



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
**Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**

**INDEX**

**(Press Ctrl+Click on the department name to see document )**

<b>Sr.No.</b>	<b>Department Name</b>
	<b>Bachelor of Science</b>
1	Department of Chemistry
2	Department of Physics
3	Department of Botany
4	Department of Zoology
5	Department of Mathematics
6	<b>Bachelor of Commerce</b>
7	<b>Bachelor of Computer Science</b>
8	<b>Bachelor of Arts</b>
9	Department of English
10	Department of Economic
11	Department of Geography
12	Department of Marathi
13	Department of History
14	Department of Political Science
14	Department of Hindi



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**Department of Chemistry**

After successfully completing **B.Sc. Chemistry** Programme students will be able to:

<b>Programme : B.Sc. (Bachelor of Science)</b>	
<b>Knowledge outcome</b>	
PO1	Transfer and apply the acquired fundamental knowledge of chemistry, including basic concepts and principles of 1) Physical, Analytical Chemistry, organic chemistry, Inorganic chemistry and biochemistry; (2) analytic techniques and experimental methods for chemistry to study different branches of chemistry;
PO2	Demonstrate the ability to explain the importance of the Periodic Table of the Elements and represent key aspects of it and its role in organizing chemical information.
<b>Skills Outcomes</b>	
PO1	Apply and demonstrate knowledge of essential facts, concepts, laws, principles and theories related to chemistry.
PO2	Demonstrate the learned laboratory skills, enabling them to perform qualitative and quantitative analysis of given samples and able to make conclusions on it.
PO3	Set procedure and synthesize simple compounds like soap of commercial importance.
PO4	Engage in oral and written scientific communication, and will prove that they can think and work independently.
PO5	Respond effectively to unfamiliar problems in scientific contexts
PO6	Plan, execute of design experiment, make documentation of it, interpret data at entry level of chemical industry and report the results.

After successfully completing **B.Sc. Chemistry** Programme students will be able to:

<b>Programme : B.Sc. (Bachelor of Science)</b>	
PSO1	Understand the nature and basic concepts of Physical, Organic and Inorganic Chemistry
PSO2	Analyze Organic and inorganic compounds qualitatively and quantitatively;
PSO3	Understand the applications of physical, organic, inorganic and analytical chemistry in pharmaceutical, agriculture and chemical industries.
PSO4	Able to perform experimental procedures as per laboratory manual in the area of physical, Inorganic and organic chemistry;
PSO5	Interpretation and synthesis of chemical information and data obtained from chemical and instrumental analysis

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>CH- 101:Physical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Students will be able to apply thermodynamic principles to physical and chemical process.
CO2	Calculations of enthalpy , Bond energy, Bond dissociation energy , resonance energy
CO3	Maintain records of quantitative and qualitative analysis.
CO4	Variation of enthalpy with temperature –Kirchoff's equation
CO5	Third law of thermodynamic and its applications, Knowledge of Chemical equilibrium will make students to understand
CO6	Relation between Free energy and equilibrium and factors affecting on equilibrium constant.
<b>F. Y. B.Sc. Chemistry</b>	
<b>CH- 102: Organic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	The students are expected to understand the fundamentals, principles, and recent Developments in the subject area.
CO2	It is expected to inspire and boost interest of the students towards chemistry as The main subject
CO3	To create foundation for research and development in Chemistry
<b>F. Y. B.Sc. Chemistry</b>	
<b>CH- 103: Chemistry Practical Course</b>	
The student who successfully completes this course students will be able to:	
CO1	Importance of chemical safety and Lab safety while performing experiments in Laboratory
CO2	Determination of thermochemical parameters and related concepts
CO3	Elemental analysis of organic compounds (non-instrumental)
CO4	Techniques of pH measurements
CO5	Chromatographic Techniques for separation of constituents of mixture

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>F. Y. B. Sc. Chemistry</b>	
<b>CH-201: Inorganic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Various theories and principles applied to reveal atomic structure.
CO2	Origin of quantum mechanics and its need to understand structure of hydrogen Atom.
CO3	Schrodinger equation for hydrogen atom
CO4	Shapes of orbital's identification
CO5	Explain rules for filling electrons in various orbital's- Aufbau's principle, Pauli exclusion principle, Hund's rule of maximum multiplicity
CO6	Discuss electronic configuration of an atom and anomalous electronic configurations.
CO7	Describe stability of half-filled and completely filled orbital's
CO8	Discuss concept of exchange energy and relative energies of atomic orbital's
CO9	Design Skeleton of long form of periodic table.
CO10	Describe Block, group, modern periodic law and periodicity
CO11	Classification of elements as main group, transition and inner transition elements
CO12	Explain characteristics of ionic bond, types of ions, energy consideration in ionic bonding, lattice and salivation energy and their importance in the context of stability and solubility of ionic compounds
CO13	Explain characteristics of ionic bond, types of ions, energy consideration in ionic bonding, lattice and salivation energy and their importance in the context of stability and solubility of ionic compounds.
CO14	Define Fajan's rule, bond moment, and dipole moment and percent ionic character.
<b>F. Y. B.Sc. Chemistry</b>	
<b>CH- 202: Analytical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution.
CO2	Relation between molecular formula and empirical formula
CO3	Stoichiometry calculation and explanation
CO4	Define term mole, mill mole, molar concentration, molar equilibrium concentration and Percent Concentration.
CO5	SI units, distinction between mass and weight
CO6	Basics of type determination, characteristic tests and classifications, reactions of different functional groups.
CO7	Elemental analysis -Detection of nitrogen, sulfur, halogen and phosphorous by Lassigen's test

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>S.Y.B.Sc. Chemistry</b>	
<b>CH- 301: Physical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Define / Explain concept of kinetics, terms used, rate laws, molecularity, order.
CO2	Explain factors affecting rate of reaction. Explain / discuss / derive integrated rate laws, characteristics, expression for half-life and examples of zero order, first order, and second order reactions
CO3	Determination of order of reaction by integrated rate equation method, graphical method, half-life method and differential method.
CO4	Explain / discuss the term energy of activation with the help of energy diagram.
CO5	Explanation for temperature coefficient and effect of temperature on rate constant k.
CO6	Derivation of Arrhenius equation and evaluation of energy of activation graphically.
CO7	Derivations of collision theory and transition state theory of bimolecular reaction and comparison.
CO8	Solve / discuss the problem based applying theory and equations.
CO9	Define / explain adsorption, classification of given processes into physical and chemical adsorption.
CO10	Discuss factors influencing adsorption, its characteristics, differentiates types as physisorption and Chemisorption
CO11	Classification of Adsorption Isotherms, to derive isotherms.
CO12	Explanation of adsorption results in the light of Langmuir adsorption isotherm, Freundlich's adsorption Isotherm and BET theory.
CO13	Apply adsorption process to real life problem.
CO14	Solve / discuss problems using theory.

<b>S. Y. B.Sc. Chemistry</b>	
<b>CH- 301: Analytical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Define, explain and compare meaning of accuracy and precision.
CO2	Apply the methods of expressing the errors in analysis from results.
CO3	Explain / discuss different terms related to errors in quantitative analysis.
CO4	Apply statistical methods to express his / her analytical results in laboratory. Solve problems applying equations
CO5	Explain / define different terms in volumetric analysis such as units of concentration, indicator, equivalence point, end point, standard solutions, primary and secondary standards, completing agent, precipitating agent, oxidizing agent, reducing agent, redox indicators, acid base indicators, metallochrome indicators, etc.
CO6	Perform calculations involved in volumetric analysis. Explain why indicator show colour change and pH range of colour change.
CO7	To prepare standard solution and b. perform standardization of solutions.
CO8	To construct acid – base titration curves and performs choice of indicator for particular
CO9	titration.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

	Explain / discuss acid-base titrations, complex metric titration / precipitation titration / redox titration.
	Apply volumetric methods of analysis to real problem in analytical chemistry / industry

<b>S. Y. B.Sc. Chemistry</b>	
<b>CH- 302: Inorganic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Define terms related to molecular orbital theory (AO, MO, sigma bond, pi bond, bond order, magnetic property of molecules, etc.).
CO2	Explain and apply LCAO principle for the formation of MO's from AO's.
CO3	Explain formation of different types of MO's from AO's.
CO4	Distinguish between atomic and molecular orbitals, bonding, anti-bonding and nonbonding molecular orbitals.
CO5	Draw and explain MO energy level diagrams for homo and hetero diatomic molecules
CO6	Define different terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect, etc.)
CO7	Explain Werner's theory of coordination compounds. Differentiate between primary and secondary Valency. Correlate coordination number and structure of complex ion.
CO8	Apply IUPAC nomenclature to coordination compound.
<b>S.Y.B.Sc. Chemistry</b>	
<b>CH- 302: Organic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned.
CO2	Explain / discuss synthesis of aromatic hydrocarbons.
CO3	Give the mechanism of reactions involved.
CO4	Explain /Discuss important reactions of aromatic hydrocarbon.
CO5	To correlate reagent and reactions.
CO6	Write / discuss the mechanism of Nucleophilic Substitution (SN1 , SN2 and SNi) reactions.
CO7	Explain /Discuss important reactions of alkyl / aryl halides.
CO8	To correlate reagent and reactions.
CO9	Give synthesis of expected alkyl / aryl halides.
CO10	Identify and draw the structures alcohols / phenols from their names or from structure name can be assigned.
CO11	Able to differentiate between alcohols and phenols
CO12	Explain / discuss synthesis of alcohols / phenols.
CO13	Write / discuss the mechanism of various reactions involved.
CO14	Explain /Discuss important reactions of alcohols / phenols.
CO15	To correlate reagent and reactions of alcohols / phenols
CO16	Give synthesis of expected alcohols / phenols.
CO17	Write / discuss the mechanism of Nucleophilic Substitution (SN1 , SN2 and SNi) reactions.
CO18	Explain /Discuss important reactions of alkyl / aryl halides.
CO19	To correlate reagent and reactions.
CO20	Give synthesis of expected alkyl / aryl halides.



**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>S.Y.B.Sc. Chemistry</b>	
<b>CH- 303: Chemistry Practical – III</b>	
The student who successfully completes this course students will be able to:	
CO1	Verify theoretical principles experimentally.
CO2	Interpret the experimental data on the basis of theoretical principles.
CO3	Correlate theory to experiments. Understand/verify theoretical principles by experiment observations; explain practical output / data with the help of theory.
CO4	Understand systematic methods of identification of substance by chemical methods.
CO5	Write balanced equation for the chemical reactions performed in the laboratory.
CO6	Perform organic and inorganic synthesis and is able to follow the progress of the chemical reaction by suitable method (colour change, ppt. formation, TLC).
CO7	Set up the apparatus / prepare the solutions - properly for the designed experiments.
CO8	Perform the quantitative chemical analysis of substances explain principles behind it.
CO9	Systematic working skill in laboratory will be imparted in student.
CO10	Verify theoretical principles experimentally.
CO11	Interpret the experimental data on the basis of theoretical principles.
CO12	Correlate theory to experiments. Understand/verify theoretical principles by experiment
<b>S. Y. B. Sc. Chemistry (Semester :IV)</b>	
<b>CH- 403:Physical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Define the terms in phase equilibria such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc.
CO2	Explain meaning and Types of equilibrium such as true or static, metastable and unstable equilibrium
CO3	Discuss meaning of phase, component and degree of freedom.
CO4	Derive of phase rule.
CO5	Explain of one component system with respect to: Description of the curve, Phase rule relationship and typical features for i) Water system ii) Carbon dioxide system iii) Sulphur system
CO6	Define the terms in phase equilibria such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc.
CO7	Explain meaning and Types of equilibrium such as true or static, metastable and unstable equilibrium
CO8	Discuss meaning of phase, component and degree of freedom.
CO9	Derive of phase rule.
CO10	Explain of one component system with respect to: Description of the curve, Phase rule relationship and typical features for i) Water system ii) Carbon dioxide system iii) Sulphur system
CO11	Define the terms in phase equilibria such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc.
CO12	Explain meaning and Types of equilibrium such as true or static, metastable and unstable equilibrium
CO13	Discuss meaning of phase, component and degree of freedom.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO14	Define various terms, laws, differentiate ideal and no-ideal solutions.
CO15	Discuss / explain thermodynamic aspects of Ideal solutions-Gibbs free energy change, Volume change, Enthalpy change and entropy change of mixing of Ideal solution.
CO16	Differentiate between ideal and non-ideal solutions and can apply Raoult's law.
CO17	Interpretation of i) vapour pressure-composition diagram ii) temperature- composition diagram.
CO18	Explain distillation of liquid solutions from temperature – composition diagram.
CO19	Explain / discuss azeotropes, Lever rule, Henry's law and its application.
CO20	Discuss / explain solubility of partially miscible liquids- systems with upper critical. Solution temperature, lower critical solution temperature and having both UCST and LCST.
CO21	Explain / discuss concept of distribution of solute amongst pair of immiscible solvents.
CO22	Derive distribution law and its thermodynamic proof.
CO23	Apply solvent extraction to separate the components of from mixture interest.
CO24	Solve problem by applying theory.
<b>S. Y. B.Sc. Chemistry (Semester :IV)</b>	
<b>CH- 403:Analytical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, Kohlrausch's law, etc. □ Discuss / explain Kohlrausch's law and its Applications, Conductivity Cell, Conductivity Meter, Whetstone Bridge.
CO2	Explain / discuss Conductometric titrations.
CO3	Apply Conductometric methods of analysis to real problem in analytical laboratory.
CO4	Solve problems based on theory / equations.
CO5	Correlate different terms with each other and derive equations for their correlations
CO6	absorbance, molar, Lambert's Law, Beer's Law, molar absorptivity
CO7	Discuss / explain / derive Beer's law of absorptivity.
CO8	Explain construction and working of colorimeter.
CO9	Apply colorimetric methods of analysis to real problem in analytical laboratory.
CO10	Solve problems based on theory / equations.
CO11	Correlate different terms with each other and derive equations for their correlations
CO12	Explain / define different terms in column chromatography such as stationary phase, mobile phase, elution, adsorption, ion exchange resin, adsorbate, etc.
CO13	Explain properties of adsorbents, ion exchange resins, etc.
CO14	Discuss / explain separation of ionic substances using resins.
CO15	Discuss / explain separation of substances using silica gel / alumina.
CO16	Apply column chromatographic process for real analysis in analytical laboratory.
CO17	Explain / define different terms in column chromatography such as stationary phase, mobile phase, elution, adsorption, ion exchange resin, adsorbate, etc.
CO18	Explain properties of adsorbents, ion exchange resins, etc.
<b>S. Y. B. Sc. Chemistry (Semester :IV)</b>	
<b>CH- 404:Inorganic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Isomerism in coordination complexes
CO2	Explain different types of isomerism in coordination complexes.



**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO3	Apply principles of VBT to explain bonding in coordination compound of different geometries.
CO4	Correlate no of unpaired electrons and orbitals used for bonding.
CO5	Identify / explain / discuss inner and outer orbital complexes.
CO6	Explain principle of CFT.
CO7	Apply crystal field theory to different type of complexes (Td, Oh, Sq, Pl complexes)
CO8	Explain: i) strong field and weak field ligand approach in Oh complexes ii) Magnetic properties of coordination compounds on the basis of weak and strong ligand field
CO9	Ligand concept. iii) Origin of color of coordination complex.
CO10	Calculate field stabilization energy and magnetic moment for various complexes.
<b>S. Y. B. Sc. Chemistry (Semester :IV)</b>	
<b>CH- 404: Organic Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	After studying the aldehydes and ketones student will able to
CO2	Identify and draw the structures aldehydes and ketones from their names or from structure name can be assigned
CO3	Explain / discuss synthesis of aldehydes and ketones.
CO4	Write / discuss the mechanism reactions aldehydes and ketones.
CO5	Explain /Discuss important reactions of aldehydes and ketones.
CO6	To correlate reagent and reactions of aldehydes and ketones
CO7	Give synthesis of expected aldehydes and ketones.
CO8	Identify and draw the structures carboxylic acids and their derivatives from their names or from structure name can be assigned.
CO9	Explain / discuss synthesis of carboxylic acids and their derivatives.
CO10	Write / discuss the mechanism reactions carboxylic acids and their derivatives.
CO11	Explain /Discuss important reactions of carboxylic acids and their derivatives.
CO12	Correlate reagent and reactions of carboxylic acids and their derivatives
CO13	Give synthesis of expected carboxylic acids and their derivatives.
CO14	Identify and draw the structures amines from their names or from structure name can be assigned.
CO15	Explain / discuss synthesis of carboxylic amines.
CO16	Write / discuss the mechanism reactions carboxylic amines.
CO17	Explain /Discuss important reactions of carboxylic amines.
CO18	To correlate reagent and reactions of carboxylic amines.
CO19	Give synthesis diazonium salt from amines and reactions of diazonium salt.
CO20	Draw the structures of different conformations of cyclohexane.
CO21	Define terms such as axial hydrogen, equatorial hydrogen, and confirmation, substituted Cyclohexane, etc.
CO22	Convert one conformation of cyclohexane to another conformation and should able to
CO23	Identify governing structural changes.
CO24	Explain / discuss stability with respect to potential energy of different conformations of Cyclohexane.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>S.Y.B.Sc. Chemistry (Semester :IV)</b>	
<b>CH- 405: Practical Chemistry</b>	
The student who successfully completes this course students will be able to:	
CO1	Verify theoretical principles experimentally
CO2	Interpret the experimental data on the basis of theoretical principles.
CO3	Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory
CO4	Understand systematic methods of identification of substance by chemical methods.
CO5	Write balanced equation for all the chemical reactions performed in the laboratory.
CO6	Perform organic and inorganic synthesis and able to follow the progress of the chemical reaction.
CO7	Set up the apparatus properly for the designed experiments.
CO8	Perform the quantitative chemical analysis of substances and able to explain principles

<b>T.Y.B. Sc. Chemistry</b>	
<b>Course CH:505: Industrial chemistry, Sem.-V (Credit:02)</b>	
The student who successfully completes this course students will be able to:	
CO1	After studying the chapter basic concepts of Industrial Chemistry, understood the concept of basic industrial chemicals, their uses and manufacturing process.
CO2	Raw material required for manufacturing of basic industrial chemicals, source of the raw materials, manufacturing process of basic chemicals with the help of flow chart, also the physico-chemical principals involved in manufacturing process
CO3	Understood the Process of manufacture of raw and refined sugar with help of flow chart. Can understand use of valuable byproduct obtained during manufacturing of sugar as an desired product.
CO4	Fermentation: After careful study of fermentation, get an idea about the basic requirement of fermentation process, condition required for fermentation, raw material for production of Alcoholic beverages. The manufacture of ethyl alcohol using molasses (which is a byproduct of sugar industry) and fruit juice. Manufacturing of wine, beer, Vicky etc. from food grain. Also importance of power alcohol as an alternative of petrochemical fuel.
CO5	Can understand raw materials required for manufacturing of soap and detergents. Types of soap products, chemistry of soap. Meaning of the term's Surfactants, Types of surfactants, Raw materials for detergents Detergent builders, additives Washing action of soap and detergent. Cleaning action of soap and detergents, Adverse Effect of both soap and detergent on environment, toxicity of surfactants.
CO6	Dye: After studying the chapter Dyes, students got an idea about what are Dye intermediates, Structural features of various dyes; can classify dyes using various methods, get an detailed knowledge about Synthesis, Structures, properties and applications of dye. Pigments: Can classify the Classification; compare the difference between dyes and pigments, properties of pigment, Production processes of zinc oxide and iron oxide.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>T.Y.B. Sc. Chemistry</b>	
<b>CH-511 (A) : Environmental Chemistry ((Credit:02))</b>	
The student who successfully completes this course students will be able to:	
CO1	Importance and conservation of environment. ii. Importance of biogeochemical cycles
	Water Pollution: Get an deep knowledge about Water resources, what is Hydrological Cycle, types of pollutants i.e. Organic and inorganic pollutants iv. Water quality parameters
CO2	Analytical Techniques in water Analysis: Can analyze water samples, predict the analysis result. Can understand drinking water quality parameters, water required for various industries.
CO3	Explain / describe various terms related to electrochemistry, nuclear chemistry and application of radioactivity, crystallography and basics of quantum chemistry
CO4	Derive relations between / among various terms / quantities related to electrochemistry, nuclear chemistry and application of radioactivity, crystallography and basics of quantum chemistry.
CO5	Apply his knowledge to explain experimental observation and should able to correlate theory and particle or observed facts. Can study the industrial pollution and its adverse effect.
<b>T.Y.B. Sc. Chemistry</b>	
<b>Course CH-604 Inorganic Chemistry Sem-VI (Credit:02)</b>	
The student who successfully completes this course students will be able to:	
CO1	Understand what is M-C bond and to define organometallic chemistry, understand the multiple bonding due to CO ligand, methods of synthesis of binary metal carbonyls, define 18 electron rule and use of it's for the stability of organometallic compounds, Understand the importance of organometallic compounds in homogeneous and heterogeneous catalysis, get very deep knowledge regarding Chemistry of ferrocene and its industrial applications.
CO2	Understand the phenomenon of catalysis, its basic principles and terminologies. ii. Define and differentiate homogeneous and heterogeneous catalysis. iii. Give examples and brief account of homogeneous catalysts. iv. Understand the essential properties of homogeneous catalysts-Give the catalytic reactions for Wilkinson's Catalysis, hydroformylation reaction, Monsanto acetic acid synthesis, Heck reaction v. Understand the principle of heterogeneous catalyst and development in it. vi. Give examples of heterogeneous catalysts. vii. Understand the classification and essential properties of heterogeneous catalysts. viii. Give the brief account of Hydrogenation of olefins, Zeolites in catalysis, biodiesel synthesis, and Automotive Exhaust catalysts ix. Understand the catalytic reactions used in industries around
CO3	Identify the biological role of inorganic ions & compounds. ii. Know the abundance of elements in living system and earth crust. iii. Give the classification of metals as enzymatic and non-enzymatic. iv. Understand the role of metals in non-enzymatic processes. v. Know the metalloproteins of iron. vi. Explain the functions of hemoglobin and myoglobin in O <sub>2</sub> transport and storage. vii. Understand the toxicity of CN <sup>-</sup> and CO binding to Hb. viii. Draw

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

	the structure of Vit.B12 and give its metabolism.
CO4	Know thy types of Inorganic polymers ii. comparison with organic polymers iii. synthesis, structural aspects of Inorganic polymers iv. Understand the polymers of Si, B, Si and P v. Inorganic polymers and their use.

<b>T.Y.B. Sc. Chemistry</b>	
<b>CH-610 (A) : Chemistry of Soil and Agrochemicals (Credit:02)</b>	
The student who successfully completes this course students will be able to:	
CO1	Understood various components of soil and soil properties and their impact on plant growth
	Understood the Reclamation and management of soil physical and chemical constraints.
CO2	Understood the classification of the soil.
	Understood the Reclamation and management of soil physical and chemical constraints
CO3	Useful in making decisions on nutrient dose, choice of fertilizers and method of application etc. practiced in crop production.
CO4	Got experience on advanced analytical and instrumentation methods in the estimation of soil.
CO5	Understood various Nutrient management concepts and Nutrient use efficiencies of major and micronutrients and enhancement techniques
CO6	Proper understanding of chemistry of pesticides will be inculcated among the students.
CO7	Derive names of super heavy elements and symbols form IUPAC rules
CO8	Imparts knowledge on different pesticides, their nature and, mode of action and their fate in soil so as to monitor their effect on the environment.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern****2) Department of Physics**

<b>F.Y.B.Sc Paper- I Semester – I</b>	
<b>Physics Paper – I (PHY-111) Mechanics and Properties of Matter</b>	
On successful completion of this course students will be able to do the following	
CO1	Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems
CO2	Use the free body diagrams to analyses the forces on the object.
CO3	Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them.
CO4	Understand the concepts of elasticity and be able to perform calculations using them
CO5	Understand the concepts of surface tension and viscosity and be able to perform calculations using them.
CO6	Use of Bernoulli's theorem in real life problems.
CO7	Demonstrate quantitative problem solving skills in all the topics covered.
<b>F.Y.B.Sc Paper- I Semester – II</b>	
<b>Physics Paper – I (PHY-121) Heat and Thermodynamics</b>	
After successfully completing this course, the student will be able to do the following:	
CO1	Describe the properties of and relationships between the thermodynamic properties of a pure substance
CO2	Describe the ideal gas equation and its limitations
CO3	Describe the real gas equation
CO4	Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process
CO5	Analyses the heat engines and calculate thermal efficiency
CO6	Analyze the refrigerators, heat pumps and calculate coefficient of performance.
CO7	Understand property „entropy“ and derive some thermo dynamical relations using entropy concept.
CO8	Understand the types of thermometers and their usage.
<b>F.Y.B.Sc Paper- II Semester – I</b>	
<b>Physics Paper – II (PHY-112) Physics Principles and Applications</b>	
On successful completion of this course students will be able to do the following:	
CO1	To understand the general structure of atom, spectrum of hydrogen atom.
CO2	To understand the atomic excitation and LASER principles.
CO3	To understand the bonding mechanism and its different types.
CO4	To demonstrate an understanding of electromagnetic waves and its spectrum.
CO5	Understand the types and sources of electromagnetic waves and applications.



**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO6	To demonstrate quantitative problem solving skills in all the topics covered
<b>F.Y.B.Sc Paper- II Semester – II</b>	
<b>Physics Paper – II (PHY-122) Electricity and Magnetism</b>	
On successful completion of this course students will be able to do the following:	
CO1	To understand the concept of the electric force, electric field and electric potential for stationary charges
CO2	Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law
CO3	To understand the dielectric phenomenon and effect of electric field on dielectric
CO4	To Study magnetic field for steady currents using Biot-Savart's and Ampere's Circuital laws
CO5	To study magnetic materials and its properties.
CO6	Demonstrate quantitative problem solving skills in all the topics covered.
<b>S.Y.B.Sc Paper- I Semester – III</b>	
<b>Course Physics Paper – I (PHY-231) Mathematical Methods in Physics-I</b>	
After the completion of this course students will be able to	
CO1	Understand the complex algebra useful in physics courses.
CO2	Understand the concept of partial differentiation.
CO3	Understand the role of partial differential equations in physics.
CO4	Understand vector algebra useful in mathematics and physics.
CO5	Understand the concept of singular points of differential equations
<b>S.Y.B.Sc Paper- I Semester – IV</b>	
<b>Course Physics Paper – I (PHY-241) Oscillations, Waves, and Sound</b>	
On completion of this course, the learner will b	
CO1	To study underlying principles of oscillations and it's scope in development.
CO2	To understand and solve the equations / graphical representations of motion for simple harmonic, damped, forced oscillators and waves.
CO3	To explain oscillations in terms of energy exchange with various practical applications
CO4	To solve numerical problems related to un damped, damped, forced oscillations and superposition of oscillations
CO5	To study characteristics of sound, decibel scales and applications.
<b>S.Y.B.Sc Paper- II Semester – III</b>	
<b>Course Physics Paper – II (PHY-232) Electronics</b>	
On successful completion of this course the students will be able to	
CO1	Apply different theorems and laws to electrical circuits.
CO2	Understand the relations in electricity.
CO3	Understand the parameters, characteristics and working of transistors.
CO4	Understand the functions of operational amplifiers



**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO5	Design circuits using transistors and applications of operational amplifiers
CO6	Understand the Boolean algebra and logic circuits
<b>S.Y.B.Sc Paper- II Semester – IV</b>	
<b>Course Physics Paper – II (PHY-242) Optics</b>	
On successful completion of this course the students will be able to	
CO1	Acquire the basic concept of wave optics.
CO2	Describe how light can constructively and destructively interfere.
CO3	Explain why a light beam spread out after passing through an aperture
CO4	Summarize the polarization characteristics of electromagnetic wave
CO5	Understand the operation of many modern optical devices that utilize wave optics
CO6	Understand optical phenomenon such polarization, diffraction and interference in terms of the wave model
CO7	Analyze simple example of interference and diffraction

**Program Outcome /Course Outcome  
CBCS 2019 Pattern****Department of Botany**

<b>Knowledge outcomes:</b>	
After completing B.Sc. Botany Programme students will be able to:	
PO1	Students will get the fundamental knowledge of the basic principles of major fields of Botany.
PO2	They can use their knowledge to solve the issues related to botany with the help of computer technology
PO3	Student will learn how to conserve the endemic and endangered plant species
<b>Skill outcomes:</b>	
After completing B.Sc. Botany Programme students will be able to:	
PO4	They can have effective collaboration with team-oriented projects in the field of Plant sciences
PO5	They can learn communication skills in a clear and concise manner both orally and in writing
PO6	Explain Biodiversity, climate change and plant pathology.
PO7	They have scope in applied botany such as Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences
PO8	apply knowledge of Medicinal and Economic botany in day to day life.
PO9	apply the knowledge to develop the sustainable and ecofriendly technology in Industrial Botany Generic outcomes: Students will
PO10	They will develop their critical reasoning, judgment and communication skills.
PO11	Can study the recent developments in the field of Molecular and cell Biology, Biotechnology, Computational Botany and relevant fields of research and development.
PO12	Enhance the scientific temper among the students so that to develop a research culture and Implementation the policies to tackle the burning issues at global and local level.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>Programme Specific Outcomes</b>	
PSO1	Students will learn the techniques which are used in industrially important plant products
PSO2	Students get conceptual knowledge of entrepreneurships in mushroom industry, Biofertilizers and Biopesticides production, plant tissue culture laboratories, Enzyme production, Fermentation, Single cell proteins etc.
PSO3	Students will understand the diversity of the plants and structural organization of plants like Dicot & Monocot.
PSO4	Understand plant structures in the context of ecological, physiological and biochemical functions of plants.
PSO5	Students will be well trained with various mechanisms of GMOs and molecular techniques.
<b>Course Outcomes FY B. Sc. Botany Semester-I</b>	
<b>BO-111: PLANT LIFE AND UTILIZATION-I</b>	
After successfully completing this course, students will be able to:	
CO1	Outline Cryptogams And Phanerogams
CO2	Distinguish characters of cryptogams and Phanerogams.
CO3	Classify the plants in to cryptogams and Phanerogams
CO4	Describe the Life cycle of plant forms of cryptogams
CO5	Identify lichens and their economic value.
CO6	Discuss morphology of vegetative and reproductive parts of plants. Court
<b>BO-112: PLANT MORPHOLOGY AND ANATOMY</b>	
After successfully completing this course, students will be able to	
CO1	Define Plant anatomy & morphology.
CO2	Describe botanical concepts, including plant anatomy.
CO3	Differentiate with respect to tissue distinguishing.
CO4	Study reproductive structures in plant
CO5	Learn about the formation of fruits.
<b>Course: Practical Botany -I</b>	
After successfully completing this course, students will be able to:	
CO1	Recognize the live forms of Cryptogrammic and Phanerogamic plants.
CO2	Analyze and describe botanical concepts, including plant anatomy.
CO3	Illustrate the floral parts, fruits, leaves and their types.
CO4	Study the mushroom cultivation.
CO5	Categorize the plants into Monocot and Dicot on the basis of anatomical characters.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>Course Outcomes FY B. Sc. Botany Semester-II</b>	
<b>BO-121: PLANT LIFE AND UTILIZATION-II</b>	
After successfully completing this course, students will be able to:	
CO1	Outline of vascular plants
CO2	utilization & economic importance of Vascular plants
CO3	Life cycle pattern in vascular plants.
CO4	Study reproductive structures in plant
CO5	Utilization and economic importance of Plant: In food, fodder, fibers, horticulture and medicines.
<b>BO-122: Principals of Plant Sciences</b>	
After successfully completing this course, students will be able to	
CO1	Know importance and scope of plant physiology
CO2	To understand the plants and plant cells in relation to water.
CO3	Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.
CO4	Learn about the movement of sap and absorption of water in plant body.
CO5	Learn plant growth and plant growth regulators.
<b>Course: Practical Botany -II</b>	
After successfully completing this course, students will be able to:	
CO1	Study of utilization and economics importance of Pterido phytes and Gymnosperm..
CO2	Study of utilization and economics importance of Angiosperm as food, fodder, fibers, horticultural and medicines.
CO3	To study of various stages in Mitosis and Meiosis.
CO4	To study Plasmolysis experiment.
CO5	Isolation of genomic DNA from given plant material.
<b>Course Outcomes S Y B. Sc. Botany Semester-III</b>	
<b>BO 231: Taxonomy of Angiosperms and Plant Ecology</b>	
After successfully completing this course, students will be able to:	
CO1	Define plant taxonomy and taxonomic related terminologies.
CO2	Explain different classification systems of angiosperms.
CO3	Use required data sources for classification of angiosperms.
CO4	Determine Botanical Nomenclature of angiosperm plants.
CO5	Recognize ecological plant groups with examples.
CO6	Learn plant families with examples.
CO7	Apply proper herbarium methods - collecting, mounting, and keeping records.
CO8	Execute computer knowledge in plant taxonomy and digital herbarium.
<b>BO 232: Plant Physiology</b>	
After successfully completing this course, students will be able to:	
CO1	Learn about Scope and applications of plant physiology, Absorption of water, Role of water in plants.

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**Program Outcome /Course Outcome  
CBCS 2019 Pattern**



CO2	Explain processes of Ascent of Sap, Transpiration.
CO3	Learn nitrogen metabolism in plants.
CO4	Learn concept and mechanisms of Seed dormancy and germination, Physiology of flowering.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern****BO 233: Practical**

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

- |     |   |
|-----|---|
| CO1 | Classify & identify the plant families.                           |
| CO2 | Draw the floral diagram of plants belonging to specific families. |
| CO3 | Demonstrate physiological experiments, and Fermentation products. |
| CO4 | Demonstrate & perform pH, plasmolysis, osmosis, DPD               |
| CO5 | Describe internal structure of plant organs.                      |
| CO6 | Describe the Transpiration process.                               |

**Course Outcomes S Y B. Sc. Botany Semester-IV****BO 241: Plant Anatomy and Embryology**

After successfully completing this course

- |     |  |
|-----|--|
| CO1 | Study Plant Anatomy, Embryology.   |
| CO2 | Describe various tissue systems in plants like epidermal, mechanical and vascular.           |
| CO3 | Interpret the Principles- incompressibility, inextensibility, shearing stress etc in plants. |
| CO4 | Explain the process of normal and abnormal secondary growth in plants.                       |
| CO5 | Identify the process of pollination and fertilization.                                       |
| CO6 | Discuss the Structure and development process of male and female gametophyte                 |
| CO7 | The types of microspore, ovules, embryo, seed and endosperm.                                 |

**BO 242: Plant Biotechnology**

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

- |     |   |
|-----|---|
| CO1 | Understanding the terminologies related to plant biotechnology.                                 |
| CO2 | Understanding of Plant tissue culture technology.   |
| CO3 | Interpret the production of Single cell proteins.   |
| CO4 | Study method of gene isolation from the plants and their application                            |
| CO5 | Learn Methods of gene transfer in plants.   |
| CO6 | Study the concept and type of Genomics, Proteomics and Bioinformatics- database, classification |
| CO7 | Study the concept of Bioremediation and Befoul technology                                       |

**BO 243: Practical Paper III**

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

- |     |   |
|-----|---|
| CO1 | Know practical knowledge of plant family of angiosperms   |
| CO2 | Study of different ecological groups and methods to study vegetations in forests.   |
| CO3 | Study different parameters of plant physiology like WHC, DPD, Rate of transpiration and Different instruments used in physiology. |
| CO4 | Study of Different tissue systems and normal and anomalous secondary growth.  |
| CO5 | Study of fermentation techniques, Spirullina cultivation for S  |



**Program Outcome /Course Outcome  
CBCS 2019 Pattern****Department of Zoology**

<b>F. Y. B.Sc. Zoology Semester I</b>	
<b>ZO -111: Animal diversity I</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	To understand the Animal diversity around us.
CO2	To understand the underlying principles of classification of animals.
CO3	To understand the terminology needed in classification.
CO4	To understand the differences and similarities in the various aspects of classification.
CO5	To classifies in vertebrates and to be able to understand the possible group of the invertebrate observed in nature.
<b>ZO - 112: Animal Ecology</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	The learners will be able to identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
CO2	To understand anticipate, analyse and evaluate natural resource issues and act on a lifestyle that conserves nature.
CO3	The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabus to understand the local lifestyle and problems of the community.
CO4	The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
CO5	The working in nature to save environment will help development of leadership skills to promote betterment of environment.
<b>ZO - 113: Practical Zoology -I</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Recognize the live forms of vertebrates and invertebrates
CO2	Analyse and describe zoological concepts, including morphology and anatomy.
CO3	Explain conservation and sustainable use of animals;
CO4	Explain and demonstrate the impact that animals have on human society.
<b>F. Y. B.Sc. Zoology Semester II</b>	
<b>ZO -111: Animal diversity II</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	To understand the Animal diversity around us
CO2	To understand the underlying principles of classification of animals.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO3	To understand the terminology needed in classification.
CO4	To understand the differences and similarities in the various aspects of classification.
CO5	To classifies in vertebrates and to be able to understand the possible group of the invertebrate observed in nature.
<b>ZO - 122: Cell Biology</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	The learner will understand the importance of cell as a structural and functional unit of life.
CO2	The learner understands and compares between the prokaryotic and eukaryotic system and extrapolates the life to the aspect of development
CO3	The dynamism of bio membranes indicates the dynamism of life. Its working mechanism and precision are responsible for our performance in life.
CO4	The cellular mechanisms and its functioning depend on endo-membranes and structures
<b>ZO - 123: Practical Zoology – II</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Recognize the live forms of vertebrates and invertebrates.
CO2	Analyse and describe zoological concepts, including morphology and anatomy.
CO3	Explain conservation and sustainable use of animals;
CO4	Explain and demonstrate the impact that animals have on human society
<b>S. Y. B.Sc. Zoology Semester III</b>	
<b>ZO - 231: Animal Systematic and Diversity – III</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Knowledge of classification of Non-chordates and chordates along with studies on various physiological functions and interactions of non-chordate organisms with type specimens
CO2	Knowledge of classification of chordates along with studies on various physiological functions and comparative anatomy of organs of chordate with example.
<b>ZO - 232: Applied Zoology - I</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Understands processes of sericulture, along with crop pest management techniques.
CO2	Students gain knowledge about various disease related vectors and their impact on human.
<b>ZO - 233: Practical course Paper – III – Practical</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	First-hand knowledge about identification of non-chordate and chordate specimens (fresh and preserved) along with larval forms and study of endoskeleton of vertebrates
CO2	Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology.
CO3	Analyse the relationships among animals, plants and microbes
<b>S. Y. B.Sc. Zoology Semester - IV</b>	
<b>ZO 241: Animal Systematic and Diversity – IV</b>	

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

Course Outcomes After successfully completing this course, students will be able to:	
CO1	. Knowledge of classification of Chordates along with studies on various physiological functions and interactions of chordate organisms with different types of specimens.
CO2	Knowledge of classification of chordates along with studies on various physiological functions and comparative anatomy of organs of chordate with example
<b>ZO 242: Applied Zoology II</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	. Understands processes of fisheries and management techniques.
CO2	Students gain knowledge about various disease related vectors and their impact on human
CO3	Understands concepts of apiculture and management techniques.
<b>ZO 243: Practical course Paper – III – Practical</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	. First-hand knowledge about identification of non-chordate and chordate specimens (fresh and preserved) along with larval forms and study of endoskeleton of vertebrates
CO2	. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology.
CO3	Analyse the relationships among animals, plants and microbes
<b>T. Y. B.Sc. Zoology Semester-V</b>	
<b>ZO 351 - Pest Management</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Define pest management
CO2	Describe the economic, ecological, and sociological benefits of IPM.
CO3	Distinguish positive and negative impacts of pesticide use.
CO4	Understand problems resulting from misuse, overuse, and abuse of chemical pesticides.
CO5	Define and describe pesticide resistance and how it develops.
CO6	Identify ecological and biological characteristics important in development of pest populations
CO7	Identify 10 tactics commonly used in IPM and be able to distinguish them.
CO8	Understand society's role in IPM decisions.
CO9	Describe different groups of pests and compare them to weeds and plant pathogens.
CO10	Analyse and compare management tactics to determine the best approach to reducing pest populations, weeds and disease presence.
CO11	Locate appropriate, scientifically valid sources of information on specific tactics to manage insect pests, weeds, and diseases.
CO12	Know and how to develop an IPM program.
<b>ZO 352 - Histology</b>	
Course Outcomes After successfully completing this course, students will be able to:	

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

CO1	The students will be able to understand, classify and identify the different types of tissue.
CO2	The students will understand the complexity of various tissues in an organ.
CO3	The students will be able to learn structure & functions of various tissues.
CO4	The students will understand the various diseases related to organs.
CO5	The student will be able to know the role of glands in mammals
<b>ZO 353 - Biological Chemistry</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	.Learners shall be able to understand basic concepts and significance of biochemistry
CO2	The students will learn about the pH and Buffers
CO3	The students will learn about the chemical structures of carbohydrate, and their biological and clinical significance
CO4	The students will be able to understand, interpret structure and importance of proteins, carbohydrates and lipids
CO5	Learners will be able to comprehend variations in enzyme activity and kinetics.
<b>ZO 354 – Genetics</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Described the genetic variation through linkage and crossing over, gene frequency, chromosomal aberrations and sex determination
CO2	Understood the theories of classical genetics and blood group inheritance in man
CO3	Explain the concept of mutation. 1) Comprehensive, detailed understanding of the chemical basis of heredity 2) Understanding the role of genetic mechanisms in evolution.
<b>ZO 355 - Developmental Biology</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Have mastered the foundational knowledge that defines the fields of cell and developmental biology
CO2	Be able to write clearly and effectively about cell and developmental biology at the graduate level as well as in layperson terms.
CO3	Be able to explain cell and developmental biology orally to professional scientists, students of the discipline, and to a lay audience.
CO4	Be prepared to teach foundational cell and developmental biology at the college level.
<b>ZO 356 - Parasitology</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	The students will be able to learn about basics and scope of parasitology
CO2	The students will be able to learn the types of host and parasite with examples.
CO3	The students will be able to learn about the morphology, life cycle, pathogenicity

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

	and treatment of common parasites (Protists and Platyhelminthes).
CO4	The students will be able to learn about host -parasite relationships and their effects on host body.
CO5	The students will be able to learn about the arthropod parasites and their role as vector
<b>ZO – 3511 Poultry Management</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	The students will be able to understand the Poultry farming practices.
CO2	The students will be able to understand the poultry breeding techniques.
CO3	The students will be able to understand poultry rearing techniques.
CO4	The students will be able to understand feeding requirement and food ingredients.
CO5	The students will be able to understand the poultry disease and their pathogens
CO6	The students will be able to understand market value of poultry products
<b>ZO 3510: Aquarium Management</b>	
Course Outcomes After successfully completing this course, students will be able to:	
CO1	Understand the roles of zoos and aquariums in research education and conservation.
CO2	Know the global, regional, national and institutional organization of zoos and aquariums. .
CO3	Understand the legislative framework that zoos and aquariums work within
<b>ZO 357 Practical Paper I</b>	
CO1	Identify the organs by studying the histological slides.
CO2	Identify hormonal disorders using pictures.
CO3	Use techniques like chromatography, spectrophotometry in biological experiments
CO4	Explain the anatomical features of brain, heart, kidney and skin of vertebrates.
CO5	Demonstrate the structure of tissues by making temporary slides.
CO6	Identify & study the plant protection appliances, pests, diseases and damage causes.
CO7	Implementation & applications of IPM.
CO8	Separation of the pesticides or plant products by TLC and Column chromatography.
<b>ZO 358 Practical Paper II</b>	
CO1	Demonstrate the effect of physical and chemical factors on enzyme activity
CO2	Measure the pH of given samples
CO3	Detect given carbohydrates using biochemical tests.
CO4	Prepare acid and base solutions and titrate them.
CO5	Isolate Carbohydrates (Starch), Protein from milk.
CO6	Illustrate the application of Hardy –Weinberg law.

Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
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**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



CO7	Illustrate the application of Mendelian Laws.
CO8	Study and identify Genetic Traits, Human Karyotypes & Syndromes, Chromosomal Aberrations.
CO9	Illustrate & learned Human Blood Group System.
<b>ZO 359 Practical Paper III</b>	
CO1	List the household Pest and social insect
CO2	Explain the pathogenicity and morphology of few ectoparasites.
CO3	Explain the diseases spread by vectors
CO4	Explain the interrelationship of insects and human with examples
CO5	Explain the effects of household insects on human health
CO6	Demonstrate rectal parasites in cockroach
CO7	Identify the life cycle stages of few parasites
CO8	Identify and explain the types of eggs, blastulae and gastrulae
CO9	Identify the Stage of chick embryo.
CO10	Identify the phases of cell division.
CO11	Prepare temporary slide of chick embryo to identify the stage and age



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**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**Department of Mathematics**

On successful completion of B.Sc Course (Mathematics), the students are able to	
PSO1	Explain the core ideas and the techniques of mathematics at the college level.
PSO2	Recognize the power of abstraction and generalization, and to carry out investigative mathematical work with independent judgment.
PSO3	Setup mathematical models of real world problems and obtain solutions in structured and analytical approaches with independent judgement.
PSO4	Carry out objective analysis and prediction of quantitative information with independent judgment.
PSO5	Communicate effectively about mathematics to both lay and expert audiences utilizing appropriate information and communication technology.
PSO6	Work independently, and to collaborate effectively in team work and team building.
PSO7	Conduct self-evaluation, and continuously enrich themselves through lifelong learning.
PSO8	Communicate to lay audiences and arouse their interest in the beauty and precision of mathematical arguments and science.
PSO9	Recognize the importance of compliance with the ethics of science and being a responsible citizen towards their community and a sustainable environment.
PSO10	Cultivate a mathematical attitude and nurture the interests

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>F.Y.B.Sc Maths Sem-1 &amp; Sem-2 Math-1 MT-111 Algebra</b>	
On successful completion of the course	
After successfully completing this course, students will be able to:	
CO1	Students are able to understand sets, relation and function.
CO2	Division & Euclidean Algorithm
CO3	Fermat's Theorem
CO4	Complex numbers
<b>F.Y.B.Sc Maths Sem-1 &amp; Sem-2 MT-121 Analytical Geometry</b>	
On successful completion of the course	
After successfully completing this course, students will be able to:	
CO1	Analytical geometry of two & three dimensions
CO2	Lines in three dimensions
CO3	Sphere
<b>F.Y.B.Sc Maths Sem-1 &amp; Sem-2 Math-2 MT-112 Calculus-1 &amp; MT-122 Calculus-2</b>	
On successful completion of the course	
After successfully completing this course, students will be able to:	
CO1	Real numbers
CO2	Sequences
CO3	Series
CO4	Limit & Continuity
CO5	Differentiation
CO6	Ordinary differential equation
CO7	Exact differential equation
<b>F.Y.B.Sc Maths Sem-1 &amp; Sem-2 Math-3 MT-113 &amp; MT-123 Practical Course</b>	
On successful completion of the course	
After successfully completing this course, students will be able to:	
CO1	On successful completion of the course students are able to understand the theory course problem using maxima software
<b>S.Y.B.Sc Maths Sem-3 &amp; Sem-4 Math-1 MT-231 Calculus of several variables</b>	
On successful completion of the course students are able to understand	
CO1	Limit & continuity of several variables.
CO2	Partial derivatives & differentiability
CO3	Extreme values
CO4	Double & Triple Integral
<b>S.Y.B.Sc Maths Sem-3 &amp; Sem-4 MT-241 Linear Algebra</b>	
CO1	Matrices and system of linear equations
CO2	Vector spaces
CO3	Linear transformations

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**



CO4	Linear isomorphism
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**S.Y.B.Sc Maths Sem-3 & Sem-4 Math-2 MT-232(B) Graph Theory**

CO1	Graph
CO2	Path & circuit
CO3	Trees & fundamental circuit
CO4	Cut sets & cut vertices
CO5	Connectivity & severability

**S.Y.B.Sc Maths Sem-3 & Sem-4 MT-242(A) Vector calculus**

CO1	Vector valued functions
CO2	Integrals
CO3	Surface integrals
CO4	Applications of integrals

**S.Y.B.Sc Maths Sem-3 & Sem-4 Math-3 MT-233 & MT-243 Practical Course**

On successful completion of the course students are able to understand	
CO1	On maxima software problems on theory courses will be solved by students

Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
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**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



<b>B.Sc. (Computer Science)</b>
<b>Programme Outcome</b>
<ul style="list-style-type: none"> <li>• Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.</li> <li>• To prepare students to undertake careers involving problem solving using computer science and technologies.</li> <li>• Develop ability to pursue advanced studies and research in computer science.</li> <li>• To produce entrepreneurs who can innovate and develop software product.</li> </ul>
<b>F.Y.B.Sc. (Computer Science) Semester-I</b>
<b>Course Title:-CS-101 Problem solving using computer and C programming Course Outcomes:-</b>
<ul style="list-style-type: none"> <li>• Explore algorithmic approaches to problem solving.</li> <li>• Ability to analyze a problem and devise an algorithm to solve it.</li> <li>• Able to formulate algorithms, pseudo codes and flowcharts for arithmetic and logical problems.</li> <li>• Ability to implement algorithms in the 'C' language.</li> <li>• Develop modular programs using control structures and arrays in 'C'.</li> </ul>
<b>Course Title :CS-102 Database Management Systems Course Outcomes</b>
<ul style="list-style-type: none"> <li>• Understand fundamental concepts of database.</li> <li>• Understand user requirements and frame it in data model.</li> <li>• Ability in creations, manipulation and querying of data in databases.</li> <li>• Ability to solve real world problems using appropriate set, function, and relational models.</li> <li>• Ability to design E-R Model for given requirements and convert the same into database tables.</li> </ul>
<b>Course Title:- CS-103 Practical Course based on CS-101 and CS-102 (C and DBMS) Course Outcome:-</b>
<ul style="list-style-type: none"> <li>• Able to devise pseudo code and flowchart for computational problems.</li> <li>• Understand how to write, debug and execute simple programs in C.</li> <li>• Able to create database tables in Postgres SQL.</li> <li>• Able to write and execute simple and nested queries.</li> </ul>

Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
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**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**Course Title: - ELC-111: Semiconductor Devices and Basic Electronic Systems**

**Course Outcome:**

- To study various types of semiconductor devices, elementary electronic circuits and systems.
- To bridge the gap between Theoretical and practical knowledge.

**Course Title: - ELC-112: Principles of Digital Electronics Course Outcome:**

- To get familiar with concepts of digital electronics.
- To study arithmetic circuits, combinational circuits and sequential circuits.

**Course Title: - ELC-113 Electronics Practical Paper – I Course Outcome:**

- To use basic concepts for building various applications in electronics.
- To understand design procedures of different electronic circuits as per requirement.
- To build experimental setup and test the circuits.
- To develop skills of analyzing test results of given experiments.

**Course Title: MTC 111 Matrix Algebra Course Outcome:**

- Perform basic Matrix operation.
- Define special matrices: diagonal, triangular, and symmetric.
- Basics of solving systems of linear equations.
- Understand determinants and their properties.
- Logic behind writing programs using computer language.
- Factorization of any square matrix in simpler LU-form.

Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
**Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**Course Title: MTC 112 Discrete  
Mathematics Course Outcome:**

- Understanding the concepts of discrete mathematics.
- Learning applications of discrete structures in Computer Science.
- Express a logic sentence in terms of predicates, quantifiers, and logical connectives.
- Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion.
- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and tree



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
**Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**Course Title: MTC 113 Mathematics Practical Course Outcome:**

- Students will be able to compute matrix calculation using Maxima software.
- Use appropriate modern technology to explore calculus concepts.
- Solve applied problems using matrices.
- Solve systems of linear equations by use of the matrix.
- Students will be able to formulate problems in the language of sets and perform set operations, and will be able apply the Fundamental Principle of Counting, Multiplication Principle.

**Course Title: CSST 111 Descriptive statistics Course Outcome:**

- The main purpose of descriptive statistics is to provide a brief summary of the samples and the measures done on a particular study.
- To provide basic information about variables in a dataset.

**Course Title: CSST 112 Mathematical Statistics Course Outcome:**

- It will help students develop skills in thinking and analyzing problems from a probabilistic and statistical point of view.
- It will provide difference between Discrete and continuous distributions.

**Course Title:- CSST 113 Statistics Practical Paper I Course Outcome:**

- To Study free statistical software's and use them for data analysis in project
- To use of Statistical tools in Ms-Excel

**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**F.Y.B.Sc(Computer Science)**

<b>Semester -II Course Title:-CS 201 Advanced C programming</b>
<b>Course Outcomes:-</b>
<ul style="list-style-type: none"> <li>• Develop advanced concepts of programming using C.</li> <li>• Develop modular programs using control structures, pointers, arrays, strings and structures.</li> <li>• Design and develop solutions to real world problems using C.</li> <li>• Able to develop structured programming approach.</li> </ul>
<b>Course Title : CS-202 Relational database Management Systems Course Outcome</b>
<ul style="list-style-type: none"> <li>• Able to acquire knowledge of data security and its importance.</li> <li>• Design E-R Model for given requirements and convert the same into database tables.</li> <li>• Able to use database techniques such as SQL &amp; PL/SQL.</li> <li>• Understand and able to implement concept of transactions.</li> <li>• Use advanced database Programming concepts.</li> </ul>
<b>Course Title:- CS-203 Practical Course based on CS-201 and CS-202(Advanced C and RDBMS)</b>
<b>Course Outcome:-</b>
<ul style="list-style-type: none"> <li>• Write debug and execute programs using advanced features in C.</li> <li>• To perform advanced database operations.</li> </ul>
<b>Course Title: - ELC-121 Instrumentation System Course Outcome:</b>
<ul style="list-style-type: none"> <li>• To study various kind of Instrument of different Instrumentation System</li> <li>• To control the parameter in process or a particular system.</li> <li>• To study smart sensors for smart Electronics Applications.</li> </ul>

**Program Outcome /Course Outcome**  
**CBCS 2019 Pattern**



**Course Title: - ELC-122 Basics of Computer Organization Course Outcome:**

- To study and design different counters.
- To study basics of computer system.
- To study Memory Organization.

**Course Title: - ELC- 123 Electronics Practical Paper – II Course Outcome:**

- To use basic concepts for building various applications in electronics.
- To understand design procedures of different electronic circuits as per requirement.
- To build experimental setup and test the circuits.
- To develop skills of analyzing test results of given experiments.

**Course Title:- MTC 121 Linear Algebra Course Outcome:**

- Solve systems of linear equations using various methods including Gaussian and Gauss Jordan elimination and inverse matrices.
- Perform matrix algebra, invertibility, and the transpose and understand vector algebra in  $R^n$ .
- Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
- Compute inner products on a real vector space and compute angle and orthogonality in inner product spaces.
- Prove basic results in linear algebra using appropriate proof-writing techniques such as linear independence of vectors; properties of subspaces; linearity, injectivity and surjectivity of functions; and properties of eigenvectors and eigenvalues.

**Course Title:- MTC 122 Graph Theory Course Outcome:**

- Explain basic concepts in graph theory.
- Define how graphs serve as models for many standard problems.
- Account for the theory of paths and degree of connectedness of graph.
- Learn the use of spanning tree.
- Discuss the concept of graph, tree, and Euler graph.
- See the applications of graphs in science, business and industry.

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**Marutraoji Ghule Patil Art's, Commerce and Science College,**  
**Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)



To present a survey of essential topics for computer science students who will encounter some of them again in more advanced courses.

**Program Outcome / Course Outcome**  
**CBCS 2019 Pattern**

**Course Title:- MTC 123 Mathematics Practical Course Outcome:**

- Students will be able to find eigen values and eigen vectors using Maxima software.
- Students will be able to perform operations on orthogonality and quadratic forms.
- Use appropriate modern technology to explore calculus concepts.

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**



<b>Course Title:- CSST 121 Method of Applied Statistics Course Outcome:</b>
<ul style="list-style-type: none"><li>• To create a mathematical model that can be used to predict the values</li><li>• To Handle large data and analyze it by statistical tools</li></ul>
<b>Course Title:- CSST 122 Continuous Probability Distribution and Testing of Hypothesis Course Outcome:</b>
<ul style="list-style-type: none"><li>• To study distribution of various data</li><li>• Student should use these techniques for their project.</li></ul>
<b>Course Title:- CSST 123 Statistics Practical Paper II Course Outcome:</b>
<ul style="list-style-type: none"><li>• How to use statistical tools in real life situation. Handling data for research purpose</li><li>•</li></ul>

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**

<b>Bachelor of Commerce B.Com</b>	
After successfully Completing B.Com programme, students will able to	
PO1	In depth knowledge, understanding and skills in commerce.
PO2	Build a strong foundation of knowledge in different areas of Commerce.
PO3	Develop the skill of applying concepts and techniques used in Commerce for real life problems.
PO4	Inculcate reading, writing, speaking skills and Business correspondence.
PO5	Creates awareness among society about Law and Legislations related to commerce and business.
PO6	Use effectively recent Trends in Business, Organizations and Industries.
PO7	Communicate effectively about Economic Environment of Country as well as World
PO8	Use effectively practical skills in real life related to banking and corporate world.
PO9	Provides a platform for overall development and develop knowledge level and awareness about Recent Trends of World
PO10	Use new technologies effectively to communicate ideas in the area of commerce.
PO11	Critically evaluate new research findings, ideas, methodologies and theoretical frame work in specialized study.
PO12	Work collaboratively and productively in groups.
PSO1	Students will be able to apply basic skills learnt in commerce necessary for analysis of various problems in accounting, marketing, business economics, management and finance.
PSO2	Students will demonstrate progressive affective domain development of values, the role of accounting in society and business.
PSO3	Students will able to demonstrate quantitative and qualitative knowledge in key areas of organization behavior.
PSO4	: Students will able to evaluate national and international issue and discussion on economic, commercial and business related topics



**Program Outcome /Course Outcome  
CBCS 2019 Pattern****F.Y.B.COM****Course1123: Financial Accounting**

After successfully completing this course, student will be able to -

CO1	Classify liabilities under piecemeal distribution of cash and student also able to practically solve problems.
CO2	Discuss disposal of assets and liabilities not taken over by new firm in amalgamation process with example.
CO3	Explain Accounting Procedure in the books of the firm under Conversion of Partnership Firm into Ltd. Co. and solve the problems
CO4	Demonstrate how to create a company, grouping, generation, Accounting Report with the help of Accounting Software Package.
CO5	Explain the Accounting Standard applicable in India
CO6	Explain suffered recoupment and lapse of short-working with examples.
CO7	Distinguish between Hire Purchase System and Installment System and solve problems thereon.
CO8	Demonstrate allocation of expenses on basis of Apportionment in Departmental Accounts.

**F.Y.B.COM****Banking and Finance[Fundamentals of Banking]**

After successfully completing this course, student will be able to -

CO1	Student will get acquainted with the basics of marketing field.
CO2	It will highlight on the core marketing concepts namely 'Marketing Mix'. It will help students to implement this knowledge in practicality by enhancing their skills in the field of market Segmentation.
CO3	Students will develop the skills of Pricing the product along with gaining knowledge on Product Mix
CO4	It will help the students to apply the various techniques of Promotion and understand the various channels of distribution

**Program Outcome /Course Outcome  
CBCS 2019 Pattern**



Marketing and Salesmanship- I (Fundamentals of Marketing)	
After successfully completing this course, student will be able to -	
CO1	To acquaint the students with the fundamentals of banking
CO2	To develop the capability of students for knowing banking concepts and operations.
CO3	To make the students aware of banking business and practices.
CO4	To give thorough knowledge of banking operations.
CO5	To enlighten the students regarding the new concepts introduced in the banking system



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

S.Y.B.COM	
Course 2113: Business Communication- outcomes	
After successfully completing this course, student will be able to -	
CO1	Discuss the Meaning, Definition, Features, Principles, Importance, Process of Communication, Barriers to Communication & its Remedies.
CO2	Identify the different methods and channels of communication
CO3	Classify the various soft-skills and its elements such as Grooming Manners and Etiquettes, Effective Speaking, Interview Skills, Listening, Group Discussion and Oral Presentation
CO4	Describe the concept of business letter, its Meaning, Importance, Qualities or Essentials, Physical Appearance, and Layout of Business Letter.
CO5	Develop the writing skill of business letters on various situations in business like Enquiry letter, order letter, sales letter etc.
CO6	Discuss the Types & Drafting of Job Application Letters
CO7	Study the internal office correspondence like OfficeMemo, Office Orders, Office Circulars, and Press Releases.
CO8	Explain the application of new technology in business communication like WhatsApp, Twitter, Facebook, LinkedIn, YouTube, Cellular Phone and Video Conferencing.
Course 2143: Business Management	
After successfully completing this course, student will be able to –	
CO1	Discuss the Meaning, Definition, Features, Principles, Importance, challenges before management and Brief Review of Management Thoughts of FW Taylor & Henry Fayol.
CO2	Discuss Meaning, Definition, Nature, Importance, Forms, Types, Steps, and limitations of Planning and Decision Making.
CO3	Describe Meaning, Process & Principles, Departmentalization of Organization and Organization Structure, Staffing and Recruitment
CO4	Discuss Meaning, Elements, Principles, Techniques & importance of Direction and communication and Process & Barriers of Communication
CO5	Explain the different theories of motivation such as Maslow's Need Hierarchy Theory, Herzberg's Two Factors Theory, Douglas Mc Gregor's Theory.
CO6	Study the leadership style for effective management and political leadership such as Mahatma Gandhi, Dr. Babasaheb Ambedkar & Pandit Jawaharlal Nehru.
CO7	Discuss the concept Need, Techniques, difficulties, steps and techniques of coordination and Control
CO8	Apply the recent trends in business management like Business Ethics, Corporate Social Responsibility, Corporate Governance, Disaster Management, Management of Change.
Marketing Management – I	



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

After successfully completing this course, student will be able to –	
CO1	To orient the students recent trends in marketing management
CO2	To create awareness about marketing of eco friendly products in the society through students
CO3	To inculcate knowledge of various aspects of marketing management through practical Approach
CO4	To acquaint the students with the use of E-Commerce in competitive environment
CO5	To help the students understand the influences of marketing management on consumer Behavior
Banking & Finance –I	
After successfully completing this course, student will be able to –	
CO1	To create the awareness among the students of Indian banking system.
CO2	To enables students to understand the reforms and other developments in the Indian Banking
CO3	To provide students insight into the functions and role of Reserve Bank of India
Elements of Company Law.	
After successfully completing this course, student will be able to –	
CO1	To impart students with the knowledge of fundamentals of Company Law.
CO2	To update the knowledge of provisions of the Companies Act of 2013.
CO3	To apprise the students of new concepts involving in company law regime
CO4	To acquaint the students with the duties and responsibilities of Key Managerial Personnel
CO5	To impart students the provisions and procedures under company law.
Corporate Accounting	
To enable the students to develop awareness about Corporate Accounting in conformity with the provisions of Companies Act and Accounting as per Indian Accounting Standards.	
CO1	To make aware the students about the conceptual aspect of corporate accounting
CO2	To enable the students to develop skills for Computerized Accounting
CO3	To enable the students to develop skills about accounting standards
T.Y.B.Com.	
Course Business Regulatory Framework (Mercantile Law) 351	
CO1	Acquaint knowledge and maturity to understand Contract Law.
CO2	To Acquaint knowledge and application of Partnership Deed.
CO3	To get training to face emerging issues relating Sale of Goods Act.
CO4	To give Comprehensive insight about the emerging trend of Arbitration and conciliation and its regulatory mechanism
Course Advanced Accounting 352	



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

CO1	Developing understanding on applicability of various Accounting Standards
CO2	Knowledge about of the Accounting for Capital Restructuring
CO3	Conceptual Clarity and Practical understanding of preparation of final accounts of banking Compass
CO4	Developing knowledge about Investment Accounting
<b>Auditing 354</b>	
CO1	Acquaint with knowledge and maturity to understand concept of Auditing, types of Audit and Audit Process
CO2	Conceptual Clarity and Practical understanding of Vouching Verification and valuation and Types of Audit Report.
CO3	Practical knowledge about appointment, reappointment and other related provision. Practical knowledge about Tax Audit as per I.T. Act 1961 (Form 3CA, 3CB & 3CD)
CO4	Understanding new concepts under Audit of Computerized Systems & Forensic Audit
<b>Marketing Management-II – 355 (h)</b>	
CO1	The objective of this course is to facilitate understanding of the conceptual framework of marketing and its applications in decision making under various environmental constraints.
CO2	The course will make learners understand how to make effective marketing decisions, including assessing marketing opportunities and developing marketing strategies and implementation plans
<b>Marketing Management- III 356(H)</b>	
CO1	Student will understand the concept of advertising and advertising media
CO2	To enable them to analyze and interpret
CO3	To enable the students to study the Appeals and Approaches in Advertisement
CO4	It will help the students to apply the various Economic and social aspects of advertising
CO5	It will help them to implement this knowledge in practical situations by enhancing their skills in the field of Marketing
<b>Banking and Finance-Special Paper II-355-B</b>	
CO1	To make the students about Indian Money Market.
CO2	To acquaint the students with Indian Financial System and its various segments. aware
CO3	To analyze and understand the functions of Indian Capital Market
CO4	To enable the students the functioning of Foreign Exchange Market
<b>Banking and Finance-Special Paper III-356-B</b>	
CO1	To familiarize the Banking Laws and Practice in correlation to the Banking



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
(2021-22)**

CO2	Aspects of Banking transactions and its implication as a Banker and as a customer
CO3	To make students capable of understanding and applying the legal and practical aspects of banking to help them technically sound in banking parlance





Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

**Faculty of Arts**

<b>Program Specific Outcome of English</b>	
PSO1	Reading
PSO2	Nation and Tradition
PSO3	Critical Insight in Literary Texts
PSO4	Issues and awareness of Sexuality and Gender: Arts
PSO5	Realizing Moral Values
PSO6	Writing skills.
PSO7	Learning Effective Communication
<b>Objectives:</b>	
PO1	To expose students to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English
PO2	To instill human values and develop the character of students as responsible citizens of the World
PO3	To develop the ability to appreciate ideas and think critically
PO4	To enhance employability of the students by developing their linguistic competence and communicative skills
PSO5	To revise and reinforce structures already learnt in the previous stages of learning.
F. Y. B. A-	
Optional English (General Paper-1)	
After studying this course student will be able to:	
CO1	To expose students to the basics of literature and language and develop an integrated view about language and literature in them
CO2	To acquaint them with minor forms of literature in English and help them to appreciate the creative use of language in literature
CO3	To introduce them to the basics of phonology of English so that they can pronounce better and speak English correctly.
CO4	To prepare students to go for detailed study and understanding of Literature and language
CO5	To enhance the job potential of students by improving their language skills
F. Y. B. Com	
Compulsory English	
After studying this course student will be able to:	
CO1	To offer relevant and practically helpful pieces of prose and poetry to students so that they not only get to know the beauty and communicative power of English but also its practical application



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

CO2	To expose students to a variety of topics that dominate the contemporary socioeconomic and cultural life
CO3	To develop oral and written communication skills of the students so that their employability enhances d) To develop overall linguistic competence and communicative skills of students.
<b>S. Y. B. A English Compulsory English</b>	
CO1	To familiarize students with some excellent pieces of drama and poetry in English so that they realize the beauty and communicative power of English.
CO2	To enable students to become competent and effective users of English in real life situations
CO3	To contribute to the overall personality development of the students
CO4	To instil humanitarian values and foster sympathetic attitude in the students
CO5	To acquaint the students with the verbal and nonverbal communication
CO6	To impart knowledge of some essential soft skills to enhance their employability

<b>T. Y. B. A. Compulsory ENGLISH</b>	
CO1	To familiarize students with some excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.
CO2	To enable students to become competent and effective users of English in real life situations
CO3	To contribute to the overall personality development of the students.
CO4	To instill humanitarian values and foster sympathetic attitude in the students.
CO5	To train the students in practical writing skills required in work environment.
CO6	To impart knowledge of some essential soft skills to enhance their employability



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

F.Y.B.A Economic	
INDIAN ECONOMIC ENVIROMENT)	
CO1	Develop ideas of the basic characteristics of Indian economy; its potential on natural resources.
CO2	Understand the importance, causes and impact of population of growth and its distribution, translate and related them with economic development.
CO3	Grasp the importance, of planning undertaken by the government of India, have knowledge on the various objectives, failures and achievements as the foundation of the ongoing planning and economic reforms taken by the government
CO4	Understand agriculture as the foundation of economic growth and development, analyses the progress and changing nature of agricultural sector and its contribution to the economy as a whole.
CO5	not only be aware of the economy as a whole, they would understand the basic features of mizoram's economy, sources of revenue, and how the state government finance its programmes and projects.

B.A. Economics	
Program Specific Outcomes	
The principal aims of objective of the BA Economics programme are To provide students a well-founded education in Economics	
PSO1	To provide structured curricular which support the academic development of students
PSO2	To provide and adapt curricular that prepare our graduated for employment and further study as economists.
PSO3	To provide students with the opportunity to pursue courses that emphasizes quantitative and theoretical aspects of Economics.
PSO4	To provide students with the opportunity to focus on applied and policy issues in Economics
PSO5	To provide students programmers that allows the students to choose from a wide range of economics specialization.
PSO6	To provide a well –resourced learning environment for Economics.

F.Y.B.COM	
BUSINESS ECONOMICS) (MICRO)	
On completion of the course students will be able to	
CO1	To familiarize the students with the basic concept of micro economics.
CO2	To make student understand the demand and supply analysis in business applications.



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

CO3	To familiarize student with the production and cost structure under different stages of production.
CO4	Develop ideas of the basic characteristics of Indian Economy, its potential on natural resources.
CO5	Understand the importance, causes and impact of population growth and its distribution, translate and relate them with economic development.
CO6	Demonstrate marginal productivity theory of distribution, theory of wages, identify different types of rent, and illustrate different theories of interest and profits.
CO7	Understand how factor market works, illustrate basic tool in welfare economics and illustrate the concept of social welfare functions and compensation principles.
CO8	Identify the various types of investment function analysis and understand the elements of social cost benefit analysis

The principal aims of objective of the BA Economics programme are To provide students a well-founded education in Economics

PSO1	To provide structured curricular which support the academic development of students.
PSO2	To provide and adapt curricular that prepare our graduated for employment and further study as economists.
PSO3	To provide students with the opportunity to pursue courses that emphasizes quantitative and theoretical aspects of Economics.
PSO4	To provide students with the opportunity to focus on applied and policy issues in Economics
PSO5	To provide students programmers that allows the students to choose from a wide range of economics specialization.
PSO6	To provide a well –resourced learning environment for Economics.

**T.Y.B.A. (INDIAN ECONOMIC DEVELOPMENT)**

On completion of the course students will be able to:

CO1	To relate and recognize the concept and indicators of Economic Development
CO2	To describe and analyze the concept and indicators of Human Development
CO3	To explain the characteristics of Developing and Developed Countries.
CO4	To describe the constraints to the process of Economic Development
CO5	To describe and explain the process of Economic Planning.
CO6	To describe and examine the changing structure of planning process in India.
CO7	To describe and explain the relation between Economic Development and Environment



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

T.Y.B.A. (INTERNATIONAL ECONOMICS)	
On completion of the course students will be able to:	
CO1	To relate and recall the concepts of International Economics and International Trade.
CO2	To describe and apply the theories of international trade.
CO3	To explain and comprehend the issues relating to Terms of trade and Balance of Payment.
CO4	Ability to relate and explain the concept of Exchange Rate and Foreign Exchange Market
CO5	Ability to describe the trends in Growth, Composition and Direction of India's Foreign Trade.
CO6	Ability to comprehend the issues relating to Foreign Capital and Regional and International Co-Operation.

T.Y.B.A. (INDIAN PUBLIC FINANCE)	
On completion of the course students will be able to:	
CO1	To describe and analyze the concept of Public Revenue and its components
CO2	To explain types of Public Expenditure and reasons for rising Public Expenditure
CO3	To explain the types of Public Debt and its effects
CO4	To explain and assess the components and instruments of Fiscal Policy.
CO5	To relate to the concepts of Budget and its components.
CO6	To describe and analyze the concept of Deficit Financing and its effects.
CO7	To describe and explain the Centre and State Financial Relationship



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
(2021-22)**

<b>TYBA Skill Enhancement Course</b>	
<b>Course Name - Management of Business.</b>	
CO1	Business planning and decision making
CO2	Leadership Skills- Ability to work in teams at the same time, ability to show leadership Qualities
CO3	Analytical Skills – Ability to analyze data collected and interpret in the most logical manner
CO4	Project Report Writing Skills- Ability to comprehend and illustrate/demonstrate findings
CO5	Presentation Skills – PPT/Poster- Ability to illustrate findings in the most appealing manner
CO6	Leadership Skills: Ability to show leadership skills with business ideas or work on business ventures as a practical example





Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

F.Y.B.A.	
Gg- 110 (A) Physical Geography Semester I	
On completion of the course students will be able to	
CO1	To introduce the students to the basic concepts in Physical geography.
CO2	To introduce latest concept in Physical geography
CO3	To acquaint the students with the utility and application of Physical geography in different regions and environment.
CO4	To make the students aware about Earth system (Lithosphere, Atmosphere, Biosphere and Hydrosphere)
Gg- 110 (B ) Human Geography Semester II	
On completion of the course students will be able to	
CO1	To introduce the students to the basic concepts in Human geography.
CO2	To introduce latest concept in Human geography
SYBA	
Gg-210 Geography of Disaster Management (G2)	
On completion of the course students will be able to	
CO1	To introduce students the concept of disaster & its relation with Geography.
CO2	To acquaint the students with the utility & application of hazards in different areas its management.
CO3	To make the students aware of the need of protection & disaster management.
SYBA	
Gg- 220 : Tourism Geography (S-1)	
On completion of the course students will be able to	
CO1	To acquaint the student's basic concepts of Geography & Tourism
CO2	To aware the students with the utility and application of Tourism
CO3	To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
CO4	To understand the impact of tourism on Physical and Human Environments.
Gg-201 : FUNDAMENTALS OF GEOGRAPHICAL ANALYSIS (G2)	
On completion of the course students will be able to	
CO1	To enable the students to use various Projections and Cartographic Techniques.
CO2	To acquaint the students with basic of Statistical data.
CO3	To acquaint the students with the principles of surveying, its importance and utility in the geographical study.
TYBA SEM- V	
Geography of Tourism- I CC1E (G3)	
CO1	To understand the history of Tourism



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
College, Ahmednagar**

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**Program Outcome /Course Outcome  
(2021-22)**

CO2	To introduce the students to the basic concepts in Tourism Geography.
CO3	To understand the types of Tourism
CO4	To gain knowledge different aspects of Tourism Geography.
Geography of Tourism- II CC1F (G-3) ( SEM – VI)	
CO1	To understand the history of Tourism
CO2	To introduce the students to the basic concepts in Tourism Geography.
CO3	To understand the types of Tourism
CO4	To gain knowledge different aspects of Tourism Geography.



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

(Affiliated to Savitribai Phule Pune University, Pune)

**Program Outcome /Course Outcome  
 (2021-22)**

<b>Programme Specific Outcomes,</b>	<b>Department History</b>
PSO1	After completion of this course they gather knowledge about the socio-cultural heritage of India and world as well.
PSO2	Help to grow national and international understanding among history students.
PSO3	Careers options for students to engage as MPSC ,UPSC and other Competitive exam. educators, archivists, producers of multimedia material and even as a researcher in historic Sites and Museums, Historical Organizations, Cultural Resources Management and Historic Preservationetc.
PSO4	History helps them in knowing the past people, their culture, their religions, and their social systems, and transforms them into responsible citizens to make a better future.

<b>F.Y BA Semester –I</b>	
Early India: From Prehistory to the Age of the Mauryas	
On completion of the course students will be able to	
CO1	The history of Early India is a crucial part of Indian history. It is a base for understanding the entire Indian history. The course is aimed at helping the student to understand the history of early India from the prehistoric times to the age of the Mauryas.
CO2	It attempts to highlight the factors and forces behind the rise, growth and spread of civilization and culture of India along with the dynastic history. It also attempts to help the students to understand the contribution of Early Indians to polity, art, literature, philosophy, religion and science and technology.
CO3	It also aims to foster the spirit of enquiry among the students by studying the major developments in early Indian history.
<b>F.Y BASemester-II</b>	
Early India: Post Mauryan Age to the Rashtrakutas	
On completion of the course students will be able to	
CO1	The history of India after the Mauryas is very important to understand the developments in early India after the Mauryas, which finally led to the transition to medieval India.
CO2	.The course is aimed at introducing the students to the developments in different parts of India through a brief study of regional kingdoms up to the tenth century C.E. It attempts to highlight the consequences of the foreign invasions, particularly on the polity, economy, society and art and architecture. The attempt is also to instill the spirit of enquiry among the students.
<b>S.Y BA-III</b>	
<b>G-II Modern India (1857-1950)</b>	
On completion of the course students will be able to	



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

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**Program Outcome /Course Outcome  
 (2021-22)**

CO1	The course is designed to help the student to know- History of freedom movement of India, aims, objectives problems and progress of Independent India. It aims at enabling the student to understand the processes of rise of modern India.
CO2	The Course attempts to acquaint student with fundamental aspects of Modern Indian History.
CO3	To explain the basic concepts/ concerns/ frame work of Indian History.
CO4	Appreciate the skills of leadership and the administrative system of the Marathas
<b>CC-2(3)History of the Marathas: (1707-1818)</b>	
On completion of the course students will be able to	
CO1	Students will be able to analyze the Marathas policy of expansionism and its consequences
CO2	They will understand the role played by the Marathas in the 18th century India..
CO3	They will be acquainted with the art of diplomacy in the Deccan region.
CO4	It will help to enrich the knowledge of the administrative skills and profundity of diplomacy
S.Y BA-III	
<b>S-I DSE-1A (3)1.Medieval India - Sultanate Period</b>	
CO1	Provides examples of sources used to study various periods in history
CO2	Relates key historical developments during medieval period occurring in one place with another .
CO3	Analyses socio - political and economic changes during medieval period
CO4	Estimate the foreign invasion and the achievement of rulers
S.Y BA Sem-IV	
<b>S-I DSE-1B (3)4.Medieval India: Mughal Period</b>	
CO1	Draws comparisons between policies of different rulers.
CO2	Understanding Role of Akbar in the consolidation of Mughal rule in India.
CO3	Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age.
CO4	Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)
S.Y BA-III	
<b>S- IIDSE-2A (3)2.Glimpses of the Modern World - Part I</b>	



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
 (2021-22)**

CO1	It will enable students to develop the overall understanding of the Modern World.
CO2	The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.
CO3	It will enhance their perception of the history of the Modern World.
CO4	It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World.
S.Y BA Sem-IV	
<b>S- II DSE-2B (3)5. Glimpses of the Modern World - Part II</b>	
CO1	It will enable students to develop the overall understanding of the Modern World.
CO2	The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.
CO3	It will enhance their overall perception of the history of the Modern World.
CO4	It will enable students to understand the significance of the strategic political developments in the Modern World.
S.Y BA-III	
<b>Art &amp;Architecture in Early India</b>	
CO1	Students will get an overall understanding of the emergence and development of the art and architecture in Early India.
CO2	They will understand the emergence of the Pottery, Terracotta figures, Ornaments, Town Planning, preparation of seals and coins.
CO3	They will have an understanding of the art and architecture in early India
S.Y BA-III	
<b>6.Medieval Indian, Art &amp;Architecture</b>	
CO1	Students will get an overall understanding of the development of the Medieval Art and Architecture.
CO2	They will understand the changing patterns of the Art and Architecture during the Medieval India.
CO3	They will have an understanding of the impact of Persian Art on Islamic Art and Architecture in Medieval India.
T.Y BA Sem-V	



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**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
 (2021-22)**

<b>G-III CC- 3(3)Indian National Movement (1885-1947)</b>	
On completion of the course students will be able to	
CO1	It will enable students to develop an overall understanding of Modern India.
CO2	It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students
CO3	Students will understand various aspects of the Indian Independence
CO4	Movement and the creation of Modern India.
T.Y BA Sem-VI	
<b>G-III CC- 4(3)India After Independence- (1947-1991)</b>	
CO1	It will enable students to develop an overall understanding of the Contemporary India.
CO2	To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students.
CO3	Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.
T.Y BA Sem-V	
<b>S-III DSE-3 C (3).Introduction to Historiography</b>	
CO1	Students will be introduced to the information and importance of Historiography.
CO2	Students will be introduced to the different Methods and Tools of data collection.
CO3	Students can study the interdisciplinary approach of History.
CO4	Students will learn about the usefulness of History in the 21st century, its changing perspectives, the new ideas that have been invented, and the importance of History in a competitive World.
T.Y BA Sem-VI	
<b>S-III DSE-3 C (3)10 Applied History</b>	
CO1	Students will be introduced to the information and importance of applied history
CO2	Student will learn about the Historical significance of Archaeology and Archives and opportunities in the field of Archaeology and Archives.
CO3	Through this course, students will be informed about the opportunities in the field of Media, Museums





Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
 (2021-22)**

CO4	the about learn will Students usefulness of history in the 21st Century, its changing Perspectives, the new ideas that have been invented, and the importance of History in a Competitive World.
T.Y BA Sem-V	
<b>S-IV DSE-4 D (3)8.Maharashtra in the 19th Century</b>	
CO1	Student will develop the ability to analyse sources for 19th century Maharashtra History.
CO2	Student will learn significance of Regional History and Socio- religious reformism foundation of the region.
CO3	It will enhance their perception of 19th Century Maharashtra.
CO4	Appreciate the skills of leadership and the Socio-religious System of the Maharashtra
T.Y BA Sem-VI	
<b>S-IVDSE-4 D (3)11 Maharashtra in the 20th Century</b>	
CO1	Student will develop the ability to analyses sources for 20th Century Maharashtra History
CO2	Student will learn significance of regional history and Socio- Religious Reformism foundation of the region
CO3	It will enhance their Perception of 20th Century Maharashtra
CO4	Appreciate the skills of leadership and the Socio-Religious System of the Maharashtra
T.Y BA Sem-V	
<b>Skill Enhancement Course (SEC)-10.Research Paper Writing</b>	
CO1	Students will be introduced to the information and importance of Historiography.
CO2	Students can study the interdisciplinary approach History
CO3	This curriculum Will help to develop Resrech ability and process of research paper Writing
T.Y BA Sem-VI	
<b>Skill Enhancement Course (SEC)-13.Archaeology</b>	
CO1	Students will learn to understand the definition, aims and scope of Archaeology so as to understand its applications in interpreting the human past.
CO2	They will be able to understand the nature of the archaeological record and the unique role of



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
 (2021-22)**

	science in archaeology
CO3	They will have an overall understanding of the Archaeology

**Department of Political Science**

Programme Specific Outcome	
PSO1	Understanding the nature and developments in national and international politics
PSO2	Analysing the Indian constitutional provisions, major legislations and reforms
PSO3	Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian society
PSO4	-Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers.
PSO5	- Developing knowledge of administrative studies with special reference to Indian administrative structures and practices.
PSO6	Examining India's foreign relations with her neighbours and great powers.
PSO7	Use of case study method for analysing the working of important international and regional organisations

F. Y. B. A. (G-1) Semester-I	
INTRODUCTION TO INDIAN CONSTITUTION Total Credits : 03	
CO1	. To acquaint students with the important features of the Constitution of India andwith The basic framework of Indian government
CO2	To familiarize students with the working of the Constitutionof India.

F. Y. B. A. (G-1) Semester-II	
INTRODUCTION TO INDIAN CONSTITUTION	
CO1	To acquaint students with the important features of the Constitution of India andwith The basic framework of Indian government
CO2	To familiarize students with the working of the Constitutionof India.
FYBA ( 2 Extra Credit)	
Democracy Election and Governance	



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
 College, Ahmednagar**

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**Program Outcome /Course Outcome  
 (2021-22)**

CO1	To introduce the student meaning of democracy and the role of the governance.
CO2	2to help them understand the various approaches to the study of democracy and governance
S. Y. B. A. (G-2) SEMESTER III PERIOD CC-I C (3)	
INTRODUCTION TO POLITICAL IDEOLOGIES	
This course is designed to acquaint students with the	
CO1	Role of different political ideologies and their impact in politics
CO2	Close link between an idea and its actual realization in public policy
CO3	Legacy of all the major ideologies
S. Y. B. A. (G-2 ) SEMESTER IV CC-1 D (3)	
INTRODUCTION TO POLITICAL IDEOLOGIES	
This course is designed to acquaint students with the –	
CO1	Role of different political ideologies and their impact in politics
CO2	. Close link between an idea and its actual realization in public policy
CO3	Legacy of all the major ideologies
S. Y. B. A. (Extra Credit)	
BASICS OF INDIAN CONSTITUTION	
CO1	To acquaint students with the important features of the Constitution of India and with the basic framework of Indian government.
CO2	To familiarize students with the working of the Constitution of India.
T. Y. B. A. CC-1 E (3) ( G-3)	
POLITICAL IDEALOGIES	
CO1	This course will introduce the overall scope of the sub-discipline of Modern Political Analysis. The focus of the course will be on the Modern Political Analysis of power. The emphasis is on the nature of power in modern societies- more in the form of organizations and social formations than as individual power. Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. State will be studied as a repository of power in society while class and patriarchy are two instance of how the nature of power is shaped by social factors. SEM
T. Y. B. A. CC-2 E (3) ( G-3)	
POLITICAL IDEALOGIES	
CO1	This course will introduce the overall scope of the sub-discipline of Modern Political Analysis. The focus of the course will be on the Modern Political Analysis of power. The emphasis is on the nature of power in modern societies- more in the form of organizations and social formations than as individual power. Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. State will be studied as a repository of power in society while class and patriarchy are two instance of how the nature of power is shaped by social factors. SEM



Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
 (2021-22)**

CO1	<p>This paper deals with concepts and dimensions of International Relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms. The dominant theories of power and the question of equity and justice, the different aspects of balance of power leading to the present situation of a unipolar world are included. It's highlights various aspects of conflict and conflicts resolution, collective security and in the specificity of the long period of the post second world war phase of the cold war, of Detent and Deterrence leading to theories of rough parity in armaments.</p>
	<p><b>Department of Marathi</b>  <b>Program Outcome of Bachelor of Arts (B.A.)</b>          Students seeking admission for B.A. programme are expected to imbue with following quality which help them in their future life to achieve the expected goals.          PO-1. Realization of human values.          PO-2. Sense of social service.          PO-3. Responsible and dutiful citizen.          PO-4. Critical temper.          PO-5. Creative ability.  <b>Programmes Specific Outcomes B.A. (MARATHI)</b>          PSO-1. Creating an interest in literature.          PSO-2. Availing the job opportunities in transformation and media.          PSO-3. Developing language.          PSO-4. Increasing the critical attitude about literary studies.          PSO-5. Imbuing the literary research attitude.  <b>Course Outcomes</b>  <b>F.Y.B.A. SEM-I (Marathi)</b>          CO-1. Understanding the interrelation between literature and society. 8          CO-2. Explaining the nature of Language and Literature.          CO-3. Obtaining the skills of literary criticism.          CO-4. Imbuing the essay writing skills.          CO-5. Illustrating the nature of literary forms like one-act-play, travelogue and short-story.  <b>B.A. SEM-II (Marathi)</b>          CO-1. Introduction of medieval Marathi language and literature.          CO-2. Introduction of the contemporary literary works.          CO-3. Acquiring the skill of translation.          CO-4. Explanation of the need and significance of editing.  <b>B.A.III G3 (Marathi) Poetry</b>          CO-1. Acquaintance with oriental poetry.          CO-2. Understanding the nature and features of poetry.          CO-3. Creating the skills of critical appreciation of poems.          CO-4. Developing the poetic devices and their uses.  <b>B.A.III S4 Linguistics:</b>          CO-1. Getting acquainted with modern linguistics.          CO-2. Understanding origin, nature and function of language.          CO-3. Getting information about phonetics.</p>



Janta Shikshan Prasarak Mandal's  
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**Program Outcome /Course Outcome  
(2021-22)**

CO-4. Enhancing the interest in Marathi Language.

**B.A.III S3 Medieval Marathi Literature:**

CO-1. Introduction of the historical survey of medieval Marathi literature.

CO-2. Introduction of the literary forms in medieval literature.

CO-3. Explanation of the trends and structure of medieval Marathi Literature.

**Marathi III Utility and Creativity of Marathi Language:**

CO-1. Understanding the formal and informal language.

CO-2. Developing various language skills.

CO-3. Getting motivation for creative writing.

CO-4. Understanding the technique of mass communication.

**B.A.III Literary Criticism:**

CO-1. Introduction to various trends in literary criticism.

CO-2. Understanding various trends in rural literature.

CO-3. Understanding various trends in Dalit literature.

**T.Y.B.A. MARATHI**

**Sem V**

**G3 -- BHASHIK KAUSHALYVIKAS AANI ADHUNIK MARATHI SAHITYA PRAKAR:  
PRVASVARNAN**

**Course Objectives—**

1. Acquiring writing skills for print media.

2. To understanding the nature, motivation, purpose, features and movement of the literary genre. 9  
*Choice Based Credit System [CBCS] 2019Pattern Programme Outcomes, Programme Specific Outcomes, Course Outcomes*

3. To understand taste and analyse the assigned travelogue.

**Sem VI**

**G3—BHASHIK KAUSHALYVIKAS AANI MARATHI SAHITYA PRAKAR: KAVITA**

1. To learn about Marathi literature, language skills development and governance.

2. To understanding the nature, movement, motivation, tendency and features of this genre

of poetry.

3. Assessing, testing and analyzing selected poems from the designated textbook.

4. To get acquainted with the various inventions in the genre of poetry and the form of language on the basis of the poems of the textbook.

**S3—MADHYUGIN MARATHI VANGMAUACHA STHUL ITIHAS PRARAMBH TE  
1600**

**Course Objectives –**

1. To understand concept form, motivation, tendency of the growing history.

2. Understanding the social and cultural background of the medieval period.

3. To understand the chronological history of Marathi language and literature.

**S4—VARNNATMAK BHAHAVIDNYAN**

**Sem-V**

**Course Objectives—**







Janta Shikshan Prasarak Mandal's  
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**Program Outcome /Course Outcome  
(2021-22)**

CO-4. Developing the poetic devices and their uses.

**SEM-III (S1) Linguistics:**

CO-1. Getting acquainted with modern linguistics.

CO-2. Understanding origin, nature and function of language.

CO-3. Getting information about phonetics.

CO-4. Enhancing the interest in Hindi Language.

**SEM-III (S2) Medieval Hindi Literature:**

CO-1. Introduction of the historical survey of medieval Hindi literature.

CO-2. Introduction of the literary forms in medieval literature.

CO-3. Explanation of the trends and structure of medieval Hindi Literature.

**III Utility and Creativity of Hindi Language:**

CO-1. Understanding the formal and informal language.

CO-2. Developing various language skills.

CO-3. Getting motivation for creative writing.

CO-4. Understanding the technique of mass communication

**TYBA HINDI (G3) Kathher Gadya Sahitya**

**Sem-V**

1. To make students aware of memoir literature.

2. To make students aware of Resvachitra literature. 11

3. To develop students from the point of view of evaluation.

4. To develop the development of meeting chronicle writing skills.

5. Build dialogue-writing skills.

**Sem-VI Ghazal literature**

1. To make students aware of Ghazal literature.

2. To make the students aware of the personality of the Ghazalkar.

3. To develop the attitude of assessment to the students.

4. To make students aware of government letter writing.

**S4 Sem-V Bhasha Vighyan**

1. Introducing the nature of linguistics.

2. To explain the scope of Linguistics to the students.

3. Introducing the directions of linguistics.

4. To explain the application aspect of linguistics.

5. To explain the utility of linguistics in the study of literature.

**Sem-VI Hindi Bhasha our Vikas**

1. Introducing the nature of linguistics.

2. To explain the scope of Linguistics to the students.

3. Introducing the directions of study of linguistics.

4. Explaining the Application aspect of Linguistics.

5. To explain the utility of linguistics in the study of literature.

**S3 Sem-V History of Hindi Literature**

1. To acquaint the students with the background of modern times.

2. To make students aware of the poetry of Bharattendu era.

3. To get acquainted with the creators of the modern period.

4. To sensitize the students about the origin and development of Hindi poetry.

**Sem-VI History of Hindi Literature**





Janta Shikshan Prasarak Mandal's  
**Marutraoji Ghule Patil Art's, Commerce and Science  
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**Program Outcome /Course Outcome  
(2021-22)**

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|--|
| <ol style="list-style-type: none"><li>1. Introduction to Hindi Literature Writing.</li><li>2. To introduce the period division and nomenclature of Hindi literature.</li><li>3. To get acquainted with the compositions of the ancient, devotional, ritual, creators</li></ol> |
|--|

  
**Dr. S.B. Dahatonde**  
IQAC Co-Ordinator  
IQAC  
Co-Ordinator  
Marutraoji Ghule Patil Arts, Commerce  
and Science College, Ahmednagar



  
**Dr. A.K. Pandharkar**  
IQAC Chairman and Principal  
**PRINCIPAL**  
Marutraoji Ghule Patil Art's  
Commerce & Science College  
Nagapur, Ahmednagar  
College Code-893