gain fundamental knowledge of chemistry which will help the for-PG studies and Research
2. Student will be able to know good laboratory practices and lab safety.
3. To make the learner proficient in analyzing the various observations and chemical phenomena presented to him during the course.
4. Students will be able to apply the fundamental knowledge to address the cross-cutting issues such as sustainable development
5. Students will be able to solve various problems by identifying the essential parts of a problem, formulate strategy for solving the problem, applying appropriate techniques to arrive at a solution, test the precision and accuracy of the solution and interpret the results.
6. Students will be able to communicate effectively i.e. being able to articulate, comprehend and write effective reports, make effective presentations and documentation and capable of expressing the subject through technical writing as well as through oral presentation.

Program Specific Outcomes:

1. Students will be able to explain fundamental concepts of inorganic, physical, organic, industrial and analytical chemistry.
2. Identify chemical formulae and solve numerical problems.
3. Students can use modern chemical tools, Models, Charts and Equipments.
4. Students will be able to prepare and qualify for competitive examinations
5. Students will understand good laboratory practices and safety.
6. Students will develop research-oriented skills.

Course Outcomes

B. Sc.-I (Chemistry)	
Course	Outcomes
Paper No. I (Inorganic Chemistry)	After completion of these courses, students should be able to, <ol style="list-style-type: none">1. Able to write electronic configuration of elements, fill electrons in different orbitals, draw energy level sequence of different orbitals, differentiate between electronegativity and electron affinity.2. Differentiate between different types of bonds and able to identify the ionic bond in compounds.3. Able to draw molecular orbital diagrams of homonuclear and heteronuclear diatomic molecules.4. Able to find hybridization, geometry and magnetic properties of transition metal complexes.
Paper No. II (Organic Chemistry)	<ol style="list-style-type: none">1. Understand the basic concepts of Organic Chemistry.2. Understand the concept of chirality, optical isomerism, and nomenclature.3. Learn aromatic-non-aromatic compounds and to understand the mechanism of electrophilic substitution reactions.4. Understand method of formation and chemical reactions of cycloalkanes, cycloalkenes and alkadienes.
Paper No. III (Physical Chemistry)	<ol style="list-style-type: none">1. Understand the carnot cycle and its efficiency and concepts of enthalpy and entropy2. Understand the free energy and laws of chemical equilibrium.3. Understand the Vander walls equations and Maxwell Boltzman distribution law.4. Understand the First and second order reaction.
Paper No. IV (Analytical Chemistry)	<ol style="list-style-type: none">1. Understand the difference between qualitative and quantitative analysis, understand the terms error and accuracy in analytical experiments. Able to calculate the mean, median of analytical data.

	<ol style="list-style-type: none"> 2. Understand the importance of chromatography in analysis and the principles of separation of analyte from mixture using paper chromatography and thin layer chromatography. 3. Able to find out unknown concentration of analyte from sample by performing titration. 4. Understand the hardness, PH, alkalinity, acidity, BOD and COD of water. 5. Understand the estimation of NPK from fertilizer.
B.Sc.-I (Chemistry Practical)	
Laboratory practical	<ol style="list-style-type: none"> 1. To know the unknown compounds by Organic Qualitative Analysis. 2. To learn the preparation of organic and inorganic materials synthesis. 3. To learn kinetics of reaction. 4. To learn separation and identification of different cations by Paper Chromatographic. 5. To learn heat of ionization, heat of ionization, heat capacity, enthalpy of hydration, solubility, and enthalpy of neutralization of different chemicals. 6. To determine the equivalent weight of Magnesium. 7. To learn preparation of standard solution. 8. To understand the estimation of metal ions.
B.Sc.-II (Chemistry)	
Paper No. V (Physical Chemistry)	<ol style="list-style-type: none"> 1. Understand the basic terminologies electrolytic conductivity and different types of conductometric titrations. 2. Understand the different physical properties of liquids depends on density and viscosity. 3. Understand the adsorption phenomenon and different adsorption isotherms and its applications. 4. Understand the types of nuclear radiations and their detection and measurements.

	5. Understand the order of reaction and theories of reaction rate.
Paper No. VI (Industrial Chemistry)	<ol style="list-style-type: none"> 1. Learn different concentration terms. 2. Understand comparison between classical chemistry and Industrial chemistry. 3. Understand concept of unit processes and unit operation. 4. Study basic principle of corrosion and electroplating. 5. Learn different types of corrosion, applications of chromium electroplating 6. Learn manufacturing process of paper. 7. Study different types of soaps and their uses. 8. Study cleansing action of soap, saponification, detergents.
Paper No. VII (Inorganic Chemistry)	<ol style="list-style-type: none"> 1. Understand the basic concepts of coordination chemistry. 2. Able to find the geometries of different transition metal complexes using Valence bond theory. 3. Study the concept of chelate formation. 4. Study the compounds of group 13, 14 and 15 of 'p-block' elements. 5. Understand the properties of elements of 3d series. 6. Learn the basic knowledge about inorganic semi-microanalysis
Paper No. VIII (Organic Chemistry)	<ol style="list-style-type: none"> 1. Learn about the synthesis, reactivity and applications of carboxylic acids. 2. Study about classification, preparation and applications of amines and diazonium salts. 3. Understand the classification, configuration and structure of carbohydrates. 4. Understand the nomenclature and reactivity of aldehydes and ketones. 5. Study the basic knowledge conformational analysis of organic compound.

B.Sc.-II (Chemistry Practical)	
Laboratory practical	<ol style="list-style-type: none"> 1. Identification of organic compounds including acids, bases, phenols and neutrals. 2. Preparation of organic compounds and their purification. 3. Organic estimations such as acetone, Vitamin-C and ester. 4. Separation, identification and determination of R_f values using TLC. 5. Understand the gravimetric analysis of Fe and Ba. 6. Preparation of inorganic complexes. 7. Able to find out the unknown concentration by performing titration. 8. Understand semimicro analysis. 9. Study the chemical kinetics of hydrolysis of ester. 10. Illustrate the experiment of instrumental methods such as conductometry, refractometry, polarimetry etc. 11. Able to measure viscosities of different liquids.
B.Sc.-III (Chemistry)	
Paper No. IX (Inorganic Chemistry)	<ol style="list-style-type: none"> 1. Study the theoretical concepts of hard and soft acids and bases. 2. Understand the metal ligand bonding in transition metal complexes. 3. Study basic concepts and classification of inorganic polymers. 4. Study classification of conductors, insulators and semiconductor 5. Study synthesis and structures of organometallic compounds.
Paper No. X (Organic Chemistry)	<ol style="list-style-type: none"> 1. Study the basic concept of spectroscopy. 2. Understand factors affecting UV-absorption spectra. 3. Understand factors affecting on vibrational frequency. 4. Interpret IR-spectra on basic values of IR-frequencies. 5. Learn basic principle of NMR spectroscopy, chemical shift, shielding and deshielding.

	<p>6. Study instrumentation of mass spectrometry, and fragmentation pattern.</p> <p>7. Solve the combined problem of UV, IR, and NMR.</p>
Paper No. XI (Physical Chemistry)	<p>1. Learn and understand quantum Chemistry, Heisenberg's uncertainty principle, concept of energy operators (Hamiltonian), learning of Schrodinger wave equation. Physical interpretation of the ψ and ψ^2. Particle in a one-dimensional box</p> <p>2. Gain Knowledge about spectroscopy, Electromagnetic spectrum, Energy level diagram, Study of rotational spectra of diatomic molecules: Rigid rotor model, Microwave oven, vibrational spectra of diatomic molecules, simple Harmonic oscillator model, Raman spectra: Concept of polarizability, pure rotational and pure Vibrational Raman spectra of diatomic molecules, related knowledge will be gained by the students.</p> <p>3. Learn and understand photochemical laws, reactions and various photochemical phenomena.</p> <p>4. Learn the various types of solutions, vapour pressure, temperature relations.</p> <p>5. Learn and understand the knowledge of emf measurements, types of electrodes, different types of cells, various applications of emf measurements.</p>
Paper No. XII (Analytical Chemistry)	<p>1. Understand the basic concepts of Gravimetric Analysis and learns different types of precipitations.</p> <p>2. Understand the flame photometry and its applications and limitations.</p> <p>3. Understand the theory of colorimetry, applications of colorimetry and spectrophotometry</p> <p>4. Understand the different types of electrodes, titrations and their applications</p>

	5. Understand the different types of chromatographic techniques and their applications
Paper No. XIII (Inorganic Chemistry)	<ol style="list-style-type: none"> 1. Understand the thermodynamic and kinetic aspects of metal complexes. 2. Study the nuclear reactions and role of radio isotopes. 3. Understand properties and classification of lanthanides and actinides. 4. Study techniques involves in extraction of iron from its ore. 5. Understand role of metals and non-metals in our health.
Paper No. XIV (Organic Chemistry)	<ol style="list-style-type: none"> 1. Study the various Name reaction and reagents with examples. 2. Learn mechanism of rearrangement reaction. 3. Understand basic terms used in retrosynthetic analysis. 4. Solve electrophilic and nucleophilic addition reaction problems 5. Study analytical and synthetic evidences of natural products such as citral and nicotine. 6. Learn different types of drugs and their synthesis and uses.
Paper No. XV (Physical Chemistry)	<ol style="list-style-type: none"> 1. Learn and understand phase rule, Learn and understand One component, Two component and Three component systems phase diagrams with suitable examples. 2. Gain Knowledge about basic concept of Thermodynamics, free energy, Gibbs-Helmholtz equation and its applications, Able to solve problem related with it. 3. Understand basic concept of solid state chemistry, learn basic terms, Laws of crystallography, learn crystal structure analysis using X-rays 4. Understand kinetics of Simultaneous reactions such as i)opposing reaction ii)side reaction iii)consecutive reactions: iv) chain reaction v) explosive reaction 5. Learn and understand the knowledge of distribution law, its modifications, applications of distribution laws, process of

	extraction, determination of solubility, distribution indicators, and molecular weights.
Paper No. XVI (Industrial Chemistry)	<ol style="list-style-type: none"> 1. Understand the methods of manufacturing of sugar 2. Understand the mechanism of manufacture of industrial heavy chemicals. 3. Understand the different types of polymers and their applications 4. Understand the different types of hydrocarbons and application of petrochemicals. 5. Understand the different methods for nonmaterial preparations and their applications.
B.Sc.-III (Chemistry Practical)	
Laboratory practical	<ol style="list-style-type: none"> 1. Understand the gravimetric estimation such as Fe, Ba, Ni. 2. Study different types of inorganic preparations. 3. Understand titration and percentage purity of different types of solutions 4. Separate binary mixture and identify an individual compound. 5. Prepare organic compounds and purify them. 6. Prepare organic derivatives. 7. Estimate amount of organic content from mixture, tablets etc. 8. Understand the kinetic reactions and their mechanisms, energy of activation, partial molar volume. 9. Understand different instruments such as pH Meter, potentiometer, refract meter, colorimeter etc.

Department of Physics

B.Sc. (Physics)

Program Outcomes:

1. Apply the basic principles of Physics to the events occurring around us and also in the world.
2. Design and carry out experiments to understand the laws and basic concepts in science.
3. To acquire a wide range of problem-solving skills, both analytical as well as technical and to apply them.
4. To enhance the student's academic abilities, personal qualities, and transferable skills will allow them to develop as responsible citizens.
5. Develop a sense of research to predict cause-and-effect relationships.
6. Ability to identify unethical behaviour and adopt an objective, unbiased and truthful actions in all aspects of their program.
7. Involve in independent and lifelong learning.

Program Specific Outcomes:

1. To understand the basic laws and explore the fundamental concepts of Physics.
2. Gain a wide spectrum of skills that will enable them to solve theoretical and experimental problems.
3. Acquire the skill to gauge the physical properties of materials.
4. Providing a hands-on learning experience such as in measuring the basic concepts in properties of matter, heat, optics, electricity and electronics.
5. Apply and verify theoretical concepts through laboratory experiments.
6. Understand basic mechanics and properties of matter.

Illustrate the principles of electricity, magnetism, thermodynamics, optics and spectroscopy

Course Outcomes

B.Sc.-I (Physics)	
Course	Outcomes

Paper I (Mechanics-I)	<ol style="list-style-type: none"> 1. Discuss basic Knowledge of vector and scalar and its properties 2. Explain differential equation in order to understand the Basic mathematics. 3. Learn basic Concept of Momentum and Energy and its Conservation 4. Acquire the knowledge of moment of inertia and rotational motion.
Paper I (Mechanics-II)	<ol style="list-style-type: none"> 1. Study the laws of gravitation and laws of motion of planet 2. Describe the Simple harmonic motion and its various characteristic 3. To understand Elasticity and properties of Elastic Material. 4. Explain the Phenomenon of Surface tension and its application.
Paper III (Electricity and Magnetism-I)	<ol style="list-style-type: none"> 1. Discuss the vector and Scalar products 2. To illustrate various theorem in Vector Calculus 3. Explain the Basic electrostatics and its different Properties 4. Describe the Properties of dielectric Material
Paper IV (Electricity and Magnetism-II)	<ol style="list-style-type: none"> 1. Illustrate Complex numbers and their application in solving a. c. series LCR circuit. 2. To get basic knowledge of Magnetism and its various properties. 3. Acquire the knowledge time varying electric magnetic field and its application. 4. To Explain Maxwell's equations and Electromagnetic wave propagation
B.Sc.-II (Physics)	
Paper V (Thermal Physics and Statistical Mechanics - I)	<ol style="list-style-type: none"> 1. Know the Zeroth Law, First Law, Second Law and Third Law of Thermodynamics. 2. Describe various types of Thermometers.

	3. State the nature of heat transfer, transport phenomena in gases behaviour of gases at different temperatures.
Paper VI (Waves and Optics -I)	<ol style="list-style-type: none"> 1. Assess fluctuations and acoustic process in nature and technology in various forms. 2. Analyse the mechanism and the machinery noise levels. 3. Distinguish between different sounds and noise levels in the environment.
Paper VII (Thermal Physics and Statistical Mechanics - I)	<ol style="list-style-type: none"> 1. Describe various thermodynamic potentials. 2. Know different theories of radiation. 3. Know the Classical Statistics and Quantum Statistics.
Paper VIII (Waves and Optics -I)	<ol style="list-style-type: none"> 1. Explain the phenomenon of Interference, Diffraction and Polarization. 2. Interpret Wavelength, resolving power and specific rotation. 3. Calculate wavelength of unknown sources.
B.Sc.-III (Physics)	
Paper-IX (Mathematical Physics)	<ol style="list-style-type: none"> 1. Acquire knowledge of methods to solve partial differential equations with examples of important partial differential equations in Physics. 2. Apply the special functions, such as the Hermite polynomial, the Legendre polynomial, the Laguerre polynomial and Bessel functions and their differential equations and their applications in various physical problems 3. Use the beta, gamma and error functions in doing integrations. 4. Understand maths of complex numbers and application of Cauchy-Riemann Equations.
Paper-X (Quantum Mechanics)	<ol style="list-style-type: none"> 1. Describe de Broglie's hypothesis of matter waves, Davisson-Germer experiment.

	<ol style="list-style-type: none"> 2. Apply the knowledge of basic quantum mechanics, to set up one-dimensional Schrodinger's wave equation and its application to a matter wave system. 3. Understand the Schroedinger wave mechanics and operator formalism. 4. Solve the Schroedinger equation for simple 1D time-independent potentials
Paper-XI (Classical Mechanics and Classical Electrodynamics)	<ol style="list-style-type: none"> 1. Apply Lagrangian methods to solve for the motion of rigid bodies. 2. Apply the calculus of variations to solve minimization problems and knowledge of the formulation of dynamics in terms of a variational principle. 3. Explain the fundamental concepts of special relativity and how to perform Lorentz transformations. 4. Solve the problems based on the motion of a charged particle in the presence of a uniform electromagnetic field.
Paper-XII (Digital and Analog Circuits and Instrumentation)	<ol style="list-style-type: none"> 1. Analyse different types of digital electronic circuits using various tools and know the techniques to prepare the most simplified circuit using various methods. 2. Explain the principles of oscillation and design various oscillator circuits. 3. Acquire the skill in using CRO for various physical measurements. 4. Demonstrate knowledge of analog electrical devices, particularly operational amplifiers and their applications.
Paper-XIII (Nuclear and Particle Physics)	<ol style="list-style-type: none"> 1. Impart knowledge about basic nuclear physics properties and nuclear models for the understanding of related reaction dynamics. 2. Explain how energy and other properties of accelerated particle beams are measured.

	<ol style="list-style-type: none"> 3. Describe the properties of radiation used for detection and the parameters that affect the precision, efficiency, and sensitivity of the measurement. 4. Explain the interaction between elementary particles and their classification.
Paper-XIV (Solid State Physics)	<ol style="list-style-type: none"> 1. Explain the Crystal systems, Crystal planes and directions, and Miller indices. 2. Describe Bragg's Law and its relation to crystal structure. 3. Illustrate the Characteristic features of various types of magnetic materials. 4. Demonstrate an in-depth understanding of the band structure of solids.
Paper-XV (Atomic and Molecular Physics and Astrophysics)	<ol style="list-style-type: none"> 1. Explain the change in behaviour of atoms in an externally applied electric and magnetic field. 2. Understand the molecular spectra and find molecular properties from molecular spectra. 3. Interpret the rotational and vibrational Raman Spectra. 4. Acquire knowledge stellar evolution of a small and massive star, pulsars, neutron star and black holes.
Paper-XVI (Energy Studies and Materials Science)	<ol style="list-style-type: none"> 1. Analyse the viability of wind and alternative energy projects. 2. Explain the field applications of solar energy. 3. Describe the biogas generation and its impact on the environment. 4. Explain the phenomenon of superconductors and its various applications. 5. Apply various Physics concepts to the nano-scale and non-continuum domain.

Department of Zoology

B.Sc. (Zoology)

Program Outcomes:

On completion of this course a Graduate student should be able to:

1. Understand the evolution, history of phylum.
2. Understand about the Non-Chordate animals, external as well as internal characters of non-chordates, distinguishing characters of non-chordates, economically importance of Mollusca.
3. Cell Biology, Scope of cell biology, cell as the basic unit of life, Main distinguishing characters between plant cell and animal cell, understand the whole cell organelles with their structure and function, Understand the cell cycle and know the importance of various cells in body of organisms, Understand the various applications of cells by using cell biology like study of various types of tumors.
4. Concepts of Chordates; Understand the phylum Chordate, basic concepts about chordates, external morphology and sexual dimorphism in chordates, Study and understand the various systems, adaptation and dentition in Mammals.
5. Applied Zoology; Understand the concepts of Goat Farming and Lac culture, Understand the various Indian breeds and their distribution and characteristics of Goats, economically importance, Various concepts in Lac Cultivation, Economical importance of lac Cultivation, Introduce the term apiculture to the students, understand economically importance of Apiculture, Bee keeping equipment's and apiary management, to study and understand the various species of Bees.
6. Concepts of various internal systems like Digestive system, nervous system, functions of Gemmules and spicules, economically importance of Molluscan shells, classification of whole phyla includes in Non chordates with the help of charts/models/pictures, understand the evolutionary history of Non chordates.
7. Understand and study the various systems like Digestive systems, Understand the Classification various classes of phylum Chordate.
8. Medical Zoology; To study and understand the scope and branches of Medical Zoology, to aware the students for various parasites and diseases which spreads in human with the help of study of host-parasite relationship, to increase awareness for

the health in students, Understand the various disease-causing vectors like Mosquitoes, to create awareness about diseases like typhoid, cholera; Understand the importance of medical diagnostic and also understand the term forensic Entomology.

Program Specific Outcomes:

1. Develop Firm foundations in the fundamentals and applications of current scientific theories.
2. Ability to differentiate between various prokaryotic species.
3. Communicate the results of their work to other relevant entities.
4. Illustrate zoological science for its application in branches like medical entomology, apiculture, aquaculture and agriculture etc.
5. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology.
6. Finding employment in research and survey institutes, industry, government, school systems, instructors, as consultants.

Course Outcomes

B.Sc.-I (Zoology)	
Course	Outcomes
Paper - I (DSC-15A Animal Diversity - I)	<ol style="list-style-type: none"> 1. Demonstrate anatomical and physiological attributes of each animal group and why these have led to their success. 2. List the various animals in a given phylum. 3. State the animal classification. 4. Enlist the examples of the phylum studied. 5. Comment on the modifications of common animal forms of the groups studied.
Paper - II (Cell Biology and Evolutionary Biology)	<ol style="list-style-type: none"> 1. Differentiate prokaryotic and Eukaryotic cells. 2. Describe the structure and functions of cell organelles. 3. Explain the theories of organic evolution.

	<ol style="list-style-type: none"> 4. Describe the concept of origin of life and theories of origin of life. 5. Understanding on the process and theories in evolutionary biology.
Paper - III (Animal Diversity and Insect Vector)	<ol style="list-style-type: none"> 1. To study the morphology and various systems in rat. 2. To study the different types insects as vectors. 3. To study mosquito born diseases with respect to their caused organism. 4. To study Housefly born diseases with respect to their caused organism. 5. To study Flea born diseases with respect to their caused organism.
Paper - IV (Genetics)	<ol style="list-style-type: none"> 1. Explain Mendel's principle, its extension and chromosomal basis and determination. of gene action from genotype to phenotype and concepts of inheritance. 2. Define the terminologies in genetics. 3. Identify genetic disorders based on Karyotypes and traits. 4. Explain the concept of Mendelian genetics, gene, gene regulation and multiple alleles. 5. Discuss Linkage and crossing with their types and significance. 6. Illustrate the modified Mendelian laws of inheritance.
B.Sc.-I Practical	<ol style="list-style-type: none"> 1. Identify various animals based on morphological features. 2. Identify the blood group in human. 3. Prepare blood smear and identify the various cells. 4. Identify the cell organelles. 5. Identify the fossil types/ adaptations in animals. 6. Explain the evidences of evolution.
B.Sc.-II (Zoology)	
Paper - V (Animal Diversity - II)	<ol style="list-style-type: none"> 1. To identify the characters of Amphibia and its parental care.

	<ol style="list-style-type: none"> 2. To identify the characters of fishes and its gill structure in cartilaginous and bony fishes. 3. To describe the Phylum Mammalia and its adaptations. 4. To identify the poisonous and non-poisonous snakes. 5. To write down classification of Aves and flight adaptation in birds.
Paper - VI (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss the overall concept of cellular metabolism-Anabolic and catabolic reaction, energy production, energy release and storage etc. 2. Explain the pathways of glucose breakdown and synthesis and their regulation. 3. Describe HMP-pathways and gluconeogenesis. 4. Describe the breakdown and regulation of various types of fatty acids. 5. Describe the mechanism of enzyme action and identify the classes of enzymes and factors affecting action.
Paper - VII (Reproductive Biology)	<ol style="list-style-type: none"> 1. Describe human male and female reproductive anatomies. 2. Describe the roles of male and female reproductive hormones. 3. Discuss internal and external methods of fertilization. 4. Explain how the embryo forms from the zygote. 5. Illustrate the reproductive cycles with hormonal control. 6. Explain foetal development during the three trimesters of gestation.
Paper - VIII (Applied Zoology - I)	<ol style="list-style-type: none"> 1. General concept of parasitology. 2. Knowledge of some parasitic diseases that could be transmitted between animals and man (Zoonotic diseases). 3. List the household Pest and social insects. 4. Explain the diseases spread by vectors. 5. Explain the interrelationship of insects and human with examples.

	6. To develop the knowledge of poultry in an operational farm for more profit. management, feed requirements, etc.
B.Sc.-II (Zoology) Practical – I	<ol style="list-style-type: none"> 1. Identify animals of higher groups in Invertebrates and Vertebrates. 2. Distinguish between poisonous and non-poisonous snakes. 3. Label various parts of the animals and their modifications. 4. Explain the modifications and adaptations in animals. 5. Explain the use of tools in Pest control. 6. Describe External features and economic importance of freshwater and Marine water fishes and other aquaculture organisms. 7. Develop skill in simple biochemical laboratory procedures.
B.Sc.-II (Zoology) Practical – II	<ol style="list-style-type: none"> 1. Identify the histological slides of reproductive organ/tissues. 2. Explain the various types of placenta in mammals. 3. Comment on merits and demerits of contraceptive devices/methods. 4. Perform vaginal smear technique to identify the phases of estrous cycle. 5. Distinguish the male and female anatomical features of reproductive system in mammals. 6. Identify the life cycle stages of few parasites. 7. Explain the diseases spread by vectors. 8. Explain the interrelationship of insects and human with examples. 9. Explain the effects of household insects on human health.
Paper - IX (Comparative Anatomy of Vertebrates)	<ol style="list-style-type: none"> 1. Students will have understood the structures of different systems such as, integumentary, skeletal, digestive, respiratory, circulatory, urinogenital, nervous and sensory organs in comparative way among the vertebrate groups. 2. Understand comparative account of the different vertebrate systems.

	<ol style="list-style-type: none"> 3. Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates. 4. Demonstrate an understanding of the evolutionary history of vertebrates and the evolutionary relationships among different groups of vertebrates.
Paper - X (Molecular Cell Biology and Animal Biotechnology)	<ol style="list-style-type: none"> 1. The student will be able to use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, transformation, restriction digestion etc. 2. Explain the concepts of DNA replication, DNA damage and repair, and gene expression in eukaryotic and prokaryotic organisms. 3. Understanding the regulation of gene expression in prokaryotes using operon concept and Eukaryotes. 4. Learn the methods of DNA sequencing and various tools and techniques of molecular biology.
Paper - XI (Biotechniques and Biostatistics)	<ol style="list-style-type: none"> 1. Students will understand basic principles and techniques in genetic manipulation and genetic engineering. 2. Students will understand gene transfer technologies for animals and animal cell lines. 3. Understand and apply statistical methods for the design of biomedical research and analysis of biomedical research data. 4. Solve the statistical problems based on Central Tendency, Dispersion, Correlation and regression. 5. Explain the concept and types of central tendency, correlation and regression with their properties.
Paper - XII (Aquatic Biology)	<ol style="list-style-type: none"> 1. Gain theoretical knowledge in hydrobiology, abiotic factors and aquatic organisms. 2. Know how aquatic organisms adapted during the course of evolution.

	<ol style="list-style-type: none"> 3. Comprehend the importance of estuaries, marshes, wetlands and coral reef community. 4. Discuss the aquatic adaptations of common freshwater forms. 5. Illustrate the physicochemical properties of water. 6. Explain the types of aquatic habitats, Discuss the aquatic adaptations of common freshwater forms.
Paper - XIII (Developmental Biology of Vertebrates)	<ol style="list-style-type: none"> 1. Students will learn the different aspects of early, late and post embryonic developments. 2. They will have the knowledge about implications of developmental biology in various fields, such as in teratogenesis, stem cell biology, in vitro fertilization, cryopreservation, cord blood transfusion etc. 3. Students will have knowledge about early development in chick and frog embryology. 4. Understand the development of multicellular organisms from a single cell zygote. 5. They will learn interesting and unique post embryonic development that happens in other animals.
Paper - XIV (Immunology)	<p>Overall Immune system of human beings, cells and organs involved in immunity.</p> <p>Understanding of types of immunity.</p> <p>Interactions of antigens, antibodies, complements and other immune components</p> <p>Understanding of immune mechanisms in disease control, vaccination, process of immune interactions.</p> <p>Students are able to understand basic concepts of Immunology, properties of immune system and types of immunity.</p>
Paper - XV (Applied Zoology - II)	<ol style="list-style-type: none"> 1. Understands concepts of fisheries, fishing tools and site selection. 2. Aqua culture systems, induced breeding techniques, post harvesting techniques.

	<ol style="list-style-type: none"> 3. Explain the basic concepts of apiculture like systematics, colony organization, polymorphism, morphology and foraging. 4. Explain the importance of institutions pertinent to Pearl culture. Discuss the setup of Pearl business. 5. Understands concepts of genetic improvement in aquaculture industry.
Paper - XVI (Insect Vectors and Histology)	<ol style="list-style-type: none"> 1. Describe the basic biology (life cycle, reproduction, host-seeking behavior) of major insect vectors and pests. 2. Explain the transmission cycles of pathogens vectored by major arthropod vectors including mosquitoes and Housefly. 3. To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination. 4. Illustrate the histology of endocrine glands.
B.Sc.-III (Zoology) Practical – I (Comparative anatomy and developmental biology of vertebrates)	<ol style="list-style-type: none"> 1. Explain the anatomical features of brain, heart and skin of vertebrates. 2. Demonstrate the importance of modifications in animal for their survival. 3. Prepare chick embryo mounting. 4. Prepare permanent slides of chick embryo whole mounts. 5. Sketch, label and explain the whole mounts and transverse sections of chick embryo. 6. To study of histological structure of placenta.
Practical – II (Applied Zoology – II and Immunology)	<ol style="list-style-type: none"> 1. Explain the basic concepts of apiculture like systematics, colony organization, polymorphism and morphology. 2. Discuss the setup of beekeeping business. 3. Identify Indian Pearl oysters. 4. Identify the pattern of identity of antigen- antibody reaction. 5. Identify the microscopic structure of the lymphoid organs.

	<ol style="list-style-type: none"> 6. Demonstrate immune electrophoresis technique. 7. Detect the human blood groups by antigen -antibody reactions. 8. Prepare the human blood smear to identify various blood cells.
<p>Practical – III (Molecular biology, Animal biotechnology, Biostatistics & Biotechniques)</p>	<ol style="list-style-type: none"> 1. To study microtomes for wax material. 2. To study of permanent histological slides, HE technique. 3. To study the different types of histochemical technique. 4. Explain the principle and applications of paper chromatographic technique with example. 5. Construct frequency distribution chart. 6. Understand the applications of statistical tools like mean, mode, median, mean deviation, standard deviations. 7. Solve the statistical problems based on Central Tendency, Dispersion, Correlation and regression.
<p>Practical – IV (Aquatic biology, insect vector & diseases)</p>	<ol style="list-style-type: none"> 1. Determination of pH, acidity-alkalinity of water sample. Determination of dissolved oxygen of water sample. Total hardness of water sample. 2. To study instruments used in limnology and their significance. 3. Description of head- origin, structure and modification; types of mouthparts and antennae. 4. To study anatomy and histology of endocrine gland.

Department of Botany

Program Outcomes:

1. To increase knowledge of basic natural sciences: Basic science knowledge is important for any further study and research. Students are known about different types of lower plants such as Algae, Fungi, Bryophyte and Pteridophytes that indicates the evolution in plants. Students will be able to apply the scientific method to questions in biology by formulating testable hypotheses, gathering data that address this hypothesis, and analyzing those data to assess the degree to which their scientific work supports their hypotheses.
2. To aware about scientific knowledge: Students will be able to apply the scientific method to questions in biology by formulating testable hypotheses, gathering data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses. Experiments are based on scientific techniques. Industrial product production requires basic skills and knowledge which is useful for welfare of society and career of Students.
3. To study modern technique: This is an era of Biotechnology, in which different microbial origin biotechnological product used daily for normal survival of human beings. Cell biology and genetics, provide knowledge about tools & technique of recombinant DNA technology plant tissue culture and their importance and applied in different scientific practices.
4. Basic sciences and advanced biotechnological techniques: In Food Industries, Pharmaceutical Industries, Wine Industries, Fiber Industry, Fodder Industry, Leather Industry, Agriculture Industry, Plant Tissue Culture Industry, Mushroom Industry, Biofuel Industry, Biopesticide Industry, Biofertilizer Industry, Vermi culture Industry, Fruit Processing Industry, Horticulture Industry etc. mainly based on biotechnological techniques.
5. Practical skills: Students getting idea about how to perform the experiments of different Botany subject. He learns many things like imagination, innovation, procedure, applications, interpretation of results, plant part sectioning, staining and many other laboratory techniques. Student easily identification of plant, classification, uses of plants. Student learns many physiological, pathological, genetical, ecological phenomenon.

6. **Critical thinking:** Curriculum is modified for the betterment of the students; enhance the ability and thinking power. **Environment and sustainability:** Healthy environment is necessary for normal and healthy life. Due to industrialization and automotive vehicles environment get imbalanced. Today's environment is polluted by different mechanisms. Conservation practices are need to sustainable development.
7. **Enhance life skills:** By learning Science, increase in reading, writing, thinking ability and planning of work Increases our knowledge, curiosity by the use of internet and other resources.
8. **Processing goods according to need:** Know Industrial expectations, need of the Society; one can produce the product of best quality. The students are making aware about use of plants in the various Industries and their products. Students Motivated for the entrepreneurship.
9. **Successful career in Botany:** Botany is a fundamental basic natural science. By learning and applying basic techniques to start up a business. In other fields like Forestry, Plant Nursery, Plant Tissue Culture, Plant Research Institutes. Also good career is available in Agriculture sector, different government and non-government fields.
10. **Effective communication:** Field visits and study tours leads to improve our Communication skills in English language. So we can able to write effectively reports, presentations and explanation. Individual work is effectively done in a team and as a member. By this students communication skill enhanced.
11. **To help to farmers:** Agriculture is a backbone of our country. Botany learners can help the farmers in response of Diseases Control, Plant Yield, Biopesticide, Hybrid Seed Production, Use of Biofertilizers etc.
12. **Research:** Skillful experimental study is useful for sustainable development, conservation of environment, reduce pollution, Agricultural problems and many burning issues related to Agriculture can be solved by the research activities.
13. **Socio economical challenges:** Increasing population and unemployment is the main barrier of development of India. To establish small scale Industries like Food Industries, Pharmaceutical Industry, Wine Industry, Fiber Industry, Fodder Industry, Leather Industry, Agriculture Industry, Plant Tissue Culture Industry, Mushroom Industry, Biofuel Industry, Biopesticide Industry, Biofertilizer Industry, Vermi culture Industry,

Fruit Processing Industry, Horticulture Industries are economically empowering the unemployed youth.

Program Specific Outcomes

Critically evaluation of ideas and arguments by collection relevant information about the plants, so as recognize the position of plant in the broad classification and phylogenetic level. Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise in the field of Plant Identification.

Accurately interpretation of collected information and use taxonomical information to evaluate and formulate a position of plant in taxonomy.

Students will be able to apply the scientific method to questions in botany by formulating testable hypotheses, collecting data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses.

Students will be able to present scientific hypotheses and data both orally and in writing in the formats that are used by practicing scientists.

PSO6. Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.

Students will be able to apply fundamental mathematical tools (statistics, calculus) and physical principles (physics, chemistry) to the analysis of relevant biological situations.

Students will be able to identify the major groups of organisms with an emphasis on plants and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics of plants, algae, and fungi that differentiate them from each other and from other forms of life.

Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth.

They will be able to use specific examples to explicate how descent with modification has shaped plant morphology, physiology, and life history.

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

Students will be able to explain the ecological interconnectedness of life on earth by tracing energy and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems. Students will be able to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization within biology.

Course Outcomes

Course	Outcomes
B.Sc.-I (Botany)	
Paper-I (Biodiversity of Microbes, Algae, and Fungi)	<ol style="list-style-type: none"> 1. The students will develop understanding about the diversity, identification, classification and economic importance of Viruses. 2. The students will develop understanding about the diversity, identification, classification and economic importance of Bacteria 3. The students will develop understanding about the diversity, identification, classification and economic importance of Algae. 4. The students will develop understanding about the diversity, identification, classification and economic importance of Fungi.
Paper-II (Biodiversity of Archaeogoniate)	<ol style="list-style-type: none"> 1. This paper deals with diversity of Bryophytes as well as study of Pteridophytes and Gymnosperms. 2. Study of their Characters and Structure. Discussion of their Economic importance.
Paper – III (Plant Ecology)	<ol style="list-style-type: none"> 1. Know the scope and importance of the ecology, to Provide knowledge about environmental factors and natural resources and their importance in sustainable development. 2. Understand plant communities and ecological adaptations in plants 3. Learn about loss and conservation of biodiversity,

	4. Study of Phytogeographical regions in India.
Paper -IV (Plant Taxonomy)	<ol style="list-style-type: none"> 1. Understand the diversity of angiosperms. 2. Understand classification, taxonomic literature, resources of data for Systematics, Binomial nomenclature. 3. The comparative account among the families of angiosperms.
B.Sc.-I Botany Practical Paper (Based on Paper I, II, III and IV)	<ol style="list-style-type: none"> 1. Students understand practically by handling of plant materials, equipment's and apparatus 2. Students learn the Vegetative and Morphological characters of Plants. 3. Study of diversity of Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms. 4. They learn the forms of Bacteria 5. Students learn the different ecological adaptations and ecological instruments. 6. They know the Phytogeographical regions of India 7. Students understand the diagnostic characters of some Angiospermic plant families such as Liliaceae, Caesalpiniaceae, Solanaceae, and Nyctaginaceae
B.Sc.-II (Botany)	
Paper V (Embryology of Angiosperms)	<ol style="list-style-type: none"> 1. Students understand the scope & importance of Plant Embryology. 2. Understand structure and development in microsporangium and Megasporangium. 3. Understand microsporogenesis and Megasporogenesis. 4. Understand male and female gametophytes and Know fertilization, endosperm types and embryogeny.
Paper VI (Plant Physiology)	<ol style="list-style-type: none"> 1. Know importance and scope of Plant Physiology, Plant water relation, absorption of water, ascent of sap, Transpiration phenomenon etc. 2. Plant growth and plant growth regulators 3. Physiology of flowering etc

<p>Paper VII Plant Anatomy</p>	<ol style="list-style-type: none"> 1. Students understand the scope & importance of Plant Anatomy and Embryology. 2. Know various tissue systems. 3. Understand the normal and anomalous secondary growth in plants and their causes (Annona, Moringa Bignonia, and Dracaena stem) 4. Performs the techniques in Plant anatomy.
<p>Paper VIII (Plant Metabolism)</p>	<ol style="list-style-type: none"> 1. Know scope and importance of plant metabolism. 2. Understand the process of enzyme activities and its properties. 3. Understand the process of nitrogen metabolism in plants. 4. Understand the respiration in higher plants with particular emphasis on Aerobic and Anaerobic Respiration. 5. To understand the Seed Dormancy and Seed Germination in Plants.
<p>B.Sc.-II (Practical Paper-I)</p>	<ol style="list-style-type: none"> 1. Learn the different Physiological experiment such as Oxygen evolving during Photosynthesis, Effect of light intensity on Photosynthesis 2. To learn the different techniques such as Chromatography, Colorimeter 3. To observe different embryological peculiarities such as Endosperm, Types of Ovules and Microsporangium structures.
<p>B.Sc.-II (Practical Paper-II)</p>	<p>Students understand practically</p> <ol style="list-style-type: none"> 1. Double staining technique 2. Maceration technique 3. Know the Biochemical Experiments such as activity of Catalase enzyme, Malate Dehydrogenase enzyme and TLC of Amino acids. 4. To observe the different anatomical peculiarities.
<p>B.Sc.-III (Botany)</p>	

<p>Paper IX (Genetics and Plant Breeding)</p>	<ol style="list-style-type: none"> 1. Understand the Science of Heredity, Mendelism, laws of heredity 2. Interaction of gene 3. Study of multiple alleles, linkage and crossing over 4. Cytoplasmic inheritance 5. Sex linked inheritance 6. Euploidy, aneuploidy and chromosomal aberrations. 7. Realize the role of genes in evolution of species and theories. 8. Know the population genetics. 9. Understand the science of plant breeding. 10. New varieties must be developed to show resistance to change in climatic conditions 11. To study the different techniques of production of new superior crop varieties.
<p>Paper X (Microbiology, Plant Pathology And Mushroom Culture Technology)</p>	<ol style="list-style-type: none"> 1. The students will develop understanding about the diversity, identification, classification and economic importance of different microbes such as viruses, bacteria etc. 2. Understand the scope and importance of Plant Pathology. To give knowledge about plant disease, plant growth, plant metabolism and structure between different groups of plant. 3. Mechanism of disease development and defense mechanism 4. Know the diseases caused by fungal, bacterial, mycoplasma, nematodal and viral pathogens 5. Different control measures of plant diseases 6. Understand the mushroom cultivation techniques.
<p>Paper XI (Cytology and Research Techniques in Biology)</p>	<p>Students Gain knowledge about Cell Science and Cell biology gives knowledge about cell organelles, importance and their function.</p> <ol style="list-style-type: none"> 1. Prokaryotic and eukaryotic cell 2. Understand component of cell is cell wall, Plasma Membrane, organelles and Cytoplasmic matrix.

	<p>3. Cell organelles w. r. t. ultra-structure, chemical composition and functions</p> <ol style="list-style-type: none"> 1. Endoplasmic reticulum 2. Golgi Complex 3. Lysosomes 4. Mitochondrion 5. Plastids 6. Ribosomes 7. Micro bodies <p>4. Understand Research Techniques such as Colorimetry, Micrometry, Spectrophotometry, Thin Layer Chromatography, Microscopy etc.</p>
Paper XII (Horticulture and Gardening)	<ol style="list-style-type: none"> 1. To understand scope, importance & disciplines of horticulture. 2. To understand different horticultural practices & methods. 3. To understand production technology, harvesting and preservation techniques of fruits, vegetables, Ornamentals, floriculture. 4. Knowledge of horticulture and floriculture is useful for development of small-scale industries for the youth.
Paper XIII (Plant Biochemistry And Molecular Biology)	<ol style="list-style-type: none"> 1. Students can Understand the current status of Biochemistry. 2. Understand the importance of Bio-molecules 3. Recognize the impact of Biochemistry on socioeconomic aspects of life and Industrial application of Biochemistry 4. Learn the scope and importance of molecular biology. 5. Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material. (Watson & Crick Model) 6. Understand the process of DNA replication, DNA damage synthesis of proteins.

	<ol style="list-style-type: none"> 7. Know the concept of gene organization, Transcription, Translation and role of genetic code in polypeptide formation. 8. Gene action and regulation in governing specific functioning and characters
<p>Paper XIV (Bioinformatics, Biostatistics and Economic Botany)</p>	<ol style="list-style-type: none"> 1. Students can Understand the concept of Bioinformatics and different databases and retrieval tools 2. Understand the techniques of statistics to biological data 3. Collection, Sampling, representation of data and its advantages 4. Measures the mean, mode, median, dispersion methods, correlation and regression of biological data. 5. Probabilities and its theories. 6. Determine test of significance. 7. Understand the scientific name, part used of some economically important plants.
<p>Paper XV (Plant Biotechnology and Paleobotany)</p>	<ol style="list-style-type: none"> 1. Understand the biotechnology scope, significance, to learn advanced techniques and achievement. 2. Fundamentals of totipotency in plant tissue culture techniques. 3. Know the transgenic technology for the improvement of quality and quantity of plant and there by product. 4. Understand the advantages of in vitro propagation in various areas. 5. Realize the application and importance of plant tissue culture and transgenic plants. 6. Known the working of NCBI and data retrieval tools. Know the scope of Paleobotany, types of fossils and geological time scale 7. Understand the various fossil genera representing 8. different fossil groups.

<p>Paper XVI (Biofertilizers, Herbal Drug Technology)</p>	<ol style="list-style-type: none"> 1. Study of Organic Biofertilizers such as Green Manures, Rhizobium, Trichoderma etc 2. Learn the different herbal drugs and their uses. 3. Learn the Adulterants used in herbal drugs
<p>B.Sc.-III (Practical paper I)</p>	<p>Students understand practicals by handling and sectioning plant materials.</p> <ol style="list-style-type: none"> 1. Preparation of different culture media such as PDA and M.S. 2. Learn the tissue culture techniques. 3. Learn the plant diseases and their symptoms 4. Isolation and Quantification of DNA molecule. 5. Isolation of Protoplast. 6. Learn the Steps involved in genetic engineering. 7. Learn the laboratory techniques of preparation of MS medium 8. Learn the different types and forms of Fossils such as Lyginopteris, Enigmocarpon
<p>B.Sc.-III (Practical paper II)</p>	<p>Students understand practicals by handling and sectioning plant materials.</p> <ol style="list-style-type: none"> 1. Genetic examples on Linkage, Crossing Over and Polygene inheritance 2. The Mitosis and Meiosis techniques. 3. Learn the karyotype analysis 4. To know the emasculation and Breeding technique in various families such as Malvaceae, Poaceae, Fabaceae 5. Study of the different economically important plants such as Gram, Soybean, Ground Nut, Cotton, Black Pepper etc. 6. Learn the methods of Central tendency measurement and Graphical data presentation.
<p>B.Sc.-III (Practical paper III)</p>	<p>Students understand practicals by handling and sectioning plant materials.</p> <ol style="list-style-type: none"> 1. They know the structure of Prokaryotic and Eukaryotic cells.

	<ol style="list-style-type: none"> 2. Learn the different lab techniques such as Photomicrography, Micrometry, Spectrophotometry etc. 3. Students learn the use of biofertilizers and organic manure. 4. Learn the preparation techniques of herbal products. 5. Students come to know the different techniques to identify drug adulteration. 6. Know the techniques of Phytochemical analysis of Primary and Secondary Metabolites.
<p>B.Sc.-III (Practical paper IV)</p>	<ol style="list-style-type: none"> 1. Students come to know the different horticultural techniques such as Budding, Layering, Grafting, Potting etc. 2. Student understands the procedure of making Bonsai, Bottle Garden, floral Rangoli and floral pot 3. They can learn the use of different garden implements such as Cutter, Scissors, Sprayer and Spade. 4. Students learn the plantation techniques of some economically important Ornamental plants such as Rose, Gerbera, Marigold 5. They know the technique of Identification and Preparation of Hedge, Edge and Indoor Plants. 6. Learn the Qualitative analysis techniques of Sugar, Starch, Proteins and Lipids. 7. Student Learn the TLC technique.

Department of Computer Science

B.Sc. (Computer Science)

Program Outcomes

1. Communicate computer science concepts, designs, and solutions effectively and professionally
2. Apply knowledge of computing to produce effective designs and solutions for specific problems
3. Identify, analyse, and synthesize scholarly literature relating to the field of computer science.
4. Use software development tools, software systems, and modern computing platforms.

Program Specific Outcomes

1. Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems.
2. Ability to understand the structure and development methodologies of software systems. Possess professional skills and knowledge of software design process.
3. Familiarity and practical competence with a broad range of programming language and open-source platforms.
4. Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

Course Outcomes

Course	Outcomes
B.Sc.-I (Computer Science)	
Paper I (Problem Solving Using Computers)	1. To understand basic concept of Computer Program 2. To Learn how to developing Programming Skills. 3. To learn and develop Basic Programs in C Language.
Paper II	1. To understand concept of Database management. 2.To Learn Relationships and ER Modelling

(Database Management System)	3. To learn and develop SQL Queries
Paper III (Programming Skills Using 'C')	1. To understand Advance concept of C Program 2. To Learn how to developing File Handling Skill in C Language 3. To learn the Mechanism of C Structures.
Paper IV (Relational Database Management System)	1. To understand Advance concept of Database management. 2.To Learn Relational Data Model 3. To learn and develop Database Designs
B.Sc.-II (Computer Science)	
Paper V (PHP and MySQL)	1. To understand basic concept of PHP. 2. To Learn how to developing applications in PHP using MySQL. 3. To learn and develop various PHP technology applications that definitely meets the current industry needs.
Paper VI (Object Oriented Programming Using C++)	1. To understand how C++ improves C with object oriented features 2. To learn syntax and semantics of C++ programming language 3. To learn how to write inline functions for efficiency and performance. 4. To learn how to overload functions and operators in C++. 5. To learn how to design C++ classes for code reuse. 6. To learn how inheritance promote code reuse in C++. 7. To learn how inheritance and virtual functions implement dynamic binding with polymorphism.
Paper VII (Cyber Security Essentials-I)	1. Understand concept of information security management. 2. Learn different access controls methods. 3. Understand wireless network security. 4. Learn cyber security laws and importance of security audit.
Paper VIII (Data Structure Using C++)	1. Understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures. 2. Ability to choose appropriate data structures to represent data items in real world problems.

	<ol style="list-style-type: none"> 3. Ability to analyze the time and space complexities of algorithms. 4. Ability to design programs using a variety of data structures such as array, stacks, queues, linked list 5. Able to analyze and implement various kinds of searching and sorting techniques.
B.Sc.-III (Computer Science)	
Paper IX (Core Java)	<ol style="list-style-type: none"> 1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets 4. Understand concept of Multiprogramming and Exception Handling
Paper X (C# Programming)	<ol style="list-style-type: none"> 1. This course will cover the practical aspects C#.NET framework. 2. The goal of this course is to introduce the students to the basics of OOPs and windows application program
Paper XI (LINUX Part I)	<ol style="list-style-type: none"> 1. Upon completion of this course, students should have a good working knowledge of Linux. 2. Allowing them to easily use any Linux distribution. 3. This course shall help student to learn advanced subjects in computer science practically.
Paper XII (Python Part I)	<ol style="list-style-type: none"> 1. To understand why Python is a useful scripting language for developers 2. To learn how to write loops and decision statements in Python 3. To learn how to use lists, tuples, and dictionaries in Python programs
Paper XIII (Advanced Java)	<ol style="list-style-type: none"> 1. The student will be able to develop distributed business applications, develop web pages Using advanced server-side programming through servlets and Java server pages. 2. Demonstrate approaches for performance and effective coding 3. To learn database programming using Java 4. To study web development concept using Servlet and JSP

<p>Paper XIV (ASP .NET)</p>	<ol style="list-style-type: none"> 1. This course will cover the practical aspects of multi-tier web based application development using the .NET framework. 2. The goal of this course is to introduce the students to the basics of distributed Web application development.
<p>Paper XV (Linux Part II)</p>	<ol style="list-style-type: none"> 1. This course covers design principles of Linux Operating System Memory management. 2. Structure of File system and virtual file system is also elaborated. 3. This course contains details of shell programming and introduces System administration
<p>Paper XVI (Python Part II)</p>	<ol style="list-style-type: none"> 1. To learn how to write functions and pass arguments in Python 2. To learn how to build and package Python modules for reusability 3. To learn how to use exception handling in Python applications for error handling

Department of Microbiology

B.Sc. (Microbiology)

Program Outcomes

1. To make the students knowledgeable with respect to the subject and its practicable applicability.
2. To promote understanding of basic and advanced concepts in Microbiology.
3. To expose the students to various emerging areas of Microbiology.
4. To prepare students for further studies, helping in their bright career in the subject.
5. To expose the students to different processes used in industries and in research field.
6. To develop their ability to apply the knowledge of Microbiology in day to day life.
7. To prepare the students to accept the challenges in life sciences.
8. To develop skills required in various industries, research labs and in the field of human health.
9. To acquire knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.
10. To demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices.
11. To become competent enough to use microbiology knowledge and skills to analyze problems involving microbes, articulate these with peers/ team members, and undertake remedial measures/studies etc.
12. To develop a broader perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.

Program specific Outcome

1. To understand of basic and advanced concepts in Microbiology.
2. To acquire knowledge of the microbiology as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.

3. To understand the working principles and applications various equipments in the microbiology laboratory.
4. To perform Ame's test for determining carcinogenicity.
5. To study microbial Biochemistry, Genetics, Cytology, Virology, Immunology, Applied microbiology and Industrial microbiology.
6. To study and practice various microbiological techniques such as staining, sterilization, preparation and use of various culture media, identification of pathogens from clinical samples, serological and other diagnostic tests.
7. To study the process of DNA isolation and separation by electrophoresis.
8. To study isolation of various mutants with various techniques.
9. To isolate and identify agriculturally significant organisms such as plant pathogens and biofertilizers.
10. To perform the assay of enzymes, antibiotics and growth factors.
11. To determine physical and chemical composition of soil.
12. To determine strength of sewage.
13. To study fermentative production and estimation of citric acid, amylase and wine.
14. To determine minimum inhibitory concentration (MIC) of pathogenic organisms and determining antibiotic sensitivity.
15. To study hematology and urine analysis.
16. To isolate lactic acid bacteria and study milk microbiology.

Course	Outcomes
B.Sc. I (Microbiology)	
Paper I (DSC A 25) A introduction to Microbiology	<ol style="list-style-type: none"> 1. To develop a good knowledge of the development of the discipline of Microbiology and the contributions made by prominent scientists in this field. 2. To develop a very good understanding of the characteristics of different types of microorganisms, methods to organize/classify these into and basic tools to study these in the laboratory.

	<ol style="list-style-type: none"> 3. To explain the useful and harmful activities of the microorganisms and scope of different branches of Microbiology. 4. To describe characteristics of bacterial cells, cell organelles and various appendages like capsules, flagella or Pilli.
<p>Paper II (DSC A 26) Basic techniques in Microbiology</p>	<ol style="list-style-type: none"> 1. To study the staining techniques for the observation of bacteria and bacterial cell components 2. To study the working principle, handling and use of microscopes for the study of microorganisms 3. To understand the principles of sterilization and disinfection of culture media, glassware and plastic ware and other objects to be used for microbiological work.
<p>Paper III (DSC B 25) Bacteriology</p>	<ol style="list-style-type: none"> 1. To describe the nutritional requirements of bacteria and other microbes that grow under extreme environments. 2. To understand the basic laboratory experiments to isolate, cultivate and differentiate bacteria 3. To study the preservation of bacteria in the laboratory.
<p>Paper IV (DSC B 26) Microbial Biochemistry</p>	<ol style="list-style-type: none"> 1. To develop a very good understanding of various biomolecules which are required for development and functioning of a bacterial cell. 2. To develop the knowledge of how the carbohydrates make the structural and functional components such as energy generation and as storage food molecules for the bacterial cells 3. To make well conversant about multifarious structures and functions of proteins, enzymes, lipids and nucleic acids. 4. To differentiate the concepts of aerobic and anaerobic respiration and how these are manifested in the form of different metabolic pathways in microorganisms.
<p>Practical Course Paper I and II</p>	<ol style="list-style-type: none"> 1. To understand the basic techniques in Microbiology laboratory 2. To study the working principle, handling and use of compound microscope for the study of microorganisms

<p>Introduction to Microbiology and Basic Techniques in Microbiology Learning Objectives</p>	<ol style="list-style-type: none"> 3. To study the simple and special staining techniques for the observation of bacteria and bacterial cell components 4. To understand the working principles and applications various equipment's in Microbiology laboratory 5. To study the preparation, sterilization and use of various culture media.
<p>B.Sc. II (Microbiology)</p>	
<p>Paper V (DSC C 25) Microbial Physiology and metabolism</p>	<ol style="list-style-type: none"> 1. Learn basics about Growth phases, measurement of growth, continuous growth, synchronous growth and diauxic growth. 2. Study the effect of environmental factors on microbial growth. 3. Understanding of basic concept temperature, pH, Osmotic pressure, Heavy metals, Radiations. 4. Learning of Transport across cell membrane. 5. Study of diffusion, active transport and group translocation. 6. Study of microbial metabolism. 7. Understanding of catabolism of glucose. 8. Detailed study of EMP, HMP, ED and TCA cycle. 9. Study the concept of fermentation- Homolactic and Heterolactic fermentation. 10. Learning about bacterial electron Transport chain and concept of components, flow of electrons and mechanism of ATP generation –chemiosmotic hypothesis.
<p>Paper VI (DSC C 26) Applied Microbiology</p>	<ol style="list-style-type: none"> 1. Learning details about Air microbiology. 2. Understanding about sources of microorganism in air- Definitions of Infectious dust, Droplets and Droplet nuclei, sampling methods for microbial examination of air. 3. Study the basics and details of water microbiology. 4. Learning the basic and detail concepts of Milk microbiology. 5. Understanding of Basic concept of Fermentation 6. Learning the basics of Primary and secondary Screening. 7. Learning about various fermentation media.

<p>Paper VII (DSC D 25)</p> <p>Microbial genetics and molecular Biology</p>	<ol style="list-style-type: none"> 1. Study details of Microbial Genetics 2. Learning details about mutation 3. Understanding the basic concepts of mutation, Spontaneous mutations, induced mutations and mutant's that distort DNA. 4. Understanding about gene transfer in bacteria. 5. Detailed understanding of fate of exogenote in recipient cell and modes of gene transport. 6. Understanding the of DNA repair and concept of photo reactivation, dark repair mechanism. 7. Detailed learning about Lac operon and its structures and working. 8. Learning about various fermentation media.
<p>Paper VIII (DSC D 26)</p> <p>Basics In Medical Microbiology and Immunology</p>	<ol style="list-style-type: none"> 1. Study basics of medical microbiology 2. Learning of virulence factors, types of diseases, types of infections, modes of transmission of diseases. 3. Understanding about general principles of preservation and control of microbial diseases. 4. Learning about basic concepts of normal flora of human body and its significance. 5. Understanding about details of immunology. 6. Learning about nonspecific defense mechanism of the vertebrate body, antigen, antibody. 7. Understanding about theories of antibody production, immune response mechanism of antigen and types of antigen-antibody reaction.
<p>Practical Course III and IV</p>	<ol style="list-style-type: none"> 1. To study the determination of lag phase. 2. To learn about various staining techniques and its principles procedures, and applications. 3. To learn the basics of preparation different types of media. 4. To understand the isolation and identification of pathogen. 5. To learn about primary screening techniques. 6. To study the isolation of lac negative mutant.

	<ol style="list-style-type: none"> 7. To develop knowledge about serological test and different types of blood groups. 8. To study the basics of different types of biochemical test. 9. To understand the effect of different environmental factors on microorganisms.
B.Sc. III (Microbiology)	
Paper XIII DSE F49: Microbial Genetics	<ol style="list-style-type: none"> 1. To understand the basic concepts of bacterial genome, organization of genome and mechanism of gene expression. 2. To study the concept of mutation, its type and detection mutants. 3. To study genetic complementation- Cis-trans test. 4. To understand the techniques in molecular biology such as – DNA sequencing, DNA finger printing and PCR. 5. To study Genetic Engineering, its tools, techniques and application.
Paper XIV DSE F50: Microbial Biochemistry	<ol style="list-style-type: none"> 1. To study enzymes with its properties, structure, specificity and action of enzyme. 2. To study purification of enzyme. 3. To understand assay of enzyme and immobilization of enzyme. 4. To study microbial metabolism and assimilation of Carbon, Nitrogen and Sulphur. 5. To study biosynthesis of different biomolecules.
Paper XV DSE F51: Environmental Microbiology	<ol style="list-style-type: none"> 1. To know the characteristics of liquid and solid wastes. 2. To know how to treat the industrial waste generated from various industries. 3. To know the biological safety. 4. To study Bioremediation and its application in various fields. 5. To understand various processes of Bioleaching.
Practical – I (Virology and Microbial Genetics)	<ol style="list-style-type: none"> 1. To study isolation of coliphage from sewage sample and observe the plaques. 2. To understand effect of U. V. light on bacteria and plot the graph with respect to bacterial growth. 3. To study the process of DNA isolation and observe DNA fibres.

	<ol style="list-style-type: none"> 4. To understand electrophoretic separation of DNA. 5. To study isolation of streptomycin resistant mutant with gradient plate technique. 6. To perform Ame's test for determining carcinogenicity.
<p>Practical – II (Food and Industrial Microbiology)</p>	<ol style="list-style-type: none"> 1. To study the assay of amylase by DNSA method. 2. To study assay of Vitamin B12 /Penicillin and observe zone of stimulation surrounding the solution. 3. To understand the basic steps in wine production and examine the pH, color and alcohol content. 4. To study isolation of lactic acid bacteria from fermented food. 5. To study amylase fermentation. 6. To study fermentative production and estimation of citric acid
<p>Practical – III (Agricultural and Environmental Microbiology)</p>	<ol style="list-style-type: none"> 1. To study isolation of <i>Azotobacter</i> / <i>Rhizobium</i> / <i>Xanthomonas</i> /PSB from soil/samples and its importance in soil. 2. To determine the Biological Oxygen Demand of industrial wastes and understand its importance. 3. To estimate Calcium and Magnesium from soil and understand its importance in soil. 4. To determine Chemical Oxygen Demand of industrial wastes and understand its importance.
<p>Practical – IV (Medical Microbiology)</p>	<ol style="list-style-type: none"> 1. To study human pathogenic organisms isolates from clinical sample. 2. To determine minimum inhibitory concentration (MIC) of pathogenic organisms. 3. To perform serological tests for malaria and typhoid. 4. To understand clinical significance of hematological tests such as hemoglobin, PCV, total and differential count of blood cells. 5. To perform physical, chemical and microbiological analysis of Urine.

Department of Mathematics

Program Specific Outcomes

1. Students gain a sound knowledge in foundational subjects related to pure and applied mathematics.
2. Acquire various skills related to computational techniques and related software's.
3. Being able to analyze the problem and propose a solution method and finalize the solution and the process of solution in consultation with the peer group and faculty.
4. Develop the solution methodology and necessary software if required and prepare the report.

Course	Outcomes
B.Sc. I (Mathematics)	
Theory paper: 5A Differential Calculus	<ol style="list-style-type: none"> 1. Students acquaint themselves with the idea of complex numbers. 2. Understand Meaning and significance of Hyperbolic functions and their relation with circular functions 3. Get to know the significance of Leibnitz's theorem, De Moivre's Theorem, Euler's Theorem. 4. Understand the concept of partial differentiation and learn to apply it for various problems in science and engineering.
Theory paper: 6A Calculus	<ol style="list-style-type: none"> 1. Students grasp the concept of mean value theorems and its significance. 2. Study the special case of Taylor's expansion 3. Learn the meaning and significance of Indeterminate forms and learn to apply it for various indeterminate limiting cases
Theory paper: 5B Differential Equations	<ol style="list-style-type: none"> 1. Understand the meaning, motivation and significance of differential equations. 2. Learn how to form and solve first order first degree ordinary differential equations. 3. Learn the methods of solving equations of first order and higher degree.

	4. Solving higher order ordinary linear differential equations and homogeneous linear differential equations with constant coefficients.
Theory paper: 6B Higher order Ordinary Differential Equations and Partial Differential equations.	<ol style="list-style-type: none"> 1. Study the method of solution of general second order differential equation with variable coefficients. 2. Understand the concept, formation, and method of solution of ordinary simultaneous equations. 3. Study the motivation and concept of partial differential equations. Learn methods of solving Lagrange's equation and Charpit's method.
Practical: CML-I (Computational Mathematics Laboratory – I)	<ol style="list-style-type: none"> 1. Students get acquainted with the field of numerical computational methods and various areas covered within the subject of numerical computations with a bird's eye view of applications. 2. Learn to use electronic calculators and computers for simple calculations of algebraic and transcendental functions that are frequently required in science and technology. 3. Teacher gets to know student specific queries and helps students solve their individual problems with personal attention.
B.Sc. II (Mathematics)	
Theory Paper: 5C Real Analysis – I	<ol style="list-style-type: none"> 1. Learning basic concepts of set theory. 2. Study the principle of mathematical induction and apply it for proving results. 3. Acquire the concept of countability and determine countable and uncountable sets.
Theory Paper : 6C Algebra – I	<ol style="list-style-type: none"> 1. Understanding of the concept of Hermitian and Skew-Hermitian Matrix and their properties. 2. Grasp the concept of normal form and convert given matrix to Normal form. 3. Learn the concept of Eigen value and Eigen vector . To find Eigen values and Eigen vectors.

Theory Paper: 5D Real Analysis – II	<ol style="list-style-type: none"> 1. Study the concept of monotonic and bounded sequences. 2. Understand Epsilon-Delta concept of convergence of a sequence. 3. Study the methods of testing convergence of series.
Theory Paper : 6D Algebra – II	<ol style="list-style-type: none"> 1. Understand the concept of Cosets. 2. Learn the meaning of Normal subgroups of a group with examples. 3. Study the concept of a Permutation group with examples.
Practical : CML – II (Computational Mathematics Laboratory – II)	<ol style="list-style-type: none"> 1. Learn to solve linear systems of equations by Gauss-Elimination , Gauss-Jordan , Gauss Jacobi and Gauss-Seidel methods manually with use of electronic calculators . 2. Learn root finding methods viz. Newton-Raphson method, Bisection method. 3. Learn methods for evaluating numerical values of integrations using trapezoidal rule, simpson's 1/3 rd rule , simpson's 3/8 th rule.
Practical : CML – III (Computational Mathematics Laboratory – III)	<ol style="list-style-type: none"> 1. Learn the basic keywords of C programming language and practice them in computer lab. 2. Studying basic data types and input output methods in C and practice it in computer laboratory 3. Apply the knowledge of C programming for preparing C programs for the solution of various numerical methods learned in the paper CML-II

**Bharati Vidyapeeth's
Dr. Patangrao Kadam Mahavidyalaya, Sangli**

**Department of English
B.A. English
(2021-22)**

PROGRAM OUTCOMES:

1. Students will be able to appreciate literary and linguistics developments of different countries and different periods.
2. Students will comprehend major trends, movements, and isms and different critical and linguistics approaches.
3. Students will develop acumen to appreciate, interpret and critically evaluate prescribed text.
4. Students will be able to interpret, analyse and evaluate different varieties of written and spoken English.
5. Students will be able to analyse unseen poem and prose stylistically.
6. Students will learn different approaches to syllabus design and methods of teaching.

PROGRAM SPECIFIC OUTCOMES:

1. To understand the major and minor forms of literature.
2. To develop interest in literature and language.
3. To understand the short stories, poems, novels and dramas.
4. To know the literary theories, terms and concepts of Criticism.
5. To appreciate the literary works.
6. To understand the structure and function of grammatical units.
7. To know the use of language at semantic and syntactic levels
8. To attempt for creative writings.
9. To learn the phonological and morphological aspects of English.
10. To know different cultures of the times.
11. To know various genres in English literature like Indian English
12. To know literature, British literature and American literature.
13. To develop language learning skills like Listening, Speaking, Reading and writing.
14. To develop vocabulary and communicative skills.
15. To develop verbal and non-verbal skills of communication.
16. To able to get the jobs in industry, government, schools and offices.
17. To build up the confidence to appear for competitive examinations.

Department of English	
Course	Outcomes
BA.III (English) English Paper- I (English Communication) <p style="text-align: right;">For</p>	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently. 3. The students will be able to acquire soft skills required at workplaces and in real life. 4. The students will be able to learn group behavior and team work. 5. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. 6. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 7. The students will be able to acquire professional skills required in media writing such as writing editorials. 8. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 9. The students will be able to acquire human values and develop cultured outlook.
Paper No. VII (DSE-E11 Introduction Literary Criticism) <p style="text-align: right;">To</p>	<ol style="list-style-type: none"> 1. Students are able to understand the major trends in criticism. 2. Students are able to interpret critical concepts. 3. Students are able to study the original contributions to literary criticism. 4. Students are acquainted with literary and critical movements. 5. Students are able to understand the meaning and appreciate the poems critically.
Paper No. VIII (DSE-E12 English Poetry) <p style="text-align: right;">English</p>	<ol style="list-style-type: none"> 1. Students will be able to trace the development of the poetry in English from the days of Shakespeare to the contemporary India. 2. Students will be able to appreciate and analyse the poems properly.

	<ol style="list-style-type: none"> 3. Students will have a fairly comprehensive view of the Western and Eastern poetic tradition and they will be able to relate it to various literary movements. 4. Students will have an insight into poetry and they will be able to make a lively and interesting reading.
Paper No. IX (DSE-E13 English Drama)	<ol style="list-style-type: none"> 1. Students are able to understand different forms of drama. 2. Students are able to relate drama to their ideological or socio-political contexts. 3. Students are able to improve their creative and imaginative faculties through the reading of drama. 4. Students are able to know about various aspects of the drama.
Paper No. X (DSE-E14 English Novel)	<ol style="list-style-type: none"> 1. Students are able to understand different forms of novel. 2. Students are able to relate novels to their ideological or socio-political contexts. 3. Students are able to improve their creative and imaginative faculties through the reading of novels. 4. Students are able to know about various aspects of the novel.
Paper No. XI (DSE-E15 Language And Linguistics)	<ol style="list-style-type: none"> 1. Students know the concept of communication. 2. Students are familiar with varieties of the English language. 3. Students know different levels of study of the English language. 4. Students know basic units of grammar.
Paper No. (BSc. III) English For Communication	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently. 3. The students will be able to acquire soft skills required at workplaces and in real life.

	<ol style="list-style-type: none"> 4. The students will be able to learn group behaviour and team work. 5. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. 6. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 7. The students will be able to acquire professional skills required in media writing such as writing editorials. 8. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 9. The students will be able to acquire human values and develop cultured outlook.
<p>Paper No. BA-II(SEM-VI)(English For Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently. 3. The students will be able to acquire soft skills required at workplaces and in real life. 4. The students will be able to learn group behavior and team work. 5. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. 6. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 7. The students will be able to acquire professional skills required in media writing such as writing editorials. 8. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 9. The students will be able to acquire human values and develop cultured outlook.
<p>Paper No. XII</p>	<ol style="list-style-type: none"> 1. Students are able to understand the major trends in criticism.

<p>(DSE-E136 Introduction To Literary Criticism)</p>	<ol style="list-style-type: none"> 2. Students are able to interpret critical concepts. 3. Students are able to study the original contributions to literary criticism. 4. Students are acquainted with literary and critical movements. 5. Students are able to understand the meaning and appreciate the poems.
<p>Paper No. XIII (DSE-E137 English Poetry)</p>	<ol style="list-style-type: none"> 1. Students will be able to trace the development of Indian. 2. Students will be able to appreciate and analyze the poems properly. 3. Students will have a fairly comprehensive view of the Western and Eastern poetic tradition and they will be able to relate it to various literary movements. 4. Students will have an insight into poetry and they will be able to make a lively and interesting reading.
<p>Paper No. XIV (DSE-E138 English Drama)</p>	<ol style="list-style-type: none"> 1. Students are able to understand historical and psychological concept of the Drama. 2. Students are able to relate drama to their ideological or socio-political contexts. 3. Students are able to improve their creative and imaginative faculties through the reading of drama. 4. Students are able to know about various aspects of the drama.
<p>Paper No. XV (DSE-E139 English Novel)</p>	<ol style="list-style-type: none"> 1. Students are able to understand development of novel. 2. Students are able to understand aspect of novel. 3. Students are able to relate novels to their ideological or socio-political contexts. 4. Students are able to improve their creative and imaginative faculties through

	<p>the reading of novels.</p> <p>5. Students are able to know about various aspects of the novel.</p>
<p>Paper No. XVI (DSE-E140 Language And Linguistics)</p>	<ol style="list-style-type: none"> 1. Students know words and phrases. 2. Students know and identify elements and types of clauses. 3. Students know types of sentences. 4. Students know the different ways of structuring clauses.
<p>Paper No. (BSc. III) English For Communication</p>	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently. 3. The students will be able to acquire soft skills required at workplaces and in real life. 4. The students will be able to learn group behavior and team work. 5. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. 6. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 7. The students will be able to acquire professional skills required in media writing such as writing editorials. 8. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 9. The students will be able to acquire human values and develop cultured outlook.
<p>Paper No. (English For Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently.

	<ol style="list-style-type: none"> 3. The students will be able to acquire soft skills required at workplaces and in real life. 4. The students will be able to learn group behavior and team work. 1. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. 2. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 3. The students will be able to acquire professional skills required in media writing such as writing editorials. 4. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 5. The students will be able to acquire human values and develop cultured outlook.
<p>Paper No. III (DSC-C5 Literature and Cinema)</p>	<ol style="list-style-type: none"> 1. The students will be able to understand film and its relationship to literature. 2. The students will be able to acquire film literacy through a working knowledge of basic film terminology. 3. The students will be able to develop critical approaches to engage with film adaptations 4. The students will be able to establish a clear understanding of literature through film adaptations of literary texts. 5. The students will be able to understand the issues and practices of cinematic adaptations.
<p>Paper No. VI (DSC-C30 Partition Literature)</p>	<ol style="list-style-type: none"> 1. The students will be able to understand cause and effect of Partition event. 2. The students will be able to explain the hidden human dimensions of the partition. 3. The students will be able to understand the impact of partition on society.

<p>Paper No. (B.Com II) -(English For Business Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to describe and recommend sales products. 2. The students will be able to narrate function of the product. 3. The students will be able to learn how to use English for talking to the customers. 4. The students will be able to learn how to use English for discussing prices, discount, etc. 5. The students will be able to talk about sale services in English
<p>Paper No. BA. PART-II SEMESTER -IX (English For Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 2. The students will be able to face job interviews confidently and efficiently. 3. The students will be able to acquire soft skills required at workplaces and in real life. 4. The students will be able to learn group behaviour and team work. 5. The students will be able to learn to value and respect others' opinions and views and develop democratic attitude. <ol style="list-style-type: none"> 1. The students will be able to face competitive examinations confidently and efficiently with adequate linguistic confidence. 2. The students will be able to acquire professional skills required in media writing such as writing editorials. 3. The students will be able to learn to appreciate and enjoy reading poetry and prose passages. 4. The students will be able to acquire human values and develop cultured outlook.
<p>Paper No. V</p>	

(DSC-C29 Literature and Cinema)	<ol style="list-style-type: none"> 1. The students will be able to understand film and its relationship to literature. 2. The students will be able to acquire film literacy through a working knowledge of basic film terminology. 3. The students will be able to develop critical approaches to engage with film adaptations 4. The students will be able to establish a clear understanding of literature through film adaptations of literary texts. 5. The students will be able to understand the issues and practices of cinematic adaptations.
Paper No. IV (DSC-C6 Partition Literature)	<p>The students will be able to understand effect of Partition on Women.</p> <ol style="list-style-type: none"> 1. The students will be able to know the term of Home and Exile. 2. The students will be able to explain the hidden human dimensions of the partition. 3. The students will be able to understand the impact of partition on society.
Paper No. B.Com II (English For Business Communication)	<ol style="list-style-type: none"> 1. The students will be able to describe and recommend sales products. 2. The students will be able to narrate function of the product. 3. The students will be able to learn how to use English for talking to the customers. 4. The students will be able to learn how to use English for discussing prices, discount, etc. 5. The students will be able to talk about sale services in English
Paper No. I BA. PART-I SEMESTER -I (English For Communication)	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose. 3. The students will be able to improve the language competence. 4. The students will be able to communicate in English, in oral and written

	<p>modes, in their day-to-day lives as well as at workplaces.</p> <p>5. The students will be able to face job interviews confidently and efficiently.</p>
<p>Paper No. I B.Sc. PART-I SEMESTER -I (English For Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose. 3. The students will be able to improve the language and business competence. 4. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 5. The students will be able to face job interviews confidently and efficiently.
<p>Paper No. I B.Com. PART-I SEMESTER -I (English For Business Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose. 3. The students will be able to improve the language and business competence.
<p>Paper No. II BA. PART-I SEMESTER -II (English For Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose. 3. The students will be able to improve the language competence. 4. The students will be able to acquire professional skills required in telephonic communication.
<p>Paper No. II B.Sc. PART-I SEMESTER -II</p>	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose.

<p>(English For Communication)</p>	<ol style="list-style-type: none"> 3. The students will be able to improve the language and business competence. 4. The students will be able to communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces. 5. The students will be able to face job interviews confidently and efficiently.
<p>Paper No. II B.Com. PART-I SEMESTER -II (English For Business Communication)</p>	<ol style="list-style-type: none"> 1. The students will be able to acquire communication skills. 2. The students will be able to understand human values through poems and prose. 3. The students will be able to improve the language and business competence.

**Department of Economics
(2022-23)**

PROGRAM OUTCOMES:

- PO 1: Illustrate knowledge with facts and figures related concerned with Economics.
- PO 2: Justify knowledge of Indian economy.
- PO 3: Explain market structure and pricing policy.
- PO 4: Analyse poverty and employment policies
- PO 5: Interpret monetary policy and fiscal policy.
- PO 6: Evaluate international trade issues.
- PO 7: Predict economic growth in five-year plans.
- PO 8: Analyse export and import policies of Indian economy.
- PO 9: Use of development theories in the future life.
- PO 10: Use of various research techniques in his / her future research.
- PO 11: Explain bank structure and operation on bank accounts.
- PO 12: Justify cooperative movements and its characteristics.

PROGRAM SPECIFIC OUTCOMES:

- PSO 1: Outline basic concepts of economics.
- PSO 2: Analyse economic behavior in practice.
- PSO 3: Explain the economic way of thinking.
- PSO 4: Justify historical and current events from an economic perspective.
- PSO 5: Write clearly expressing an economic point of view.
- PSO 6: Find alternative approaches to economic problems through exposure to coursework in allied fields.
- PSO 7: Create students' ability to suggest solutions for various economic problems.
- PSO 8: Predict growth rate of Primary, Secondary and Service sector of the economy with help of economic parameters.

Department of Economics	
Course	Outcomes
1. Economics Course - 1 Indian Economy I	CO 1: Explain features of Indian economy at independence era and structural changes in the Indian economy. CO 2: Analyze inclusive growth in Indian economy with sustainable development. CO 3: Express his / her own views on poverty and unemployment.

	<p>CO 4: Analyze problems of social inequality and rising of economy, problems, and remedies of regional imbalance in India.</p> <p>CO 5: Explain concept of National Income, Per capita Income and Human Development Index.</p> <p>CO 6: Identify trend of population growth, impact of population on economic growth and population policy 2000.</p>
<p>2. Economics Course - 2 Indian Economy II</p>	<p>CO 7: Identify changing role of agriculture in Indian Economy.</p> <p>CO 8: Outline agricultural productivity, Green Revolution, need of 2nd Green Revolution and agricultural pricing and procurement.</p> <p>CO 9: Analyze need of industrialization, Industrial Policy since 1991, Problems and prospects of Cottage and Small-scale Industries and Foreign Investment Policies since 1991.</p> <p>CO 10: Describe growing importance of service sector, Significance of Banks, financial Institutions and Insurance, Importance of IT, transport, communication, and tourism.</p> <p>CO 11: Explain concept, implementation, and impact on Indian economy of Liberalization, Privatization and Globalization.</p> <p>CO 12: Remembering recent export promotion policy.</p>
<p>3. Economics Course - 3 Principles of Macro Economics I</p>	<p>CO 13: Analyze concept of macroeconomics with definition, nature, and scope.</p> <p>CO 14: Analyze inclusive growth in Indian economy with sustainable development.</p> <p>CO 15: Explain concept of GNP², NNP³, GDP, GDP at market price, Per Capita Income and Disposable Income.</p> <p>CO 16: Analyze methods of measuring national income with difficulties and importance.</p> <p>CO 17: Explicate functions of money and theories of money, Index numbers and its importance.</p>

	CO 18: Analyze Say's market law, Keynesian theory of employment, consumption function. investment function and multiplier.
4. Economics Course - 4 Money and Banking	CO 19: Analyze functions of commercial banks, types of banks, investment policy of commercial banks, process of credit creation and its limitations. CO 20: Analyse features of bank account, opening KYC and closing account, bankers and customers rights and obligations. CO 21: Identify History and organizational structure of Reserve Bank of India with functions, monetary policy, and credit creation CO 22: Explicate bank Ombudsman scheme with meaning, power, and duties. CO 23: Analyse process and importance of loan, advantages, and disadvantages of bank merge. CO 24: Justify NPA and its causes and remedies.
5. Economics Course - 5 Principles of Macro Economics II	CO 25: Explain inflation with meaning, types, causes, effects, and remedies of controlling inflation. CO 26 Describe trade cycles and its Phases. CO 27: Identify Hawtrey and Schumpeter theory of trade cycles. CO 28: Analyze meaning, nature, and scope of Public Finance with principle of maximum social advantage. As well as taxation and budget. CO 29: Justify public expenditure with meaning and causes of growth of public expenditure. CO 30: Illustrate public debt, Deficit Financing and Fiscal Policy.
6. Economics Course - 6 Banks and Financial Markets	CO 31: Describe financial system in India. Structure and Importance of Financial System and Features and Structure of Money and Capital Market in India.

	<p>CO 32: Compare Capital Market and Money market in India with Role of SEBI.</p> <p>CO 33: Demonstrate Indian Financial Institutions, like Non - Bank Financial Institutions, Loan companies in India, EXIM Bank and Mutual Funds.</p> <p>CO 34: Analyze Recommendation of the Narasimham Committee of 1991 and 1998.</p> <p>CO 35: Interpret Foreign Direct Investment in banking and Payment Bank with Small Finance Banks.</p> <p>CO 36: Applying E - Banking Service in daily use.</p>
<p>7. Economics Course - 7 Principles of Micro Economics I (DSE E-71)</p>	<p>CO 37: Explain Meaning, Nature, and Scope of Micro Economics as well as its importance and limitations.</p> <p>CO 38: Framework economic analysis using economic parameters.</p> <p>CO 39: Express his / her own views about consumer behavior.</p> <p>CO 40: Deep explain how to fluctuate demand and supply in market.</p> <p>CO 41: Describe various parameters related to demand and supply.</p> <p>CO 42: Explain production theories and cost - benefit analysis of the firm.</p>
<p>8. Economics Course - 8 Economic of Development (DSE E-72)</p>	<p>CO 43: Explain concept of economic development and difference between economic development and growth.</p> <p>CO 44: Explain indicators of economic development, Sustainable and green development.</p> <p>CO 45: Identify underdeveloped economies, characteristics of underdeveloped economies. affecting factors on economic development.</p> <p>CO 46: Illustrate features of economic development and development status of Indian economy.</p> <p>CO 47: Analyze Ricardian classical approach to the development, Myrdal's theory of</p>

	<p>economic development, Rostow's stages of economic growth and balanced and unbalanced theory of growth.</p> <p>CO 48: Build up resources for economic development like Human Capital, Technology. FDI, Aids etc.</p>
<p>9. Economics Course - 9 International Economics I (DSE E-73)</p>	<p>CO 49: Explain what trade is and trade theories of Ricardian and Heckscher-Ohlin theory of international trade.</p> <p>CO 50: Explain unmistakably importance of international trade and its study, Similarities, and dissimilarities in inter-regional and international trade.</p> <p>CO 51: Clarify of gains from international trade and its measurement.</p> <p>CO 52. Analyze how to become trade engine of economic growth, terms of trade and factors affecting terms of trade.</p> <p>CO 53: Explain meaning of exchange rate, PPP10 theory, concept of fixed exchange rate, flexible exchange rate and floating exchange rate.</p> <p>CO 54: Explicate tariffs and quotas, free trade, and trade protection policy.</p>
<p>10. Economics Course - 10 Research Methodology in Economics I (DSE E-74)</p>	<p>CO 55: Analyze basic concept of research and its methodology.</p> <p>CO 56: Explain types of research with meaning and objectives.</p> <p>CO 57: Carry out a literature review, Steps of research, features of good research design and importance of research design.</p> <p>CO 58: Analyse and clarify concept of hypothesis which is very important for research with Kinds of hypothesis, features of hypothesis and importance of hypothesis.</p> <p>CO 59: Use of methods of data collection in his/her research.</p> <p>CO 60: Clarify sources of primary and secondary data and importance of data collection.</p>

<p>11. Economics Course - 11 History of Economic Thoughts I (DSE E-75)</p>	<p>CO 61: Explain basic economic ideas of economist of the world.</p> <p>CO 62: Explain thoughts of classical economist like, Adam Smith's theory of value and canon and taxation, Malthusian theory of population etc.</p> <p>CO 63: Describe economic thoughts of great economist Fredrick List on stages Economic growth.</p> <p>CO 64: Interpret concept of nationalism and theory of protectionism.</p> <p>CO 65: Analyse thoughts of Karl Marks about economic development.</p> <p>CO 66: Manipulate scientific concept of socialism and materialist, Theory of value, Theory of Surplus value and Concept of falling rate of profit.</p>
<p>12. Economics Course - 12 Principles of Micro Economics II (DSE E-196)</p>	<p>CO 67: Identify the market structure.</p> <p>CO 68: Analyse the economic behavior of individual firms and markets.</p> <p>CO 69: Explain a firm's profit maximizing strategies under different market conditions.</p> <p>CO 70: Justify the factor pricing.</p> <p>CO 71: Interpret modern theory of rent.</p> <p>CO 72: Comprehension classical and Keynesian theory of interest and risk and uncertainty theory of profit.</p>
<p>13. Economics Course - 13 Economics of Planning (DSE E-197)</p>	<p>CO 73: Illustrate economic planning and its importance in development.</p> <p>CO 74: Analyse development of planning and planning machinery in India.</p> <p>CO 75: Evaluate sectorial performance of the Indian economy.</p> <p>CO 76: Explain NITI Ayog, need for establishment, organization, objectives, and work.</p> <p>CO 77: Identify plan models in Indian plan period.</p> <p>CO 78: Compare and analyse Indian models of economic development.</p>

	<p>15. Economics Course - 15 Research Methodology in Economics II (DSE E-199)</p> <p>CO 85: Explain the sampling techniques as a method of data collection.</p> <p>CO 86: Analyse optimum size of sampling.</p> <p>CO 87: Use techniques of data analysis in research.</p> <p>CO 88: Classified the data in tabular form.</p> <p>CO 89: Justify how to write a research report and thesis.</p> <p>CO 90: Clarify how to write a research proposal for grants.</p>
<p>14. Economics Course - 14 International Economics II (DSE E-198)</p>	<p>CO 79: Illustrate difference between balance of trade and balance of payments.</p> <p>CO 80: Analyse the balance of payments.</p> <p>CO 81: Analyse measures to correct disequilibrium in balance of payments.</p> <p>CO 82: Discuss the various types of foreign capital.</p> <p>CO 83: Compute the trends of Foreign Direct Investment in India.</p> <p>CO 84: Analyse the impact of international institutions on Indian economy.</p>
<p>16. Economics Course - 16 History of Economic Thoughts II (DSE E-200)</p>	<p>CO 91: Interpret economic ideas of Alfred Marshall.</p> <p>CO 92: Illustrate views of Mahatma Phule on agriculture and education.</p> <p>CO 93: Analyse views of Rajarshi Shahu Maharaj on agriculture and Cooperation. CO 94: Explain views of Dr. Babasaheb Ambedkar on money, agriculture, and development policy. As well as Drain theory of Dadabhai Nauroji.</p> <p>CO 95: Justify views of Mahatma Gandhi views on village development, Swadeshi and Gram Swarajya.</p> <p>CO 96: Clarify economic thoughts of Gopal Krishna Gokhale, D. R. Gadgil, V. M. Dandekar and Amartya Sen.</p>
<p>1. Micro Economics Paper I</p>	<p>CO 1: Explain Demand and consumer behavior with indifference curve.</p> <p>CO 2: Use application of indifference curve in real life.</p> <p>CO 3: Analyze importance of demand forecasting in business decision and various methods of demand forecasting.</p>

	<p>CO 4: Apply firm theories in business situation.</p> <p>CO 5: Explain production cost curves and revenue curves of the firm.</p> <p>CO 6: Apply tools of consumer behavior to business situation.</p>
<p>2. Micro Economics Paper II</p>	<p>CO 7: Explain Equilibrium of firm and industry in short run and long run with measuring producer's surplus under perfect competition.</p> <p>CO 8: Illustrate price determination and price discrimination under monopoly as well as measurement of monopoly power.</p> <p>CO 9: Analyze characteristics of Monopolistic competition and equilibrium of firm in short run and long run under Monopolistic competition.</p> <p>CO 10: Interpret price war, price leadership and kinky demand curve under Oligopoly market.</p> <p>CO 11: Justify Ricardo's & Modern theory of rent, Money and Real wage and Wage differentials.</p> <p>CO 12: Clarify Liquidity preference theory of interest and Bearing and Uncertainty theories of profit.</p>
<p>3. Macro Economics Paper I</p>	<p>CO 13: Analyze concept of macroeconomics with variables and components of macroeconomics.</p> <p>CO 14: Explain the relevance of national income, concepts, and its applications in economic policy making.</p> <p>CO 15: Illustrate methods of measuring national income with difficulties and importance.</p> <p>CO 16: Analyze changing value of money and its impacts on economy.</p> <p>CO 17: Justify Keynesian theory of employment.</p> <p>CO 18: Explain the output and employment generation process through investment and consumption.</p>

<p>4. Money and Financial System Paper 1</p>	<p>CO 19: Explain functions of money and measurement of money supply. CO 20: Analyse functions of commercial banks and types of banks. CO 21: Clarify banking business and its importance, process of credit creation and its limitations. CO 22: Interpret changing nature of banking business. CO 23: Explicate banking system and its functioning in India. CO 24: Identify recent trends in banking system.</p>
<p>5. Macro Economics Paper II</p>	<p>CO 25: Illustrate trade cyclical phenomenon in the economy CO 26: Apply practical decisions at their business level in future. CO 27: Analyse public finance system of state and its impact on economy. CO 28: Clarify and impact of public finance system of state on citizens of the nation. CO 29: Justify the trade and business practices through international trade theories and other relevant concepts. CO 30: Explicate the international monetary exchange system and determination of rate exchange.</p>
<p>6. Money and Financial System Paper II</p>	<p>CO 31: Apply e - banking services. CO 32: Explain working of RBI in India. CO 33: Prepare provide consultancy and guidance for investment in financial markets. CO 34: Analyse business practices of NBFCs and AIFI Expected Skills Impartation. CO 35: Explicate administrative structure, Functions and Role of NABARD and SIDBI. CO 36: Identify administrative structure, Functions and Role of NHB and EXIM Bank.</p>
<p>7. CC - C5 - Co-operative</p>	<p>CO 37: Explain meaning, definition, features, and principals of co-operation.</p>

Development Paper I	<p>CO 38: Analyse role of co-operation in economic development.</p> <p>CO 39: Identify agriculture and non-agriculture credit co-operative institutions,</p> <p>CO 40: Explain co-operative banking and various credit societies in India.</p> <p>CO 41: Analyse types, management, progress, and problems of urban co-operative banks.</p> <p>CO 42: Analyse role and problems of consumer co-operatives as well as sugar co-operatives.</p>
8. CC - C7 - Business Environment Paper I	<p>CO 43: Explain relationship between business environment and sustainable development.</p> <p>CO 44: Analyse present status of Indian agriculture, agriculture price policy and marketing problems.</p> <p>CO 45: Justify food security and agriculture renewal action plan.</p> <p>CO 46: Explicate 1991's industrial policy, MSME's, progress of industrial sector in globalization etc.</p> <p>CO 47: Identify problems of Indian economy like as population, unemployment and poverty, inequality of income etc.</p> <p>CO 48: Analyse problems of rural and urban economy.</p>
9. Advanced Banking Paper I	<p>CO 49: Explain Regulatory Framework for Banking in India.</p> <p>CO 50: Understand the important laws relating banking sector.</p> <p>CO 51: Knowledge of legal provisions for banking business practices.</p> <p>CO 52: Understand different provisions under cyber-Laws.</p>
10. Advanced Banking Paper II	<p>CO 53: Explain Retail and Corporate Banking systems.</p> <p>CO 54: Understand the Retail and Corporate Banking Practices.</p> <p>CO 55: apply the knowledge in banking business.</p> <p>CO 56: Analyse differentiates Retail and Corporate Banking.</p>

<p>11. CC - C6 - Co - operative Development Paper II</p>	<p>CO 57: Illustrate cooperative legislations and fund management. CO 58: Interpret institutional arrangement for cooperative education and training. CO 59: Interpret nature, registration, legislation, and audit of housing cooperatives. CO 60: Clarify nature and elements of audit of co-operative housing societies. CO 61: Explain cooperative audit system and provisions. CO 62: Analyse responsibilities and powers of cooperative auditor.</p>
<p>12. CC - C8 - Business Environment Paper II</p>	<p>CO 63: Analyse concept of Liberalization, Privatization and Globalization. CO 64: Explain implementation and impact of Liberalization, Privatization and Globalization on Indian Economy. CO 65: Justify economic planning and service sector in India. CO 66: Interpret need of foreign capital in India and Policy of Government of India about foreign capital. CO 67: Identify relationship between Indian rupee and foreign currency with multinational corporations. CO 68: Extend objectives and performance of IMF, IBRD, WTO and SAARC.</p>
<p>13. Advanced Banking Paper III</p>	<p>CO 69: Explain the Importance of Head Office of the Bank. CO 70: Understand the Structure of Branch Office - Small, Medium and Large Bank Branch. CO 71: Explain Nature and Importance of Information and System Audit of the Banks.</p>
<p>13. Advanced Banking Paper IV</p>	<p>CO 72: Understand the nature and structure of Financial Market in India. CO 73: Understand business practices in money market and capital market. CO 74: Understand functioning of different Intermediaries in Financial Markets.</p>

**Department of History
(2022-23)**

Department of History	
Course	Outcomes
1. History Course - 1 Rise of Maratha Power I (DSC-B-1)	<p>Co 1: Understand the background of Rise of Maratha Power</p> <p>Co 2: Explain the contribution of chhatrapati Shivaji Maharaj in the Treaty of Purander, Coronation, Expedition to Karnataka</p> <p>Co 3: Acquaint himself with the contribution of Chh. Sambhaji Maharaj, Chh. Rajaram Maharaj, Maharani Tarabai in Maratha War of Independence</p> <p>Co 4: Know the Importance of Sources for understanding Maratha History</p>
2. History Course - 2 Polity, Society & Economy Under The Maratha II (DSC-B-2)	<p>Co 1: Understand the background of polity under the Maratha Empire</p> <p>Co 2: Explain the contribution of chh. Shivaji Maharaj in the Agriculture, Industry and Trade</p> <p>Co 3: Acquaint the students with the political, socio-economic and religious life of the people during the 1600-1707 period.</p> <p>Co 4: Know the Importance of policy and contribution of Shivaji Maharaj</p>
3. History Course - 3 History of Modern Maharashtra (1900- 1960) III (DSC-D-1)	<p>Co 1: Understand the beginnings and growth of nationalism consciousness in Maharashtra</p> <p>Co 2: Explain the contribution of Maharashtra to the national movement</p> <p>Co 3: Give an account of various movements of the peasants, workers, women and backward classes</p> <p>Co 4: Know the background and events which led the formation of separate state of Maharashtra</p>
4. History Course - 4 History of India (1757-1857) IV (DSC-B-15)	<p>Co 1: Acquaint himself with significant events leading to establishment of the rule of East India Company</p> <p>Co 2: Know the colonial policy adopted by the company to consolidate its rule in India</p> <p>Co 3: Understand the Structure change initiated by colonial role in Indian economy</p> <p>Co 4: Explain the various against rule of the East India Company</p>
5. History Course - 5 History of Modern Maharashtra (1960- 2000) V (DSC-D-29)	<p>Co 1: Acquaint himself with the contribution of eminent leaders of Maharashtra</p> <p>Co 2: Know about the economic transformation of Maharashtra</p>

	<p>Co 3: Understand the salient feature of change in society</p> <p>Co 4: Explain the growth of education</p>
<p>6. History Course - 6 History of Freedom Struggle (1757- 1857) VI (DSC-B-30)</p>	<p>Co 1: Understand the events lead to the growth of nationalism in India</p> <p>Co 2: Acquaint himself with Major events of the freedom struggle under the leadership of Mahatma Gandhi</p> <p>Co 3: Explain the contribution of revolutionaries, Left Movement and Indian National Army</p> <p>Co 4: Know the concept of communalism and the causes and effects of the partition of India</p>
<p>7. History Course - 7 Social Reform In India IDS I (DSC)</p>	<p>Co 1: Understand the salient features of Prominent socio-religious reform movement</p> <p>Co 2: Explain the thought and work of Mahatma Phule for radical transformation of Indian society</p> <p>Co 3: Know the measures taken by Rajashri Shahu Maharaj for emancipation of lower classes and women</p> <p>Co 4: Understand the thought of Ambedkar on the annihilation of the cast system and untouchability in India</p> <p>Co 5: Know how the Indian constitution embodies the values of social justice and equality</p>
<p>8. History Course - 8 Social Reform In Maharashtra IDS II (DSC)</p>	<p>Co 1: Know about the beginnings of social reform in Maharashtra by the Paramhansa Mandali and Prarthana Samaj</p> <p>Co 2: Understand the contribution of women reformers</p> <p>Co 3: Explain the contribution of social reformers in the fight for social justice</p> <p>Co 4: Explain the role played by educational reforms in transformation of society</p>

Department of Sociology
(2022-23)

Course Name	Course Outcomes (COs)
DSC (B2) Paper-I Introduction to Sociology	CO1: Understand Nature of Sociology CO2: Understand Basic Concept in Sociology CO3: Understand Social Institutions and their functions CO4: Understand Key Concepts Social Groups
DSC (B16) Paper-II Principles of Sociology	CO1: The students will knowledge Culture CO2: Understand Basic Concept of Socialization CO3: Understand Social control CO4: The students will understand concept of social change.
Paper-I Scientific Method (Compulsory)	CO1: To make acquainted with science CO2: To import value education CO3: To explain the major teaching principles of causation CO4: To discuss the major problem of scientific method
Paper-II Scientific Method (Compulsory)	CO1: Explain the importance of Techniques of Social Research. CO2: Explain the importance of scientific method. CO3: To create awareness about Science and Technology among students with Scientific method.
DSC – D3 Paper No- III Social Issues in India	CO1: Understanding social Issues Its Classification and need of study. CO2: Awareness about Issues related Elderly and awareness about Female Foeticide. CO3: Awareness about Issues of crime and Juvenile Delinquency. CO4: Understanding Human Right and cyber-Crime.
DSC – D4 Paper No- IV Social Movement in India	CO1: Understanding of meaning characteristics elements of social movement. CO2: Awareness about peasant problem and its impact. CO3: Understanding Dalit movement. CO4: Awareness women movement.
DSC – D31 Paper No- V Gender and Violence	CO1: Understanding meaning, Nature, and major Gender Issues. CO2: Awareness about Domestic Violence. CO3: Understanding about types of violence against women. CO4: Awareness about women’s Harassment at workplace
DSC – D32 Paper No- VI Sociology of Health	CO1: Understanding nature subject matter and importance of sociology of health. CO2: Awareness about major diseases in India. CO3: Understanding Health Policy in India.

**Department of Geography
(2022-23)**

PROGRAM OUTCOMES:

- Acquire the knowledge of Human Geography and will correlate it with their practical life.
- Demonstrate knowledge of physical and cultural features of the earth and locate them on a map.
- Apply various statistical formulas to analyse data. Identify and obligate to professional ethics, moral responsibilities and scientific norms.
- Develop as an effective individual, a team member or a team leader.
- Involve in independent and lifelong learning. Demonstrate project management and entrepreneurial skills.

PROGRAM SPECIFIC OUTCOMES:

- Student will gain the knowledge of physical geography. They will gather knowledge about the fundamental concepts of Geography and will have a general understanding about the geomorphologic and geotectonic process and formation. Imbibing knowledge, skills and holistic understanding of the Earth, atmosphere, oceans and the planet through analysis of landform development; crustal mobility and tectonics, climate change.
- Associating landforms with structure and process; establishing man-environment relationships; and exploring the place and role of Geography, other social and earth sciences. Students can easily correlate the knowledge of physical geography with the human geography. They will analyse the problems of physical as well as cultural environments of both rural and urban areas.
- Developing a sustainable approach towards the ecosystem and the biosphere with a view to conserve natural systems and maintain ecological balance.
- The physical environment, human societies and local and/or global economic systems are integrated to the principles of sustainable development

- Inculcating a tolerant mind-set and attitude towards the vast socio-cultural diversity of India by studying and discussing contemporary concepts of social and cultural geography. Explaining and analysing the regional diversity of India through interpretation of natural and planning regions.
- Analysing the differential patterns of the human habitation of the Earth, through studies of human settlements and population dynamics. Understanding and accounting for regional disparities, poverty, unemployment and the impacts of globalization
- Understanding the history of the subject; over viewing ancient and contemporary geographical thought and its relationship with modern concepts of empiricism, positivism, radicalism, behaviourism, idealism etc.
- Sensitization and awareness about the hazards and disasters to which the subcontinent is vulnerable; and their management.
- Training in practical techniques of mapping, cartography, software, interpretation of maps, photographs and images etc; so as to understand the spatial variation of phenomena on the Earth's surface. They will learn how to prepare map based on GIS by using the modern geographical map making techniques.

Department of Geography	
Course	Outcomes
Paper 7: EVOLUTION OF GEOGRAPHICAL THOUGHT	1) Student should be able to understand in-depth about the Evolution of Geographical Thought. 2) Students should be able to analyse the recent trends in geography. 3) Student should be able to make use of various models of paradigms and debates in the Geographical studies. 4) Understanding of recent trends in geography.
Paper 8: GEOGRAPHY OF INDIA	1) The student understands the dimensions and physiography of India. 2) The students are fully aware about the climatic seasons in India. 3) The student learns about soils, vegetation's, drainage systems in India. 4) The student acquires an importance of agriculture and industry in Indian economy.

		5) The student gets knowledge about the economic setup of the India.
Paper POPULATION GEOGRAPHY	9:	1) The student understands sources of demographic data. 2) The student learns distribution and trends of population growth in the developed and less developed countries. 3) The student understands population composition in different regions of the world. 4) The student understands the problem of over population and will be act for control population.
Paper 10: ECONOMIC GEOGRAPHY		1) Student should be able to understanding about the economic geography. 2) Student able to get knowledge about locational factors of economic activities with special reference to agriculture and industry. 3) Student able to understanding of the basic concepts related to manufacturing and major manufacturing industries (selected countries) of the world. 4) Student able to understanding of the transport and trade.
Paper 11: URBAN GEOGRAPHY		1) The student learns the importance of urban settlements. 2) The student understood the types of Urban Settlements, Site and Situations. 3) The student learns relationship between human activities and urban development. 4) The student gets knowledge of present urban problems and thinks about solutions of it. 5) The students learn scope as a good urban planner and environmental conservator.
Paper 12: POLITICAL GEOGRAPHY		1) The student understands the Political geography as a fundamental branch of Human Geography. 2) The student learns theories of Political Geography. 3) The student aware about resource conflicts and discuss regarding solutions, displacement.
Paper FUNDAMENTALS OF MAP MAKING AND	13:	1. The student understands the elements map, and able to draw graphical scale and projection. 2. The student receives the knowledge about the analysis of landforms and its identification.

<p>MAP INTERPRETATION</p>	<p>3. The student obtained the skills about map interpretation S.O.I. topographical maps and I.M.D. weather maps.</p> <p>4. The students acquire different cartographic techniques and methods used for representation of demographic and physio-socio-economic database</p>
<p>Paper 14: ADVANCED TOOLS, TECHNIQUES & FIELD WORK IN GEOGRAPHY</p>	<p>1) The student able to use computer for acquire geographical knowledge and learn remote sensing.</p> <p>2) The student obtains skill of interpretation aerial photograph and satellite image.</p> <p>3) The student gets hands of GIS and made use of GPS in day today life.</p> <p>4) The student processes the geographical data using with different statistical methods.</p> <p>5) The student able to do survey with different instruments and prepare small scale map.</p> <p>6) The student does field work by use of modern techniques and able to write project report.</p>

Department of Political Science

Program Outcomes (POs)

After completing the graduation in Political Science, the student will be able to,

PO1: Develop leadership with public vision.

PO2: Enhance innovative approach of the student towards profession in Political Science.

PO3: Becomes a responsible citizen will informed in fundamental right and obligations as well.

PO4: Develop inclusive understanding of representation.

Program Specific Outcomes (PSOs)

After completing the graduation in Political Science, the student will be able to,

PSO1: Learn organization of government machinery and representation.

PSO2: Get effectiveness in translating the government philosophy into programme.

PSO3: Deal with the concepts and dimensions of international politics.

PSO4: Understand the constitutional and legal provision of America.

PSO5: Understand the continuity and change within the western political traditions.

Course Outcomes (COs)

B.A. in Political Science

(2021-2022)

Course Name	Course Outcomes (COs)
DSC (B4) Paper-I Introduction to Political Science	CO1: Acquire domain Knowledge. CO2: Understand importance of Political Science. CO3: Understand sub disciplines of Political Science. CO4: Understand Concept of State and Democracy. CO5: Understand Key Concepts of Political Science.
DSC (B18) Paper-II Indian Constitution	CO1: The students will get knowledge about making and philosophy of Indian Constitution. CO2: The students will become aware about Fundamental Rights. CO3: The students will become aware about Directive Principles and Fundamental Duties. CO4: The students will understand about working of Legislature, Executive and Judiciary. CO5: The students will understand about working and role of Judiciary.

DSC (D7) Paper-III Political Process in India	CO1: Understanding the nature and characteristics of Indian Federalism CO2: Examining the Institutions of Electoral process in India. CO3: Discussing the party System of India. CO4: Analyzing the issues in Indian Politics.
DSC (D8) Paper-IV Indian Political Thought Part -I	CO1: Analyzing the selected thought of kautilya. CO2: Analyzing the selected thought of Mahatma Phule. CO3: Analyzing the selected thought of Justice M.G. Ranade. CO4: Analyzing the selected thought of B.G. Tilak.
DSC (D35) Paper-V Local Self Government in Maharashtra	CO1: Understanding historical background of local self government CO2: Examining the institutions of Rural local self government. CO3: Examining the institutions of Urban local self government. CO4: Discussing the constitutional amendments and challenges before local self government.
DSC (D36) Paper-VI Indian Political Thought -II	CO1: Analyzing the selected thought of M. K. Gandhi. CO2: Analyzing the selected thought of Jawaharlal Nehru. CO3: Analyzing the selected thought of Justice Dr. B.R.Ambedkar. CO4: Analyzing the selected thought of M. N. Roy.
CGE Paper- I Public Administration	CO1: Explaining the Nature, scope of Public Administration . CO2: Explaining the Principles of Organization. CO3: Discussing the Public Corporation. CO4: Explaining the Changing perspective in Public Administration.
CGE Paper- II Public Administration	CO1: Discussing the Personnel Administration. CO2: Discussing the Financial Administration, budgetary process in India and parliamentary financial committee. CO3: Discussing Delegated Legislation. CO4: Understanding the concepts of good governance, discussing right to information.
DSE E-76 Paper No. VII Political Theory	CO1: Getting basic knowledge of Political Theory. CO2: Understanding of approaches to Political Theory. CO3: Knowing Behavioral movement in Political Science. CO4: Acquiring knowledge about concepts of Power, Authority and Legitimacy.
DSE E-77 Paper No. VIII Public Administration	CO1: Acquiring information about various concepts in Public Administration. CO2: Getting knowledge about Organization, its Bases, Principles and Units. CO3: Getting acquainted with the budgetary process in India. CO4: Understanding the interface between citizens and Public Administration; and other agencies in society and Public Administration.
DSE E-78- Paper No. IX International Politics	CO1: Getting acquainted with the concepts and dimension of International Politics. CO2: To understand main theories of International Politics. CO3: To know the working of international and regional organizations and the new world order that emerged after

	the end of cold war.
DSE E-79 Paper No. X Comparative Politics	CO1: Students will be familiar with basic theory of Comparative Politics CO2: Students be able to understand constitutionalism, federalism. CO3: Students shall understand party system and pressure groups and its functioning. CO4: Students shall understand classification of political parties and pressure groups.
DSE E-80 Paper No. XI Western Political Thought – I	CO1: Students will get acquainted with the western tradition from Plato to Rousseau CO2: Students will understand the evolution of western Political idea. CO3: Students will be able to study historical aspects of western state and society.
DSE E- 201 Paper No. XII Modern Political Concepts	CO1: Student will know modern concepts such as Feminism, Multiculturalism, Environmentalism and Civil Society etc. CO2: This will enable students to have comprehensive idea of contemporary scenario in political science.
DSE E- 202 Paper N0. XIII Politics and Movements in Maharashtra	CO1: Student will know the Political System of Maharashtra. CO2: They will understand the process of formation of Maharashtra State. CO3: Student will know the movements, pressure groups and Political Parties in Maharashtra. CO4: This will provide comprehensive idea of contemporary politics of Maharashtra.
DSE E- 203 Paper No. XIV Foreign Policy of India	CO1: Student will understand, ‘what is Foreign Policy and what are The objectives of Foreign Policy. CO2: This will provide comprehensive idea of foundation of Indian Foreign Policy. CO3: Student will come to know India’s relation with super powers and neighboring countries. CO4: It will bring attention of the students towards the current national and international political situation and foreign policy.
DSE E- 204 Paper No. XV Comparative Government (With special reference to UK & USA)	CO1: To familiarizes students with composition, functions, and law- making process of legislative bodies in UK and USA. CO2: To introduce the students with execution process of laws in UK and USA. CO3: To introduce the Judicial System in UK and USA and procedure of adjudication. CO4: Students will understand the role of Pressure Groups in the Politics of UK and USA.
DSE E- 205 Paper No. XVI Western Political Thought- II	CO1: The students will understand Political views of J.S. Mill, Karl Marx, Gramsci & Hannah Arendt. CO2: The students will get acquainted with various aspects of state and society with western perspective.

BHARATI VIDYAPEETH'S
Dr. Patangrao Kadam Mahavidyalaya, Sangli
Department of Commerce

PROGRAMME: B. COM.

PROGRAMME OUTCOME (POs)

1. Understand application of knowledge of commerce in business service sector, industry, marketing, finance, entrepreneurship development etc.
2. Develop communication skills and computer awareness and practical application of income tax.
3. Designed to equip the students for a career in financial analysis, personal financial advisor, consultants etc.
4. After completing the Bachelors in Commerce (B. Com.) program, students would gain a thorough grounding in the fundamentals of Commerce and Finance.
5. The commerce and finance focused curriculum offers a number of specializations and practical exposures which would equip the student to face the modern-day challenges in commerce and business.
6. The all-inclusive outlook of the course offers a number of value based and job oriented courses ensures that students are trained into up-to-date. In advanced accounting courses beyond the introductory level, affective development will also progress to the valuing and organization levels.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

By the end of the programme, the student will be able to

1. Understand the basic concepts of the commerce, management, accounting of & economics.
2. Analyze relationship among commerce, trade industry, services, management and administration.
3. Perform all accounting activities and can handle type of business very well.

4. Understand application of knowledge of commerce in business service sector industry, marketing, finance entrepreneurship development etc.
5. Develop communication skills and computer awareness and rules of income tax act.
6. Think about commercial and professional way or point of view.
7. Understanding legal issue/ law relating to banking and insurance sector

COURSE OUTCOME (CO)

B.Com. I Semester- I

Course: - Management Principles and Applications Paper-I

By the end of the Course, to enable the student to

1. Describe the basic principles and functions of business management.
2. Explain basic management concepts, principles and practices.
3. Illustrate the Contribution towards development of management theories.
4. Elaborate the concepts of Organizing, Direction and Communication.

Course: - Financial Accounting Paper-I

By the end of the Course, to enable the student to

1. Adapt basic knowledge about Accounting Concepts and Conventions, Accounting Process, Accounting Standards & IFRS
2. acquaint students with accounting treatment regarding Amalgamation of Partnership Firms.
3. Demonstrate accounting for Consignment Accounts.
4. Understand the accounting process of Accounts of Professionals

Course: - Principles of Marketing Paper-I

By the end of the Course, to enable the student to

1. Understand the concepts and principles of Marketing.
2. Adapt basic knowledge of practical market as well as tools and techniques of marketing to the students.
3. Give basic knowledge of 4P's of marketing and retailing.
4. Explain marketing research process and marketing information system.

Course: - Insurance Paper-I

By the end of the Course, to enable the student to

1. Know the fundamentals of Insurance.
2. Understand procedural part and documentation in Life Insurance business and General Insurance business.
3. Create awareness among them to become a life Insurance Agent.
4. Describe the fundamentals of General Insurance.

B.Com. I Semester- II

Course: - Management Principles and Applications Paper-II

By the end of the Course, to enable the student to

1. Understand the concept of motivation and different theories of motivation.
2. Give basic knowledge about the concept of Leadership.
3. Describe the different concepts and Techniques of Co-ordination and Control.
4. Illustrate the Social and Ethical Issues in Management.

Course: - Financial Accounting Paper-II

By the end of the Course, to enable the student to

1. Simulate accounting situations of Single-Entry System.
2. Demonstrate accounting for Conversion of Partnership Firm into a Limited Company.
3. Acquaint students with accounting treatment regarding Branch Accounts.
4. Explain the accounting process Computerized Accounting System.

Course: - Principles of Marketing Paper-II

By the end of the Course, to enable the student to

1. Provide basic knowledge of concepts, principles, tools and techniques of marketing.
2. Understand the concepts of Consumer Behaviour and Market Selection.
3. Describe the Distinguishing characteristics of rural marketing.
4. Create awareness among them about recent developments in marketing.

Course: - Insurance Paper-II

By the end of the Course, to enable the student to

1. Impart theoretical knowledge of fire insurance.
2. Enlighten students with different sides of marine insurance.

3. Impart conceptual knowledge of Personal Accident insurance, Health insurance, Motor Insurance and Crop Insurance.
4. Acquaint students with the Growth of general insurance business in India.

B.Com. II Semester- III

Course: - Fundamentals of Entrepreneurship Paper-I

1. Impart theoretical knowledge of Entrepreneurship
2. Develop Entrepreneurship qualities and skills
3. Acquaint students with steps involved in the formation of Small Enterprises
4. Enlighten students with Recent Trends and Concepts in Entrepreneurship

Course: - Corporate Accounting Paper-I

1. Explain the accounting entries of issue and forfeiture of shares and re-issue of forfeited shares, discuss accounting treatment for redemption of preference shares and buyback of shares.
2. Demonstrate accounting for issue of debentures and redemption of debentures.
3. Simulate practice of preparing financial statements as per the provisions of Indian Companies Act 2013.
4. Practice the fundamental accounting process on Tally ERP.

B.Com. II Semester- IV

Course: - Fundamentals of Entrepreneurship Paper-II

1. Acquaint students with family business in India
2. Impart conceptual knowledge of Service and Agro Entrepreneurship
3. Aware students about Business Plan and Project Report
4. Inspire the students through successful stories of Entrepreneurs

Course: - Corporate Accounting Paper-II

1. Explain the accounting entries of profit/loss prior to incorporation.
2. Compute the value of shares as per distinct methods and differentiate between them.
3. Simulate practice of accounting for liquidation of companies.
4. Practice the store accounting through Tally ERP.

B.Com. III Semester- V

Course: - Business Regulatory Framework Paper -I

1. Know the Essential element and Kinds of Contract
2. Describe the different labor law.
3. Understand the Sale of Goods Act,1932 and Goods and Services Tax (GST)
4. Describe the Indian Partnership Act-1932 and Limited Liability Partnership Act 2008

Course: - Modern Management Practices Paper-I

1. Impart knowledge of modern management
2. Understand concepts of Customer Relationship Management (CRM)
3. Know the concepts of emotional and social intelligence
4. Understand the concept of lean and talent management

Course: - Advanced Accountancy Paper-I

1. Practice the preparation of financial statements of banks.
2. Demonstrate accounting for farms and hire purchase system.
3. Simulate accounting situations of insurance claim.
4. Explain the accounting process on Tally with GST.

Course: - Advanced Accountancy Paper-II (Auditing)

1. Understand the concept and types of audit
2. Identify the residential status and its implication on tax liability
3. Understand the concept of exemption from income
4. Know the computation of income from various sources as well as total income

Course: - Advanced Costing Paper- I

1. Understand the basic concepts of cost accounting.
2. Classify the cost and apply the same for cost determination.
3. Understand the cost accounting procedure in respect of materials.
4. Know the application of cost accounting in determination of labour cost.

Course: - Advanced Costing Paper- II

1. Identify the meaning of overheads and its classification

2. Understand different methods of absorption of overheads.
3. Find out the reasons for difference between profit as per cost and financial accounts.
4. Understand meaning of activity based costing and its practical application.

B.Com. III Semester- V

Course: - Business Regulatory Framework Paper -II

1. Develop awareness about the Company Act- 2013
2. Understand the Security Exchange Board of India Act-1992, Consumer Protection Act-1986 and Competition Act-2002
3. Apply the practical aspects of Business Transactions and Cyber Laws
4. Impart knowledge of Negotiable Instrument

Course: - Modern Management Practices Paper-II

1. Impart knowledge of total quality management.
2. Understand the Japanese and Chinese Management Practices
3. Know the concept of Event and Performance Management
4. Understand the concept of time and stress management

Course: - Advanced Accountancy Paper-III

1. Practice the preparation of financial statements of banks.
2. Demonstrate accounting for farms and hire purchase system.
3. Simulate accounting situations of insurance claim.
4. Explain the accounting process on Tally with GST.

Course: - Advanced Accountancy Paper-IV (Taxation)

1. Understand the basic concepts of income tax and basis of charge
2. Identify the residential status and its implication on tax liability
3. Understand the manner of computation of total income
4. Know the basic concepts about GST

Course: - Advanced Costing Paper- III

1. Understand the concepts of job and unit costing.
2. Know the applications of process costing and joint product and by product accounting.
3. Understand procedure of contract costing and its practical implementation
4. Identify meaning of service costing and its application.

Course: - Advanced Costing Paper- IV

1. Know the applications of marginal costing in decision making.
2. Understand the concept of standard costing and analysis of variances.
3. Know the concept and types of budgets and concept of budgetary control.
4. Understand prospects of cost accounting standards.

सन २०१७

बी.ए. भाग १ आवश्यक मराठी

- १ साहित्यातील जीवनदर्शन समकालीन व्यवहार याची जाणीव दिली .
- २ साहित्यविषयक आकलनक्षमता वाढविली .
- ३ उपयोजित भाषाकौशल्य प्राप्त केली .
- ४) 'युवक' गटातील विद्यार्थ्यांची मनोभूमिका पक्की केली .

सन २०१८

- १ विद्यार्थ्यांची मराठी भाषा आणि साहित्याविषयी अभिरूची विकसित केली .
- २ मराठी साहित्य परंपरा लेखक कवी यांचा परिचय करून दिला .
- ३ विद्यार्थ्यांमध्ये मातृभाषा राष्ट्रीय एकात्मता आणि उच्च मानवी मूल्यांविषयी जाणीव निर्माण केली .
- ४ विद्यार्थ्यांचा व्यक्तिमत्व विकास घडवून विविध परीक्षा स्पर्धा परीक्षा आणि स्पर्धा परीक्षांची पूर्वतयारी करून घेतली .
- ५ चित्रपट आणि प्रसारमाध्यमे यांच्या लेखन आणि उपयोजनाच्या आकलनाचा अवकाश वाढविला .

सन २०१७

बी.ए. भाग १ ऐच्छिक मराठी

१. ललित साहित्यप्रकारांची ओळख करून घेतली .
२. साहित्यातून मानवी जीवन व व्यवहार समजावून दिले .
३. साहित्याच्या सामाजिक बांधिलकीची जाण अधिक दृढ केली .
- ४) 'युवक' वयोगटातील विद्यार्थ्यांची मनोभूमिका पक्की केली .
५. विद्यार्थ्यांची वाङ्मयीन अभिरूची विकसित केली .
६. साहित्य आणि संस्कृती भाषा आणि संस्कृती यांचा अनुबंध तपासला .
७. वाङ्मयीन प्रकार व कलाप्रकार समजावून घेण्यास मदत केली .
८. साहित्यविषयक आकलन क्षमता वाढविली .

सन २०१९

१. विद्यार्थ्यांची मराठी भाषा आणि साहित्याविषयी अभिरूची विकसित केली .
२. मराठी साहित्य परंपरा लेखक कवी यांचा परिचय करून दिला .
३. विद्यार्थ्यांमध्ये मातृभाषा राष्ट्रीय एकात्मता आणि उच्च मानवी मूल्यांविषयी जाणीव निर्माण केली .
४. विद्यार्थ्यांचा व्यक्तिमत्व विकास घडवून विविध परीक्षा आणि स्पर्धा परीक्षांची पूर्वतयारी करून घेतली .
५. निबंधलेखनाच्या माध्यमातून भाषा उपयोजनाची कौशल्ये विकसित करणे .

सन २०१७

बी.ए. भाग २ मराठी

पेपर क.३

पेपरचे नाव सभासद बखर व अनुवाद प्रक्रिया

अभ्यासक्रम निष्पत्ती

- १ मध्ययुगीन मराठी वाङ्मयाचा व भाषेचा परिचय करून घेतला .
- २ अनुवाद प्रक्रियेचा परिचय झाला .
- ३ समकालीन जाणीवा व्यक्त करणाऱ्या कथांचा परिचय करून घेतला .

सन २०१९

पेपर क.३ (DSC-CI)

पेपरचे नाव काय डेंजर वारा सुटलाय नाटक

अभ्यासक्रम निष्पत्ती

- १ नाटक या वाङ्मय प्रकाराचे आकलन करून घेतले .
- २ समकालीन नाटकातून नाटककाराच्या समकालाचे प्रतिबिंब कशाप्रकारे प्रकट होते याचा अभ्यास झाला .
- ३ नाट्याभ्यासाद्वारे प्रयोगरूप नाटक व नाटयक्षेत्रातील ज्ञानसंपादनास चालना मिळाली .
- ४ नाट्याभ्यासातून सभ्यता संस्कृती राष्ट्रीय एकात्मता व बंधुता वाढीस लागण्यास मदत झाली .
- ५ विद्यार्थ्यांमध्ये संवादलेखन कौशल्ये विकसित झाले .

सन २०१७

बी.ए. भाग २ मराठी

पेपर क.४

पेपरचे नाव जनाबाईचे अभंग व संपादनप्रक्रिया

अभ्यासक्रम निष्पत्ती

१. मध्ययुगीन मराठी वाङ्मयाचा व भाषेचा परिचय करून घेतला .
२. संपादनप्रक्रियेचा परिचय झाला .
३. समकालीन जाणिवा व्यक्त करणाऱ्या कवितेचा परिचय करून घेतला .

सन २०१९

पेपर क्रमांक ४

पेपरचे नाव : काव्यगंध

अभ्यासक्रम निष्पत्ती

१. मराठी काव्यपरंपरा व प्रवाहांची ओळख करून घेतली .
२. मराठी काव्यातून प्रकट होणारे माणूस आणि समाज यातील परस्पर संबंध शोधले .
३. कवितेच्या कलात्मक आकृतीबंधाचे मोल अभ्यासले .
४. काव्यप्रवाहानुरूप काव्यलेखनाचे विशेष समजावून घेतले .
५. प्रात्यक्षिकेद्वारे काव्यलेखन कौशल्ये समजविण्यास मदत झाल

**Bharati Vidyapeeth's
Dr. Patangrao Kadam Mahavidyalaya, Sangli**

**Department of Chemistry
M. Sc. Analytical Chemistry**

PROGRAMME OUTCOMES

Name of Programme: **M. Sc. Chemistry**

The following outcomes are specified by Shivaji University, Kolhapur.

PO1: The M.Sc. analytical chemistry program at Shivaji University, Kolhapur provides the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry and particularly in analytical chemistry enabling them to interface not only with various branches of chemistry (organic, inorganic, physical, biological, industrial, environmental, pharmaceuticals etc) but also with the related fields, and for professional courses and areas of research including medical, forensic, food, agriculture, dental, law, intellectual property, business programs etc.

PO2: Students will be able to solve various problems by identifying the essential parts of a problem, formulate strategy for solving the problem, applying appropriate techniques to arrive at a solution, test the precision and accuracy of the solution and interpret the results.

PO3: Students will be able to acquire domain specific knowledge and technical skills needed for employment in industries, teaching fields and pursue research. Students will be skilled in problem solving, critical thinking and analytical reasoning

PO4: Students will be able to apply the fundamental knowledge to address the cross-cutting issues such as sustainable development

PO5: Students will get perfect insight into qualitative and quantitative analytical chemistry and research ethics for production of quality research.

PO6: Students will be able to communicate effectively i.e. being able to articulate, comprehend and write effective reports, make effective presentations and documentation and capable of expressing the subject through technical writing as well as through oral presentation.

PROGRAMME SPECIFIC OUTCOMES

Name of Programme: M. Sc. Analytical Chemistry

The following outcomes are specified by **Shivaji University, Kolhapur**.

PSO1: Students will be able to prepare and qualify subject specific competitive exams like NET, SET and GATE and also other general public administration exams like M.P.S.C. and U.P.S.C. etc. exams.

PSO2: Student will be able to utilize the knowledge and analytical skills in QA-QC and R&D departments in almost all the industries enabling them to secure jobs where analytical chemistry is the core requirement to ensure and ascertain the quality of the product.

PSO3: Students will have opportunity for higher education leading to Ph.D. program.

PSO4: Students will be able to explore contemporary research in chemistry and allied fields of science and technology, collaborate in team projects, communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

PSO5: Students can start their own laboratories/startups/ chemical industry/ business (entrepreneurship).

PSO6: Students will be able to interpret data from the state of art Analytical instruments for ascertaining the product/material.

COURSE OUTCOMES: The course outcomes are specified by Shivaji University, Kolhapur

M. Sc. Analytical Chemistry:

Course	Outcome
CH-1.1 (Inorganic Chemistry – I)	<ol style="list-style-type: none">1. Students will be able to explain the basic chemistry of transition metals and its compounds, spectroscopic characteristics of such compounds, nomenclature, reactions and applications.2. Students will obtain knowledge about Preparation, structure, physical and chemical properties of metal carbonyls of transition metals.3. Students will be able to understand the all aspects of synthesis, bonding, structure and reactivity of organometallic compounds and their applications in homogenous catalysis.4. Student will be able determine the stability of the complexes and will be able to explain the nuclear stability and reactions.
CH-1.2 (Organic Chemistry – I)	<ol style="list-style-type: none">1. Students will able to differentiate between various organic reactive intermediates.2. Students can recognize, classify, explain, and apply fundamental organic reactions.3. Students will have ability to distinguish between different kinds of isomers.4. Course will develop interest in writing and finding mechanisms of new reactions.

<p>CH-1.3 (Physical Chemistry – I)</p>	<ol style="list-style-type: none"> 1. Students will be able to understand basic principles of thermodynamics and statistical mechanics 2. Able to learn advanced topics like quantum statistics and molecular dynamic simulation methods. 3. Develop abilities to understand how to estimate and analyze the physicochemical properties of condensed and gas phase materials. 4. Able to utilize spectral data to estimate molecular thermodynamic properties through partition function calculations. 5. Understand properties of detergents and colloidal materials 6. Learns the principles and techniques to understand gas and liquid adsorptions on solid surfaces 7. Can learn spectral techniques to study surface adsorption phenomena. 8. Learn principles and techniques for estimation of average molecular weight of a polymer or biological macromolecules CO9: Develop abilities to characterize polymers through understanding theories of virial coefficients, concepts of glass transition temperatures, etc.
<p>CH-1.4 (Analytical Chemistry – I)</p>	<ol style="list-style-type: none"> 1. Students would acquire the knowledge about the fundamentals of Analytical Chemistry including the sampling, sample pretreatment, basic techniques, methods and data handling, processing and statistical analysis of the same. 2. Students would acquire the knowledge and understand the scope of Analytical Chemistry spanning various fields. The students will learn fundamentals of qualitative analysis using conventional techniques 3. Students will learn the chromatographic techniques, choice of chromatographic techniques and tuning of the chromatographic technique as per the need based on the samples to deal with, learn electroanalytical techniques and computation chemistry which would groom them for alternative analytical strategies which form one of the important components of analytical chemistry. 4. Students will learn about referring to the standard reference books and infer information from the same. Analytical case study problems would be discussed to familiarize with the scope and advantages of Analytical Chemistry.

<p>CH-2.1 (Inorganic Chemistry – II)</p>	<ol style="list-style-type: none"> 1. Students will get the knowledge of the basic chemistry of non-transition elements and their compounds, synthesis and structural features, and applications. 2. To be able to explain the structures of inorganic compounds based on different theories. Student will understand the chemistry of various types of solvents. 3. Be well versed with the knowledge about the chemistry of Lanthanides and Actinides with respect to occurrence, separation, compounds and applications. 4. To understand the three dimensional structures of solid-state materials of industrial importance and to get the knowledge of bio-inorganic Chemistry.
<p>CH-2.2 (Organic Chemistry – I)</p>	<ol style="list-style-type: none"> 1. Illustration of modern synthetic methods and applications of reagents. 2. Provide knowledge of different organometallic compounds and various coupling reactions. 3. Understand principle and applications of protection and deprotection of various functional groups. 4. It will elaborate to understand the concept of chemoselectivity, regioselectivity and enantioselectivity.
<p>CH-2.3 (Physical Chemistry – I)</p>	<ol style="list-style-type: none"> 1. Students will learn basics of quantum mechanics. 2. Knowledge of the course will form the basis or essential requirement for the course “Advanced Quantum Chemistry” CO3: Able to understand selection rules and to predict the electronic spectra of conjugated organic molecules. 3. Able to study photochemical and photophysical phenomena 4. Capable of qualitative and quantitative analysis of various ingredients from industrial, food and pharma samples using techniques of emission spectroscopy. 5. Capable of understand the electrochemical aspects of materials, ionic processes and electrochemical sensors, battery materials and characterizations etc. 6. Able to study electrokinetic effects and their applications in the field of protein separation, characterization etc. 7. Understanding the molecular dynamics through kinetic studies. Applications to explore reaction pathways, protein-ligand binding rates, etc. will help to understand life governing processes.
<p>CH 2.4 Analytical Chemistry- II</p>	<ol style="list-style-type: none"> 1. Students will acquire the knowledge of spectroscopic tools/instruments used in chemical analysis and interpretation of the data. The scope and limitations of the

	<p>spectroscopic tools would be discussed so that the students learn about the type of samples which could be analyzed by these tools offering choices among the spectroscopic tools.</p> <ol style="list-style-type: none"> Students will learn about the simple and advanced instruments used for analysis like NMR, MS, AAS, ICP and thermal analysis (TGA, DTA, DSC etc.) techniques spanning wide variety of samples to be considered for analysis. Students will learn about the instrumentation, sample preparation and handling of sample, analysis and data interpretation and structural elucidation. Learning about different instruments will give them idea about appropriate choice of the instrument for analysis based on the source and type of analyte(s) in the sample under consideration.
PCH-I	<ol style="list-style-type: none"> Ability in professional sampling and sample treatment before actual analysis Ability to treat and evaluate the results of analysis Understanding and capability of performing basic chemical processes in a chemical laboratory Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, ion-selective electrodes)
PCH-I	<ol style="list-style-type: none"> Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. Determine the rate constants of various first order and second order reactions Determine the redox potential of a system, relative strength of acid etc using potentiometer, conductometer Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH-II	<ol style="list-style-type: none"> Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. Determine the rate constants of various first order and second order reactions Determine the redox potential of a system, relative strength of acid etc using potentiometer, conductometer

	<ol style="list-style-type: none"> 4. Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc. 5. Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH 2.1	<ol style="list-style-type: none"> 1. Students developed for precise sample solution preparation and sample treatment before actual analysis. 2. Students can be able to perform the calculations and error analysis 3. Develop understanding of basic chemical processes and deciding methods of analysis. 4. Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, high end thermometers, refractometer, pH meter etc.)
	<ol style="list-style-type: none"> 1. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 2. Determine the unknown concentration and thermodynamic parameters using conductometer. 3. Student will explore how to estimate order of reaction and the catalysis. 4. Students can estimate refractive index and molecular weights of species. 5. Students can understand the estimation of equilibrium properties like redox potential, phase diagram etc.
ACH-3.1 (Advanced Analytical Techniques)	<ol style="list-style-type: none"> 1. Develop knowledge of fundamental, instrumentation and working of state of art instrumental analytical techniques, effective use and choice of technique, written and/or oral communication of the concepts of analytical chemistry which will be useful as analytical chemist and R&D. 2. Acquire knowledge of mass spectrometry, type of MS, ionization types and specific practical applications of MS. 3. Acquire knowledge of basics of nanochemistry, nanomaterials and nanotechnology and application orientated synthesis and characterization of nanomaterials. 4. This course gives wide understanding about the instrumental analytical techniques (SEM, TEM, EDS, STM, AFM, Raman, XFS, ESR, XPS, AES, SIMS etc.) employed for qualitative and quantitative analysis for contemporary research.
ACH-3.2	<ol style="list-style-type: none"> 1. Students will gain knowledge of the instruments used at

(Organic Analytical Chemistry)	<p>the interface of Analytical-Organic chemistry useful for R&D and structural elucidation using UV-Visible, IR, ¹H & ¹³C NMR, Mass spectrometry data and interpretation of the same.</p> <ol style="list-style-type: none"> Students will acquire knowledge about the drug, their classification, sources of impurities (chemical, atmospheric and microbial contamination) in pharmaceutical raw materials and analysis of the same. Students will gain knowledge about the conventional and advanced analytical approaches for analysis of drug, vitamin, body fluids and clinical samples. Students will have an idea of commonly used pesticides and their analysis and also about forensic science and forensic sample analysis.
ACH- 3.3: (Electroanalytical Techniques in Chemical Analysis)	<ol style="list-style-type: none"> Fundamental knowledge of electrochemistry, electrodes, types of electrodes, its construction will lay foundation for the course. Students will gain knowledge and skill in electroanalytical techniques like cyclic voltammetry and its types, polarography, coulometry and dynamic light scattering technique for qualitative and quantitative analysis. Students will be familiar with the advanced electrodes used for chemical analysis, liquid-liquid membrane electrodes, enzymes and gas electrodes. Students will learn about electrophoretic techniques, advances in electrophoresis techniques and its analytical applications.
ACH-3. 4) (A) (Environmental Chemical Analysis and Control)	<ol style="list-style-type: none"> Students will acquire knowledge about sampling, criteria of good sampling, handling, preservation and storage of the samples, pretreatment and post treatment of samples. Students will acquire knowledge of conditions and strategies required during sampling and electrochemical and spectral methods for analysis of environmental samples. Students will learn about the air and water pollution, sources of pollution, typical parameters and properties (physical, chemical and biological) to be measured in air and water pollution with relevance to specific case studies. Students will be acquainted with organic pollutants and their analysis with special reference to pesticide analysis.

ACH-3.4) (B) (Recent Advances in Analytical Chemistry)	<ol style="list-style-type: none"> 1. Students will be acquainted with ultra-purity and ultra-trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACH-3.4 (B) (Recent Advances in Analytical Chemistry)	<ol style="list-style-type: none"> 1. Students will be acquainted with ultra-purity and ultra-trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACHP – V Practical -V	<ol style="list-style-type: none"> 1. In-depth training on laboratory solution preparations on all concentration scales 2. Training on laboratory safety and lab ethics in scientific work 3. Training on planning, design and execution of experiments 4. Training on uncertainty estimations for experimentally measured and derived properties of solutions
ACHP – VI Practical-VI	<ol style="list-style-type: none"> 1. Training on scientific literature search, defining the objective of the work, research skills, data representation in tabular and graphical form etc. 2. Training on experimental verification of fundamental theories, comparison of data with literature and scientific discussion on any deviation of data from expected theoretical values or reported literature. 3. Developing analytical skills 4. Training on qualitative and quantitative analysis of analyte
Part-II semester-IV	
ACH4.1 (Modern Separation Method in Analysis)	<ol style="list-style-type: none"> 1. Students will learn about modern separation and chromatographic used for analysis of different type of samples. 2. The student will understand instrumentation and mechanism of various separation techniques. 3. Student will acquire knowledge regarding various choice of instrument and detectors to be used for analysis depending on the sample and matrix.

		<p>4. Student will learn fundamentals of extractive chromatography, types of extraction techniques, advances in extraction methods and their hyphenations with chromatography leading to addressing challenging problems in analytical chemistry.</p>
ACH-4.2 (Organic Analysis)	Industrial	<ol style="list-style-type: none"> 1. Acquire knowledge of handling and investigating the characteristics of the oils, fats, detergents and soap samples and analysis of the same providing opportunity in cosmetic, pharmaceuticals, dyes and polymers industries. 2. Student will gain knowledge and importance of food quality, probe for food adulteration and adulterants, food preservative, food flavors and analysis of their components. 3. Students will also gain knowledge about the animal food stuff and the additives added in the animal food stuff as antibiotics, dietary supplements and growth promoting drugs, preservatives etc. and analysis of the same. 4. Student will learn about the analysis of cosmetics, face powder, hair dyes and hair care products, types of cosmetics, precautionary measures and composition of the cosmetics and specific roles of the ingredients. Will acquire knowledge about the paints, pigments and petroleum products, composition and analysis of the same using conventional and instrumental techniques.
ACH- 4.3 (Advanced Methods in Chemical Analysis)		<ol style="list-style-type: none"> 1. Students will be skilled in the techniques like fluorescence, phosphorescence, types of quenching, FRET and applications of the same in Analytical Chemistry and for addressing research problems. 2. Students will gain knowledge of the kinetic methods of analysis supporting the analysis and data procured in research. 3. The students will acquire the knowledge of advanced method of chemical analysis XPS, XRF, fluorescence and phosphorescence spectroscopy which will be beneficial in research. 4. Students will acquire knowledge of identifying types of plastic and will also be able to and determination of metallic impurities in plastics
ACH-4.4 (A) (Industrial Chemistry)	Analytical	<ol style="list-style-type: none"> 1. The students will acquire knowledge of analysis of metals, alloys, minerals and ores commonly used in the industry. 2. The students will be acquainted with the analysis of real samples like cement, plaster of Paris, different commercial

	<p>ores, soil composition, soil fertility, fertilizers etc using conventional and instrumental methods of analysis.</p> <ol style="list-style-type: none"> Students will also gain the knowledge of analysis of commercial materials, explosives, polymers, resins, rubber, luminescent paints, lubricants and adhesives. These would offer opportunity to the students to get employment in industries for quality assurance and quality control (QA-QC) of the product.
<p>ACH-4.4 (B) (Quality Assurance and Accreditation)</p>	<ol style="list-style-type: none"> Students will acquire knowledge of QA-QC which is essential for analytical chemist, This covers a variety of chemical fields and this knowledge would help students working on various materials, understanding the basics of samples, sampling, sample storage, and pre-post treatment of samples. Students will acquire knowledge of good laboratory practices, professional ethics, and instrumental analytical chemistry, awareness of health hazards, remedial measures, analytical method development and validation. The students would be aware of the importance of documentation for raw materials and finished products, their monitoring, maintenance and management. World-wide agencies involved in regulating the analytical protocols and establishing standards. Students will gain knowledge about the quality assurance and accreditation, evolution and significance of quality management, available accreditation agencies and advantages of accreditation.
<p>ACHP – VIII Practical-VIII</p>	<ol style="list-style-type: none"> The students will acquire hands on training for conducting the representative experiments for the analysis of wide variety of samples of inorganic, organic and physical approaches by qualitative and quantitative analysis. Demonstrate professional and ethical attitude to serve the society Students will have knowledge of safety signs on container of chemicals, safety in handling of chemicals, MSDS sheets, learn sample preparation and characterization for confirming the purity. Students would acquire knowledge about the separation and estimation of amount of metal, metal ions, organic compounds etc. in given samples. Based on the experience of project work, students will have ability to start their R & D laboratory.