



**Shri Shivaji Education Society Amravati's
SHRI SHIVAJI SCIENCE AND ARTS COLLEGE,
CHIKHLI, Dist. Buldana- 443201.
NAAC Reaccredited with 'B⁺⁺' Grade (CGPA 2.82)
ISO: 9001-2015**

**Program Outcome,
Program Specific Outcome
and Course Outcome**

Science Faculty

- After graduation student from Science Faculty should have
- Imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
- Developed Scientific outcome for upgrading the aspects related to life. They acquired the basic Knowledge of science subject i.e. Physics, Chemistry, Botany, Zoology,
- Mathematics, which are founder subject in applied sciences.
- Acquired skills in handling instruments, planning, and performing laboratory experiments.
- Analyzed the given data critically and systematically and drawing objective conclusion.
- Students proposed novel ideas in various subjects and providing solution to various problems
- Able to think creatively to propose novel ideas in explaining facts and figures or providing better solution and new ideas for the sustainable developments
- Students communicate scientific concepts, experimental, results, and analytical arguments clearly and concisely, both verbally and in writing.
- Sensitivity towards environmental concerns. The developments of team work and leadership abilities are imbibed to give importance of safe laboratory skills.

Arts Faculty

- After completion of Art faculty of humanities
- Acquired knowledge with facts and figures related concerned with subjects such as History. Economics, Political science, languages.
- Recognize ways in which political, social and economic issues which affect their daily lives across time and space.

- Understand historical developments in different periods of Indian history.
- Imbibes the values of the Indian constitution and their significance in everyday life.
- Gains a sense of the working of Indian democracy, its institutions and processes at the local, State and union levels.
- Understands spatial distribution of resources and their conservation.
- Written articles, novels, stories, to spread the message of equality, nationality, harmony etc.
- Understand how issues in social science influence literature and how literature can provide solutions to the social issues.
- Participated in various social and cultural activities voluntarily.
- Developed communication skill such as reading, listening, speaking, help in expressing ideas and views clearly and effectively.

➤

Commerce Faculty

- Advanced accounting is useful to clear the basic ideas of accounting which is applicable in Business.
- Business economics is useful to upgrade the knowledge of economy as well as the economical Concepts.
- Business and mathematical statistics is applicable to develop the knowledge in statistics and mathematical abilities.
- Deliver the Business regularity framework and Company law.
- Develop skill in Computer fundamental and operating system.
- The subject is useful to calcite the areas of Income tax and operating System.
- It is useful and applicable to maintain the Business Accounts as well as for Calculating the profit in the Commercial

institutions.

- Study about Computer application in Business.
- To gain knowledge of E-commerce and legal security.
- It is useful to enhance the knowledge about Entrepreneurship as well as helpful to develop skills among students.

Shri Shivaji Science and Arts College, Chikhli.
Department of Botany
Program Outcome, Program Specific Outcome and Course Outcome

PROGRAM OUTCOME

- At the end of the B.Sc. Programme, graduates will be able to
- Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevance in routine life.
- To inculcate Scientific Aptitude among the students.
- To make them aware of Environment and living things.
- To make them to use scientific logics and Soft Skills.
- Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.
- Acquired skills in handling scientific instruments, planning and performing laboratory experiments noting down the observations and drawing logical inferences from them.

PROGRAM SPECIFIC OUTCOME

- Identify and become familiar with the scope, methodology and application of modern botany and learn to appreciate its ability to explain various aspects.
- Understand theoretical and practical concepts of instruments that are commonly used in practical of botany.
- Design and carry out scientific experiments and record the results of such experiments.
- Understand safety use of instruments like autoclave, laminar air flow etc, and how they are applicable in botanical study in various fields.
- It explains how botany is useful for social, economic and environmental problems and issues facing our society regarding pollution, toxic food, energy, medicine and health etc.

COURSE OUTCOME

B.Sc. I Sem I

CO-I

- Understand the diversity of microbes and plants (cryptogams).
- Understand the different microbe's structure and their role in different areas.
- Understand the diversification of plant on the basis of Habitat, forms, nutrition's and ecological adaptations.

CO-II

- Understand the classify algae up to classes.
- Understand the different classes of algae on the basis of habitat, thallus, pigmentation, reserve food and reproduction.

CO-III

- Understand the classification of fungi by Ainsworth.
- Understand the different classes of fungi on the basis of their morphology and reproduction.
- Understand the different forms of lichens and their importance.

CO-IV

- Understand the classification of bryophyte.
- Understand the different Bryophytic forms on the basis of thallus organisation i.e. *Marchantia* and *Funaria*.
- Understand the evolution in Bryophyta and affinity to Pteridophyta.
- Learn about some Indian bryologist.

CO- V

- Understand about the first vascular plant i.e. pteridophyta.
- Understand the classification of pteridophyta.
- Understand the different examples of pteridophyta i.e. *Equisetum* and *Marsilea*.
- Understand about the evolution of stele and heterospory and seed habit in pteridophytes.

CO- VI

- Understand the applications of microbes and their economic importance in different areas.

- Understand the plant diseases by different microbes i.e. Fungal diseases ,viral diseases and Bacterial diseases.
- Understand the importance of cryptogams i.e.Bryophyta.

Practical

CO-I

- Study of preparation of temporary mount, identification and classification of algae, bryophyte, and pteridophytes materials.

CO-II

- Study of permanent slides of various materials plant pathology with the help of field study and excursion tour.

B.Sc. I Sem- II

CO- I

- Understand the process of fossilization and types of fossils.
- Understand the geological Time Scale and fossils of of gymnosperm.

CO- II

- Understand the classification of gymnosperm.
- Learn about the gymnospermic plant i.e. *Gnetum* and *Pinus* by studying morphology anatomy and life cycle.
- Understand the affinity of gymnosperm to pteridophytes and angiosperm.
- Understand the economic importance of gymnosperm.

CO- III

- Understand the morphology of plant on the basis of root, stem and leaves.
- Understanding diversity of plant i.e. annual plant biannual plant and perennial plant.
- Understand the different morphological parts of the plants their types and characteristics.

CO- IV

- Understand the types of inflorescence.
- Understand the types of flower, structures their parts.
- Understand the placentation in plant and types of pollination.

CO- V

- Understand the types of fruit.

- Understand the utilisation of plants i.e. the food plants , fibre plants and oil yielding plants.

CO- VI

- Understand the about spices and their importance.
- Understand the different medicinal plants with their medicinal uses and their characters.

Practical

CO-I

- Morphology, anatomy, double stains, permanent mount preparation of gymnosperm plants and fossils study.

CO-II

- Detailed morphological study of root, stem, leaf flower its modification of various plants and utilization of plants study.

B.Sc.II Sem- III

CO- I

- Understand the origin and evolution of angiosperm with different theories.
- Understanding Botanical nomenclature and its principles,rules ,taxonomic rank, type concept and valid Publication.
- Understand the herbarium with its techniques, significance and examples.
- Understand concept of biodiversity and its conservation i.e. ex situ conservation and in situ conservation.

CO- II

- Understand the Angiosperm classification system that is Bentham and hooker and englers and prantles.
- Understand the taxonomic studies of family Malvaceae, Brassicaceae leguminaceae and Apiaceae.
- Understand the systematic studies and importance of Asteraceae, Asclepidiaceae, Apocynaceae, Solanaceae, verbanaceae, lamiaceae euphorbiaceae, liliaceae, and poaceae.

CO- IV

- Understand the anatomy of plant.
- Understand the types of plant tissues i.e. simple tissues and complex tissues.

- Understand the anatomy of stem with their characteristics rings, sapwood and heart wood.
- Understand and roots systems, monocot and dicot root with secondary growth in dicot root.

CO- V

- Understand the embryology.
- Understand the development of male gametophyte.
- Understand the development of female gametophytes and its types.
- Understand the double fertilization process and triple fusion.
- Understand the classification of embryo and endosperm types and its significance.

CO- VI

- Understand the anatomy of stem i.e. monocot and Dicot stem.
- Understand the abnormal primary growth in boerhaavia stem and secondary growth in bignonia and dracenna stem.
- Understand the anatomy of leaf with respect to nerium leaf and Maize leaf.

Practical

CO-I

- Study of embryology, pollination, and mounting of parts of flower in angiospermic plants.

CO-II

- To study the anatomy and taxonomy of angiosperm plants with the help of laboratory study, field study by conducting excursion tours.

B.Sc. II Sem- IV

CO-I

- Understand the concept of cell and about the prokaryotic and Eukaryotic cells.
- Understand structures and functions of cell wall.
- Understand the structures and functions of plasma membrane with their models.
- Understand the structure and functions of nucleus.
- Understand the structure and functions of chloroplast.

CO- II

- Understand the structure and functions of different cellular organelles i.e. Golgi Complex ,vacuole, ribosome, Peroxisomes and mitochondria.
- Understand the cell cycle with mitosis and meiosis.

CO-III

- Understand the structure of chromosome with its types and their components.
- Understand the chromosomal aberrations structural and numerical chromosomal aberrations.

CO- IV

- Understand the mendel's laws i.e. law of dominance, law of segregation and law of independent assortment.
- Understand the interaction of genes i.e. complementary, supplementary and epistasis gene interaction.
- Learn the problem solving on the mendelism and interactions of genes.

CO- V

- Understand the linkage of genes its types with their theories.
- Understand the crossing over concept its types and theories.
- Understand the concept of mutation with spontaneous mutation and induced mutation.

CO- VI

- Understand the nomenclature of enzymes.
- Learn the characters of enzymes.
- Understand the concept of holoenzymes, coenzyme and cofactor.
- Understand the mechanism and action of enzymes.
- Understand the structure and functions of carbohydrate i.e. monosaccharide, disaccharide and polysaccharide.

Practical

CO-I

- Study the isolation of cell organelles using various techniques and study the stages of mitosis and meiosis.

CO-II

- Study of genetics using monohybrid and Dihybrid ratio with its related problems and demonstrate various tests for biochemical compounds.

B.Sc. III Sem- V

CO- I

- Understand the plant water relationship and process of imbibition, diffusion, osmosis and plasmolysis.
- Understand the absorption of water by active and passive transport.
- Understand the concept of ascent of sap by root pressure and transpiration pull theory.
- Understand the process of transpiration with its types, mechanism and significance.
- Understand the mineral uptake by active process by Carriers and by passive process by Ion exchange.

CO- II

- Understand the concept of photosynthesis their mechanism and process with light reaction and dark reaction.
- Understand the concept of respiration in mitochondria its types and with glycolysis, kreb cycle and electron transport chain.

CO- III

- Understand the nitrogen metabolism with role of Nitrogen, nitrogen fixation by symbiotic and non symbiotic process.
- Understand the concept of growth in plants by phases of growth, growth curve, geological role of growth hormones like Auxin, gibberellin cytokinins, Absasic acid and Ethylene.
- Understand the concept of senescence and Abscission.

CO- IV

- Understand the concept of photoperiodism, concept of florigen and role of phytochrome.
- Understand the concept of vernalization and its significance.
- Understand Movement in plants i.e. phototropic, Geotropic, epinasty, hyponasty and seismonasty movement.
- Understand the stress physiology in plant- types of stress, water and salinity stress.

CO- V

- Understand the concept of ecology ,environment and scope of ecology.
- Understand ecological factors i.e. light, temperature and water.
- Understand the atmosphere and its composition.
- Understand the Edaphic factors, process of soil formation, soil profile, soil biota and their role.

- Understand the ecological adaptation morphological and Anatomical in hydrophytes and xerophytes.

CO- VI

- Understand the concept of ecosystem, structure and functions, food chain, food web concept and energy flow model.
- Understand the population Ecology, natality and mortality concept and characteristics of community like frequency, density and abundance.
- Understand the concept of ecological succession i.e. Hydrosphere and Xerosphere.
- Understand the types of ecosystem i.e. Pond ecosystem and desert ecosystem.

Practical

CO-I

- Studied major and minor experiments of plant physiology.

CO-II

- Studied major and minor experiments of ecology and environment.

B.Sc. III Sem- VI

CO- I

- Understand the historical account of DNA and genetic Material by Griffith and chase experiment.
- Understand the chemical composition of DNA and double helical model of DNA.
- Understand the DNA replication in eukaryotes.
- Understand the packaging of DNA.
- Understand the Satellite, repetitive DNA and transposable elements.

CO- II

- Understand the concept of gene and their structure.
- Understand the expression of gene, Central dogma, types of RNA, genetic code and ribosomes.
- Understand the concept of transcription in eukaryotes, mechanism and RNA processing.
- Understand the translation process in eukaryotes.
- Understand the concept of endo-membranous system i.e. flow of peptide.

CO-III

- Understand the regulation of gene expression in prokaryotes, concept of Operon example Lac Operon.
- Understand the regulation of gene in eukaryotes, Britton Davidson model.
- Understanding protein folding mechanism and structure of proteins.
- Understand the process of protein sorting for protein targeting to organelles.

CO-IV

- Understand the Recombinant DNA technology, Tools and techniques.
- Understand the concept of restriction enzymes and its nomenclature and types.
- Understand the concept of vector with some examples plasmid, cosmid and phage.
- Understand the source of gene ex. genomic library and c DNA library.
- Understand the gene transfer techniques, indirect technique- chemical and physical and direct technique- agrobacterium mediated gene transfer.
- Understand the concept of gene amplification by PCR method.

CO- V

- Understand the basics of plant tissue culture.
- Understand the laboratory equipment and infrastructure for plant tissue culture.
- Understand the cultural media and growth hormones used in plant tissue culture.
- Understand the different sterilization techniques.
- Understand plant tissue culture technique i.e. Callus culture, micro propagation and concept of cellular totipotency , differentiation and morphogenesis.

CO- VI

- Understand the application of biotechnology in agriculture i.e. haploid plant production, protoplast culture, somatic hybridization, transgenic plant like BT- cotton and synthetic seed production.
- Understand the improvement in crop biotechnology.
- Understand the applications of biotechnology in industries in fermentation Technology, Bakery product production and alcohol production.
- Understand the biotechnology applications in Health-care for example edible vaccine production.
- Understand the biotechnological applications in conservation for example ex-situ conservation and in situ conservation.

Practical

CO-I

- Studied various major and minor experiments on molecular biology.

CO-II

- Studied working principle and application of various biotechnological instruments and techniques.

Shri Shivaji Science and Arts College, Chikhli.
Department of Chemistry
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcome

After successful completion of three year degree programme in chemistry (B.Sc.), a student should be able to

- PO-1. Demonstrate, solve and understanding of major concepts in all disciplines of chemistry.
- PO-2. Solve the problems and also think methodically, independently and draw a logical conclusion.
- PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- PO-4. Create an awareness of the impact of chemistry on the environment, society and development outside the scientific community
- PO-5. Find out the green route for chemical reactions for sustainable development.
- PO-6. To inculcate the scientific temperament in the students and outside the scientific community.
- PO-7. Use modern techniques, decent equipments and chemistry softwares.

Programme specific outcomes

- PSO-1 Gain the knowledge of chemistry through theory and practicals.
- PSO-2 To explain nomenclature, stereochemistry, structures, reactivity and mechanism of chemical reactions.

- PSO-3 Identify chemical formulae and solve numerical problems.
- PSO-4 Use modern chemical tools, models, chem-draw, charts and equipments.
- PSO-5 Know structure activity relationship.
- PSO-6 Understand good laboratory practices and safety
- PSO-7 Develop research oriented skills.
- PSO-8 Make aware and handle the sophisticated instruments, equipments.

Course Outcomes of B.Sc.-I Sem.-I

Course: 1S Chemistry

After successful completion this course, students will be able to know :

- CSO-1. Different periodic properties of elements.
- CSO-2. Periodic trends of atomic and ionic radii, Ionization energy, electron affinity and electronegativity.
- CSO-3. Definition of ionic bonding, Factors affecting on ionic bond formation, Born- Lande equation to calculate Lattice energy, Born Haber cycle to determine lattice energy, Solvation and salvation energy.
- CSO-4. S block elements and P block elements
- CSO-5. Inductive effect, Electromeric effect, Resonance effect, Hyperconjugation.
- CSO-6. Reactive intermediates Carbocations, Carbanions and free radicals.
- CSO-7. Aliphatic Hydrocarbons – Alkanes, Alkenes, Alkynes and Alkadienes
- CSO-8. Aromatic Hydrocarbons – structure of benzene, Reactivity of benzene and orientation of benzene.
- CSO-9. Thermodynamics – Adiabatic and Isothermal process, Statement of First law of thermodynamics, Need of Second law of thermodynamics.
- CSO-10. Concept of entropy, Physical significance of entropy, entropy of fusion, sublimation, vapourisation, transition and its calculation.

CSO-11. Gaseous state – Postulates of Kinetic theory of gases, RMS, average and Most probable Velocity.

CSO-12. Phase Rule – Statement of Phase rule, explanation of phase rule, Number of components and degree of freedom, Applications of Phase rule to water and Sulfur dioxide.

Course : 1S Chemistry Practical

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

:

CSO-1. Detection of Acidic and Basic radicals from given inorganic mixture.

CSO-2. Preparation of acetamide, benzanilide, Phenyl azo dye, tribromoaniline, benzoic acid.

Course Outcomes of B.Sc.-I Sem.-II

Course: 2S Chemistry

After successful completion and studying this course, students will be able to-

CSO-1. Understand the concept of polarisation and Fajans rule with its application.

CSO-2. Describe the covalent bond and hybridisation and its types.

CSO-3. Discuss the concept of acids and bases, classify hard and soft acids.

Apply Pearsons HSAB or SHAB principle to acids and bases.

CSO-4. Compare the study of p-block elements of group 16 and 17 with reference to different periodic properties.

Interhalogen compounds, their structure and properties and introduction of Fluorocarbons.

CSO-5. Study noble gases, compounds of noble gases with their structure and bonding.

CSO-6. Discuss non-aqueous solvent, water as Universal solvent with different parameters. Liquid ammonia as solvent with its merits and de-merits.

CSO-7. Explain different methods of preparations of alkyl and aryl halides with different chemical reactions and comparison of reactivity. Benzyne intermediate mechanism.

CSO-8. Study alcohols- Methods of preparation, reactions and uses of dihydric alcohol.

Pinacol-pinacolone re-arrangement mechanism.

CSO-9. Co-relate and study phenols, ethers and epoxide. Their methods of preparation with specific name reactions-like Williamsons synthesis, Fries-rearrangement, Kolbe's reaction. Ring opening reaction of epoxides.

CSO-10. Understand electrical and magnetic properties with their application.

Study the types of magnetic properties.

Study Gouy's balance method. Application of magnetic moment for identification of molecular structure with different numericals .

CSO-11 Visualise and discuss the concept of chemical kinetics.

Study terms involved in it. Half life period, order of reaction with examples.

Determination of order of reaction using different methods like- vant-Hoff's method, Ostwald's method.

Activation energy and Arrhenius equation with numericals.

Course : 2S Chemistry Practical

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

CSO-1. Systematic analysis of organic compound under following heads:

Preliminary test, element detection, functional group, melting /boiling point and preparation of derivative with its melting point.

CSO-2. Determination of surface tension by stalagmometer.

CSO-3. Determination of coefficient of Viscosity of unknown liquid by Ostwald's Viscometer method.

CSO-4. Comparison of cleaning power of detergents sample by stalagmometer.

CSO-5. Determination of parachor value of $-\text{CH}_2-$ group by stalagmometer.

CSO-6. Determination of heat of solution of KNO_3 solution.

Course Outcomes of B.Sc.-II Sem.-III

Course: 3S Chemistry

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

CSO-1. Molecular orbital theory, Concept of bond order, MO structure of homonuclear diatomic molecule, Comparison of VB and MO theory.

CSO-2. Free electron theory and properties of metals, Resonance theory of metals

CSO-3. Various rules under VSEPR theory to explain molecular geometry

CSO-4. Volumetric analysis, Molarity, Normality, Types of acid and base titration

CSO-5. General principles involved in redox titration, Iodometric estimation of Cu(II)

CSO-6. Theoretical principles underlying various steps involved in gravimetric analysis, Estimation of barium as barium sulphate

CSO-7. Preparation of acetaldehyde, benzaldehyde, acetone, acetophenone, structure of carbonyl group, reaction of aldehyde and ketones

CSO-8. Structure and reactivity of carboxylic group, Preparation of oxalic acid, Lactic acid, Benzoic acid and their reaction.

CSO-9. Element of symmetry, chirality, asymmetric carbon atom, enantiomers and diastereomers.

- CSO-10. Cis-trans and E-Z nomenclature, Methods of structure determination.
- CSO-11. Bayer strain theory, stability of cycloalkanes, conformational isomers
- CSO-12. Gibbs and Helmholtz's free energy function, partial molal function, Gibbs-Duhem equation.
- CSO-13. Nerst distribution law and its applications, Phase transition-Clausius-Clapeyron equation.
- CSO-14. Surface tension and applications of surface tension, Viscosity and its applications
- CSO-15. Conductance of electrolyte solution, Conductometric titration and its application, Determination of dissociation constant of weak electrolyte.

B.Sc.- II Sem.-III

Course : 3S Chemistry Practical

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

- CSO-1. Experiments related to Volumetric Analysis such as neutralizing capacity of antacid, the strength of oxalic acid, FAS, $K_2Cr_2O_7$, Percentage purity of FAS, Estimation of copper by iodometric titration.
- CSO-2. Experiments related to Gravimetric analysis such as Estimation of Barium, Nickel, Iron.
- CSO-3. Physical chemistry experiments such as determine refractive index, consolute temperature for phenol water system, Transition temperature of $MnCl_2 \cdot 4H_2O$, Kinetics of hydrolysis of methyl acetate, kinetics of saponification of ethyl acetate, determine partition coefficient of benzoic acid, Iodine, determine solubility of benzoic acid at different temperature and heat of solution.

Course Outcomes of B.Sc. Chemistry Semester- IV

After successfully completing this course, Students will be able to

CSO-1. Know characteristics of transition elements, general properties of transition elements with special reference to group trend, Comparison of 3d series element with 4d and 5d series element.

CSO-2. Know principle involve and factors affection in extraction of elements, Apply thermodynamic concept to reduction process (Ellingham diagram).

CSO-3. Know special properties of lanthanides, Learn electronic configuration and oxidation state of Actinides, comparison of Lanthanides and Actinides.

CSO-4. Know general properties of metallurgy.

CSO-5. Know orbital picture, synthesis and reactions of naphthalene (Electrophilic Substitution), Preparation of naphthal and naphthalamine.

CSO-6. Know synthesis and properties of malonic ester, Acetoacetic ester.

CSO-7. Know constitution, structure of glucose and fructose, Epimerisation, Conversion of glucose to fructose.

CSO-8. Know preparation of nitrobenzene, Reduction reaction of nitrobenzene in acidic, basic and neutral medium.

CSO-9. Know basicity of amine compounds, Preparation and properties of aniline, Hoffmann exhaustive methylation and its mechanism.

CSO-10. Know preparation of benzene dizonium chloride and its synthetic applications.

CSO-11 .Know classification, synthesis and properties of proteins.

CSO-12. Describe colligative properties of dilute solutions with respect to elevation of boiling point, depression in freezing point, Explain abnormal behaviour of solution, Van't Hoff's factors (i), Determination of degree of dissociation and association from Van't Hoff's factors and to solve the numericals.

CSO-13. Know type of symmetry, Laws of symmetry, Weiss and Miller indices of lattice planes, Calculation of h,k,l , Bravais lattice of SCC,BCC,FCC, Bragg's law, Method of determination of orbital structure of NaCl and KCl and to solve the numericals.

Course outcomes for B.Sc. Chemistry practical Semester- IV

After successfully completing this course, Students will be able to

CSP- 1. Employ scientific knowledge for separation of binary mixture of Cu^{2+} and Ni^{2+} ions by paper chromatography and determination of R_f value.

CSP- 2. Employ scientific knowledge for estimation of Zn^{2+} ion by complexometric titration.

CSP- 3. Employ scientific knowledge for determination of strength of unknown calcium salt solution by complexometric titration.

CSP-4. Employ scientific knowledge for estimation of hardness of water by complexometric titration.

CSP- 5. Use modern technique for estimation of Cu^{2+} ion in CuSO_4 sample solution by spectrophotometry.

CSP- 6. Employ scientific knowledge and good laboratory practice for isolation of casein from milk.

CSP -7. Employ scientific knowledge and good laboratory practice for estimation of glucose.

CSP -8. Employ scientific knowledge and good laboratory practice for estimation of acetamide.

CSP- 9. Employ scientific knowledge for determination of equivalent weight of organic acid.

Course Outcomes of B.Sc. Chemistry Semester -V

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

- CSO-1. Basic terms involve in coordination chemistry, Werner's theory.
- CSO-2. Nomenclature and isomerism in coordination compounds, Structure and bonding in complexes of 3d series elements.
- CSO-3. Definition, classification and application of chelates.
- CSO-4. Crystal field theory, Crystal field splitting, concept of CFSE, High spin and low spin complexes.
- CSO-5. Electronic spectra of transition metal complexes, Calculation of ground term, Orgeldiagram of d1 and d9 complexes, Electronic spectrum of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$.
- CSO-6. Stability of complexes, Thermodynamic and Kinetic stability.
- CSO-7. Orbital picture and substitution reaction of pyrrole and pyridine, Chemical reaction and orientation.
- CSO-8. Method of preparation and synthetic application of organomagnesium, organolithium and organozinc compounds.
- CSO-9. Retrosynthetic analysis and applications.
- CSO-10. Polymers, Dyes, Drugs and Pesticides.
- CSO-11. Quantum mechanics, Plank quantum theory, Photoelectric effect, Compton effect, de Broglie hypothesis, Heisenberg's uncertainty principle.
- CSO-12. Classical wave equation, Derivation of time independent Schrodinger wave equation, well behaved wave function.
- CSO-13. Application of Schrodinger wave equation, Concept of atomic orbital.
- CSO-14. Molecular spectroscopy, Energy level diagram of molecule, Conditions and selection rules for rotational, vibrational and Raman spectrum.
- CSO-15. Pure rotational and vibrational Raman spectrum of diatomic molecule.

Course Outcomes of B.Sc. Chemistry practical Semester- V

After successfully completing this course, student will able to know:

- CSO-1. Preparation of tetraminecopper (II) sulphate, hexamine nickel (II) chloride, potassium trioxalatoaluminate (III), Prussian blue, chrome alum, sodium thiosulphate and dithionite, cuprous chloride.
- CSO-2. Estimation of acetamide, glucose, formaldehyde, nitro group, protein.
- CSO-3. Qualitative separation of mixture of dyes using TLC/ Paper chromatography.
- CSO-4. Demonstration of Steam Distillation.
- CSO-5. Conductometric titration of mixture of strong and weak acid against a strong base.
- CSO-6. Determination of dissociation constant of weak acid by conductometry.
- CSO-7. pH metric titration of strong acid against a strong base by computer simulation.
- CSO-8. Potentiometric titration of strong acid against strong base.
- CSO-9. Verification of Lambert- Beer Law using KMnO_4 / $\text{K}_2\text{Cr}_2\text{O}_7$ solution.

Course Outcomes of B.Sc. Chemistry Sem -VI

Course: 6S Chemistry Theory

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

- CSO-1. Thermodynamic and kinetic stability of complexes and different factors affecting the stability of complexes
- CSO-2 Two types of substitution reactions shown by coordination compounds with their mechanisms viz. SN_1 dissociative mechanism and SN_2 associative mechanism
- CSO-3 Labile and inert complexes and the various factors affecting the lability

of complexes

CSO-4 Various regions of electromagnetic spectrum, phenomenon of coloration of complexes and laws of light absorption,

CSO-5 Principle and applications of spectrometer, colorimeter and paper chromatography

CSO-6 Metal carbonyls, Effective atomic numbers (EAN) rule, structure of metal carbonyls on the basis of VBT, concept of synergic bonding

CSO-7 structure and bonding in silicon polymers, polyphosphazenes, role of bioinorganic molecules or trace elements in biological system

CSO-8 Principle, instrumentation, solvent and application of electronic spectroscopy and IR spectroscopy in elucidation of unknown organic compound

CSO-9 Principle, instrumentation and application of $^1\text{H-NMR}$ spectroscopy and mass spectrometry in structural elucidation of given organic molecules

CSO-10 Introduction to elementary quantum mechanics involving Planck's quantum theory, Heisenberg's Uncertainty Principle, de Broglie hypothesis, Photoelectric effect, Compton's effect, Schrodinger wave equation, wave function and concept of atomic orbitals

CSO-11 Principle and application of pH-metry using different electrodes and about potentiometric titration

CSO-12 Nuclear models, Meson theory, nuclear fission and nuclear fusion reactions, Q-value and application of radioisotopes for human welfare

Course: 6S Chemistry Practical

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

CSO-1 Estimation of organic compounds like glycine, formaldehyde, ascorbic acid, phenol from the given solution skillfully

CSO-2 Handling of instruments conductometer, potentiometer skillfully and performed practicals by using these instruments.

Shri Shivaji Science and Arts College, Chikhli.
Faculty of Commerce
Program Outcome, Program Specific Outcome and Course Outcome

Programme Outcome:

Bachelor in Commerce is a three years under graduate course. It consists of six semesters i.e. two semesters in one academic year. Eligibility is HSC passed student from any stream. The programme outcome of B.Com., can be elaborated below:

1. After completing a B.Com degree a student can pursue PG Courses M.Com.
2. After B.Com. a student can appear for various competitive exams such a UPSC, MPSC, Banking etc.
3. A student can also start his own business or can work with private concerns.

Programme Specific Outcome:

1. By completing a degree of B.Com a student acquires entrepreneur, accounting, managerial, statistical, auditing, income tax and communication skill.
2. A student gains knowledge regarding various economic concepts, monetary system.
3. A student can also gain information technology and computer software knowledge such as MS. Word, MS. Excel, MS. Power Point, Tally and designing webpage though HTML.
4. A student can gain good knowledge about e-commerce.

Course Outcome

B.Com. I Year (Sem. I)

Compulsory English

To develop Prose and Poetry reading skill in English. To make aware about English grammar and to develop business correspondence and writing skills.

Supplementary English

To develop Prose, Poetry and composition writing reading skill in English.

Compulsory Marathi

To develop Prose and Poetry reading skill in Marathi. To inculcate skill for writing in Marathi for different media.

Computer Fundamental And Operating System -I

The objective of this course are to impart basic knowledge about Computer, Word Processing.

Principles Of Economics

To impart basic knowledge about micro economics, consumption law, production function and cost & revenue.

Advanced Accountancy

To impart basic Accounting Knowledge as applicable to business.

Principles Of Business Organization

To make aware about basic concept Commerce and Industry, business, Merger Acquisition, New Enterprises and Trade Union in India.

B.Com. I Year (Sem. II)

Compulsory English

To develop Prose and Poetry reading skill in English. To make aware about English grammar and to develop business correspondence and writing skills.

Compulsory Marathi

To develop Prose and Poetry reading skill in Marathi. To inculcate skill for writing in Marathi for different media. To develop the skill of business letter writing.

Computer Fundamental And Operating System -II	The objectives of this course are to impart basic knowledge about Computer, MS-Word Processing 2007 and MS-PowerPoint 2007.
Business Economics	To impart knowledge regarding business and managerial economics, market structure and factors pricing
Financial Accounting	To develop conceptual understanding of fundamentals of financial accounting system and to impart skills in accounting for various kinds of business transaction
Principles Of Business Management	To develop conceptual knowledge and managerial skills regarding business management and its principles.
B.Com. II Year (Sem. III)	
Compulsory English	To develop Prose and Poetry reading skill in English. To develop communication skills in english.
Supplementary English	To develop Prose, Poetry and short stories reading skill in English.
Compulsory Hindi	To develop Prose and Poetry reading skill in Hindi. To development business correspondence skill in Hindi.
Compulsory Marathi	To develop Prose and Poetry reading skill in Marathi. To inculcate skill for writing resume and job application in Marathi.
Company Accounts	This course enable the students to develop awareness about company Account.
Business Mathematics	The objective of this course is to enable the students to have such minimum knowledge of Mathematics
Auditing	This course will enable the students to create awareness regarding concept of audit and audit procedure carried out for Audit of Banking, Insurance & Educational Institutions.
Monetary System	To course will enable students to create awareness regarding concept of Money, Value of money and Price Fluctuations. It will also make aware students regard capital market, money market and its functioning.
Information Technology & Business Data	The objective of this course is to familiarize with basics of Information Technology and use of

Processing-I Spreadsheet Package for Business Data Processing

**B.Com. II Year
(Sem. IV)**

Compulsory English To develop Prose and Poetry reading skill in English. To inculcate Interview and Interviewing skills, Meeting skills and Nonverbal Communication.

Compulsory Marathi To develop Prose and Poetry reading skill in Marathi. To inculcate skills for creating text for advertisement in Marathi.

Corporate Accounting This course enable the students to develop awareness about corporate Accounting

Business Statistics The objective of this course is to enable the students to have such minimum knowledge of Statistics.

Income Tax The objectives of this course is to make aware students regarding basic concepts of income tax, computation of income of individual , procedure of filing income return and about income tax authorities and power

Indian Financial System The objectives of this course are to develop awareness among student regarding Indian Financial Market, Indian Banks, Commercial Banks, Reserve Bank of India and Stock Exchange.

Information Technology & Business Data Processing-II The objective of this course is to familiarize with basics of Database, Database management System and use of Accounting Package for Business Data Processing

**B.Com. III Year
(Sem.V)**

Compulsory English To develop Prose, Poetry reading and communication skill in English. To inculcate awareness about paperless office, video conferencing and e-banking.

Compulsory Marathi To develop Prose and Poetry reading skill in Marathi. To inculcate skills for writing official notices, tenders and minutes of the meeting in Marathi.

Cost Accounting	This course exposes the students to the basic concepts and tools used in Cost Accounting. To provide an understanding of the applications of Cost Accounting techniques for determination of cost of production.
Business Environment	The contents of this course intend to develop the ability to understand and interpret sector-wise business environment of India.
Business Regulatory Frame work	To help the students to understand the concept of business Laws and it's applications in business regulation.
Internet and World Wide Web - I	The course aims at familiarizing the students with the basic concepts and ground rules of Internet and the various services it offers including designing of website and how to access information from depositories in the world wide web.
e-Commerce - I	The objective of the course is to familiarize the students with the essentials of internet based e-commerce and to make them comprehend its practical aspects as well as growth potential of ecommerce in India.
B.Com. III Year (Sem.VI)	
Compulsory English	To develop Prose, Poetry reading skill in English and to enhance communication skill in Advertising (Types of Advertising & Advertising Media, Techniques of effective advertising). To develop Employability Skills namely Leadership Skills, Teamwork Skills, Time Management, Stress Management among students.
Compulsory Marathi	To develop Prose and Poetry reading skill in Marathi. To inculcate skills for writing memorandum and Public Notification in Marathi.
Management Accounting	This course exposes the students to the basic concepts and tools used in Management Accounting and to provide an understanding of the applications of Management Accounting techniques for management decision making.
Economics of Development	To provide an insight into various growth models and their applicability in present scenario.
Company Law	To provide an indebt knowledge about company law, Incorporation of company, Share capital of

Internet and World Wide Web - II

company, Securities Market, Company Secretary And Company Meetings

The course aims at familiarizing the students with the basic concepts and ground rules of Internet and the various services it offers including designing of website and how to access information from depositories in the world wide web.

e-Commerce- II

The objective of the course is to acquaint the students with the internet- based e-commerce business models, internet marketing and e-governance.

**Master of Commerce (M.Com.) Programme
Programme Outcome:**

Master of Commerce is a two years post graduate course. It consists of four semesters i.e. two semesters in one academic year. Eligibility is B.Com. or B.B.A. passed student. The programme outcome of M.Com., can be elaborated below:

1. After completing a M.Com degree a student can pursue research degrees such as M.Phil. (Commerce) and Ph.D. PG Courses such as M.A.(Eco.), and various other management and professional courses such as M.B.A., C.A., C.S. etc. can also be opted.
2. After M.Com. a student can appear for various competitive exams such a UPSC, MPSC, Banking
3. A student can get appointed as a junior college teacher after completing B.Ed. programme along with M.Com.
4. A student can also get appointed as a senior college teacher after completing Ph.D. or qualifying for 'SET| NET after completing M.Com.
5. A student can also start his own business or can work with private concerns.

Programme Specific Outcome:

1. By completing a degree of M.Com a student acquires entrepreneur, accounting, managerial, statistical, auditing, income tax and communication skill.
2. A student gains advanced knowledge regarding the subjects in business management , managerial economics, statistics, corporate tax planning, financial management, research methodology and marketing management.
3. A student can also gain information technology and computer software knowledge such as MS. Word, MS. Excel, MS. Power Point, Tally and designing webpage though HTML.
4. A student can gain good knowledge about e-commerce and legal securities

Course Outcome

M.Com. I Year (Sem. I)

Managerial Economics

To make aware regarding concept of managerial economics and micro economics theories

Service Marketing and Customer Relationship Management

To acquaint students with basic issues in services marketing and customer relationship management.

Advanced Financial And Cost Accounting

To enable students to understand advanced accounting concepts, tools and techniques used in financial and cost accounting

Banking and Insurance

To make aware students regarding structure of Banking and Insurance in India and services provided

M.Com. I Year (Sem II)

Accounting for Managerial Decisions

To enable students to understand accounting concepts, tools and techniques used for taking managerial decisions.

Strategic Management

To enhance decision making abilities of students in situation of uncertainty in dynamic business environment

Management Concept and Organisational Behaviour

To help student understand the conceptual framework of management and organisational behaviour.

Computer Applications in Business

To provide knowledge and understanding the applications of relevant software in business data analysis for accounting and decision making.

M.Com. I I Year (Sem. III)

Research Methodology

To make student conversant with principles and theoretic concepts of the research methodology and guide them in their applications, so the students will be able to write project report.

Statistical Analysis

To make the student learn the application of statistical tools and techniques for decision making.

Corporate Tax Planning

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

E-Commerce and Legal Security

To enable the student to gain knowledge about e-commerce and its various

components with legal security.

M.Com. II Year (Sem. IV)

Entrepreneurship and Skill Development

To improve entrepreneurship quality for self-employment. To give knowledge to start their own start-up. This course will also guide them how to develop business skills and how to achieve business goals.

Sales and Distribution Management

To acquaint the students with sales operation, selling strategy and distribution management.

Co-operative Management

To enable the students to understand the management of co-operative societies and co- operative legislation in India.

International Financing

To make aware students regarding international financing

Shri Shivaji Science and Arts College, Chikhli.
Department of Computer Science
Program Outcome, Program Specific Outcome and Course
Outcome

Program Outcome

- PO-1. Demonstrate, solve and understanding of major concepts in all disciplines of Computer Science.
- PO-2. Solve the problems and also think methodically, independently and draw a logical conclusion.
- PO-3. Employ critical thinking in programming way and the scientific knowledge to design, carry out, records and analyze the results of practically done with the help of programming language.
- PO-4. Create an awareness of the impact of programming language and use of computer science with it on in a useful way on the environment, society and development outside the scientific community and as well as in a society.
- PO-5. Demonstrate proficiency in problem-solving techniques using the computer.
- PO-6. Able to do Hands on work in proficiency in at least two high-level programming languages and two operating systems.
- PO-7. In depth proficiency in the analysis of complex problems and the synthesis of solutions to those problems.
- PO-8. Practically gaining the knowledge of comprehension of modern software engineering principles.
- PO-9. Major impact on a breadth and depth of knowledge in the discipline of Computer Science. PO-10. The revised and restructured

curriculum for the Three-year integrated course is systematically designed considering the current industry needs in terms of skills sets demanded under new technological environment.

- PO-11. The proposed curriculum is more contextual, industry affable and suitable to cater the needs of society and nation in present day context.

B.
B. Sc. I (Sem I)
CO

- To understand the computer fundamentals like operating systems, peripheral devices, internet and it's types.
- To understand various DOS commands and features of windows
- To understand internet and Types of Internet connections.
- To understand Programming Concept like Algorithm flowcharting programming languages.
- To understand assembler, interpreter and compiler
- To understand C language its history, features and structure of C program
- To understand keywords, identifiers, constants, variables, basic data types of C.
- To understand I/O Operations like Formatted I/O and Unformatted I/O
- To understand Control structure and conditional operator with its Applications

CO Practicals

- Execution of various DOS commands.
- Application of number systems.
- To understand and applications of web browser and E-mail.
- Design, implement, test, debug, and documents programs in C
Implementation of Arithmetic, relational, logical operators.
- Demonstration & use of various I/O operations.
- To understanding about writing algorithms and step by step approach in solving problems with the help of flowchart.
- Demonstration of Control structure and conditional operator.

B. Sc. I (Sem II)

CO

- To understand the fundamentals of data structure like list, array, stack, queue.
- To understand algorithms of traversing, insertion and deletion operation.
- To understand Linked list, circular queue & their implementation.
- To understand Tree, tree Traversing, sorting and searching Techniques.
- To understand Function in C language function prototype, local & global variable.

- To understand and implementation of array.
- To understand String Handling in C language.
- To understand and implementation Pointers and Pointer and array.
- To understand and implementation of Structure and Union.
- To understand and implementation of File Handling and I/O Operations on file.

CO Practicals

- To implement data structure like array, stack, queue.
- To demonstration of algorithms of traversing, insertion and deletion operation on Linked list and circular queue.
- Demonstration of tree, tree Traversing, sorting and searching Techniques.
- Demonstration of function in c language
- To implementation of function prototype, local & global variable.
- To demonstration and implementation of array.
- To demonstration of String Handling in C language.
- To demonstrate and implementation Pointers and Pointer and array.
- To demonstration and implementation of Structure and Union

B. Sc. II (Sem III)

CO

- Understand basic data structures such as arrays, linked lists, stacks and queues and their applications.

- Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.
- To design and implement various data structure algorithms.
- To impart a thorough understanding of non-linear data structures such as trees and their applications.
- Familiarity with various sorting, searching techniques and their performance comparison.
- Determine and demonstrate bugs in program, recognize needed basic operations with data structures.
- Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.
- Students should be able to write, compile and debug programs in C++ language.
- Use different data types in a computer program.
- Basic idea about Classes and object with specifies, data members and member functions.
- Understanding the pure concept of managing console I/O with manipulators and operators.
- Using functions with their features and design programs involving decision, structures, loops and using different functions.
- Constructor and Destructor types and usage.
- Operator overloading usage in a way that unary and binary operators
- With the help of Inheritance understand the visible mode and virtual as well as abstract base classes for object-oriented programming.

CO Practicals

- Programs to demonstrate fundamental algorithmic problems including tree.
- Implement various searching and sorting algorithms.
- Programs to demonstrate the implementation of various operations on stack and queue.
- To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.
- The strengths of C++, which provide the students with the means of writing modular, efficient, maintainable, and portable code.
- Implement the use of various OOPs concepts with the help of programs.
- Identify with the help of classes and objects defining data member and member functions, accessing members in creation of program and usage of the supported factors needed for a finding the solution to specific problem.
- To learn how to overload functions and operations in C++.
- Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.

B. Sc. II (Sem IV)

CO

- To introduce the concept of DBMS with respect to the relational model, to specify the functional and data requirements for a typical database application and to understand creation, manipulation and querying of data in databases.
- Identify the basic concepts and various data model used in database

design ER modeling concepts and architecture use and design queries using SQL.

- Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression to the form of queries.
- Identify the basic database storage structures and access techniques such as file organizations, indexing methods.
- An understanding of normalization theory and apply such knowledge to the normalization of a database.
- Recognize the purpose of query processing and optimization and also to demonstrate the basic of query evaluation.

- Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data.
- Understanding the concept of SQL DDL, DML commands and Clauses.
- Apply and relate the concept of Function with the supported format of Number, Character, Conversion and Date the in the database.
- In database management system and SQL commands along with PL/SQL using Oracle gives the student mastery on an open source-based toolkit, which has more scope in the job market.
- Perform PL/SQL programming using concept of Cursor Management and Triggers.
- Deep Knowledge about the Transaction in processing PL/SQL. Able to understand the concept of securities in database which is mostly dependent on PL/SQL.

CO Practicals

- Transform an information model into a relational database schema and to

use a data definition language and utility to implement the schema using a DBMS.

- Using an SQL interface of a multi-user relational DBMS package to create, secure, populate, maintain, and query a database.
- Formulate query, using SQL, solutions to a broad range of query and data update problems.
- Use a desktop database package to create, populate, maintain, and query a database.
- Demonstrate a rudimentary understanding of programmatic interfaces to a database and be able to use the basic functions of one such interface.
- Analyze an information storage problem and derive an information model expressed in the form.
- Understand query processing and techniques involved in query optimization.
- Improve the database design by normalization.
- Execute various PL/SQL queries related to Transaction Processing.
- Understand the PL/SQL architecture and write PL/SQL code for procedures, Cursor Triggers.

B. Sc. III (Sem V)

CO

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

- To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. To build Windows applications using structured and object-based programming techniques.

- Learn about .NET framework developed by Microsoft.
- Design and develop professional console and window-based .NET application.
- Be able to understand use of VB.NET basics, Objects and Types, Inheritance.
- To develop, implement, and demonstrate Component Services, Threading, Remoting, Windows services, web.
- To understand and be able to explain Security in the .NET framework and Deployment in the .NET.
- To develop Assemblies and Deployment in .NET, Mobile Application Development.
- Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements VB.NET application.
- Construct classes, methods and assessors also the instantiate objects.
- Understand and implement string manipulation, events and exception handling within .NET application environment.
- Use Object Oriented paradigm to develop code and understand the concepts of Core Java and to cover-up with the pre-requisites of Core java. The introduction to Java programming is done through the framework of object-oriented systems.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries.
- Be able to use the Java SDK environment to create, debug and run simple Java programs.
- Identify Java language components and how they work together in applications.
- Apply the above to design, implement, appropriately document and

test a Java application of medium complexity, consisting of multiple classes.

- The knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods.
- Understand the fundamentals of object oriented programming in Java, including defining classes, objects, invoking methods and exception handling mechanisms.
- Understand the principles of inheritance, packages and interfaces.

CO

Practicals

- To aware with complete the all introductory part of to .Net IDE Component Framework.
 - To develop, implement and creating Applications with VB.NET.
 - Programming concepts in .Net Framework.
 - Understand .NET framework and can realize some of the major enhancements in the new version of VB.
 - Experience to using the VB .NET environment and how to develop small programs.
 - Develop programs using Decisions, loop and Arrays in VB .NET.
 - To design and program stand-alone Java applications.
 - Understand the basic concepts such as Classes, methods, function Overloading, array and string manipulation in Java.
 - Apply the types of inheritance in Java.
- Implement Strings, packages, and Interface techniques

B. Sc. III (Sem VI)

CO

- Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.
- Explore Exception Handling and design the Multithreading application in Java.
- Understand the concept of applets by how to create and run applets and Graphics programming by various classes in the graphics class.
- Interact with the concept of applets life cycle and creating with supported methods in Java
- Event handling with the application of AWT in Java.
- Design and implement windows application using windows forms, control library
- Single and Multiple form-based and menu -based technique shows in a .Net applications using basic and advanced control.
- Implementation of GUI application with Form Controls and its Event.
- Handle controls in Forms (message Box, Input Box), Windows MDI forms and Controls (Textbox, Creating Multiline, Word Wrap textboxes)
- Connect database by using ADO.NET and manipulate the database
- ADO.net based database driven .Net application.
- Understand ADO.NET and develop database applications.

CO

Practicals

- Working on the concepts of multi-threading by using thread class and implementing Run able interface.
- Find out the errors and exceptions, keywords that are used to manage exceptions and various ways in Java application.
- Develop Applet programs and manipulate the IO streams.
- Create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields,scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT).
Apply event handling on AWT with Java applications.
- Understand the VB .NET environment and how to develop small programs.
- Develop menu-based program for text manipulation.
- Connect database by using ADO.NET and manipulate the database.
- Develop the applications using Data Grid for displaying records.

Program Outcome (PO)
&
Program Specific Outcome(PSO)
M. Sc. Computer Science

PO

- PO-1. An ability to apply knowledge of computing and mathematics appropriate to the discipline.

- PO-2. An ability to identify, formulate, and develop solutions to computational challenges.
- PO-3. An ability to design, implement, and evaluate a computational system to meet desired needs within realistic constraints.
- PO-4. An ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals.
- PO-5. An understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession.
- PO-6. An ability to communicate and engage effectively with diverse stakeholders.
- PO-7. An ability to analyze impacts of computing on individuals, organizations, and society.
- PO-8. Recognition of the need for and ability to engage in continuing professional development.
- PO-9. An ability to use appropriate techniques, skills, and tools necessary for computing practice.
- PO-10. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computational systems in a way that demonstrates comprehension of the trade offs involved in design choices.
- PO-11. An ability to apply design and development principles in the construction of software systems of varying complexity.

PSO

- PSO1. Communicate computer science concepts, designs, and solutions effectively and professionally.

- PSO2. Apply knowledge of computing to produce effective designs and solutions for specific problems
- PSO3. Use software development tools, software systems, and modern computing platform

M. Sc. I (Sem I)

CO-I

- Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions.
- Develop K-maps to minimize and optimize logic functions up to 5 Variables.
- Acquire knowledge about various logic gates and logic families and analyze basic circuits of these families.
- Design various combinational and sequential circuits such as encoders, decoders and counters using multiplexers, and flip-flops.
- Describe and compare various memory systems, shift registers and analog to digital and digital to analog conversion circuits.
- Understand the taxonomy of microprocessors and knowledge of contemporary microprocessors. Describe the architecture, bus structure and memory organization of 8086 as well as pin diagram, signal description, register organization.
- Explore techniques for interfacing I/O devices to the microprocessor 8086
Demonstrate programming using the various addressing of 8086 microprocessor.

CO-II

- To Understanding .net, the C# environment
- To understand and implement framework base classes, user and program Interfaces.
- Be able to understand use of C# basics, Objects and Types, Inheritance, program structure; Literals, variables and data types, operators, Expressions, Decision making and branching, looping, methods in c#
- To develop, implement and creating Applications with C#.
- To understand and implement Operator overloading.
- To understand and be able to explain Multithreading in c# with Implementation.
- To develop or implement Data Access with .Net: ADO.net.

CO-III

- After completing this course, students will be able to: Allocate Main Memory based on various memory management techniques.
- Compare Memory allocation using Best fit, Worst fit, and first fit policies. Apply page replacement policies for dynamic memory management.
- Schedule CPU time using scheduling algorithm for processors.
- Compare various device scheduling algorithms.

CO-IV

- Understand computer network basics, network architecture, TCP/IP and OSI reference models.
- Identify and understand various techniques and modes of transmission
- Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme,
- To understand Routing; Internet Protocol: IP Addressing, IPv4: Classes and Packet format, DHCP; ICMP; Routing in the Internet: RIP, OSPF, BGP.
- Discuss the elements and protocols of transport layer
- Understand network security and define various protocols such as FTP, HTTP, Telnet, DNS
- To understand Network Management Architecture; Internet Network Management Framework; SMI, MIB, SNMP.

CO-Practicals (Lab-I)

- Study of logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates Design and implement combinational circuits like half adder/full adder, half subtractor /full subtractor, code converters, comparators, MUX / DEMUX
- Design and implement sequential circuits like flip-flops, counters and shift registers
- Demonstration of 8-bit DAC and 8-bit ADC Solve basic binary math operations using the instructions of microprocessor 8086.

Apply programming knowledge using the capabilities of the stack, the program counter. Design, code and debugs

- Assembly Language programs to implement simple programs
Execute a machine code program on the trainingboards.
- Student can understand internal structure and operations of OS alongwith various processes including threading, inter process communication and synchronization with I/O operations.

CO-Practicals (Lab-II)

- Understand code solutions and compile C# projects within the .NET framework
- Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.
- Construct classes, methods, and assessors, and instantiate objects
Understand and implement string manipulation, events within .Net application environment.
- Identify and resolve problems (debug /trouble shoot) in C#.NET window based application Design and Implement database connectivity using ADO.NET in window based application Identify and resolve problems (debug /trouble shoot) in C#.NET window based Application.

M. Sc. I (Sem II)

CO-I

- To learn graphics and animation on the web pages, using Java Applets.
- To learn and design a full set of Event driven UI widgets and other components, including windows, menus, buttons, checkboxes, text, fields scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) & Swings
- To learn Java Data Base Connectivity (JDBC) so as to retrieve and manipulate the information on any relational database through Java programs.
- To learn the server side programming using Servlets and JSP.
- To learn Java Bean so as to make the reusable software components.
- To learn invocation of the remote methods in an application using RMI
- To learn the development of Enterprise based applications, using EJB: Stateful, Stateless and Entity Beans
- To make the students familiar with Struts frameworks, which gives the opportunity to reuse the codes for quick development
- To learn Hibernate for the mapping of Java classes and objects associations to the relational database tables

CO-II

- After successfully completing this course, students will be able to know:
- Learn the notions of data structure, Abstract Data Type.
- Understand basic data structures such as arrays, linked lists, stacks and queues.
- To evaluate various methods of linked list formulation. Also explore different kinds of linked lists and their applications in day to day problem solving.
- To evaluate various formulation of queues. Also explore different kinds queues and their applications and implementations in simulations.
- To learn Sorting: Insertion sort, merge sort, Heaps and heap sort. Quick sort, Linear sort, priority queue, order statistics, lower bounds for sorting.
- To learn Searching: Balanced tree, red-black tree, lower bounds for Searching.
- To learn Graph: representation and algorithms, Breadth-first search (BFS), Depth-first search (DFS), topological sorting, Shortest Paths, Single source shortest paths problem, Minimum spanning tree, topological ordering, sparse matrices, linked list implementation of graph and graph traversal.
- To explore hashing, and various implementations of searching and hashing algorithms.

CO-III

- Learn the phases of software development LO2. LO3. LO4. LO5.
- Develop process models and process system models.
- Gather, understand, analyze and specify requirements, Analyze and translate a specification into a design, and then realize that design practically, using an appropriate Software engineering methodology.
- Know how to develop the code from the design and effectively apply relevant standards and perform testing, and quality management and practice
- Develop architectural diagram, and implement by following coding principles
- Able to use modern engineering tools necessary for software project Management, time management and software reuse.
- Apply testing strategies and handle software product maintenance Issues.

CO-IV

- Ability to understand Sets and their algebra, duality, powersets and partitions. Principle of Strong Mathematical Induction, set theory.
- Ability to analyze various binary relations characteristic function and Recursive functions.
- Ability of Counting, Algebraic Structures, Algebraic systems, and

Solving cosets and Lagrange's theorem

- Ability to understand logical operators, Implications, Lattice as POSETs and properties,
- Lattice as algebraic systems, sublattices, Direct product and homomorphism, Special lattices, Boolean algebra
- Ability to model problems using Graphs, connectivity, Rooted trees, simple precedence grammars-syntax terminology, a view of parsing, notion and use of precedence relations, formal definition of precedence relations.
- To understand Turing machines and partial recursive functions. Ability to learn the notions of languages, finite state automata, phrase structure grammars, finite state machines.

CO-V

Understand the structure of compilers

- Understand the basic techniques used in compiler construction such as lexical analysis, top-down, bottom-up parsing, context-sensitive analysis, and intermediate code generation.
- Understand the Memory Allocation like Static and dynamic memory allocation, array allocation and access, allocation for strings, structure allocation.
- Understand the basic data structures used in compiler, Compilation of control structures: Control transfers, procedural calls, conditional execution, iteration control constructs Understand Error detection, indication and recovery. Compilation of I/O statements: Compilation of I/O list, compilation of FORMAT list, the I/O routine, file control.
- Understand Code optimization, program flow analysis, Global optimization, writing compilers.

CO Practicals (Lab-III)

- To build software development skills using java programming for realworld applications.
- To implement frontend and backend of an application.
- To implement classical problems using java programming.
- Read and make elementary modifications to Java programs that solvereal-world problems.
- Validate input in a Java Program.

CO Practicals (Lab-IV)

- Able to prepare SRS document, design document, test cases and software configuration management and risk management related document.
- Apply various white box and black box testing techniques.
- Develop function oriented and object oriented software design usingtools like rational rose.
- Able to perform unit testing and integration testing.
- Able to track the progress of a project using Openproj tool.
- Implement basic data structures such as arrays and linked list.
Programs to demonstrate fundamental algorithmic problems including
Tree Traversals, Graph traversals, and shortest paths.
- Implement various searching and sorting algorithms.
- Programs to demonstrate the implementation of various operations on stack and queue

M. Sc. II (Sem III)

CO-I

- Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
- Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis
- Use of geometric transformations on graphics objects and their application in composite form
- Extract scene with different clipping methods and its transformation to graphics display device. Explore projections and visible surface detection techniques for display of 3D scene on 2D screen. Render projected objects to naturalize the scene in 2D view and use of illumination models.

CO-II

- Describe and Synthesise concepts of programming for networking, including, multithreading, delegate and event handling, remote files I/O and database connectivity.
- Develop Code for basic network and Internet protocols including sockets, stream and packet protocols such as TCP, UDP, HTTP, FTP and SMTP protocols for creating simple two tier client server applications.
- Program multi-tier client server computing systems with remote and web services protocols for creating distributed client server Systems.
- Design and develop specialized client server systems with better security, scalability, queuing, and optimal performance and bandwidth utilization;

- Program different network programming tools, network monitoring, tracking and analyzing advanced client server systems

CO-III

- To provide hardware and software issues in modern distributed systems.
- To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.
- To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed.
- To know about Shared Memory Techniques
- Have Sufficient knowledge about file access.
- Have knowledge of Synchronization and Deadlock.

CO-IV

- Understanding of the basic kinds of finite automata and their capabilities.
- Understanding of regular and context-free languages.
- Understanding of the key results in algorithmic complexity, computability and solvability of problems.
- Ability to describe and transform regular expressions and grammars.
- Using the Prolog language as an experimental tool for testing properties of basic computational structures.
- Understanding the key notions of computation, such as algorithm,

computability, decidability, reducibility, and complexity, through problem solving.

- Understanding Natural Language.

CO-Practicals (Lab-V)

- Demonstrate the use of ARFF files taking input and display the output of the files.
- Implement the Preprocess and classify Customer dataset.
- Perform Preprocessing, Classification techniques on Agriculture dataset.
- Preprocess and classify Weather dataset
- Perform Clustering and association techniques on Customer/agriculture dataset.
- Compare various Data Mining techniques available in WEKA
- Understand the basic concepts of computer graphics.
- Design scan conversion problems using C++ programming.
- Apply clipping and filling techniques for modifying an object.
- Understand the concepts of different type of geometric transformation of objects in 2D and 3D.
- Understand the practical implementation of modeling, rendering, viewing of objects.

CO-Practicals (Lab-V)

- Design and Set up a client /server environment using LAN and WAN Scenarios.

- Design and build client server applications with network programming exposure. Understand basic networking concepts using sockets.
- Examine the techniques which are required to develop network application/internet-based application.
- Compare various application deployment mechanisms and the use of digital certificates
- Outline the prevention strategies for network attacks with at least one prevention technique providing in two or three tier environments.

M. Sc. II (Sem IV)

CO-I

- Represent Knowledge using various knowledge representation schemes.
- Understand Artificial Neural Networks and its applications
- Understand the basic knowledge acquisition methods.
- Understand the theoretical base of the expert system and its development process.
- Differentiate between different knowledge representation techniques and describe methods of knowledge acquisition and extraction.
- Develop expert systems using various available tools
- Analyze the development process of expert system through various case studies.

CO-II

- Understand the basic concepts of algorithms and analyze the performance of algorithms.
- Discuss various algorithm design techniques for developing algorithms.
- Discuss various searching, sorting and graph traversal algorithms.
- Understand NP completeness and identify different NP complete problems.
- Discuss various advanced topics on an algorithm.

CO-III

- Describe network security services and mechanisms
- Understanding Breaking an Encryption Scheme, Types of Cryptographic Function, Respective Algorithms of cryptography, Cryptographic Authentication Protocols,
- Understanding Kerberos V4: Tickets, Kerberos V5: ASN.1, Names, Delegation of Rights, Ticket Lifetimes, Key Versions, Optimizations..
- Various network security applications, IPSec, Firewall, IDS, Web security, Email security, and Malicious software etc.
- Understanding Firewalls.

CO-IV

- Understanding the basic principles of mobile communication systems AND Satellite Systems Understanding an analysis of mobile communications with the interpretation of the call prints, Wireless LAN: Infrared Versus Radio Transmission, Infrastructure and Adhoc Network.

- Understanding the basic principles of the modern mobile and wireless communication systems and Mobile Network Layer.
- Understanding the operation of mobile communications systems and their generation divisions Understanding Support for Mobility like File Systems, World Wide Web, Wireless Application Protocol, i-Mode, SyncML.

CO-V

- Examine various types of images, intensity transformations and
- Develop Fourier transform for image processing in frequency domain. Learn different techniques employed for the enhancement of images. Evaluate the methodologies for image segmentation, restoration etc Implement image process & analysis of algorithms
- Learn different causes for image degradation and overview of image restoration techniques.
- Understand the need for image compression and to learn the spatial and frequency domain techniques of image compression.
- Learn different feature extraction techniques for image analysis and recognition.

CO-VI

- Have an ability to apply software testing knowledge and engineering methods.
- Understanding the software test outline to test cases, creating test cases, documentation short cuts, introduction to using tables and spreadsheet.

- Have an ability understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
- Create test strategies and plans, design test cases, prioritize and execute them.
- Able to develop the Testing Web Applications
- Manage incidents and risks within a project.

CO-Practicals (Lab -VII)

- Apply various AI search algorithms (uninformed, informed, heuristic, constraint satisfaction,) Implement fundamentals of knowledge representation, inference and theorem proving using AI tools
- To implement advance learning techniques-search
- Ability to write programs in java to solve problems using algorithm design techniques such as Divide and Conquer, Greedy, Dynamic programming, and Backtracking.
- Able to implement Quick sort, Merge sort algorithm, BFS and DFS algorithms
- Able to implement backtracking algorithm for the N-queens problem.
- Able to implement greedy algorithm for job sequencing with deadlines.
- Get awarded with Dijkstra's , Prim's algorithm , Kruskal's algorithm on spanning tree.
- Able to implement Floyd's algorithm for the all pairs shortest path problem.

Shri Shivaji Science and Arts College, Chikhli.
Department of Economics
Program Outcome, Program Specific Outcome and Course Outcome

	Programme Outcomes
	After successful completion of three year degree programme in Economics a student would be able to
	To know what is Economics how it applied in Economics
	To understand a well-founded education in Economics
	To provide the graduates employment and scope for further study as economists To grab the opportunity to pursue courses that emphasize quantitative and theoretical aspects of Economics
	To focus on applied and policy issues in Economics
	TO comprehend Economics policies. To know work of Central and State Government and RBI and Nationalized Banks for development of Economy.
	Programme Specific Outcomes
	Understand how different degrees of competition in a market affect pricing and output.
	Identify the basic concepts and theories of microeconomics as well as macroeconomics.
	Understand the efficiency and equity implications of market interference, including government policy.
	Evaluate the changing role of agriculture, industrial, service, sector, and foreign sector in Indian Economics.
	Understand the meaning, function and role of central as well as commercial banks in the Economy.
	Measure the problem and prospect of economy of Maharashtra as well as Indian Economics.
	Develop the knowledge about theories of economic growth & Development and issue of economic planning.
	Course Outcome
B.A I Semester.I Micro Economics	Introduction of Economics:
	Analyze about Traditional and Definition of Economics.
	Understanding about methodology in economics.
	Classify the definition of economics.
	Identity the importance of Economics.
	Law and Economics is an Interesting application of the economics way of thinking to real world problem and policy issues.

	To study comparison micro and Macro economics, demand and supply.
	Identify and learn law of demand and definition
	Law and Economics is an Interesting application of the economics way of thinking to real world problem and policy issues.
	To study comparison micro and Macro economics, demand and supply.
	Identify and learn law of demand and definition
	To understand definition law and supply.
	Write down the classification of demand and supply.
	Student will able to understand link between demand and price elasticity.
	Cost and Revenue Analysis
	Understand Concept of Revenue and cost of production.
	To make the student aware of importance in government policy to collect the revenue its impact on production of cost.
	Explain the anticipate the consequences of internal and external economics.
	Market Structure:
	To learn perfect competitive markets.
	Understanding the relationship monopoly of market and price discrimination. The market types, learning objective. Market structure, monopolies completion, pure monopoly and to know the market structure under which a firm operates.
B.A.I Semester. II Economy of Maharashtra	Course outcome of Economics.
	Understand the historical background of Maharashtra State.
	Analyze the basic feature of economy of Maharashtra State.
	Understand the natural and importance of agriculture sector.
	Evaluate various land reform and green revolution in Maharashtra.
	Know main feature of industrial development in Maharashtra.
	Evaluate he role of MSMEs in the industrial development of Maharashtra.
	Understand the historical background of Vidharbha region.
	Realize various special issues in Vidharbha region.
	Analyze the natural and causes of farmers' suicides in Vidharbha
B.A.II Semester III Micro Economics	Course outcome of Economics.
	Identify the basic concepts and theories of macro Economics.
	Understand various concepts such as; GDP, GNP, NNP, NDP capita Income and National Income
	Identifying the factors determining gross domestic product, employment, the general level of prices, and interstates.
	I can explain gross domestic product (GDP) and its. Use as an indicator of the state of the economy.
	I can define unemployment and explain the reasoning behind variations in unemployment, rates and unequal opportunities across different age group.
	Define Money, explain the function of money, define liquidity.
	Able to understand quantity theory of money.
	I can define the term inflation and deflation and apply the impact of changes in the rate of inflation on household and businesses.
	I can explain two general types of inflation; cost push and demand.
	Understand Say's Law of Market, classical theory of employment and Keynes objection to the classical theory, demonstrate the principal of effective demand and income determination.

	Able to understand classical and Keynesian theories of output and employment.
	Able to understand consumption and investment function. I can define the international trade and discuss the benefits arising from it.
	To can define exchange rates, their importance international trade and calculate the impact of exchange rate changes on prices.
B.A.II Semester IV Banking	Course outcome of Economics.
	1.1 To understand essence of commercial banking business;
	To become proficient in management of various aspects of commercial banking, Learning outcome: after going to through this course, the students are expected to develop a clear understanding and knowledge about the functioning of a commercial bank.
	1.2 Central Bank
	The objective of this course is to expose students to the theory and functioning of the monetary Policy and the role of Central Bank in the Economics. It also discusses the conduct of monetary policy and its effect on interest rates, credit availability, price and inflation.
	Facilitate Understanding the functioning of markets in theory and practice. Monetary policy of RBI: Objective and Limitation.
	Provide a brief background of RBI and its function and impact on Indian economy.
	1.3 Co-operative Bank and NABARD .
	To create awareness among the students about co-operation and rural development.
	The student should have to provide the knowledge of rural economy.
	The student will become aware about co-operative about co-operative farming and micro credit in India.
	1.4 IMF and World Bank
	Facilitative and understanding functioning of International Monetary Fund (IMF) Objective, Importance and Function.
	To Understand role of World Bank (IBRD) Objective, Importance and Function .
	To know international trade and World Trade Organization (WTO) Objective, Importance and Function
	1.5 Recent Service in Banking Sector .
	ATM, Debit Card, Credit Card, E-Marketing, Cashless Transaction, Mobile Banking E-Wallets, Core Banking, RTGS and NEFT.
	Understanding of Banking Channels and Payments.
	Understanding the Core Banking and Practices on Banking Technology .
B.A.III Semester. V Indian Economy	Course outcome of Economics.
	On the Competition of the course students will be able to development, idea of basic characteristics of India economy like planning basic feature, type and five year plan .
	To know new economy reforms and impact of LPG.
	The overall object of this course importance of agriculture and Indian economy.
	Sensitize the overall development a productivity causes and remedies to incised to productivity and agriculture marketing.
	To know subdivision and fragmentation: concepts, causes and remedies.
	To know Indian Government industrial policy 1991 in the era of LPG challenges on small scale industries.

	To provide brief information industrial disputes cause.
	To able to understand trade union; characteristics and function.
	Facilitate understanding policy and direction Indians foreign trade.
	To expose students to poverty causes and remedies and present position of Indian economy.
	To create awareness among the students about self help group and with help of SHG development of rural economy.
	To know environment meaning of types and impact of global warming on Indian economy
	Provide the information on role of natural resources in development of Indian economy and information about pollution of land, water, air and forest etc.
B.A.III Semester. VI Demography	Course outcome of Economics.
	Understand the meaning and scope of demography.
	Evaluate various population theories.
	Analyze various determinants of fertility, birth rate and mortality.
	Analyze the pattern, causes and effect of migration in India.
	Evaluate the factor affecting migration and urbanization.
	Examine the concept, types and causes of migration in India.
	Evaluate the population policy in Indian economy.
	Discuss the population and human development issues in India.
	Analyze the family planning strategies and their outcomes.
	Evaluate new economic policy.

Shri Shivaji Science and Arts College, Chikhli.
Department of Electronics
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcomes (POs):

At the end of the programme, students would be able to

- 1) Utilize the basic knowledge in Electronics science.
- 2) Identify electronic components and ICs.
- 3) Design system components that meet the requirement of public safety and offer solutions to the societal and environmental concerns
- 4) Apply research based knowledge to design and conduct experiments
- 5) Construct, choose and apply the techniques, resources and modern electronics tools required for Electronics applications.
- 6) Apply the contextual knowledge to assess societal, health, safety and cultural issues and endure the consequent responsibilities relevant to the professional electronics practice.
- 7) Examine the impact of electronics solutions in global and environmental contexts and utilize the knowledge for sustained development.
- 8) Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics and Communication.
- 9) Perform effectively as a member/leader in multidisciplinary teams.
- 10) Demonstrate resourcefulness for contemporary issues and lifelong learning.

Program Specific Outcomes:

Upon completion of the programme successfully, students would be able to

1. acquire knowledge in fundamental aspects of all branches of Electronics
2. create inquisitiveness and problem-solving skills
3. apply the principles of Electronics in solutions to real world problems
4. get prepared for higher education and career in Electronics
5. develop skills in the proper handling of apparatus and components
6. apply Electronics in their day to day life

7. act as a responsible citizen

8. Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics and Communication Engineering problems

9. Apply the fundamental concepts of electronics and communication science to design a variety of components.

Course Outcome

Semester I - Basics of Electronics

Unit No	Title of Unit	Course Outcomes
1	Passive Components & Network theorems	<ul style="list-style-type: none">• To give knowledge of some basic electronic components and circuits• Design and analyse of electronic circuits• Understand various functions of network and also the stability of network
2	Measuring Instruments	<ul style="list-style-type: none">• Understand fundamental of various electrical measurements• Understanding the basic electrical properties.
3	Semiconductor Diodes and Regulated power supply	<ul style="list-style-type: none">• Understand the current voltage characteristics of semiconductor devices• To study difference between rectifiers & regulators
4	Bipolar Transistors	<ul style="list-style-type: none">• To study types of transistors & its configurations• Experimentally determine Voltage Gain, Current Gain, Input Impedance, Output Impedance of a BJT amplifier in different mode
5	Switching and Optoelectronic devices	<ul style="list-style-type: none">• Analyse DC circuits and relate models of semiconductor devices with their physical operation• Learn the various parameters and their interrelationship

6	Integrated Circuits	<ul style="list-style-type: none"> • Understand the fundamentals and areas of applications for the integrated circuits • To understand some working of IC based circuits
----------	----------------------------	--

Semester II - Digital Electronics

Unit No.	Title of Unit	Course Outcomes
1	Binary Arithmetic & Logic gates	<ul style="list-style-type: none"> • To study different types of Number systems, their interconversions & arithmetic operations • To study logic gates and their usage in digital circuits.
2	Boolean Algebra & Logic families	<ul style="list-style-type: none"> • Illustrate the basics of Boolean algebra and logic gates • To study the design of gates using discrete electronic components
3	Multivibrators and Flip Flops	<ul style="list-style-type: none"> • To study multivibrators using transistors • Understanding terminologies of flipflops
4	Counters and Shift registers	<ul style="list-style-type: none"> • Analyzing important types of Counters • Understand the fundamentals of Registers
5	Combinational logic circuits	<ul style="list-style-type: none"> • Analyze, design and implement combinational logic circuits • Prepare various combinational and sequential circuits
6	Semiconductor Memories	<ul style="list-style-type: none"> • Classify different semiconductor memories • Compute different parameters of memories

Semester III - Electronics Devices and Circuits

Unit No.	Title of Unit	Course Outcomes
1	Hybrid-parameters & Cascaded amplifiers	<ul style="list-style-type: none"> • Analysis of hybrid parameters & their interconversion • Study of cascaded amplifiers
2	Power Amplifier	<ul style="list-style-type: none"> • Know about the multistage amplifier using BJT in various class to determine frequency response and concept of efficiency • Know about different power amplifier circuits, their design and use in electronics and communication circuits
3	Feedback amplifier and Oscillators	<ul style="list-style-type: none"> • Know the concept of feedback amplifier and their characteristics. • Study the different oscillator circuits for various frequencies • Employ the concept of positive feedback to design of an oscillator circuits
4	Operational amplifier and applications	<ul style="list-style-type: none"> • Compute and characterization of operational amplifiers • Analyze and identify linear and nonlinear applications of Op-Amp
5	Advance applications of Op-Amp	<ul style="list-style-type: none"> • Design and analyze advance applications of Op-Amp • Study mathematical equations by using Op-Amp
6	A/D and D/A converter	<ul style="list-style-type: none"> • learn about various terminologies of A/D and D/A converters.

Semester IV - Communication Electronics & Microprocessor 8085

Unit No.	Title of Unit	Course Outcomes
1	Modulation and Demodulation	<ul style="list-style-type: none"> • Use of different modulation and demodulation techniques used in analog communication • Understand about various types of signals and systems, classify them, analyze them, and perform various operations on them • Analyze transmitter and receiver circuits
2	Fiber Optic Communication	<ul style="list-style-type: none"> • To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures
3	Pulse Modulation and Digital Communication	<ul style="list-style-type: none"> • Understand use of transforms in analysis of signals and system in continuous and discrete time domain
4	Architecture and timings of 8085	<ul style="list-style-type: none"> • Describe the functionalities of 8085 architectures
5	Instruction and programming of 8085	<ul style="list-style-type: none"> • To study Assembly language programming for arithmetic operations
6	Interfacing	<ul style="list-style-type: none"> • To understand idea of interfacing and their operating modes

Semester V - Measuring Instruments

Unit No.	Title of Unit	Course Outcomes
1	Basic Instrumentation	<ul style="list-style-type: none"> • Students will be able to describe functional blocks of instrumentation system • Student will be able to compare different types of transducers

2	Measurement of Temperature	<ul style="list-style-type: none"> To study different instruments for temperature measurement
3	Timer and PLL	<ul style="list-style-type: none"> Study of PLL using VCO and function generator using IC Study of timer circuits
4	Display, digital Instrument and recorder	<ul style="list-style-type: none"> To study uses of display devices Understand the operation of recorder
5	Sensors and Actuators	<ul style="list-style-type: none"> Students will be able to explain principle of operation for various sensors & actuators
6	Biomedical electronics	<ul style="list-style-type: none"> Students will be able to understand the different types of biomedical instruments

Semester VI - Advance Microprocessor and Microcontroller

Unit No.	Title of Unit	Course Outcomes
1	8086 Architecture	<ul style="list-style-type: none"> To introduce students with the architecture and operation of typical microprocessors and microcontrollers.
2	Instructions and programming of 8086	<ul style="list-style-type: none"> To familiarize the students with the programming and interfacing of microprocessors
3	8051 Microcontroller and Architecture	<ul style="list-style-type: none"> Draw and describe architecture of 8051 microcontroller Design microcontroller-based system for various applications
4	Instruction set of 8051 and programming	<ul style="list-style-type: none"> Write assembly language program for microcontrollers

5	8051 Interfacing and Application	<ul style="list-style-type: none">• Interface various peripheral devices to the microcontrollers• Design microcontroller-based system for various applications
6	Advance microcontroller	<ul style="list-style-type: none">• Introduce advance terminologies in microcontrollers

**Shri Shivaji Science and Arts College, Chikhli.
Department of English and English Literature
Program Outcome, Program Specific Outcome and Course
Outcome**

**Programme Outcomes (Po's) of B. A.(English & English
Literature)**

At the end of the Programme the student is expected to know, understand and develop and become -

- 1) Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- 2. Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
- 3. Social Interaction:** Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- 4. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- 5. Ethics:** Recognize different value systems and accept responsibility for them.
- 6. Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
- 7. Analyse** various forms of literature and understand different aspects of life
- 8. Self-directed and Life-long Learning:** Acquire the ability to engage in professional and financial independence and life-long learning.

PROGRAMME SPECIFIC OUTCOMES

After completing the Course the student will be able to:

- 1) Understand grammar of English language
- 2) Comprehend different forms of literature

- 3) Have a humanitarian attitude towards different cultural
- 4) Widen scope of employability in the area of Teaching, Private Sector, Civil Services and Banking

**COURSE OUTCOMES
ENGLISH**

COURSE / CLASS	COURSE OUTCOME	
	Language (Students learn)	Life Values (Students learn)
B. A. / Sem. I		
Unit I - Prose		<ul style="list-style-type: none"> How a man turns into an ideal citizen by taking inspiration from teachers, friends and family members.
i. Education Provides a Solid Foundation- A.P. J. Abul Kalam	<ul style="list-style-type: none"> Technique of writing autobiography. 	
ii. Love Story – Maneka Gandhi	<ul style="list-style-type: none"> New words related to the livestock. 	<ul style="list-style-type: none"> Emotions and feelings of animals - love, loss and parents.
iii. Speech on Indian Independence – Pandit Jawaharlal Nehru	<ul style="list-style-type: none"> Interpretation of figurative language. 	<ul style="list-style-type: none"> India’s past efforts to achieve independence and hope to see future of India as a prosperous and progressive nation.
iv. Film Making - Satyajit Ray	<ul style="list-style-type: none"> Technique of writing essay on real incidences. 	<ul style="list-style-type: none"> Representation of socio-cultural life of India in the films.
Unit II - Poem		
i. In the Bazaars of Hyderabad – Sarojini Naidu	<ul style="list-style-type: none"> Use of colloquial words in the poem. 	<ul style="list-style-type: none"> Different temperaments of the traders.
ii. She Walks in Beauty – Lord Byron	<ul style="list-style-type: none"> Use of figures of speech in the poem. 	<ul style="list-style-type: none"> Juxtaposing images and comparison of physical, spiritual and intellectual beauty.
iii. Middle Age – Kamala Das	<ul style="list-style-type: none"> Paraphrasing the poem. 	<ul style="list-style-type: none"> Status of middle aged mother in Indian family.
Unit III Grammar		
• Parts of Speech	<ul style="list-style-type: none"> To identify different parts of speech with their usages. 	<ul style="list-style-type: none"> Enrichment of Language
• Tenses	<ul style="list-style-type: none"> To use proper tense as per the situation 	
• Unit III IV – • (i) Unseen Passage	<ul style="list-style-type: none"> Development of reading skill with comprehension. 	
• (ii) Letter Writing	<ul style="list-style-type: none"> To compose letters such as – Personal letters, Formal letters, etc. 	

<ul style="list-style-type: none"> (iii) Curriculum Vitae 	<ul style="list-style-type: none"> Writing CV / Resume 	
A. I Sem – II Unit I - Prose <ul style="list-style-type: none"> APPRO JRD – Sudha Murthy 	<ul style="list-style-type: none"> Dialogue writing 	<ul style="list-style-type: none"> Dedication of a businessman to uplift the economy of his motherland.
<ul style="list-style-type: none"> Packing – Jerome K. Jerome 	<ul style="list-style-type: none"> Direct – Indirect Speech 	<ul style="list-style-type: none"> Importance of neatness and systematic way of life.
<ul style="list-style-type: none"> How I Became a Public Speaker – G. B. Shaw 	<ul style="list-style-type: none"> Shavian style of writing. 	<ul style="list-style-type: none"> Preparation to be a successful public speaker.
<ul style="list-style-type: none"> Values in Life – Rudyard Kipling 	<ul style="list-style-type: none"> Prefixes to derive new words 	<ul style="list-style-type: none"> The importance of moral values in life to become a perfect man.
<ul style="list-style-type: none"> UNIT II - POEM 	<ul style="list-style-type: none"> To write summary of a poem . 	<ul style="list-style-type: none"> To lead economically balanced life.
<ul style="list-style-type: none"> i. Money Madness – D. H. Lawrence 		
<ul style="list-style-type: none"> ii. No Men Are Foreign – James Kirkup 	<ul style="list-style-type: none"> Poetic devices 	<ul style="list-style-type: none"> The importance of peace, brotherhood and oneness in the troubled times.
<ul style="list-style-type: none"> iii. On Another’s Sorrow – William Blake 	<ul style="list-style-type: none"> To develop an idea into a paragraph. 	<ul style="list-style-type: none"> Need of human sympathy for happy life and to overcome the challenges in life.
UNIT - III - Grammar	<ul style="list-style-type: none"> Subject – verb agreement Verb : Main verb and auxiliary verb. 	<ul style="list-style-type: none"> Enrichment of language.
UNIT - IV	<ul style="list-style-type: none"> To develop an idea into a short story 	
<ul style="list-style-type: none"> Story Building 		
<ul style="list-style-type: none"> E-communication 	<ul style="list-style-type: none"> Writing Fax, e-mails, etc. 	
<ul style="list-style-type: none"> Notice , Agenda, Minitus 	<ul style="list-style-type: none"> To draft Notice, Agenda and Minutes as a part of business correspondence 	
A. II Sem – III Unit I - Prose		
<ul style="list-style-type: none"> i. India’s Message to the World – Swami Vivekanand 	<ul style="list-style-type: none"> The technique of narration 	<ul style="list-style-type: none"> India has power of spirituality to offer to the world
<ul style="list-style-type: none"> ii. The Pleasures of Ignorance – Robert Lynd 	<ul style="list-style-type: none"> New words and develop vocabulary. 	<ul style="list-style-type: none"> To use ignorance as a tool to discover new thing.
<ul style="list-style-type: none"> iii. The Three Questions – Leo Tolstoy 	<ul style="list-style-type: none"> Direct – Indirect Narration 	<ul style="list-style-type: none"> Moral principles for successful life

iv. Dirge – James Shirley	<ul style="list-style-type: none"> Poetic device 	<ul style="list-style-type: none"> Just life and good deeds are the things that are only remembered
v. Leisure – W. H. Davies	<ul style="list-style-type: none"> Use of simple language for poetic creation 	<ul style="list-style-type: none"> The idea of happy life .
vi. A Baby Asleep After Pain – D. H. Lawrence	<ul style="list-style-type: none"> Use of poetic images. 	<ul style="list-style-type: none"> Divine quality among children
IT - III - Grammar	<ul style="list-style-type: none"> Adjective and Adverb Clauses, Types of sentences 	<ul style="list-style-type: none"> Enrichment of language.
IT - IV - Communication Skills	<ul style="list-style-type: none"> Telephone and Interpersonal Communication 	
A. II – Sem. – IV Unit I - Prose		
i. Why are Beggars Dispaired – George Orwell	<ul style="list-style-type: none"> Types of sentences 	<ul style="list-style-type: none"> To have humanitarian attitude towards beggars.
ii. On the Conduct of Life – William Hazlitt	<ul style="list-style-type: none"> Varieties of suffixes to derive new words 	<ul style="list-style-type: none"> Gems of wisdom and common sense in leading life.
iii. Girl – O. Henry	<ul style="list-style-type: none"> Situational dialogues 	<ul style="list-style-type: none"> Positive and negative impact of suspicious nature of human beings.
iv. The Magic Shop – H. G. Wells	<ul style="list-style-type: none"> Technique of narration 	<ul style="list-style-type: none"> Magic as an illusion and not a reality.
IT II - Poetry		
i. Where the Mind is without Fear – Rabindranath Tagore	<ul style="list-style-type: none"> To understand prosaic poetry 	<ul style="list-style-type: none"> Humanitarian approach towards nation building.
ii. A Lament – P. B. Shelley	<ul style="list-style-type: none"> To write an abstract of a poem. 	<ul style="list-style-type: none"> Temporary nature of mortal life
iii. Love in a Life – Robert Browning	<ul style="list-style-type: none"> Imagery in poetry 	<ul style="list-style-type: none"> Useless desires and goals that human being run after in life.
iv. Uphill – Christina Rossetti	<ul style="list-style-type: none"> Simile and metaphor in a poem 	<ul style="list-style-type: none"> The role of goodness, duty and sacrifice in life.
IT III -		
<ul style="list-style-type: none"> Grammar 	<ul style="list-style-type: none"> Transformation of sentences simple, Compound and Complex Synthesis of Sentences 	<ul style="list-style-type: none"> Enrichment of Language
<ul style="list-style-type: none"> Communication Skills 	<ul style="list-style-type: none"> Interpersonal Conversation and Casual Conversation 	<ul style="list-style-type: none"> Enrichment of language.
A. / Sem. V Unit I - Prose		
i. The Open Window- Saki	<ul style="list-style-type: none"> New words and its usage 	<ul style="list-style-type: none"> Different human natures.

The Three Hermits- Leo Tolstoy	<ul style="list-style-type: none"> • Use of short sentences to answer short answer type question. 	<ul style="list-style-type: none"> • Concept of pure sainthood and realization of the concept of God.
What is Swaraj- M. K. Gandhi	<ul style="list-style-type: none"> • Language of journalism. • Framing questions. 	<ul style="list-style-type: none"> • The concept of patriotism, social and political awareness.
Letter to His Son – Earl of Chesterfield	<ul style="list-style-type: none"> • Inspirational language. 	<ul style="list-style-type: none"> • Responsibility of a father. • Importance of moral teaching in successful life.
Unit II - Poem		
i. Bangle Sellers- Sarojini Naidu	<ul style="list-style-type: none"> • Writing interpretation of a poem in simple language. 	<ul style="list-style-type: none"> • Psychology of a salesman and hardships of the life of a salesman.
ii. The Mountain and the Squirrel-Ralph Waldo Emerson	<ul style="list-style-type: none"> • Style of writing poetry. 	<ul style="list-style-type: none"> • Eastern thought and Oriental Mysticism.
Unit III-		
i. Précis Writing	<ul style="list-style-type: none"> • What is précis? • Characteristics of good précis. • Origin of précis writing. • Technique of writing précis. 	<ul style="list-style-type: none"> • Enrichment of language
ii. Development of Thought	<ul style="list-style-type: none"> • How to develop thought in a lucid way. 	<ul style="list-style-type: none"> • Enrichment of Language
A. III - Sem. -- VI		
Unit I --- Prose		
i. Quality - John Galsworthy	<ul style="list-style-type: none"> • Sentence construction 	<ul style="list-style-type: none"> • Importance of dedication to improve quality in work.
ii. Miss Grill -- Katherine Mansfield	<ul style="list-style-type: none"> • Usage of simple present 	<ul style="list-style-type: none"> • Power of music to change human nature
iii. My Financial Career – Stephen Leacock	<ul style="list-style-type: none"> • Dialogue writing 	<ul style="list-style-type: none"> • To plan financial career properly.
iv. Socrates and the School Master – F. L. Byron	<ul style="list-style-type: none"> • Dialogue writing 	<ul style="list-style-type: none"> • Difficulty in removing old customs from the mind of the people.
Unit II -- Poetry		
i. The Solitary Reaper – William Wordsworth	<ul style="list-style-type: none"> • Interpreting a poem in a simple language. 	<ul style="list-style-type: none"> • To become one with the nature.
ii. Stay Calm - Grenville K.	<ul style="list-style-type: none"> • Imagery in poetry 	<ul style="list-style-type: none"> • To find solution for difficulties by peaceful mind.
Unit III -- Report Writing	<ul style="list-style-type: none"> • To write News Paper Report • Language of the report, event 	<ul style="list-style-type: none"> • Enrichment of language

	description	
Essay Writing	<ul style="list-style-type: none"> To write Descriptive Essays , Narrative Essays, Expository Essays, Argumentative Essays. 	
COM. I SEM – I		
UNIT I - Prose	<ul style="list-style-type: none"> New words Writing answers to specific questions. 	<ul style="list-style-type: none"> Human mind can imagine far greater things than naked human eye.
1. The Eyes Are Not Here – Ruskin Bond	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
2. Romance of a Busy Broker – O. Henry	<ul style="list-style-type: none"> Dialogue writing 	<ul style="list-style-type: none"> Modern man is leading life like a machine.
3. Bores – E. V. Lukas	<ul style="list-style-type: none"> Humorous writing style of the essayist. 	<ul style="list-style-type: none"> Human behavior and certain types of human natures.
4. The Lost Child – Mulk Raj Anand	<ul style="list-style-type: none"> Creative way of narration of natural surrounding 	<ul style="list-style-type: none"> Child psychology.
UNIT II - Poetry	<ul style="list-style-type: none"> Use of language of creative writing 	<ul style="list-style-type: none"> Growing materialism in the world.
i. The world is too Much with Us –William Wordsworth		
ii. Once Upon a Time –Gabriel Okara	<ul style="list-style-type: none"> Summarising the poem to write short answers questions 	<ul style="list-style-type: none"> The artificiality in human relationship prevailing in the present world.
iii. If – Rudyard Kipling	<ul style="list-style-type: none"> The use of ‘If’ clause in the poetry 	<ul style="list-style-type: none"> To know the significance of virtues and self control in life.
UNIT IV - Grammar	<ul style="list-style-type: none"> Change the Narration Articles Synonyms and Antonyms Tense forms 	<ul style="list-style-type: none"> Enrichment of language
UNIT V - Business Correspondence and Writing Skill	<ul style="list-style-type: none"> Letter Writing (Formal and Informal) Resume Writing 	<ul style="list-style-type: none"> Writing skill for business communication.
Com. II SEM – II		
Unit I - Prose		<ul style="list-style-type: none"> Spiritual and Contended life .
Which is Great in His Own Place – Swami Vivekanand	<ul style="list-style-type: none"> New words and reading with comprehension. 	<ul style="list-style-type: none"> Every person’s work is important and he is great in his own place.
The Postmaster – Ravindranath Tagore	<ul style="list-style-type: none"> Reading with comprehension to write short answer type questions. Observes minutely the use of English language by Indian writers for creative purpose. 	<ul style="list-style-type: none"> Understand the problems of orphans and poverty in Indian society.
How I Became a Public Speaker – G. B. Shaw	<ul style="list-style-type: none"> New words Shavian style of writing 	<ul style="list-style-type: none"> How one can become a good public speaker.

pects of Democracy in India – Dr. B. R. Ambedkar	<ul style="list-style-type: none"> • Argumentative style of writing essay. 	<ul style="list-style-type: none"> • Difference between political and social democracy. • Education as solution to casteism
IT II - Poetry ccess is Counted Sweetest – Emily Dickinson	<ul style="list-style-type: none"> • Appreciation of the poem and summarizing it in own language. 	<ul style="list-style-type: none"> • One has to go through pains and hard words to become successful in life.
Laugh and Be Merry – John Masefield	<ul style="list-style-type: none"> • Use of poetic devices for creative purpose. 	<ul style="list-style-type: none"> • To lead life happily as the world is transitory.
The Impossible Dream - Joe Darion	<ul style="list-style-type: none"> • To develop a thought. 	<ul style="list-style-type: none"> • One should cherish ambition and struggle hard with confidence and courage to achieve the highest goal in life.
IT III - Grammar	<ul style="list-style-type: none"> • Voice • Idioms and Phrases • One word substitute • Preposition 	<ul style="list-style-type: none"> • Enrichment of language.
IT IV - Business Correspondence	<ul style="list-style-type: none"> • News paper report • E-mail 	<ul style="list-style-type: none"> • Development writing skill for professional
COM . II SEM – III it I Prose ravel by Train – J. B. Priestly	<ul style="list-style-type: none"> • Reading to summarize and write short answer type questions 	<ul style="list-style-type: none"> • Application of humour in the observation daily life .
wo Gentleman of Verona – A. J. Cronin	<ul style="list-style-type: none"> • Dialogue writing 	<ul style="list-style-type: none"> • Patriotism • Embracing responsibilities without complaining.
o Kiss the World – Subroto Bagchi	<ul style="list-style-type: none"> • Summarize the main points to attempt short answer questions 	<ul style="list-style-type: none"> • A life even though poor but rich in values makes human being dignified
he Struggle for an Education up from Slavery – Booker T. Washington	<ul style="list-style-type: none"> • Read with comprehension and learns new words 	<ul style="list-style-type: none"> • The importance of virtues such as patience, perseverance, self belief and a never - say - die attitude
it II - Poetry Where the Mind is Without Fear – Ravindranath Tagore	<ul style="list-style-type: none"> • Poetic devices used in the poem. 	<ul style="list-style-type: none"> • Caste free society. • The concept of an ideal nation and nationalism
opping by Woods on A Snowy Evening – Roberst Frost	<ul style="list-style-type: none"> • Development of idea 	<ul style="list-style-type: none"> • To avoid temptation • Commitment of duties towards life.
affodils – William Wordsworth	<ul style="list-style-type: none"> • To write a short summary of the main ideas in the poem. 	<ul style="list-style-type: none"> • Through this simple poem , the poet has given the world of literature, the definition of a poem that is “ Spontaneous overflow of powerful feelings...recollected in tranquility”.
it III Communication Skills	<ul style="list-style-type: none"> • An introduction to Communication 	<ul style="list-style-type: none"> • To write for official purpose.

	<ul style="list-style-type: none"> • Notices , Agenda, and Minutes • Presentations 	
COM. II SEM - IV Unit I Prose The Town Week – E. V. Lucas	<ul style="list-style-type: none"> • New words and its usage 	<ul style="list-style-type: none"> • About moods and sentiments of urban people of different days of a week.
Florence Nightingale – Lytton Strachey	<ul style="list-style-type: none"> • Use of short sentences to answer short answer type question. 	<ul style="list-style-type: none"> • That with passion , service and devotion one can challenge the established institutions in the society and bring reformation.
The Gift of Magi – O. Henry	<ul style="list-style-type: none"> • Language of journalism. • Framing questions. 	<ul style="list-style-type: none"> • True love lies in care and making sacrifices for others.
Three Hermits – Leo Tolstoy	<ul style="list-style-type: none"> • Inspirational language. 	<ul style="list-style-type: none"> • True religiosity is nothing but sincerity in faith and simplicity in behavior.
Unit II Poetry On His Blindness – John Milton	<ul style="list-style-type: none"> • New words and reading with comprehension. 	<ul style="list-style-type: none"> • Patience is the foundation of a believer in God
Solitude – Alexander Pope	<ul style="list-style-type: none"> • Reading with comprehension to write short answer type questions. • Observes minutely the use of English language by Indian writers for creative purpose. 	<ul style="list-style-type: none"> • In the world of industrialization man has been disconnected with nature • One can lead contented life in the company of nature with minimum requirement
Still I rise – Maya Angelou	<ul style="list-style-type: none"> • New words and reading with comprehension. 	<ul style="list-style-type: none"> • The determination can overpower even racial prejudices
Honey Mandness – D. H. Lawrence	<ul style="list-style-type: none"> • Writing interpretation of a poem in simple language. 	<ul style="list-style-type: none"> • Modern man has grown very materialistic and mad after money.
Unit III Communication Skills	<ul style="list-style-type: none"> • Interview and interviewing skills • Meeting skills • Non-verbal communication 	<ul style="list-style-type: none"> • Good performance in professional life.
COM. III SEM – V Unit I Prose Jagan Tata Steve Jobs Rajay Bhatkar	<ul style="list-style-type: none"> • New vocabulary related to managerial skills and enterprising drive. • Notes down main points to answer MCQ questions. • To write short answer - questions 	<ul style="list-style-type: none"> • The contribution of the three industrials in the development of national economy.
Black Money and Black Economy	<ul style="list-style-type: none"> • New concepts related to black money and black economy and summarizes the prose. 	<ul style="list-style-type: none"> • Various aspects related to black money and how it can damage a nation’s economy.
Unit II Poetry Red Red Rose – Robert Burns	<ul style="list-style-type: none"> • Simile and Metaphor 	<ul style="list-style-type: none"> • The aesthetic quality which satisfies sense of beauty. • The intimate and

		romantic relationship between lover and beloved
is needless to ask of a Saint – Sant Kabir	write a short summary of the main ideas in the poem	evil effects of caste system in the society.
Love's philosophy – P. B. Shelley	•	• The representation of love in nature.
The Garden - Andrew Marvell	• The metaphysical way of composing poems	• How the poet dismisses the ways of certain people who run after honour and acclaim and disconnect themselves from nature.
Unit III Computer Technology and Recent Concept in Business	• Paperless office, • video conferencing, • e-banking	• language for specific purpose
Communication Skills	• Public speaking (Strategies for effective speaking) • Types of speeches	• Acquires skills of public speaking • How language changes depending on type of speech.
COM. III SEM – VI UNIT I Prose undar Pichai Mallika Srinivasan Muhammad Yunus	• New vocabulary related to managerial skills and enterprising drive. • Notes down main points to answer MCQ questions. • To write short answer - questions	• The contribution of the three industrialists in the development of national economy.
Introduction to write to Information Act – 2005 - Pralhad Kachare	• New vocabulary of right to information act • Summarizes and writes down main points to attempt short answer – questions and MCQs.	• International perspective, national history, objectives and applications of public authority, etc.
Unit II Poetry How do I Love Thee – Elizabeth Barrett Browning	• Poetic devices	• The intimate and romantic relationship between lover and beloved
The Duck and the Kangaroo – Edward Lear	• New vocabulary	• One must try to break the routine life to know the world which lies beyond one's capacity.
Go Autumn - John Keats	• Simile and Metaphor	• Like seasons everything in the world keeps changing.
Unit III Communication Skills	• Employability skills	• Leadership skills, team work skills, time management,

		stress management, advertising.
Sc. I SEM - I Unit I Prose The Child - Premchand	• Dialogue Writing	• Social reformation
A Simple Philosophy - Seathl	• New difficult words	• Colonization by the Europeans
Values in Life - Rudyard Kipling	• Writing paragraph	• To become successful in life with morality
Nate: The Elixir of Life -- C. V. Raman	• Types of sentences	• Environmental conservation
Introduction to write to Information Act – 2005 - Pralhad Kachare	• New vocabulary of right to information act • Summarizes and writes down main points to attempt short answer – questions and MCQs.	• International perspective, national history, objectives and applications of public authority, etc.
Unit II Poetry May Not the Struggle Knot Avalleth - Arthur Hugh Clough	• Poetic devices	• The qualities in life like courage, hope reason and logic should be used to fight in life.
God's Grandeur - G. M. Hopkins	• Summarizing the poem to write short answer question	• Modern man is losing spirituality due to growing materialism.
To Autumn -- John Keats	• Simile and Metaphor	• Like seasons everything in the world keeps changing.
Bangle Sellers – Sarojini Naidu	• New words with poetic devices	• Depiction of Indian
Stay Calm - Grandville Kleiser	• Poetic devices	• To keep silent and peaceful in difficult situation to overcome the problem.
Unit III Grammar	• Parts of Speech • Articles • Propositions	• Language enrichment
Communication Skills	• Situational English • C. V. Writing • Formal Letters	• Language enrichment
Sc. I SEM - II Unit I Prose The Hazards of Food Colouring –	• Summarizes and writes down main points to attempt short answer – questions and MCQs.	• Artificial colour on food affects badly on health.
Chalchukhwallah – Ravindranath Tagore	• Reading with comprehension to write short answer type questions.	• Human relationships such as father – daughter are far above than the barriers of caste , creed and religion.
The Eyes are Not Here – Ruskin Bond	• New words • Writing answers to specific questions.	• Human mind can imagine far greater things than naked human eye.

My Lost Dollar – Stephen Leacock	<ul style="list-style-type: none"> • Dialogue writing 	<ul style="list-style-type: none"> • In financial matter one must be very honest.
IT II Poetry Captain ! My Captain! – Walt Whitman	<ul style="list-style-type: none"> • To write summary of a poem 	<ul style="list-style-type: none"> • The role of Abraham Lincoln in the abolition of slavery.
The Quality of Mercy - Shakespeare	<ul style="list-style-type: none"> • Simile and metaphor 	<ul style="list-style-type: none"> • The virtue 'mercy'
Father Returning Home – Dilip Chitre	<ul style="list-style-type: none"> • Expansion of thought 	<ul style="list-style-type: none"> • To extend care to the old people.
The World is Too Much With Us – William Wordsworth	<ul style="list-style-type: none"> • Use of language of creative writing 	<ul style="list-style-type: none"> • Growing materialism in the world.
IT III a. Grammar	<ul style="list-style-type: none"> • Tenses • Transformation of Sentences 	<ul style="list-style-type: none"> • Enrichment of language
b. Communication Skills	<ul style="list-style-type: none"> • Conversation • Report Writing • Paragraph Writing 	<ul style="list-style-type: none"> • Speaking and writing skill.

English Literature (UG) Programme Specific Outcomes (PSOs)

AFTER COMPLETION OF THIS COURSE STUDENTS WILL BE ABLE TO:

1. Understand Literary Movements that existed in different ages.
2. Define Literary Theories and Terms in Criticism.
3. Develop reading, writing and analytical skills.
4. Communicate their ideas critically and creatively

Course Outcomes (COs)

AFTER COMPLETION OF THIS COURSE STUDENTS WILL BE ABLE TO:

1. Analyse various forms of literature.
2. Acquaint them with the forms of structures and aesthetics of style and techniques of literary works.
3. Analyse various elements of literature.
4. Communicate in English orally and in writing.
5. Kindle critical thinking skills.

Shri Shivaji Science and Arts College, Chikhli.
Department of History
Program Outcome, Program Specific Outcome and Course Outcome

Programme outcomes

At the end of the B.A Programme, graduates will be able to

1. To develop the ability to think critically and historically when and historically when discussing the past.
2. Develop the ability to convey verbally their historical knowledge.
3. Understand the importance of communal unity for country.
4. Work as a teacher in college school and high schools.
5. Prepare for post graduate studies and to achieve success in their Professional careers.
6. To develop and sharpen critical, creative, analytical and problem solving abilities and skills of the students.
7. To prepare students for the responsibilities and opportunities of career.

Programme Specific Outcome (PSOs)

After completion the programme of B. A. in History students will be able to.....

- To develop the interest in the study of history and relating activity.
- Understand the history of India and modern World.
- Develop the ability to think critically and historically when discussing the past
- Develop the ability to distinguish between fact and fiction.
- Explain what influence the past has on the present.
- Understand the importance of communal unity for country.
- Understand the background of our religion, custom and diversity of country.
- Critically recognize the Social, Political, Economic, religious and cultural aspects of History.
- Understand the difference between democracy and dictatorship.
- After B. A. in History students can get the opportunities for

Course Outcomes (CO's) of History

B.A. I Sem I

History Of India From Earliest Times 1205 A.D.

After completing the course contents students are able to...

- Understand the difference between Primary and secondary sources and use the sources in writing history.
- Understand the history of Indus valley civilization.
- Understand the religious movement and difference between the philosophy of Hinduism, Jainism and Buddhism.
- Students get information about administration system in ancient India.
- Perceive socio-economic, religious situation under the Maurya.
- Clarify the concept of golden age of Gupta period.
- Understand the condition of religion of Bouddha in ancient India.

B.A. I Sem II

History of India From 1206 A.D. to 1525 A.D.

After completing the course contents students are able to...

- Understand the Establishment of Muslim power in India.
- Recognize the Socio, Political, Economic, Religious conditions under Vijaynagar and Bahamani empire.
- Know the system of trade, commerce and technological development during the sultanate period.
- Understand the nature of village community & relationship between the Muslim and Hindu society.
- Understand the literature, education and art-architecture condition in sultanate.
- Understand the political, military Structure, condition of society and Social Status of women in sultanate Period.

B.A. II Sem III

History of India From 1526 A.D. to 1756 A.D.

After completing the course contents students are able to...

- Understand the establishment, expansion, consolidation and decline of Mughal power.
- Identify the socio, economic, religious and political condition in Mughal period.
- Understand the society and status of women in Mughal period.
- Understand the religious movements in Mughal period.
- Understand the importance of the Hindavi Swarajya in History.
- Understand the formation of welfare state during the Maratha Rule.
- Understand the Policy of Shivaji about agricultural and farmers.
- Identify the contribution of Chhatrapati Sambhaji, Chhatrapati Rajaram and Maharani Tarabai in Maratha freedom movement against Mughal.

B.A. II Sem IV

History of India From 1757 A.D. to 1947 A.D

After completing the course contents students are able to...

- Identify the economic changes in India by British power.
- Evaluate the renaissance and social reform movement in India.
- Distinguish the detail account of British raj as well as its overall impacts on the Indian society, economy, agriculture and technology.
- Identify the importance of modern education in rise the nationalism in India.
- Inculcates the nationalist feelings among the students.
- Identify the important persons, their ideas, teachings and its effects in Modern India.
- Acquainted the knowledge of national leaders to create a memory of the national heroes.
- Understand the difference between moderates, extremists and revolutionaries.

- Understand the evolutionary processes of constitutional developments.

After completing the course contents students are able to...

- Get information about the French revolution.
- Understand the rise, work and downfall of Napoleon Bonaparte.
- Understand the unification of Italy and Germany.
- Understand the Bismarck's role in Germany under his leadership.
- Understand the Kaiser William II role in First World War.
- Understand the Russia revolution and its effect.

B.A. III Sem V

History of Modern World: (From 1780 A.D. to 1965 A.D.)

After completing the course contents students are able to...

- Get information about the French revolution.
- Understand the rise, work and downfall of Napoleon Bonaparte.
- Understand the unification of Italy and Germany.
- Understand the Bismarck's role in Germany under his leadership.
- Understand the Kaiser William II role in First World War. ➤ Understand the Russia revolution and its effect.

B.A. III Sem VI

History of Modern World (From 1921 to 1965 AD)

After completing the course contents students are able to...

- Examine the Nazism and Fascism in Germany and Italy.
- Got knowledge regarding Russia under Stalin.
- Illustrate the participation of USA in the World War.
- Understand the causes and results of Second World War and the establishment of UNO.
- Understand the effect of military alliances of Russia and America.
- Understand the cold war and its consequences, problem of the world countries, foundation and role of UNO.
- Understand the causes and effect of Non-Aligned movement on the world.

Shri Shivaji Science and Arts College, Chikhli.
Department of Marathi
Program Outcome, Program Specific Outcome and Course
Outcome

Compulsory Marathi
PROGRAM OUTCOME/MARATHI

Students completing Graduation with Marathi, Marathi literature as an optional Subject will get knowledge about

PO1: Our rich and everlasting cultural heritage.

PO2: Valued knowledge traditions, esoteric philosophical systems, esteemed ethical and value system. PO3: Great contributions made in different fields of knowledge by ancient Indians.

PO4: Uniqueness and greatness of Marathi language and literature.

PO5: Desire to acquire knowledge in and about Marathi, our heritage, traditions and culture.

PROGRAM SPECIFIC OUTCOME/ *Marathi*

PSO1: Create an interest in literature.

PSO2: Availing the job opportunities in translation, transformation and Media.

PSO3: Developing the language.

PSO4: Increasing the critical attitude about literature studies.

PSO5: Understand the interrelation between literature and society.

PSO 6: Understand the nature of language and literature.

PSO 7: Contemporary writers, poets understand the flow of thought.

PSO8: Information about phonetics.

PROGRAM SPECIFIC OUTCOME /*Marathi Literature*

PSO1: Students should be introduced to this literary type of ideological essay poetry.

PSO2: The rules of Marathi writing should be understood from this study.

PSO3: It is expected that they will be able to print.

PSO4: It is expected that the students will be able to study the literary genres of novels and poems in a meticulous manner, be able to express themselves, take notes, write essays and evaluate literary works.

Course Outcomes/ *Marathi*

B.A I (Semester I)

Co1: Knowledge about Walking.

Co2: To know the importance of Education.

Co3: Understand the features of Vinoba Bhave's literature

Co4 : To know the importance of inspiration in life.

Co5 : To introduce a folk Literature .

Co6: To understand the life of Farmer and women .

Co7 : To introduce poets & their works .

B.A I Year Sem II

Co1: To inform literature of Swami Vivekanand .

Co2: Understand the importance of Marathi language.

Co3: To Devolve Scientific View.

Co4: To know the importance of Mother

.Co5: Understand the Letter Writing.

Co6: To introduce poets & their works.

B.A II Year Sem III

Co1: To inform literature of Sant Literature .

Co2: Understand the importance of Marathi language.

Co3: To know the importance of Science.

Co4: To know the importance of Animals & Birds

Co5: Understand the honor of women.

Co6: To introduce poets & their works.

B.A II Year Sem IV

Co1: To know the importance of land.

Co2: To know the Comparison of Man and Women

Co3: To know about Science.

Co4: To know the importance of Mirror.

Co5: To introduce the thoughts of Sant Gadge baba.

Co6: To understand the sensivity about urban life.

Co7: To know the speciality of the poet like Sant Ekanath, Sant Kanhopatra ,
Rajesh Mahalle, Shanta Shelake, Mirza Beg, Anil, Parsawale's literature.

B. A. III Year Sem V

Co1: To understand humanity.

Co2: To know the Power of Mind.

Co3: To introduce the speciality of Mahatma Fule's literature.

Co4: To know the importance of water.

Co5: To know the importance of trees ,nature in our life.

Co6: To understand the value of Urban aria.

Co7: To understand the value of life.

Co8: To know the speciality of poet and their poems like Tukaram ,Rramdas,
Balkavi, Gres, wahru Sonavane ,Sukhdev Dhanke literature.

B. A. III Year Sem VI

Co1: To understand the thought of Dr. Panjabrao Deshmikh, rajrshi Shahu

Maharaj, and Rajmata Jijau . Co2: To know the importance of food taste in our daily
life and our happiness.

Co3: To introduce the spectacles and its uses.

Co4: To know the special character of Arani.

Co5: To know factual picture of human life.

Co6: To understand the comic events in the story.

Co7: To know the speciality of poet and their poems like Sant Shekh Mahamd, Father Stifan, Mardhekar, Narayan surve ,dahake,Kavathkar, and Baban Saradkar.

B.Com I Sem I

CO1: Knowledge about Baba Padmanji's literature.

CO2: To understand Feminism .

CO3: To understand Power of Young Generation.

CO4: Knowledge about Poem .

CO5: To understand social restrictions and social responsibility

CO6: To develop the selflessness.

CO7: To understand the female awareness.

CO8: To know about Hamid Dalwai, Baba Padmanji, Baba Amte, Sumitra Gokhale

Literature

B.Com I Sem II

CO1: Understand the works of Sant Kabir.

CO2: Awareness about nature.

CO3: Understand the importance of nature

CO4: To know about Democracy.

CO5: Knowledge about Globalization and Its Effects

CO6: To develop good Letter Writing

CO7: To aware about War.

CO8: To introduce poet and their works.

B.Com II Sem III

- CO1: To know the literature of Dr. V. B. Kolte.
- CO2: To know the features of Dr. Panjabrao Deshmukh.
- CO3: To know the Place of Marathi language in Globalization.
- CO4: Understand the Literature of Poet Vinda Karndikar .
- CO5: To Know the importment of advertisement.
- CO6: Understand the literature of Sant Gadge Baba.
- CO7: Knowledge about Relation.
- CO8: To know the speciality of Tukdoji Maharaj, Stive Jobes, etc.

B.Com II Sem IV

- CO1: To inform about science and human life .
- CO2: To inform importance the protection of environment .
- CO3: Knowledge about happy life.
- CO4: To know the importance of advertisement.
- CO5: To inform about Mahanubhao samprday .
- CO6: To know about Lilacharitra.
- CO7: To introduce Dr Ambedkar and Mahtma Gandhi.
- CO8: To know the speciality of gangadhar Pantavane Vishnu Solanke Narayan Surv's literature.

B.Com III Year Sem V

- CO1: To understand the value of Water, Nature and Globalization.
- CO2: To understand ideology of Shahu Maharaj about Education .
- CO3: To know the speciality of Writers like V. D. Savarakar, Agarkar and Mahtma Fule.

B.Com III Year Sem VI

CO1: To understand the value of advertisement.

CO2: To know the effects of dowry system.

CO3: To know the effects of pollution.

CO4: To introduce poet and their works.

B.Sc I Sem. I

CO1: To understand the importance of science in our life.

CO2: To know the importance of values in our life.

CO3: To introduce poets & their works.

B.Sc I Sem. II

CO1: To know the importance of values in our life.

CO2: To introduce Writers and poets & their work

Course Outcome /Marathi Literature

B. A. I Sem. I

CO1: To Create an interest in literature.

CO2: To introduce Novel and Writer.

Co3 : To Understand Modern Poem.

CO4: To understand the value of Water.

B. A. I Sem. II

CO1: To know the importance of values in our life.

CO2: To introduce One act Play.

Co3: To Understand Modern Poem

Co4 : To Increase the critical attitude about literature studies.

B. A. II Sem. III

CO1: To know the importance of values in Marathi Story.

CO2: To introduce Story Writers and his Story.

Co3 : To Develop Scientific approach to Literature .

B. A. II Sem. IV

CO1: To know the importance of values in Athvaniche Pakshi .

CO2: To introduce ancient Marathi literature.

CO2: To introduce Lilacharitra and life of Shree Chakradharswami and Shree Govinprabhu .

Co3 : To Develop Sensibility .

B. A. III Sem. V

CO1: To introduce D. M. Mirasdar and his literature.

CO2: To Develop the language to Literature.

B. A. III Sem. VI

CO1: To introduce Biography of Carver and his work.

Co2 : Increasing the critical attitude about literature studies

Co3 : To Develop Scientific approach.

M A Marathi

PROGRAM OUTCOMES

*After completion the Post-Graduation in Arts/Humanities/ Social Sciences the student would Have deep knowledge and understanding about all possible aspects in the subject by making use of reference books, research journals, periodicals and internet facilities.

- Have the details of important landmarks of development of it PG subject since ancient time.
- Critically evaluate the works of various authors or social scientists by considering the strength and weakness and suggestions probable modifications for improvement.

- Understood how the developments in the field of Humanities have improves the quality of life and how they have satisfied the aspirations, intensions likes and dislikes and how they could modify them.

- Realize how the studies in Humanities have led to various social, economic, political changes over last few centuries.
- Able to predict the future course of the developments in the subject and the various factors that are likely to influence them and how they will change the life of common man.
- Taken up an independent research project, plan and execute it and present the results and conclusions systematically at the end.
- Taken up independent creative writing or various aspects in literature, social, economic political, environmental issues in the form of story, poetry, research articles, reports, etc in various periodicals & journals.
- Recognized that studies in humanity will dissolve differences & inequalities due to caste, creed and religion, social status etc leading to human dignity which will help to create social & national integration
- Participated & led various activities related to literature & social issues in order to create social awareness and harmony. Faculty of Arts/ Humanities/ Social Sciences

***Program specific Outcomes
(PSO)***

PSO1: To make students learn various literary streams, their nature, scope etc.

PSO2: To go through the contemplation by numerous thinkers on human life, values, and human problems expressed in Marathi.

PSO3: To enhance empathy, inclusiveness, tolerance and

human values. PSO4: To make the students study multi-

disciplinary aspects of Marathi.

PSO5: To learn about Marathi culture with its variety and plurality

Indian culture. PSO6: To develop communication skills and motivate

them to make career in Marat

Course Outcome

M A Part I Sem I

- Know the form of Literature i.e.[poetry, Folk literature]
- Understand concepts of Poetry and Folk literature.
- To know different literary types and analysis then.
- To make student aware of literature which contribute in Indian culture.
- To know various stages of development of Marathi Language.
- To know the nature and purpose of Language.
- To know historical study, descriptive study for Linguistic Research..

M A MARATHI PART I SEM. II

- Understand the importance of interrelationship between Society and Literature.
- Develop ethical thinking
- To criticize the literature
- To understand the folk literature.
- To know the novel.
- To know various stages of development of Marathi Language
- Know the concepts of Gandhism, Marxism, Ambedkarism.

M A Part II Sem III

- Know the form of Literature i.e.[dalit sahitya]
- Understand concepts of ancient Marathi Poetry and Sant sahitya .
- To know different literary types and analysis then.
- To know the nature and purpose of Language.
- To know historical study, descriptive study for Linguistic Research.
- To know the official writing in Marathi language.

M A Part II Sem IV

- To develop communication skills and motivate them to make career in Marathi.
- Know the form of Literature.
- Understand concepts of Poetry and Folk literature.
- To know different literary types and analysis then.
- To make student aware of literature which contribute in Indian culture.
- To know various stages of development of Marathi Language.
- To know the nature and purpose of Language.
- To know historical study, descriptive study for Linguistic Research.

Shri Shivaji Science and Arts College, Chikhli.
Department of Mathematics
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcomes (POs):

On completion of B.Sc. Mathematics program, graduates will be able to:

- Demonstrate, solve and an understanding of major concepts in all discipline of mathematics.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and scientific knowledge to design, carryout, record and analyze the result of mathematical analysis.
- Create an awareness of the impact of mathematics on the environment, society and development outside the scientific community.
- To inculcate the scientific temperament in the students and outside the scientific community.

Program Specific Outcome (PSOs):

On completion of B.Sc. Mathematics program, graduates will be able to:

- Demonstrate basic ideas, skills in algebra, geometry, trigonometry, calculus number theory and classical mechanics.
- Apply the underlying unifying structures of mathematics (i.e. sets, relations and functions, logical structure, sequence and series) and the relationships among them
- Applying mathematical methods to solve science problem in research and technical problems in industry.
- Analyze and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, astronomy and astrophysics and illustrate these solutions using symbolic, numeric, or graphical methods.

Course Outcomes (COs):

Class	Paper	Course Outcome (Student will able to)
B.Sc. I, 1Sem	(i) Algebra and Trigonometry (ii) Calculus	<ul style="list-style-type: none"> ➤ Study of Complex number and trigonometric series. ➤ To gain the knowledge of Elements of quaternion and Theory of equations ➤ Study the system of equations by using matrix methods. ➤ Knowledge of limit of a function and differentiability. ➤ To Understand Rolle's theorem ➤ Knowledge of Partial derivatives and reduction formulae
B.Sc. I, 2Sem	(iii) Differential Equations (Ordinary and Partial), (iv) Vector Analysis and Solid Geometry	<ul style="list-style-type: none"> ➤ Study of ordinary differential equation & Second order linear differential equations. ➤ Knowledge of Reduction of order, Formation of partial differential equations. ➤ To gain the knowledge of Compatible differential equations. ➤ Study of Scalar and vectors, Frenet - Serret formulae. ➤ To gain the knowledge of Greens theorem, divergence and Curl. ➤ To acquire the Knowledge of Sphere and Cone.
B.Sc. II, 3Sem	(v) Advanced Calculus (vi) Elementary Number Theory	<ul style="list-style-type: none"> ➤ Knowledge of Sequence and Series ➤ Study of Limit & continuity & Maxima & minima of functions of two variables. ➤ Understand Double integral, Gauss and Stoke's theorem. ➤ Knowledge of Divisibility, Prime numbers and Fermat numbers. ➤ Study of Congruence and Arithmetic functions. ➤ Knowledge of Primitive roots, quadratic residues.
B.Sc. II, 4Sem	(vii) Modern Algebra : groups & rings (viii) Classical Mechanics	<ul style="list-style-type: none"> ➤ Study of Group, Cosets and normal subgroups. ➤ To acquire the knowledge of Homomorphism and isomorphism. ➤ Knowledge of Ring, integral domain and field, and Ideal. ➤ To analyze D'Alembert's principle, Central force motion. ➤ Study of Calculus of variation. ➤ Knowledge of Hamilton's principle and Rigid body.

<p>B.Sc. III, 5Sem</p>	<p>(ix) Mathematical Analysis (x) Mathematical Methods</p>	<ul style="list-style-type: none"> ➤ Knowledge of Riemann Integral, Improper integrals and their Convergence. ➤ Study of Continuity and differentiability of complex function. ➤ Study of Elementary function and Metric spaces. ➤ Knowledge Legendre's equation and Bessel's equation. ➤ To gain the knowledge of Fourier series. ➤ To acquire the Knowledge of Laplace transform and Fourier Transform
<p>B.Sc. III, 6Sem</p>	<p>(xi) Linear Algebra (xii) Special Theory of Relativity</p>	<ul style="list-style-type: none"> ➤ Study of Vector Space and Linear transformations. ➤ Knowledge of Dual Spaces and Inner Product Spaces. ➤ Acquire the knowledge of Modules. ➤ Understand Review of Newtonian Mechanics and Relativistic Kinematics. ➤ Study of Geometrical representation of space-time and Relativistic Mechanics. ➤ Knowledge of Electromagnetism and Maxwell's equation in tensor form

Shri Shivaji Science and Arts College, Chikhli.
Department of Microbiology
Program Outcome, Program Specific Outcome and Course Outcome

PROGRAM OUTCOME

- At the end of the B.Sc. Programme, graduates will be able to
- Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevance in routine life.
- To inculcate Scientific Aptitude among the students.
- To make them aware of Environment and living things.
- To make them to use scientific logics and Soft Skills.
- Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.
- Acquired skills in handling scientific instruments, planning and performing laboratory experiments noting down the observations and drawing logical inferences from them.

PROGRAM SPECIFIC OUTCOME

- Identify and become familiar with the scope, methodology and application of Microbiology and learn to appreciate its ability to explain various aspects.
- Understand theoretical and practical concepts of instruments that are commonly used in practical of Microbiology.
- Design and carry out scientific experiments and record the results of such experiments.
- Understand safety use of instruments like Autoclave, Laminar air flow, Centrifuge, Photoelectric colorimeter etc., and how they are applicable in Microbiological study in various fields.
- It explains how Microbiology and Microorganisms are useful for social, economic and environmental problems and issues facing our society regarding pollution, toxic food, energy, medicine and health etc.

COURSE OUTCOME

B. Sc. I (Semester- I)

CO I

- Get an idea about the historical events in microbiology.
- Understand the diversity in microbiology.
- Know the scope of Microbiology.

CO II

- Know parts of microscope, type and its principal.
- Get the theoretical concepts of related stain.
- Understand different methods of staining techniques.

CO III

- Understand taxonomic Classification of Microorganisms.
- Understand diversity of Microorganisms.

CO IV

- Understand cells and its types.
- Understand shape, size and arrangement of bacteria.
- Understand structural organization of bacterial cell and its importance.
- Understand anatomy of Prokaryotic cell.

CO V

- Understand basic nutritional requirements of microorganisms.
- Acquainted with various sterilization techniques.
- Know various methods of pure culture isolation.
- Know the methods of preservation of pure culture.

CO VI

- Understand concept of growth and reproduction of Bacteria.
- Know the Synchronous culture and Continuous culture methods.
- Understand factors influencing growth of bacteria.

Practical

CO VII

- Understand the parts of Microscope, types of Microscopes and its Principles.
- Understand different equipment's used in microbiology lab and their operation.
- Develop basic skill of Aseptic technique.
- Cultivate bacteria from soil, water, Air, milk and skin.
- Perform staining by different methods.
- Demonstrate motility of bacteria.
- Isolate pure culture of bacteria.

B. Sc. I (Semester- II)

CO I

- Understand structural organization of viruses.
- Understand replication of viruses.
- Understand concept of virus cultivation.

CO II

- Understand basic skill of Aseptic technique.
- Understand various methods to control microorganisms.
- Understand various mechanisms of cell injury.
- Acquainted with knowledge of antibiotics and its mechanism of action.

CO III

- Understand the role of microorganisms in various fields.
- Understand role of microorganisms in bio-fertilizers and bio-pesticides production.

- Understand role of microorganisms in antibiotic and vaccine production.
- Understand role of microorganisms in biodegradation and bioleaching of metals from ores.

CO IV

- Understand structure and function of various biomolecules and its importance in living cell.
- Understand structure and function of Nucleic acids.

CO V

- Understand basic concept of biostatistics.
- Understand s types of Central tendencies.
- Know the concept of Correlation and Regression.
- Understand concept of hypothesis testing.

CO VI

- Understand basic concept of computers and its peripherals.
- Know the concept of Computer memory.
- Use of computer in preparation of presentations, Seminars.
- Use of MS-Word and MS- Power Point in routine.
- Use of Internet in searching information related to subject.

Practical

CO VII

- Cultivate viruses by plaque formation method.
- Study the factors affecting growth of bacteria.
- Demonstrate microbiostatic effect of heavy metals.
- Cultivate anaerobic bacteria.
- Perform antibiotic sensitivity of bacteria.
- Use Yeast for Alcohol production and Bread making.

B. Sc. II (Semester- III)

CO I

- Get an idea about the gene and its parts.
- Understand the concept of Split genes and Overlapping genes.
- Understand the concept of DNA replication in prokaryotes and different models of DNA replication.
- Get an idea about DNA repair mechanisms.
- Understand concept of Genetic Code and its importance.
- Understand the process of protein synthesis.

CO II

- Understand different operons in bacteria and its importance.
- Know the concept of mutation and its types.
- Understand various mutagenic agents and their effects.

CO III

- Understand process of gene recombination in prokaryotic cell.
- Acquainted with various mechanisms of gene recombination in bacteria.

CO IV

- Acquainted with basic technique of genetic engineering.
- Understand uses of different enzymes in genetic engineering.
- Know about various vectors used in genetic engineering.

CO V

- Understand methods for isolation of DNA.

- Acquainted with methods such as DNA sequencing, Polymerase Chain Reaction.
- Understand the method for identification of transformed cells.
- Understand the concept of Gene Library.

CO VI

- Understand concept of recombinant Insulin and its production in large amount.
- Understand about Recombinant Vaccine.
- Understand the concept of Gene Therapy.
- Understand the concept of DNA Probes in diagnosis of disease.
- Understand how transgenic plants are produce nowadays.
- Understand about genetically modified microorganisms which control pollution.

Practical

CO VII

- Develop skill of Isolation of DNA from bacteria.
- Perform Agarose Gel Electrophoresis.
- Isolate Mutant strains of bacteria.
- Detect DNA and RNA from the sample.
- Carryout Transformation by using Chemical agents.

B. Sc. II (Semester- IV)

CO I

- Understand concept of epidemiology.
- Understand the types of infection and transmission of disease.
- Know the normal flora of human body and its importance.
- Understand how to control communicable diseases.

CO II

- Concept of cells and organs related to immune system.
- Immune response and Immune mechanisms.
- Immunity and its types.
- Concept related to Hypersensitivity.

CO III

- Antigens, its types and bacterial antigens.
- Antibodies, its types and importance.
- Antigen – Antibody reactions, its types and applications in serological diagnosis of disease.

CO IV

- Understand various bacterial disease, their causative agents, modes of transmission, Epidemiology, Treatments, Laboratory diagnosis and Prophylaxis.

CO V

- Understand Various Viral diseases, their causative agents, modes of transmission, Epidemiology, Treatments, Laboratory diagnosis and Prophylaxis.
- Acquainted Rickettsial diseases, their causative agents, modes of transmission, Epidemiology, Treatments, Laboratory diagnosis and Prophylaxis.
- Understand various fungal diseases, their causative agents, modes of transmission, Epidemiology, Treatments, Laboratory diagnosis and Prophylaxis.
- Understand various Protozoal diseases, their causative agents, modes of transmission, Epidemiology, Treatments, Laboratory diagnosis and Prophylaxis.

CO VI

- Understand chemotherapeutic agents.
- Antibacterial antibiotics, their mode of action and uses.

- Antiviral agents, their mode of action and uses.
- Antifungal antibiotics, their mode of action and uses.
- Basic mechanism of antibiotic action.
- Understand various methods of Antibiotic sensitivity testing.

Practical

CO VII

- Demonstrate the activity of various enzymes such as Oxidase, Urease and Coagulase.
- Isolate and identify bacteria from clinical samples.
- Perform serological tests like Widal test, VDRL test and Pregnancy test.
- Determine blood group and Hemoglobin.
- Perform antibiotic sensitivity of bacteria.
- Determine Carbohydrate and Proteins from Urine.
- Estimate blood glucose and cholesterol.
- Perform Total Leukocyte Count and Differential Leukocyte Count of Blood.

B. Sc. III (Semester – V)

CO I

- Understand microbial interactions present in natural habitat.
- Understand atmosphere and its composition.
- Understand different types of microbes present in Air.
- Understand about Air-borne disease.
- Understand about how to control air borne disease.

CO II

- Understand presence of microorganisms in soil.
- Understand formation of process of humus.
- Understand concept of biological Nitrogen fixation.
- Understand different Biogeochemical cycling of elements.
- Understand biofertilizers, its competition and its importance in Agriculture.

CO III

- Microorganisms present in water, their growth requirements.
- Planktons and their importance.
- How to control problems created by planktons.
- Understand concept, Process and control of Eutrophication.

CO IV

- Collect water sample from natural sources for testing.
- Perform bacteriological analysis of water.
- Get knowledge about indicators of excretal pollution of water.
- Perform Multiple Tube Dilution technique and Most Probable Number technique for testing water potability.
- Get knowledge about ICMR and WHO standards of drinking water quality.

CO V

- Understand Self-purification of water.
- Understand process of Treatment of water
- Construction of Slow Sand Filters and Rapid Sand Filters.
- Acquainted about Chlorination of water.
- Understand Treatment of sewage.
- Understand Construction of Municipal Sewage treatment plant.
- Understand Secondary treatment of sewage.

- Understand Construction of Domestic Sewage treatment plant.
- Understand Concept of Chemical Oxygen Demand and Biological Oxygen Demand.
- Understand Construction of Biogas production plant.

CO VI

- Understands UV – Visible Spectroscopy.
- Understand Paper and Gel Electrophoresis.
- Understand Chromatography, its different types and its importance.
- Acquainted with concept of Isotopes and its use in Biological field.

Practical

CO VII

- Able to perform bacteriological analysis of water by Standard Plate Count Method, Multiple Tube Dilution Technique and Membrane Filter technique.
- Able to estimate Biochemical Oxygen Demand of Water.
- Understand how to estimate Chlorine demand and Residual chlorine of water.
- Able enumerate bacterial count of soil.
- Able to Isolate Symbiotic and Non – symbiotic Nitrogen fixing bacteria.
- Able to isolate Antibiotic producing organisms from soil.

B. Sc. III (Semester- VI)

CO I

- Understand Industrial importance of microorganisms.
- Understand Process of fermentation.
- Understand Production strain.
- Understand Scale-up process.
- Understand Layout of fermentation plant.
- Understand Raw materials used in fermentation.
- Understand Antifoam agents used in fermentation process.
- Understand Sterilization of fermentation medium.

CO II

- Understand Industrial production of Ethanol, Beer, Wine, Citric acid, Vinegar and Acetone- Butanol.

CO III

- Understand Industrial Production of Baker's yeast, Single Cell Proteins.
- Understand Industrial Production of Penicillin, Amylase, and Vitamin B12.

CO IV

- Understand Composition of milk.
- Understand Sources of contamination of milk.
- Understand methods of Pasteurization.
- Understand Testing of milk for its quality.
- Understand Preparation of various milk products.

CO V

- Understand food spoilage.
- Understand how to preserve food.
- Know preparation of various fermented food products like Idli, Pickels, and Sauerkraut.
- Understand concept of food poisoning and food intoxication.

CO VI

- Understand enzymes and its classification.
- Understand EMP pathway and TCA cycle of metabolism.

- Understand about Electron Transport Chain.

Practical

CO VII

- Able to perform milk testing by Phosphatase and Methylene Blue Reduction test.
- Able to enumerate bacteria in milk.
- Able to perform test for adulteration of milk.
- Able to produce Ethyl alcohol, Citric acid, and Amylase from raw materials.
- Able to Immobilized enzymes.
- Able to produce Pickels, and Cheese.
- Able to produce wine from grapes and other raw materials.

Shri Shivaji Science and Arts College, Chikhli.
Department of Physics
Program Outcome, Program Specific Outcome and Course Outcome

Programme Outcomes

	<p>At the time of graduation, Students will be able to</p> <p>PO-1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.</p> <p>PO-2: Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.</p> <p>PO-3: Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.</p> <p>PO-4: Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.</p> <p>PO-5: Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.</p> <p>PO-6: Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.</p> <p>PO-7: Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes</p>
--	--

Programme Specific Outcomes

	<p>PSOs: Upon completion of the Programme successfully, students would be able to</p> <p>PSO-1: acquire a comprehensive knowledge and sound understanding of fundamentals of Physics</p> <p>PSO-2: develop laboratory skills, enabling them to take measurement in a physic laboratory and analyze the measurements to draw valid conclusions.</p> <p>PSO-3: be prepared to acquire a range of general skills, to solve problems, to evaluate information, to use computers productively, to</p>
--	---

	<p>communicate with society effectively and learn independently.</p> <p>PSO-4: Develop good oral and written scientific communication skill.</p>
--	---

Course Outcomes B. Sc. Physics

Semester - I

Course/Unit	Outcomes
	On successful completion of the course students would have;
Unit-I	CO: Discuss the basic concepts of rotational dynamics.
Unit-II	CO: Examine the phenomenon of simple harmonic motion and distinction between undamped, damped and force oscillations and the concept of resonance.
Unit-III	CO: Explain the superposition of simple harmonic motion and acquire the knowledge of Ultrasonic waves, their production, detection and applications in different field.
Unit-IV	CO: Understand fundamentals the elastic properties of matter. Determine the constants of elasticity and relate it with appropriate things.
Unit-V	CO: Interpret the postulates of special theory of relativity. Know the concept of Global positioning system (GPS)
SEM: Skill Enhancement Module	<p>After completion of this course students will able to</p> <p>CO-1: Apply the principles of measurement and error analysis.</p> <p>CO-2: Develop the skills to handle various instruments with precision.</p>
Physics Practicals	<p>On successful completion of this practical course, the students would be able to</p> <p>CO-1: List out, identify and handle various equipment likes different types of pendulums.</p> <p>CO-2: Learn the procedures of operation of various oscillating objects.</p> <p>CO-3: Acquire skills in observing and measuring different types of errors.</p> <p>CO-4: Perform procedures and techniques related to experiments based on mechanics.</p> <p>CO-5: Conduct experiments collaboratively and ethically.</p>

Course Outcomes B. Sc. Physics

Semester - II

Course/Unit	Outcomes
	On successful completion of the course students would have;
Unit-I	CO: Discuss the concept of scalars & vectors and their properties
Unit-II	CO: Develop an understanding of Gauss law and its applications to obtain electric field in different cases.
Unit-III	CO: Formulate the relationship between electric displacement vector, electric polarization and dielectric constant.
Unit-IV	CO: Distinguish between the magnetic effect of electric current, electromagnetic induction and the related laws in appropriate

	circumstances
Unit-V	CO: Simplify electrical circuits by applying various network theorems.
SEM: Skill Enhancement Module	After completion of this course students would be able to CO-1: Make use of Multimeter for the measurement of electrical parameters and get the knowledge of electronic components and their applications. CO-2: Estimate the power consumption of domestic appliances and carry out energy audit.
Physics Practicals	On successful completion of this practical course, the students would be able to CO-1: Simplify various electrical circuits by using network theorems. CO-2: Learn the procedures of operation of electrical components like capacitor, resistor and inductor. CO-3: Acquire skills in measuring dielectric constants of different materials. CO-4: Perform procedures and techniques related to experiments based on electrical and electronic circuits. CO-5: Conduct experiments collaboratively and ethically.

**Course Outcomes B. Sc. Physics
Semester – III**

Course/Unit	Outcomes
	After completion of these courses students should be able to;
Mathematical Background and Electrostatics	CO1: To understand concept of Mathematical Physics such as Gradient, divergence and curl of a vector fields, line, surface and volume integral. To study Gauss divergence theorem, Stocks theorem. CO2: Know basic concept of Electrostatics & its applications.
Magnetostatics and Maxwell's Equations	CO1: To study Faraday's Law, Maxwell's Equations & wave equations for electromagnetic wave. CO2: To understand Poynting vector and Poynting theorem.
Solid State Electronics Devices-I	CO1: To know semiconductors, charge carriers & electrical conduction, Fermi level & energy level diagrams, mobility and conductivity. CO2: To understand Hall effect, Hall coefficient, Semiconductor diode & its biasing, LED and Varactor diode.
Solid State Electronics Devices-II	CO1: Study BJT, its construction & working, modes of operation, current gains & their relation & CB & CE characteristics CO2: To study JFET- construction & working & it's Characteristics. CO3: Gain knowledge of Basic concept of Difference amplifier & to study the Operational Amplifier and their types.
Special Theory of Relativity	CO1: To understand the Special of Special Theory of Relativity, Lorentz transformations, Length contraction, Time dilation, relativistic addition of velocities, relativity of mass, Einstein's Mass - energy relation. CO2: To solve Numericals for better understanding.
Atmosphere and Geophysics	CO1: To study structure of earth, Earthquakes, composition of atmosphere. CO2: To understand Radiation in the atmosphere, moisture and clouds.
Physics	CO:1 Design circuit & study characteristics of CB & CE transistor.

Practicals	<p>CO:2 Design circuit & study characteristics of FET & FET as voltmeter.</p> <p>CO:3 Design circuit & study p-n diode as a rectifier.</p> <p>CO:4 Design circuit & study characteristics of p-n junction.</p> <p>CO:5 Study of OP AMP as an inverting amplifier, noninverting amplifier, adder & subtractor.</p> <p>CO:6 To determine characteristics of Phototransistor.</p> <p>CO:7 Design circuit & study Zener regulated power supply.</p>
-------------------	---

Course Outcomes B. Sc. Physics Semester - IV	
Course/Unit	Outcomes
	After completion of these courses students should be able to;
Geometrical Optics and Interference	<p>CO1: Understand optical lens system.</p> <p>CO2: Learn interference in thin films due to reflected and transmitted light, interference in wedge shaped thin film,</p> <p>CO3: Understand formation Newton's ring, measurement of wavelength of monochromatic light & refractive index of liquid by Newton's.</p>
Diffraction	<p>CO1: Understand diffraction phenomenon such as Fresnel diffraction, Fraunhofer diffraction, single & double slit diffraction</p> <p>CO2: Understand construction and theory zone plate & plane transmission grating</p> <p>CO3: Know resolution of images, Rayleigh's criteria for resolution and R. P. of grating.</p>
Polarization	<p>CO1: Know about the basic concepts of polarization & phase retardation plates.</p> <p>CO2: Study of production of elliptically and circularly polarized light.</p> <p>CO3: Study Half shade polarimeter</p>
Laser	<p>CO1: Know the history of LASERS and its basic concepts.</p> <p>CO2: Understand the basic principle and working of different types of lasers such as Ruby laser He-Ne laser, Semiconductor laser etc.</p> <p>CO3: Know the applications of lasers in various fields.</p>
Fiber optics	<p>CO1: Study basic concept of fiber optics, structure and classification of optical fiber.</p> <p>CO2: Understand propagation of light wave in an optical fiber,</p> <p>CO3: Know acceptance angle and numerical aperture, dispersion, fiber losses, fiber optic communication.</p> <p>CO4: Gain information of advantages and disadvantages of optic fibers, application of fiber optics.</p>
Renewable Energy Sources	<p>CO1: Know various renewable energy sources</p> <p>CO2: Know Solar energy & To gain knowledge of Solar Energy Storage.</p> <p>CO3: Study Solar Photovoltaic systems-Operating principle, photovoltaic cell concepts & solar PV panel its applications.</p>
Physics Practical	<p>CO:1 Design circuit & study (a) half wave rectifier (b) full wave bridge rectifier & investigate the effect if C, L & π filter.</p> <p>CO:2 Learn how to determine refractive index & dispersive power of prism.</p> <p>CO:3 Learn how to determine resolving power of plane transmission grating & telescope.</p>

	<p>CO:4 Learn how to determine wavelength of monochromatic light by Newton's rings & plane transmission grating.</p> <p>CO:5 To study & plot characteristics of solar cell.</p> <p>CO:6 To determine frequency & phase by CRO.</p> <p>CO:7 Learn how to determine number of lines per centimeter of given grating & resolving power.</p>
--	--

Course Outcomes B. Sc. Physics Semester - V	
Origin of Quantum Mechanics	<p>CO1:To Understand origin of quantum mechanics. Describe concept of wave packet.</p> <p>CO2: Know Davisson Germer experiment</p> <p>CO:3 To understand Heisenberg's Uncertainty principle& its verification using Thought experiment and Gamma ray microscope.</p>
The Schrodinger Equation and Its Applications	<p>CO1: To understand concept of wave function & its significance.</p> <p>CO2: Know the Schrodinger equations and its applications.</p> <p>CO3: To understand Eigen functions and Eigen values and qualitative analysis of zero point energy.</p>
Atomic and Molecular Spectroscopy	<p>CO1: Understand vector atom model & study Stern-Gerlach experiment and different types of coupling.</p> <p>CO2: Know the properties and types of X-ray</p> <p>CO:3 To study for Raman Effect & its basic principal</p>
Nuclear Physics	<p>CO:1 Know about detection of charge particles by using G. M. counter.</p> <p>CO:2 Understand concept of nuclear physics like, Alpha decay, Beta decay, Concept of nuclear fission and fusion.</p> <p>CO:3 Study construction & working of nuclear reactors.</p>
Hybrid parameters & Amplifier	<p>CO:1 Understand hybrid parameter, CE amplifier, Bias stability & Thermal runaway</p> <p>CO2: Study RC coupled amplifier & its variation in gain with frequency</p> <p>CO:3 Study noise & distortion in electronic circuits.</p>
Feedback in amplifiers & Oscillators	<p>CO:1 Know properties, advantage and applications of negative feedback. CO:2 CO:2 Describe the construction and working of various types of oscillators and multivibrators.</p>
Physics Practicals	<p>CO1: Construct regulated power supply using Zener diode and draw the regulation curve.</p> <p>CO:2 Determine hybrid parameters& its practical applications</p> <p>CO:3 Design circuits for RC coupled amplifier and study the frequency response.</p> <p>CO:4 Construct Hartley, Colpitt's, Weins Bridge Oscillator and measure the frequency of oscillations.</p> <p>CO:5 Identify elements in optical line spectrum.</p> <p>CO:6 Design the circuit to study characteristics of LED & to determine</p>

plank constant using LED
CO:7 Determine 'e' by Thomson's method.

**Course Outcomes B. Sc. Physics
Semester – VI**

Statistical Mechanics	<p>CO:1 Understand the concept of Phase space, unit cell, microstates, and macrostate.</p> <p>CO:2 Study concept of probability, principle of equal priori probabilities & most probable distribution</p> <p>CO:3 Maxwell Boltzmann statistics, and its applications.</p>
Statistical Mechanics	<p>CO:1 Study Distinguishable & indistinguishable particles & understand concepts of boson & fermions.</p> <p>CO:2 Compare Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics and derive it's outcomes</p> <p>CO:3 Understand Fermi function, Fermi energy & Fermi temperature.</p>
Crystallography	<p>CO:1 Distinguish between crystalline and amorphous solids.</p> <p>CO:2 Study how to calculate atomic packing factor for Cubic structure.</p> <p>CO:3 Explain symmetry elements and Bravais lattice.</p> <p>CO:4 Distinguish between various types of crystal imperfection.</p>
Electrical Properties of Materials	<p>CO:1 Analyze the success and failure of free electron theory.</p> <p>CO:2 Study origin of band gap & classification of materials on the basis of bands structure</p> <p>CO:3 Understand Hall effect & its applications.</p>
Magnetic Properties of Materials	<p>CO:1 Understand different types of magnetic materials</p> <p>CO:2 Study classical & quantum mechanical treatment of paramagnetism;</p> <p>CO:3 Study Curie's law, Weiss's law, Hysteresis and Energy Loss.</p>
Superconductivity & Nano Technology	<p>CO:1 Understand superconductors and its type, Meissner effect & Applications of superconductors.</p> <p>CO:2 Understand nanomaterials, its physical properties & applications of nanomaterials in different fields.</p>
Physics Practicals	<p>CO:1 Understand basic laws, theory, characteristics of photocell and can be determine Plank's constant using photocell.</p> <p>CO:2 Design the circuit to study characteristics of Photo diode.</p> <p>CO:3 Determine activation energy of thermistor and energy gap of semiconductor.</p> <p>CO:4 Understand basic laws, theory and determine Hysteresis losses in transformer core & plot B-H curve.</p> <p>CO:5 Determine lattice parameter by using X-ray diffraction pattern.</p> <p>CO:6 Understand various crystal structure using crystal models &</p>

	<p>identify of crystal planes.</p>
--	------------------------------------

CO:7 Design the circuit to study characteristics of Zener Diode

CO:8 To study thermo emf using thermocouple.

Shri Shivaji Science and Arts College, Chikhli.
Department of Political Science
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcome

At the end of the Programme the student is expected to know, understand and develop and become -

- 1) Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- 2. Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
- 3. Social Interaction:** Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- 4. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- 5. Ethics:** Recognize different value systems and accept responsibility for them.
- 6. Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
- 7. Analyse** various forms of literature and understand different aspects of life
- 8. Self-directed and Life-long Learning:** Acquire the ability to engage in professional and financial independence and life-long learning.

Programme Specific Outcomes PSOs:

Student of B. A. program studying Political Science as an optional subject is expected to:

- 1: To understand the basic structure of Indian political system
- 2: To Inculcate interest in political field
- 3: To create the leadership qualities in students
- 4: To understand Indian governing system

Course outcome

B.A. I (Sem I)

Subject- Indian Constitutional Provisions and Local Self Government

CO I

- Student learns the various features of Indian Constitution and political System.
- Student learns the parliamentary system of India and its importance for Indian society.
- Student learns and understands the objectives of Indian constitution through Preamble.
- Students learns the meaning nature and importance of Fundamental Rights like ,Right to Equality ,freedom, Right to Religion Etc.
- They also understand the role of judiciary for the protection of Fundamental Rights through Right to Constitutional Remedies.

CO II

- Student learns welfare nature of Directive Principle.
- Students understand the role and importance of Directive Principle for Socio-Economic and Political Justice.
- Student learns liberal view of Directive Principle about responsibility of world Peace of Indian Government.
- Student learns and understands the duties of citizens.
- Student learns the meaning, importance and methods to be acquired by the Indian citizenship.

CO III

- Student learns the role of constitutional head of Indian President, Vice- President in Government of India.
- Student learns the role of Prime Minister as real constitutional head his powers and his relation with cabinet and President.

CO IV

- Student learns the structure and powers of Indian Parliament.
- They also understand the role of Loksabha and Rajyasabha as a house of peoples representative and as a house of State representative of both houses.
- Student understands and learns the Politically Neutral and respectable role and

importance of speaker of Loksabha.

CO V

- Student learns importance, structure and power of judiciary.

- Student learns the important role of Supreme court and High Court as guardian of constitution, guardian of Indian federation and as a guardian of Rights, Justice of Citizens.
- Students learn the concept of Judicial Review, Judicial Activism in the sake of common people.

B.A. I (Sem II)

Subject- Indian Constitutional Provisions and Local Self Government

CO I

- Students Learn the importance of Autonomous institute like, Election Commission for the Safe and transparent Election Process.
- Students understand Election Commission role for Strengthen to Indian Democracy.
- Students became well known about the reforms in Election process.
- Students learn that Election commission gives recognition to political parties in India and control them by lawful way for betterment of Democracy.

CO II

- Student learns & understands dual Parliamentary System at State Level.
- They also learn the role of Constitutional head (Governor) and the same time learn role of real Constitutional Head (Chief Minister) of State.
- Student learns the power, Role and Relations between governor, Chief Minister and State Cabinet.

CO III

- Student learns the structure, powers and Role of both State Legislature i.e. Legislative Assembly and Legislative Council in Maharashtra State.
- They also learn the importance of legislative Council in State which is Establish in few only by the provisions of Constitution.

CO IV

- Students learn that institutions like, Local Self Government encourage to Common People for the participation in politics which help Strengthen to Indian democracy.
- Student learns that such LSG are tool of Political Socialization which Strengthen to democracy at bottom level.
- Students learn that Gram Sabha is Local Parliament at Village level.
- Students understand that Local problems may solve quickly only by LSG due to Local representative.
- Student Learn the importance of 73rd and 74th constitution amendment for LSG.

CO V

- Students learn the importance of 50 % reservation policy for women's participation in Panchayat Raj.
- Girls Students feel eager to participate for innovative work in Panchayat Raj system.
- Students learn the importance of Nagpur pact and its Recommendations for the development of Vidarbha.
- Students learn the importance and need of Right To Information Act for the transparency in governance.
- Student understands that RTI is a tool of justice for common people so, they are also eager to use it in their life as per need.

B.A. II (Sem III)

Subject- Selected Constitution and International Relations (UK, USA & SAARC)

CO I

- Student Learns historical background of Parliamentary System of UK.
- Student Learns various features of British Parliamentary System.
- Student learns the role of Prime Minister, Cabinet & their responsibility.
- Student understands difference between crown and king.

CO II

- Students learn role and functions of House Lords and House of Commons with their historical evolution.
- Students learn role, importance and responsibility of opposition party and leader in democracy.
- They also learn concept of Shadow Cabinet.

CO III

- Students learn and understand presidential form of democracy which is developing in USA originally.
- Students learn various feature of First written Constitution of the world i.e. USA.
- They learn the role and functions of President, Vice- President and Cabinet.

CO IV

- Students learn the importance role of senate though it's a second house of Congress.
- Students learn comparatively the power and functions of both houses of Congress.
- Students learn the senate's constitutional power which can control the decision of President.
- Students understand the role and powers of Supreme Court of USA and its Rights of Judicial Review and role as a guardian of Constitution.
- They also learn theory of separation of powers and principle of Checks and Balance, which is adopted wisely in Constitution.

CO V

- Students learn the role and importance of SAARC in South Asian countries.
- They learn importance of cooperation, peace, various issues among the member countries for the development of peoples of same countries.

B. A. II (Sem IV)

Subject- Selected Constitutions and International Relations (China-UNO)

CO I

- Student learns the various features of China's constitution and political system, based on Communist ideology.
- Student learns the role of National People's Congress and role of Standing Committee as a controller of NPC.
- Student learns population control policy of Chinese Government.

CO II

- Student learns the role of President, Prime Minister, State Council in Executive of China.
- Student learns and understands the role of Communist Party as single Political Party System in Government of China.
- Student learns the structure of Communist party and its real control and Discipline on government.

CO III

- Students learn and understand the universal aims and value of UNO.
- They understand the value and importance of UNO for the development of human kind.
- Students learn the role of General Assembly and Security Council for the peace and prosperity of World.

CO IV

- Students Learn the role of Security Council as a Executive of world.
- Students understand the sensitive role security council in UNO as a messenger of peace for world.
- Students understand the main role of ICJ to dilute the conflicts between countries.

CO V

- Students of UG learn in real base the Indo-China Relations.
- Students Learn the Tibet dispute and its historical background, its importance as a buffer state for India.
- Students Learn china's negative attitude about India in UNO.
- Students understand China's Dual role about terrorism and backing to Pakistan against India.
- Students understand impact of China's goods and market on Indian Economy in global era

B. A. III (Sem V)

Subject- Modern Concepts and Policy in Politics

CO I

- Students learn the meaning and Characteristics of leadership.
- Students learn the main Factors which mainly shape to the leadership.
- They also learn types of leadership i.e. dictator, democratic leaders.

- They also learn the role of leadership in Social, Economic and Political System.

CO II

- Students learn and understand the need of reservation policy for weaker sections of society.

- They also understand that reservation policy is only way for establishment of justice and equality in society.

- They also learn that reservation policy is adopted as per Constitutional Provision for Equal opportunity.

- Student also learn that some political parties make the issue of reservation policy for their political interest due to which may harmful for national and social integrity, which should stop.

CO III

- Students learn the real liberal meaning of Nationalism.

- Students learn the emotion of Nationalism is a tonic for the unity among citizens which increase patriotism in citizens.

- They also learn real nationalism never create emotion of intolerance, jealousy among the citizens.

- They also understand the present status of Nationalism in India, which is use for Political interest by both sides through political parties, which is very harmful for social unity.

CO IV

- Student learns and understands harmful nature of communism.

- They also understand that communism is a main obstacle for development, unity, Principle of tolerance, secularism.

- They also understand that some political parties use communism for their short political interest.

- They also understand the importance of secularism, tolerance, social unity to overcome on communism.

CO V

- Students learn the meaning, nature and kind of terrorism.

- Students learn that the terrorism is a main obstacle before Indian democracy, social unity of society.

- They also understand that terrorism is a enemy of humanity.

B. A. III (Sem VI)

Subject- Concept of Western and Indian Thinker

CO I

- Student learn Aristotle as a father of Political Science.
- Student learn classification of state just as his thought on slavery, revolution, women's liberty Etc.
- Student learn Gandhian thoughts as a innovative moral principles in politics.
- Student learn the concept of Ramrajya for people's welfare and self- dependent society.

CO II

- Student learn the concept of democracy of walter Bagehot , Abraham Lincon and Students learn the concept of parliamentary democracy of Dr.B.R.Ambedkar.
- Students learn the importance and necessity of parliamentary system other than presidential democracy by his extreme analysis.

CO III

- Student learn the concept of nationalism through the thoughts of Machivelli, Swami Vivekanand , V. D. Sawarkar.
- Students learn and understand the basic difference, nature about the concept of nationalism between three of them separately.

CO IV

- Student learns the real hard leffist concept of socialism through the thoughts of Karl Marx.
- Student impressed by the theories of Marx which proves the systematical exploitation of Poor's by Richers of society.
- Student learns that Nehru's and Lohiya's socialism emphasis on social justice, equality, liberty and security of individuals and on another hand Karl Marx denied liberty of individual.
- Student learns the soft concept of Heharus socialism which may help for the development of India and at the same time which helps welfare of middle and poor sections of Indian society.
- Students learn another Ram Manohar Lohiya's concept of socialism which gives importance to de centralization of power.

CO V

- Student learns David Eston's concept of behaviorisms and its importance in modern political science as a tool of study.
- Student learns that human behavior is very important in study of political science.
- Student learns David Eston's Explain Eight feature for study of political science point of view of human behavior.
- Student learns Gabriel Almond emphasis on Political science should not value free, Should not lose touch with brute realities of politics so he put post behavioral theory.
- Student learns the importance concept of sovereignty in political science and they learn John Austin's theory of sovereignty.

Programme: M. A.(Political Science)

Programme outcome:

The overall programme outcome of M.A. (Political Science) is to develop Political awareness and consciousness among students with subject matter. The program aims at inculcating political insights and democratic values among students. Also it help them to understand the constitutional framework, political process around and its relevance with their own life. The program help students to develop their oratory and analytical skills. With the detailed teaching, discussions and participatory debates in the program; students develop critical thinking to analyze and evaluate happenings in local, national and international level. It also make them aware about various career opportunities in the field of political

Shri Shivaji Science and Arts College, Chikhli.
Department of Zoology
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcome

B.Sc. in Zoology is an undergraduate Program in Zoology. Zoology is the branch of science which deals with the study of animal kingdom including the evolution, structure, Physiology, Classification, developmental biology, habits, habitat and distribution of all the animals. The B.Sc. Zoology course is premeditated to introduce students to the study of zoology at the organism and organ function levels. The program provides the student with an introduction to the recent advances in zoology in the areas of systematic, evolution, reproduction, development, animal diversity, cytology, molecular biology and animal ecology. This course is offered for candidates who are interested in the study of animals. The minimum time required to complete the course is three years.

Course specific outcome

B.Sc. I - SEM – I

Course - Life and Diversity of Non-Chordata.

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

CO1. State the outline of animal classification of non-chordates

CO2. Knowledge about protozoal human diseases.

CO3. Describe the morphology, habit and habitat. Systematic position and various systems
In Sycon and Metridium

CO4. Describe the morphology, habit and habitat. Systematic position and various systems
In Fasciola and Ascaris.

CO5. Describe the morphology, habit and habitat. Systematic position and various systems
In Leech and Cockroach.

CO6. Describe the morphology, habit and habitat. Systematic position and various systems
In Pila and Asterias.

CO7. Describe the morphology, habit and habitat. Systematic position and various systems
In Fasciola and Ascaris.

CO8. Describe body organization and affinities of Balanoglossus.

CO9. Explain Structure and importance of coral reefs.

CO10. Explain Parasitic Adaptations in helminthes and larval forms of Non-chordates.

CO11. List of ten invertebrate phyla

Course Outcome

B.Sc. I SEM – II

Course – Cell and Developmental Biology

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

CO1. Differentiate prokaryotic and Eukaryotic cells.

CO2. Describe the structure and functions of Endoplasmic reticulum.

CO3. Describe various Structural models of Plasma membrane with its function

CO4. Describe the structure and functions of Golgi complex, Ribosome, Mitochondria and Lysosomes

CO4. Explain the structure and functions of Nucleus, typical chromosomes and Giant chromosomes.

CO5. Explain the cell division process and its significance.

CO6. Describe the process of Gametogenesis.

CO7. Explain the types and Mechanism of fertilization.

CO8. Describe development up to Coelom formation in Amphioxus

CO9. Explain development up to Gastrulation in frog and chick.

CO10. Describe the development of extra embryonic membranes in chick

CO11. Explain the various types of placenta in mammals.

CO12. Describe parthenogenesis and regeneration in animals.

CO13. Give elementary idea of Stem cells.

B.Sc. I - SEM – I

Course: Life and Diversity of Non-chordate. (Practical in Zoology)

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

CO1. State outline classification of non-Chordate.

CO2. List of ten invertebrate phyla.

CO3. Enlist the various animals belonging to different phyla.

CO4. To know the structures of various organs of non chordate animals.

CO5. To understand the Anatomy of leech and cockroach.

CO6. To prepare permanent slides.

B.Sc. I - SEM – II

Course: Cell and Developmental Biology. (Practical in Zoology)

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

CO1. Use of Microscope.

CO2. Prepare gram staining.

CO3. To prepare slides of polytene chromosomes.

CO4. To prepare slides of various stages of Mitosis and Meiosis.

CO5. Identify the stages of Gametogenesis in rat

CO6. Identify the different type's animal eggs.

CO7. To explain the life cycle of Cockroach, housefly, mosquito and butterfly.

CO8. To demonstrate chick development.

CO9. To identify developmental stages of frog and chick.

CO10. To know the structure of placenta in mammals.

B.Sc. II- SEM – III

Course -Life and Diversity of Chordata and Concept of Evolution

CO1. To state the classification of chordata.

CSO2. Classify phylum Protochordates to Class-Mammalia

CO3. Students acquires anatomical knowledge of Amphioxus, Scoliodon, Frog, Calotes and Pigeon

CO4. Gain knowledge of anatomy of vertebrates from Protochordates to Class Mammalia

CO5. Impact knowledge of evolutionary processes ex. Darwinism, Lamarkinism, Speciation

CO6. Understand the co-relation among animal species.

CO7. Understand the Human Evolution

CO8. Gain knowledge and Understanding of protection of endangered species, biodiversity, environmental conservation processes and its importance.

B.Sc. II- SEM –IV

Course- Advanced Genetics and Animal Ecology

CO1: Gain Mendelian and Non- Mendelian inheritance

CO2: To understand theories of sex determination

CO3: Understand Human Genetical Disorders

CO4: Gain knowledge of Genetic Screening and prenatal diagnosis

CO5: Gain knowledge of Abiotic and Biotic factor

CO6: Understand different ecosystem and relationship between habit and ecological niche.

B.Sc. II- SEM – III

Course -Life and Diversity of Chordata and Concept of Evolution (Practical)

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

- CO 1.** To state the classification of Chordata.
- CO 2.** To understand the anatomy through video, Models , Photographs
- CO 3.** Gain knowledge of bones of fowl and rabbit
- CO 4.** Gain knowledge of fossils and living fossils
- CO 5.** Study of evolution of beaks and leg of birds
- CO 6.** To know the histology of Amphioxus and frog.

B.Sc. II- SEM –IV

Course_ Advanced Genetics and Animal Ecology (Practicals)

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

- CO1.**Recording of Mendelian Traits in Man
- CO2.** Detection of Monohybrid and Dihybrid Cross
- CO3.** To identify human Karyotype and Chromosomal syndrome from photo slide.
- CO4.** To record human genetically traits.
- CO5.** To Estimate of DO, Salinity, PH, free CO₂, Calcium, Carbonates, Bicarbonates.
- CO6.** To Prepare field Report. Food Web diagram and Identification of common Animals

B.Sc. III - SEM – V

Course – Animal Physiology and Economic Zoology.

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

- CO1.** Describe the Structure of respiratory organ.
- CO2.** Explain the physiology of respiration and respiratory pigment.
- CO3.** Neurophysiologic control of respiration.
- CO4.** Describe blood circulation and its types.
- CO5.** Explain the structure and mechanism of heart.
- CO6.** Describe blood groups, blood coagulation, and factors.
- CO7.** Explain the types and structure of muscles.
- CO8.** Describe the physiology of muscle contraction.
- CO9.** Explain the structure and types of neuron.
- CO10.** Describe the neurotransmitter, synapse and synaptic transmission.
- CO11.** Explain the hormones and their physiological role.
- CO12.** Describe the reproductive cycle and hormonal control of reproduction.
- CO13.** Explain the osmoregulation in aquatic and terrestrial animals.
- CO14.** Describe the beneficial and harmful insects.
- CO15.** Present status of aquaculture in India and fresh water fish culture.

B.Sc. III - SEM – VI

Course – Molecular Biology and Biotechnology.

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

- CO1.** To prove the genetic material by various experiment.
- CO2.** Explain the chemical structure and types of DNA and RNA.
- CO3.** Describe the semi-conservative replication of DNA.
- CO4.** State the concept of genes.
- CO5.** Describe the process of protein synthesis.
- CO6.** Explain the gene regulation in *E.Coli*.
- CO7.** Describe the theory, types and significance of mutation.
- CO8.** Explain the DNA repair process.
- CO9.** Describe the PCR and blotting technique.
- CO10.** State the DNA finger printing.
- CO11.** Explain the recombinant DNA technology and its practical application.
- CO12.** Describe the immune system and its types.
- CO13.** To state the humoral and cell mediated immunity.
- CO14.** To know the ELIZA and RIA technique.

B.Sc. III - SEM – V

Course – Animal Physiology and Economic Zoology. (Practical in Zoology)

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

- CO1.** Detection of blood groups.
- CO2.** Estimation of hemoglobin percentage.
- CO3.** RBC and WBC count.
- CO4.** Preparation of haematin crystals.
- CO5.** Measurement of blood pressure.
- CO6.** To demonstrate action of salivary amylase on starch.
- CO7.** To detect nitrogenous waste product.
- CO8.** To explain the life cycle of honey bee, lac insect and silk moth.
- CO9.** To identify the histological slides of major organs of respiratory, circulatory and nervous system.
- CO10.** To know the locally available fishes.

B.Sc. III - SEM – VI

Course – Molecular Biology and Biotechnology. (Practical in Zoology)

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

- CO1.** To state the scope and importance of Microtechnique.
- CO2.** To prepare the various fixative.
- CO3.** To know the collection of various tissue.
- CO4.** To prepare the alcoholic grades.
- CO5.** Use and care of oven.
- CO6.** To know the block making and trimming.
- CO7.** Use and care of microtome.
- CO8.** To know the section cutting and staining technique.
- CO9.** To prepare the various stains.
- CO10.** To know the camera Lucida and its use and drawings.
- CO11.** To prepare the slide of mitochondria.
- CO12.** To know the extraction of DNA.
- CO13.** Explain the application of DNA finger printing

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in Marathi

Literature and Language.

- To understand the role of research methodology in the area of Marathi Literature and Language.
- To understand the role of research methodology in the area of Marathi Literature and Language.

Programme Outcomes

- To understand literature review process and formulation of a research problem.
- To develop the skill of understanding recourses, literature, ability to review and capacity to explore the issue for research.
- To equip with various tools and techniques of data collection, and classification, verification, interpretation and resource to resources for research.

Programme Specific Outcomes

- Direct recruitment as Assistant Professor
- Applying the research knowledge to understand and solve social issues
- Contribution of developed research aptitude to analyze interpret socio-political, economical and cultural changes in nation

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in English

Course Outcomes

- To understand the role of research methodology in the area of English Literature and Language
- To understand the basic, conceptual knowledge and its application to actual research
- To learn technical writing and ICT Skills required for the research

Programme Outcomes

- To understand literature review process and formulation of a research problem
- To develop the skill of understanding recourses, literature, ability to review and capacity to explore the issue for research.
- To equip with various tools and techniques of data collection, and classification, verification, interpretation and resource to resources for research

Programme Specific Outcomes

- Direct recruitment as Assistant Professor
- Applying the research knowledge to understand and solve social issues
- Contribution of developed research aptitude to analyze interpret socio-political, economical and cultural changes in nation
- Nation building through the study and analysis of Autobiographies of Writers
- Conservation of socio-political life and experiences of the people in the form of books

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in Political Science

Course Outcomes

- Understand the role of research methodology in the area of Political Science
- To understand the basic, conceptual knowledge and its application to actual research
- To learn technical writing and ICT Skills required for the research

Programme Outcomes

- To understand literature review process and formulation of a research problem
- To develop the skill of understanding recourses, literature, ability to review and capacity to explore the issue for research.
- To equip with various tools and techniques of data collection, and classification, verification, interpretation and resource to resources for research

Programme Specific Outcomes

- Direct recruitment as Assistant Professor
- Applying the research knowledge to understand and solve social issues
- Contribution of developed research aptitude to analyze interpret socio-political, economical and cultural changes in nation
- Nation building through the study and analysis of Political Events
- Recruitment as Reporter, Political Analyst

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in History

Course Outcomes

- To understand the role of research methodology in the area of History
- To understand the basic, conceptual knowledge and its application to actual research
- To learn technical writing and ICT Skills required for the research

Programme Outcomes

- To understand literature review process and formulation of a research problem
- To develop the skill of understanding recourses, literature, ability to review and capacity to explore the issue for research.
- To equip with various tools and techniques of data collection, and classification, verification, interpretation and resource to resources for research

Programme Specific Outcomes

- Direct recruitment as Assistant Professor
- Applying the research knowledge to understand and solve social issues
- Contribution of developed research aptitude to analyze interpret socio-political, economical and cultural changes in nation
- Nation building through the study and analysis of History
- Recruitment in the area of archeology

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in Economics

- To understand the role of research methodology in the area of Economics
- To understand the basic, conceptual knowledge and its application to actual research
- To learn technical writing and ICT Skills required for the research

Programme Outcomes

- To understand literature review process and formulation of a research problem
- To develop the skill of understanding recourses, literature, ability to review and capacity to explore the issue for research.
- To equip with various tools and techniques of data collection, and classification, verification, interpretation and resource to resources for research

Programme Specific Outcomes

- Direct recruitment as Assistant Professor
- Applying the research knowledge to understand and solve social issues
- Contribution of developed research aptitude to analyze interpret socio-political, economical and cultural changes in nation
- Nation building through the study and analysis of Economical Development.
- Recruitment in the area of Agri. and industry

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes Research Centre in Zoology

Plankton diversity and Fishery Potential

Course Outcomes

- The research scholar will know about the fish diversity and plankton diversity and steps towards the conservation of fishery potential.

Programme Outcomes

- Investigation in the field of fish biology, aquaculture, and fisheries.
- To search the correlation with the fish population density.
- Study on the advanced techniques used in aquaculture and fisheries to increase the rate of production of the cultured as well as capture species according to the increasing demand of the market.

Programme Specific Outcomes

- The research scholars will focus on identifying the impact of food available on the potential of fishes in the reservoir.

Butterfly diversity

Course Outcomes

- The research scholar will gain the knowledge of role of butterflies in the ecology and measures of conservation of endangered species of butterflies.
- The research scholar improves awareness of society towards butterflies.

Programme Specific Outcomes

- Knowledge of the abundance and diversity of butterflies
- Report on the changing status of butterflies
- Determination of factors affecting the survival of the butterfly species in nature

Programme Specific Outcomes

- The research scholar will know about the diversity of butterflies and the seasonal occurrence

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes

Research Centre in Botany

Course Outcomes

- The research scholar will know about the Botany and related research.

Programme Outcomes

- The Ph.D. in Botany is framed to inculcate the research scholars with basic, applied and instrumental knowledge associated with plant science.
- Students will be equipped with background status and innovation in research work and future perspectives of the selected topics of research.
- Students would be taught different aspects about the importance of literature review, accessing scientific databases, laboratory safety and code of conduct with the view of preparing them for taking up research problems.
- Students would be made aware of the research ethics, scientific temper, intellectual property rights and code of conduct for pursuing career in research and development.
- Students would be taught about the different instrumentation techniques, statistical tools and bioinformatics tools, so that they could apply these in their field of research depending upon their requirements.

Programme Specific Outcomes

- Students after completing the course will have an elementary knowledge about the different disciplines of the subject.
- Students will be able to utilize their knowledge of using instruments and other analytical techniques for solving their research problems.
- Students will be aware of the consequences of deviating from the standard code of conduct in research laboratories, plagiarism, and paraphrasing, ethical aspects and so on.
- Students will be able to access and extract the desired information from the different scientific databases and resources.
- Students will be able to read and write good scientific papers.
- The programme will motivate the students to take up the challenges of the Ph.D course and make them mentally prepare to excel in the respective field of their research work.
- After completion of the course, students will gain the capacity to serve the various higher academic institutions like Colleges, Universities, National Research Institutes in various fields of apex academic research.

Course Outcomes /Programme Outcomes/ Programme Specific Outcomes Research Centre in Microbiology

Programme Outcomes

- Research Scholar is well equipped with Research & Development Competences expressive of their Creative Knowledge, Inventive Skill, Resolute Attitude and Innovative Pursuits in their chosen fields.
- Research Scholar are Seasoned to the demanding Research Environment and explicitly Spirited enough to the occasion in their scientific/technological quests with exemplary qualities of productive contribution to society, nation and world in the arena of Science and Technology.
- Research Scholar are ready to espouse Leadership Responsibilities in their chosen fields of Science and Technology with demonstrated perfection and benchmark contribution.
- Research Scholar Collate information from a variety of sources and Enrich a coherent understanding of the subject concerned pertaining to Novel investigation on the problems in everyday life.

COURSE OUTCOMES

After completion of this programme the candidate will be able to

- ▮ Apply the theory, methodologies and knowledge of Microbiology to find solutions to molecular level mechanism in microorganisms.
- ▮ Pursue research in interdisciplinary and multi faceted projects.
- ▮ Understand the value of ethics in their discipline and its application in academics.
- ▮ Demonstrate scientific quantitative skills, such as the ability to evaluate experimental design, read graphs, and understand and use information from scientific papers. Demonstrate skill in communication of scientific data in standard format.

Program Outcome, Program Specific Outcome and Course Outcome

- ▮ Understanding of applications of microorganisms in the industry, health-care, environmental protection, food agriculture and research.
- ▮ Understand the current trends in Microbiology and critically appraising published work.
- ▮ Have a positive interaction with people from various fields and can excel as a team leader/mentor in various projects.
- ▮ Handle teaching sessions for graduate /undergraduate students and can assess a performance of a student in a classroom.