



Ainpur Parisar Shikshan Prasarak Mandal's

**Sardar Vallabhbhai Patel Arts & Science College, Ainpur**  
**Tal. Raver, Dist. Jalgaon (Maharashtra)**

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**Programme Outcome**

**Faculty of Arts and Humanities (UG)**

Students after completion of their graduation from faculty of Arts/Humanities and Social Science at under graduate level will meet the following outcome.

- Students will acquire knowledge of facts and figures from the study of Economics, History, Politics, Geography, Psychology and languages and will develop the ability for critical thinking.
- Language learning will make them to acquire skill for effective communication such as reading listening, speaking and writing.
- Study of Social issues through the syllabus, will create curiosity and sympathy among students and they will take initiative in social interaction.
- The study of literature and social science will bring about civic sense and awareness regarding human rights that will turn them into effective citizenship to build better society and stronger nation.
- Students will learn about morality, gender equity, love mercy justice through literature that would inculcate ethical values among them in due period.
- Poems, stories, lessons, essays, reports in literature and social science related to environment will invoke the students to care for nature and environment and measures to be taken for sustainability.
- Students will emerge as self directed individuals and will learn that the pursuit of knowledge is lifelong learning process that needs to put up untiring efforts with positive approach to live successful life.

**Programme Outcome (PG)**

Students after completion of their Post graduation faculty of Arts in Marathi will meet the following outcome

- Student will acquire knowledge in department by referring text books, reference books research journals, magazine and IT resources.
- Students will know about the origin and gradual development of particular trend, theory movement and its impact on contemporary society.
- Students will gain information about the inflaming social political, natural economical elements on literature and the way of life of people of the days.
- Student will motivate themselves for creative writing out of which a few of them can emerge as great poet, playwright, and artist also.
- Certain unexplored areas from Marathi will be selected by the students for the specific research.
- Literature in Marathi will teach the students about human values that will help the society to remove barriers based on religion, caste and creed that will bring peace and harmony in the society.



## Programme Outcome (UG)

### Faculty of Science

After graduating from science faculty as student should have:

#### 1. Theoretical knowledge:

Students acquire a knowledge of various subjects in basic sciences such as Physics, chemistry, Biology, Mathematics etc. she understood the basic concepts, fundamental principles and theories related to various scientific phenomenon.

#### 2. Laboratory skill:

Students acquire skills in handling instruments, planning and performing experiments.

#### 3. Analytical skills:

Analyze the given scientific data, employ critical thinking and scientific approach in the performance, design, interaction and documentation of laboratory experiments to get its conclusions.

#### 4. Scientific approach:

Students are able to think creatively to propose novel ideas in explaining facts and figures or providing better solution to the problems.

#### 5. Environment and sustainability:

Interdisciplinary approach helps providing better solution and new ideas for sustainable development of better environment.

#### 6. Ethical social Values:

The knowledge of Science and its applications inculcate ethical moral and social values among students.

#### 7. Effective citizenship:

Students apply the knowledge of science in their day to day life for building better society and stronger nation.

#### 8. Communication skills:

It acquires through presentation of the idea and views of science cleanly and effectively.

#### 9. Lifelong learning:

The acquired knowledge is lifelong activity and in combination with untiring efforts and positive attitudes for leading a successful life.



*B. W. Pare*  
Principal  
Sardar V. P. Arts & Science College  
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**Program specific outcome**

**1. B. A. Economics**

- Understanding how different degrees of competition in a market affect pricing and output.
- Understanding the efficiency and equity implications of market interference, including government policy.
- Developing research knowledge in economics.
- Developing the skill of data collection & use of sampling techniques in research.
- Developing the knowledge about theories of economic growth & Development and issues of economic planning.
- Creating awareness about changing macro-economic policies and theories.

**2. B.A. Marathi**

- Creating an interest in literature.
- Availing the job opportunities in translation, transformation and media.
- Developing language.
- Increasing the critical attitude about literary studies.
- Imbuing the literary research attitude.

**3. B.Sc. Chemistry**

- Creating interest in environmental issue.
- Increasing working knowledge of instruments.
- Obtaining the knowledge of pharmaceutical tablets
- Social awareness about the quality of water.
- Increasing the practical skill of the students
- Awareness about plastic garbage.

**4. B.Sc. Computer Science**

- Effectively communicating computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation.
- Ability to use approximately system design notations and apply system design engineering process in order to design, plan and implement software systems.



- Preparing for a career in an information technology oriented business or industry or for graduate study in computer science or other scientific or technical fields.
- Ability to complete successfully to program small –to-mid-size programs on their own.
- Effectively utilizing the knowledge of computing principles and mathematics theory to develop sustainable solutions to current and future computing problems.
- Developing and implementing solution based system and/or process that address issues and/or improve existing systems within a computing based industry.

## 5. B.A. History

B.A. History On completion of the BA (History) special, students will be able to

- Understand the basic themes, concepts, chronology and the Scope of Indian History.
- Acquaint with range of issues related to Indian History that span distinct eras.
- Understand the history of countries other than India with comparative approach.
- Think and argue historically and critically in writing and discussion.
- Prepare for various types of Competitive Examinations
- Critically recognize the Social, Political, Economic and Cultural aspects of History.



  
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**Course Outcomes**

**Department of Chemistry**

Class	Course	Outcomes ( Students will gain an understanding of )
F.Y. B.Sc.	CH: 101 Physical and Inorganic Chemistry - I(Section A)	<ol style="list-style-type: none"><li>1. An ability to use conceptual and mathematical tools to express and predict the various mathematical concepts in chemistry.</li><li>2. Atomic structure, chemical bonding or molecular geometry based on accepted models.</li><li>3. Scientific equation in straight line to get physical parameter for slope and intercept.</li><li>4. The concept of deviation of real gas from ideal behavior.</li><li>5. The concept of critical constant and vanderwaal's constant.</li></ol>
	CH: 102 Organic and Inorganic Chemistry- I(Section – B)	<ol style="list-style-type: none"><li>1. The general properties of organic compounds, applications of organic compounds.</li><li>2. Mono functional compounds - Common and IUPAC nomenclature of various types of organic compound.</li><li>3. The preparation, properties and reactions of alkanes.</li><li>4. The S- block Elements i.e. Alkali metals and Alkaline earth metals.</li><li>5. Concepts of Acid base theories viz. Arrhenius theory, Bronsted-Lowry theory, and Lewis theory.</li><li>6. Ionic product of water, Buffer solutions.</li></ol>
	CH-103 Chemistry Practical's –I (Based on Section A and B)	<ol style="list-style-type: none"><li>1. Calibration of the apparatus like volumetric flask, pipette and burette.</li><li>2. The determination of heat of solution, equivalent weight, surface tension and qualitative analysis of acidic and basic radicals.</li><li>3. The applications of types of titrations for various estimations.</li><li>4. Quantitative analysis by gravimetric method.</li><li>5. Quantitative analysis by volumetric method.</li><li>6. Calibration of the apparatus like volumetric flask, pipette and burette.</li></ol>
	CH: 201 Physical and Inorganic Chemistry-II (Section A)	<ol style="list-style-type: none"><li>1. Identifying methods and instruments that can be used to study chemistry</li><li>2. Evaluation of data generated by experimental methods for chemical characterization.</li><li>3. Specific and equivalent conductance.</li><li>4. Cell constant and use of it to obtain specific and equivalent conductance.</li></ol>



CH: 202 Organic and Inorganic Chemistry-II (Section –B)	<ol style="list-style-type: none"> <li>1. The preparations, reactions and properties of monohalogen and dihalogen derivatives of Alkanes.</li> <li>2. The preparations, properties and reactions of Alcohol, Ether and Epoxides</li> <li>3. The preparations and reactions of carbonyl group and carboxylic acids.</li> <li>4. Determination of the Molecular weight, formula weight, equivalent weight of organic compounds</li> <li>5. The Electronic structures, size of atoms and ions, ionization energy, metallic and nonmetallic properties of p block elements.</li> </ol>
CH-203 Chemistry Practical's-II (Based on Section A and B)	<ol style="list-style-type: none"> <li>1. To expose &amp; develop interest in the field of chemistry</li> <li>2. To develop ability &amp; to acquire the knowledge of terms, facts concept processes techniques&amp; principles of subject</li> <li>3. To develop ability to apply the knowledge of contents of principles of chemistry</li> <li>4. To develop skills required in chemistry such as the proper handling of apparatus &amp; chemical analysis.</li> <li>5. To understand the fundamental principle and chemical analysis Determination of the viscosity and relative viscosity of liquids.</li> <li>6. Quantitative analysis by instrumental method using Conductometer.</li> <li>7. Qualitative analysis of organic compounds.</li> <li>8. Quantitative analysis by volumetric method and gravimetric methods</li> </ol>
CH -301 Physical And Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. The Electronic structures, size of atoms and ions, ionization energy, metallic and nonmetallic of d block elements.</li> <li>2. The concept of physical and chemical properties of metals.</li> <li>3. Colligative properties and its application calculation of molecular weight of solute</li> </ol>
CH - 302 Organic and Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. The concept of isomers and discuss the isomer which results from free rotation of C-C single bond, from a chirality, from restricted rotation, R, S and E, Z nomenclature.</li> <li>2. Study of amines their formation reactivity.</li> <li>3. Study of reactivity, preparation and reactions of organo Li, Cu, Zn compounds.</li> <li>4. The importance of analytical chemistry in analysis of compounds by titrimetric, gravimetric and instrumental methods.</li> <li>5. The importance of sampling methods and ways of interpretation of results of analysis.</li> <li>6. The causes of errors and their minimization during analysis.</li> <li>7. The application of types of titrations for quantitative analysis of the samples.</li> </ol>
Skill Enhancement Course SEC-1: Basic Analytical Chemistry	<ol style="list-style-type: none"> <li>1. To understand the concept of chromatography.</li> <li>2. To understand the types of Chromatography e.g. partition, adsorption chromatography, Paper chromatography, Thin layer chromatography ,ion exchange (Column) chromatography .</li> <li>3. The concept for separation of analytes in samples by thin layer, paper and column chromatographic methods.</li> </ol>
CH-303 Chemistry Practical	<ol style="list-style-type: none"> <li>1. Techniques of chromatography for separation of components in the mixture.</li> <li>2. Determination of molecular weight by depression of freezing point</li> </ol>



	<p>method</p> <ol style="list-style-type: none"> <li>3. Determination of molecular weight by using Landsbergers apparatus.</li> <li>4. Recrystallization methods for purification of organic compounds.</li> <li>5. Preparation methods of inorganic complexes.</li> <li>6. Analyzing compounds by titrimetric, gravimetric and instrumental method</li> <li>7. Determination of thermodynamic parameters.</li> </ol>
CH- 401 Physical and Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. Concept of Helmholtz and Gibbs free energy. Solving numerical of Helmholtz and Gibbs free energy, Clapeyron equations. Concept of vapour pressure of liquids, Raoult's law etc.</li> <li>2. Concept of electromotive force and its measurement.</li> <li>3. Concepts of coordination Chemistry</li> </ol>
CH - 402 Organic and Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. The synthesis and reaction of 5, 6 member and condensed heterocyclic systems.</li> <li>2. The synthesis of synthetic reagents and their synthetic utility.</li> <li>3. The mechanism and stereochemistry of E1, E2 reaction.</li> <li>4. The concept of quantitative analysis by gravimetric methods.</li> <li>5. To apply the concepts of Molecular orbital theory.</li> </ol>
Skill Enhancement Course SEC-2: Advanced Analytical Chemistry	<ol style="list-style-type: none"> <li>1. To understand the applications of redox titrations.</li> <li>2. To apply the knowledge of complex metric titration.</li> <li>3. To understand the steps of gravimetric analysis and its Applications</li> </ol>
CH-403 Chemistry Practical	<ol style="list-style-type: none"> <li>1. Qualitative analysis of organic compounds.</li> <li>2. Estimation of Nickel and Barium gravimetrically.</li> <li>3. Make use of potentiometer for determination of standard electrode potential.</li> <li>4. To understand the concept of critical solution temperature.</li> </ol>
CH-501 - Principles of Physical Chemistry-I	<ol style="list-style-type: none"> <li>1. Understand the significance of wave function and postulates of quantum mechanics.</li> <li>2. Deduce rate equations and half-life equations for first and second order reactions.</li> <li>3. Draw and explain the one and two component system phase diagrams.</li> <li>4. Explain the principles of electrode processes and apply them during Practicals.</li> </ol>
CH-502 - Inorganic Chemistry	<ol style="list-style-type: none"> <li>1. Learn about the VSEPR theory and how it can be used to explain molecular shapes.</li> <li>2. Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap.</li> <li>3. Learn about stability of complexes using CFSE.</li> <li>4. Learn about MOT to draw energy diagrams and to predict bond order.</li> </ol>
CH-503 - Organic Reaction Mechanism	<ol style="list-style-type: none"> <li>1. Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination.</li> <li>2. Students will be able to write/ explain mechanisms of those types of reactions.</li> <li>3. Students will understand how a reaction takes place in one or more steps.</li> <li>4. Students will understand the types of intermediates formed in different reactions.</li> </ol>





	<ol style="list-style-type: none"> <li>Students will learn how reagent attacks the substrate molecule and accordingly how bonds break and formed.</li> <li>Students will learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry.</li> <li>Students will be able to predict the products and to suggest the mechanisms</li> </ol>
CH-504 - Industrial Chemistry	<p>the student will be able to understand....</p> <ol style="list-style-type: none"> <li>Basic requirements of Chemical Industry, different terms, operations and processes involved in chemical Industry.</li> <li>Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO).</li> <li>Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar and uses of by-products of sugar industry.</li> <li>Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry.</li> <li>Understand Occurrence of Petroleum, theories of formation of Petroleum and different terms Viz. Knocking, Anti-Knock Compounds, Octane number, Cetane number, Gasohol and Power alcohol etc.</li> <li>Manufacturing processes involved in Industrial Organic Synthesis such as Methanol, Isopropanol, Glycerol, Acetylene and Aromatic hydrocarbon i.e. Toluene from petroleum with their uses.</li> </ol>
CH-505 - Analytical Instrumentation (Skill Enhancement Course)	<ol style="list-style-type: none"> <li>Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis. Express the role of analytical chemistry in science.</li> <li>Students will be able to function as a member of an interdisciplinary problem solving team.</li> </ol>
CH-506(B) – Green Chemistry	<ol style="list-style-type: none"> <li>With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances.</li> <li>The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield.</li> <li>The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock, renewable energy sources, importance of green solvents, etc.</li> <li>The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems.</li> <li>Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry.</li> </ol>





CH-507 -Physical Chemistry Practical	<ol style="list-style-type: none"> <li>1. Students will get basic analytical and technical skills to work effectively in the various fields of chemistry.</li> <li>2. Students will able to calibrate and handle instruments like conductometer, potentiometer, pH meter, colorimeter, spectrophotometer, polarimeter.</li> <li>3. They have ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.</li> <li>4. They get skills required in chemistry such as the proper handling of apparatus and chemicals.</li> </ol>
CH-508 - Inorganic Chemistry Practical	<ol style="list-style-type: none"> <li>1. Student will able to determine cation &amp; anion from inorganic mixtures by using qualitative analysis.</li> <li>2. Student will able to determine metal from ore &amp; alloys.</li> <li>3. Students will be able to design &amp; carry out scientific experiments as well as accurately record &amp; analyze the results of experiments.</li> <li>4. Students will be able to handle colorimeter for estimation of metal ions.</li> </ol>
CH-509 -Organic Chemistry Practical	<ol style="list-style-type: none"> <li>1. Separate and analyze binary water insoluble mixture.</li> <li>2. Separate and analyze binary water soluble mixture.</li> <li>3. Estimate - Acetamide, Glucose and Glycine by volumetric method.</li> <li>4. Estimate basicity of various acids.</li> </ol>
CH-601 - Principles of Physical Chemistry-II	<ol style="list-style-type: none"> <li>1. Analyze the rotational spectra of diatomic molecules and determine the bond length.</li> <li>2. Explain and apply the radioactivity principles for various chemical and biological investigations.</li> <li>3. Describe the mechanism of fluorescence, phosphorescence and photochemical reactions.</li> <li>4. Analyze the given crystal structure and determine the indices of planes, inter- planer distances and type of crystal structure.</li> </ol>
CH-602 Subject-Chemistry of Inorganic Solids	<ol style="list-style-type: none"> <li>1. Learn about basic principles and synthesis of nanomaterials.</li> <li>2. Learn about classification, composition and processing of cement.</li> <li>3. Learn about classification and composition of alloys.</li> <li>4. Learn about types manufacture and applications of fertilizers.</li> </ol>
CH-603 - Spectroscopic Methods of Structure Determination	<ol style="list-style-type: none"> <li>1. Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters.</li> <li>2. Students will learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum.</li> <li>3. Students will understand principle of UV spectroscopy and nature of UV spectrum. They will learn types of electronic excitations.</li> <li>4. Students will be able to calculate maximum wavelength for any conjugated system. And from the value of <math>\lambda</math>-max they will be able to find out extent of conjugation in the compound.</li> <li>5. Students will understand principle of IR spectroscopy, types of vibrations and the nature of IR spectrum.</li> <li>6. From IR spectrum, they will be able to find out IR frequencies of</li> </ol>



	<p>different functional groups. And thus, they will be able to find out functional groups present in the compound. Students will understand principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants.</p> <p>8. Students will be able to interpret the NMR data and they will be able to use it for determination of structure of organic compound. Students will be able to determine structure of simple organic compounds on the basis of spectral data such as <math>\lambda</math> max values, IR frequencies, chemical shift (<math>\delta</math> values).</p>
CH-604 - Chemistry of Industrially Important Products	<p>The student will be able to understand....</p> <ol style="list-style-type: none"> <li>1. Describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use.</li> <li>2. Gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries.</li> <li>3. Importance of Cosmetics Industry and a general study including preparation and uses of the Hair dye, hair spray, shampoo, suntan lotions, lipsticks, talcum powder, nail enamel, creams (cold, and shaving creams).</li> <li>4. Perfumes and identify the distinguishing features of its components and also an essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2- phenyl ethyl alcohol, Jasmine, Civetone, Muscone etc.</li> <li>5. Know about pesticides both natural and synthetic, benefits and adverse effects of it, also synthesis, manufacture and uses of pesticides viz. Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor).</li> <li>6. Definition, classification, raw material used in soaps and detergents, reaction involved in it, Manufacture of Soaps and cleansing action of soaps and detergents.</li> <li>7. Definition, properties of good dyes, relation between colour and constitution, classification of dyes according to their mode of application and chemical constitution.</li> <li>8. Importance's, definition and meaning of the different terms involved in Drugs and Pharmaceuticals Industry and also synthesis, uses, properties and industrial manufacture of Paracetamol, Aspirin, and Chloramphenicol.</li> </ol>
CH-606(A) – Polymer Chemistry	<ol style="list-style-type: none"> <li>1. Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response.</li> <li>2. Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index.</li> <li>3. Identify different mechanisms of polymerizations viz. free radical, ionic, and condensation polymerizations.</li> <li>4. Distinguish techniques of polymerization based on physical conditions required for the preparation of polymers in laboratory or industry.</li> <li>5. Familiar with preparation, properties, and applications of industrially important selected polymers.</li> </ol>



M.Sc. I Organic Chemistry	CH-110: Physical Chemistry I	<ul style="list-style-type: none"> <li>The terms eigen function, eigen value, operator and postulates of Quantummechanics.</li> <li>Mechanics of particle in one, two and three dimensional box.</li> <li>Parent –daughter relationship, application of radioactivity, NAA, IDA. Effect of radiation and units of radiation.</li> <li>The Fricke and ceric sulphate dosimeter.</li> <li>The terms ionic strength, activity coefficient .DHO equation.</li> <li>The adsorption of gases by solid types of isotherms.</li> </ul>
	CH130: Inorganic chemistry I	<ul style="list-style-type: none"> <li>Concept of molecular orbitals and its orientation.</li> <li>Concept of geometry and shape of the molecule</li> <li>Concept of bond order and dipole moments of the inorganic molecule.</li> <li>Concept of 18 electron rule and application</li> <li>Determination of the point group of inorganic molecules.</li> <li>Preparation and properties of transition metal carbonyls.</li> <li>Concept of symmetry elements in molecules.</li> </ul>
	CH -150 :Basic Organic Chemistry I	<ul style="list-style-type: none"> <li>Stereo chemical principles, enantiomeric relationship R and S ,E and Z nomenclature in C,N,S,P containing compound.</li> <li>SN1, SN2 and SNi mechanism and stereochemistry.</li> <li>NGP by pi and sigma bonds, classical and non -classical carbocations .</li> <li>Alkylation and acylation reaction .</li> <li>Comparison and the difference between types of addition, elimination and substitution reaction.</li> <li>Solving problem type of elimination</li> </ul>
	CH-210: Physical Chemistry II	<ul style="list-style-type: none"> <li>The thermodynamic description of mixtures state function, exact, inexact differential.</li> <li>The colligative properties of solutions, depression in f.p., elevation in b.p, osmotic pressure.</li> <li>The statistical thermodynamics and various partition functions.</li> <li>The consecutive elementary reactions, rate determining steps, steady state approximation, pre-equilibria, Michaelis-Menten mechanism, Lindemann- Hinshelwood mechanism, chain reactions.</li> <li>The molecular spectroscopy: R, Raman, electronic and Mossbauer and its application.</li> </ul>
	CH: 230 -Inorganic chemistry II	<ul style="list-style-type: none"> <li>Mechanism in transition metal complexes.</li> <li>Radius ratio rule of coordination no 3,4,</li> <li>The Born-Haber cycle to calculate lattice energy.</li> <li>Classification and use of catalyst.</li> <li>Structure of atom, Hunds rule, Term symbol, calculation of microstates, orbital selection rule.</li> <li>Concept of metal complexes involved in biological system: 1-B12, Chlorophyll,</li> </ul>



		Haemoglobin.
	CH-250 Name Reactions, Synthetic Organic Chemistry & Spectroscopy	<ul style="list-style-type: none"> <li>• Various name reaction with example.</li> <li>• Use of synthetic reagents in oxidation and reduction for solving the examples.</li> <li>• Mechanism of rearrangements reaction .</li> <li>• Factors affecting on UV absorption spectra.</li> <li>• Interpretation of IR spectra on basic values, IR frequencies</li> <li>• Solving problems of UV, IR and NMR.</li> </ul>
	CH-290-General Chemistry	<ul style="list-style-type: none"> <li>• Solving the problems on Chemometrics Mean and Standard deviation.</li> <li>• Theory of electrogravimetric analysis, Electrolytic separation and determination of metals.</li> <li>• Knowledge of Instrumentation, choice of Mobile Phase, Solvent Treatment systems, Pumping systems, Sample injection systems, Columns for High Performance Liquid Chromatography.</li> <li>• Principle, theory of Glass Membrane Potential, The Alkaline and Acid Error, Standard Buffers, Accuracy of pH , Measurements with the pH-meter, types Ion-selective Electrodes.</li> <li>• Voltammetric Electrodes, Detectors, Amperometric Sensors, Amperometric Titrations.</li> <li>• Concept of Phosphorescence, Fluorescence and Photo luminescent phenomena used for determination of mixtures.</li> </ul>
	CH-P-1 : Physical Chemistry Practical	<ul style="list-style-type: none"> <li>• Preparation of molar and normal solutions of various concentrations.</li> <li>• Determination of concentration of unknown solutions and degree of hydrolysis and hydrolysis constant by Spectrophotometry.</li> <li>• Determination of stability constant of a complex ion and standard free energy change <math>\Delta G^0</math> and equilibrium constant by potentiometry.</li> <li>• Investigation of the rate constant for depolymerization , energy of activation and order of the reaction.</li> <li>• Calculation of Hammett constant and amount of aspirin in the given tablet by pH measurement.</li> <li>• Determination of specific rotation and percentage of two optically active substances by polarimetrically.</li> </ul>
	CH-I-1: Inorganic chemistry Practical	<ul style="list-style-type: none"> <li>• Gravimetric and volumetric analysis of ores.</li> <li>• Analysis of binary mixtures by gravimetric and volumetric method.</li> <li>• Preparation of various inorganic complexes and determination of its Percent purity.</li> <li>• Analysis of iron from given drug sample and calcium in milk sample.</li> </ul>



		<ul style="list-style-type: none"> <li>• Paper chromatographic technique.</li> <li>• Estimation of phosphate from waste water by spectrophotometry.</li> </ul>
	CH-O-1 Organic Chemistry practical	<ul style="list-style-type: none"> <li>• Uses of chemistry softwares like ISI draw, chem Draw, Chem sketch.</li> <li>• Knowledge of drawing of the different structure of organic compound.</li> <li>• Thin layer chromatography technique for completion of reaction.</li> <li>• Single and two stage preparation.</li> <li>• Application of knowledge of Green principle for organic synthesis</li> <li>• Use of soxhlet extractor and steam distillation assembly for Purification of organic compound.</li> </ul>

### Department of Physics

Class	Course	Outcomes
FYBSc	PHY-101: BASIC MECHANICS	Learner will be able to .... <ol style="list-style-type: none"> <li>1. Apply the concept of use of knowledge of mechanics to real life problems.</li> <li>2. Create scientific temperament.</li> <li>3. Adopt Basic skills to perform experiments to understand the concept from existing theories of Basic physics.</li> </ol>
	PHY- 102: DYNAMICS AND ELASTICITY	Learner will be able to .... <ol style="list-style-type: none"> <li>1. Grasp knowledge about Basic theories related with Gravitation and dynamics of bodies</li> <li>2. Know about satellite communication and get the Basic idea of global positioning system.</li> <li>3. Get acquainted with the elastic properties of matter and Viscosity.</li> </ol>
	PHY 201: ELECTRICITY AND ELECTROSTATICS	Learner will be able to .... <ol style="list-style-type: none"> <li>1. Apply the concept of use of knowledge of Electricity and electrostatics to real life problems.</li> <li>2. Grasp knowledge about how to solve the problems based on Vector analysis.</li> <li>3. Know Basic concept of current, current density vector and Kirchhoff's law by loop analysis.</li> <li>4. Learn Illustration of Network theorems and solve the circuit network problems.</li> <li>5. Solve the problems related to electric field and potential due to charged bodies.</li> </ol>



PHY 202: DIELECTRICS, MAGNETISM AND ELECTROMAGNETISM	<p>Learner will be able to ....</p> <ol style="list-style-type: none"> <li>1. Know about Capacitance and dielectrics</li> <li>2. Get knowledge about Magnetic properties of materials and their applications</li> <li>3. Use knowledge about Maxwell's equations and Electromagnetic wave propagation through vacuum and isotropic dielectric material.</li> </ol>
PHY 103: Practical Physics	Understanding of the course will create scientific temperament and should make the students to perform experiments based on theoretical knowledge.

SYBSc	<b>PHY 301: Thermodynamics and Kinetic theory of gases</b>	<p>Learner will be able to ....</p> <ol style="list-style-type: none"> <li>1. Apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.</li> <li>2. Understood Laws of thermodynamics and concept of internal energy.</li> <li>3. Know about Carnot's theorem and basic concept of heat engine.</li> <li>4. Concept of entropy, Change of entropy in Reversible process and Irreversible process, T-S</li> <li>5. Understanding of the course will create scientific temperament.</li> </ol>
	PHY- 302 (A): Electronics- I	<p>Learner will be able to ....</p> <ol style="list-style-type: none"> <li>1. Apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.</li> <li>2. Understanding of the course will create scientific temperament.</li> <li>3. Various aspect of semiconductor devices like P-N diode, Zener diode, LED and Photodiode, BJT etc.</li> <li>4. Understood basic concept and Solving problems of digital electronics</li> </ol>
	PHY 304: Skill Enhancement Course I Renewable energy and Energy Harvesting	course is not just to impart theoretical knowledge to the students but to provide them with exposure and hands-on learning wherever possible]
	PHY-401: Waves and Oscillations and Acoustics	<p>Learner will be able to ....</p> <ol style="list-style-type: none"> <li>1. Apply the concept of use of knowledge of Waves and Sound to real life problems.</li> <li>2. Understanding of the course will create scientific temperament.</li> <li>3. Demonstration Lissajous figures by mechanical, optical and electrical methods as Composition of two S.H.M.s of equal frequencies along same line of vibration, at right angles</li> <li>4. Solving differential equation of forced oscillations and its solution, and to obtain amplitude, Energy of forced oscillations, Amplitude and Sharpness and Velocity of</li> <li>5. Concept of sound, to classify sound frequencies and to understand Piezoelectric effect, Magnetostriction effect.</li> </ol>



	6. Doppler effect in sound and light and its application.
PHY-402: Optics	<ol style="list-style-type: none"> <li>1. Formation of images using optical instruments and various types of aberration.</li> <li>2. Concept of interference pattern due to reflected light in parallel sided thin films and in thin wedge shaped film.</li> <li>3. Demonstration of experimental set up for Newton's rings, theory and its application to determine wavelength of source and refractive index of liquids.</li> <li>4. Demonstration of Michelson Interferometer (experimental setup and its application for measurement of wavelength of monochromatic source).</li> <li>5. Distinguish between Fresnel and Fraunhofer diffraction.</li> </ol>
PHY 404: Skill Enhancement Course II Electrical Circuits and Network Skills	This course is to enable the students to design and trouble shoots the electrical circuits, networks and appliances through hands-on mode
<b>PRACTICAL COURSE-I</b> The scientific knowledge improves the experimental and handover training.	

#### Department of Zoology

Class	Course Name and Code	Course Outcomes
F.Y.B.Sc.	SEM –I  Animal Diversity- I	<ol style="list-style-type: none"> <li>1.To understand the diversity of Non chodates</li> <li>2. To understand the taxonomy of Non chodates</li> <li>3. To gain the basic information about each phylum peculiar character.</li> </ol>
	Animal diversity -II	<ol style="list-style-type: none"> <li>1.To understand the diversity of Chodates</li> <li>2. To understand the taxonomy of Chodates</li> <li>3. To gain the basic information about each phylum peculiar character.</li> </ol>
	Practicals based on Animal Diversity- I and Animal diversity - II	To understand the non chordates, Chordate and general topics with practical demonstration





	Zoo-201, Comparative anatomy of vertebrates	<ol style="list-style-type: none"> <li>1. To understand various system structure in the vertebrates.</li> <li>2. Explain the comparison of systems in the vertebrates anatomy.</li> <li>3. To give basic idea of peculiar characters of vertebrate anatomy</li> </ol>
	SEM II ZOO-Developmental Biology	<ol style="list-style-type: none"> <li>1.Explain the basic knowledge of human gamete formation</li> <li>2. Explain the basic knowledge of human foetus development</li> <li>3. To understand the various movements of cells in foetus</li> </ol>
S.Y.	SEM-I Zoo- 301 Physiology	<ol style="list-style-type: none"> <li>1.Explain the basic knowledge of human anatomy.</li> <li>2.To provide a course of study in mammalian, principally human, systems physiology, building on knowledge of basic physiological principle.</li> <li>3. To understand the functions of important physiological systems including the cardio- respiratory, renal, reproductive.</li> </ol>
B.SC.	Zoo-302 Biochemistry	<ol style="list-style-type: none"> <li>1. Understand in detail about amino acid structures, types of amino acids, classifications, metabolism of proteins and types of proteins</li> <li>2. Understand in detail about the carbohydrates, classifications,</li> <li>3. Understand in detail about the lipids, classifications, metabolism of carbohydrates. 4. Develop the ability to understand the function of different enzymes in biological reactions.</li> </ol>
S.Y. B.Sc.	Zoo-303 Pracicals based Physiology and Biochemistry	To provide practical knowledge based on physiology (Zoo-301) and biochemistry (302).
	SEM-II Zoo- 401 Genetics	<ol style="list-style-type: none"> <li>1.Explain the mendelian genetics and its extension.</li> <li>2. Updating current knowledge regarding genetic phenomenon like linkage, crossing over.</li> <li>3.To provide basic knowledge of sex determination.</li> </ol>
	Zoo-402 Evolutionary biology	<ol style="list-style-type: none"> <li>1.To provide students with a deeper insight into the evolutionary processes. 2.To teach students the basic process of evolutionary change.</li> <li>3.To specify the species concept.</li> <li>4. To understand the role of extinction in evolution.</li> </ol>
	Zoo-403 Practicals based Zoo- 401 and Zoo-402	To provide the Practical knowledge related with enetics and evolutionary biology.



### Department of Mathematics

Class	Course	Outcomes
F.Y. B.Sc.	1.MTH 101: Matrix Algebra	Upon successful completion of this course the student will be able to: <ol style="list-style-type: none"> <li>1. understand concepts on matrix operations and rank of the matrix.</li> <li>2. understand use of matrix for solving the system of linear equations.</li> <li>3. understand basic knowledge of the eigen values and eigen vectors.</li> <li>4. apply Cayley-Hamilton theorem to find the inverse of the matrix.</li> <li>5. know the matrix transformation and its applications in rotation, reflection, translation</li> </ol>
	3.MTH 103(B): Graph Theory	Upon successful completion of this course the student will be able to: <ol style="list-style-type: none"> <li>1. Understand the fundamental concepts in graph theory, the basics of graph theory.</li> <li>2. Understand operations on graphs.</li> <li>3. To learn about connected graphs.</li> <li>4. To understand various problems related with planar graphs.</li> <li>5. know the trees and spanning trees</li> </ol>
	4.MTH 201: Ordinary Differential Equations	Upon successful completion of this course the student will be able to: <ol style="list-style-type: none"> <li>1. Understand basic concepts in differential equations.</li> <li>2. Understand method of solving differential equations</li> <li>3. Understand use of differential equations in various fields.</li> </ol>
	5.MTH 202: Theory of Equations	Upon successful completion of this course the student will be able to <p>Divisibility of numbers and Roots of polynomial equations.</p> <ol style="list-style-type: none"> <li>1. Relations between roots and coefficients of polynomials of degree.</li> <li>2. Roots of cubic equations by using Cardon's method, biquadratic equations by Descarte's method and roots of polynomial equations by Newton's method</li> <li>3. Students can find out roots of any equation of degree less than or equal to five.</li> </ol>
	6.MTH 203(B): Numerical Analysis	On successful completion of this course student will be able to <ol style="list-style-type: none"> <li>1. understand methods of solutions of equations viz. bisection, iteration, Newton- Raphson methods and method of false position.</li> <li>2. understand methods of curve fitting viz. Gauss's forward and backward difference formulae and Lagrange's interpolation formula.</li> <li>3. use of curve fitting such as least square, polynomial and exponential fittings for set of given data.</li> <li>4. use Taylor's series, Euler's method. Modified Euler's method., Runge Kutta methods for solving ordinary differential equations.</li> <li>5. understand that when exact solutions are difficult to obtain, than solutions can be obtained by using numerical methods.</li> </ol>
S.Y. B.Sc.	1.MTH -301: Calculus of Several Variables	On successful completion of this course student will be able to understand <ol style="list-style-type: none"> <li>1. limit and continuity of functions of several variables, fundamental concepts of multivariable Calculus.</li> <li>2. series expansion of functions.</li> <li>3. Extreme points of function and their maximum, minimum values at those points.</li> </ol>



		<p>4. meaning of definite integral as limit as sums.</p> <p>5. how to solve double and triple integration and use them to find area by double integration and volume by triple integration.</p>
	2.MTH -302(A): Groups Theory	<p>After studying this course, you should be able to:-</p> <ol style="list-style-type: none"> <li>1) apply the Lagrange's Theorem in simple cases</li> <li>2) decide whether a given group is cyclic, and given a finite cyclic group, find a generator for a subgroup of a given order</li> <li>3) express a given finite cyclic group and determine whether they are isomorphic or not</li> <li>4) express products of elements of a group defined by generators and relations in appropriate standard form</li> <li>5) recognise the ring is Integral domain or Field</li> </ol>
	4.MTH -401: Complex Variables	<p>On successful completion of this course</p> <ol style="list-style-type: none"> <li>1. Students will understand the concept of analytic function</li> <li>2. Students will understand the Cauchy Riemann Equations</li> <li>3. Students will understand harmonic functions</li> <li>4. Students will understand complex integrations</li> <li>5. Students will understand calculus of residues and will acquire the skill of contour integrations</li> </ol>
	5.MTH-402 (B): Differential Equations and Numerical Methods	<p>On successful completion of this course</p> <ol style="list-style-type: none"> <li>1. Students will be aware of formation of differential equations and their solutions</li> <li>2. Students will understand the concept of Lipschitz condition</li> <li>3. Students will understand method of variation of parameters for second order L.D.E.</li> <li>4. Students will understand simultaneous linear differential equations, Pfaffian differential equations and method of their solutions</li> <li>5. Students will understand that when exact solutions are difficult to obtain, than approximate solutions can be obtained by using numerical methods</li> </ol>
	6.SEC- 2 MTH 404: Vector Calculus	<p>On successful completion of this course student will be able to</p> <ol style="list-style-type: none"> <li>1. understand scalar and vector products</li> <li>2. understand vector valued functions and their limits and continuity, use them to estimate velocity and acceleration of partials.</li> <li>3. Calculate the curl and divergence of a vector field.</li> <li>4. Set up and evaluate line integrals of functions along curves</li> </ol>



### Department of Botany

Class	Course	Outcomes
F.Y. B.Sc	BOT:101 MICROBIAL DIVERSITY, ALGAE AND FUNGI	<ol style="list-style-type: none"> <li>1. Diversity among Bacteria, Viruses, Algae and fungi.</li> <li>2. Life cycle pattern of Bacteria, Viruses, Algae and fungi.</li> <li>3. Useful and harmful activity of Viruses, Algae and fungi.</li> </ol>
	BOT:102 PLANT TAXONOMY	<ol style="list-style-type: none"> <li>1. Understand principles of general taxonomy and they can use nomenclature rules for naming to plants.</li> <li>2. Arrange sub and super categories of species with system of hierarchy</li> <li>3. Describe taxons.</li> <li>5. Discuss the importance of binominal nomenclature.</li> <li>6. Explain techniques of seedless plants herbarium.</li> <li>7. Discuss about function of herbarium.</li> </ol>
	BOT:201 DIVERSITY OF ARCEGONI ALES	<ol style="list-style-type: none"> <li>1. Understand the habit and morphological diversity of Bryophytes and Pteridophytes.</li> <li>2. Understand the economic importance of the Bryophytes and Pteridophytes.</li> <li>3. Know the evolution of Bryophytes and Pteridophytes.</li> </ol>
	BOT:202 PLANT ECOLOGY	<ol style="list-style-type: none"> <li>1. Know the scope and importance of the discipline.</li> <li>2. Understand plant communities and ecological adaptations in plants</li> <li>3. The students will acquire knowledge about the hazardous effects of different Environmental Pollutants and Relative Measures for their Control/Prevention.</li> <li>4. Learn about conservation of biodiversity, Non-conventional Energy.</li> <li>4. Discover botanical regions of India and vegetation types of Maharashtra.</li> </ol>
	BOT103: PRACTICAL COURSE (BASED ON BOT.101, BOT.102 & BOT.201, BOT.202)	<ol style="list-style-type: none"> <li>1. Understand the morphological diversity among Bacteria, Viruses, Algae and Fungi.</li> <li>2. Observe vegetative and reproductive parts of various life forms of Bacteria, Viruses, Algae and Fungi</li> <li>3. Understand morphological peculiarities of plants.</li> </ol>
S.Y. B.Sc.	BOT.231: BRYOPHYTES AND PTERIDOPHYTES	<ol style="list-style-type: none"> <li>1. Understand the habit and morphological diversity of Bryophytes and Pteridophytes.</li> <li>2. Understand the economic importance of the Bryophytes and Pteridophytes.</li> <li>3. Know the evolution of Bryophytes and Pteridophytes.</li> </ol>
	BOT. 301 – PLANT ANATOMY	<ol style="list-style-type: none"> <li>1. Understand the scope &amp; importance of Anatomy and Embryology</li> <li>2. Know various tissue systems.</li> <li>3. Understand the normal and anomalous secondary growth in plants and their causes.</li> </ol>
	BOT.232: MORPHOLOGY OF ANGIOSPERMS	<ol style="list-style-type: none"> <li>1. Understand the habit of the angiosperm plant body.</li> <li>2. Understand the plant morphology.</li> <li>3. Know the vegetative and reproductive characteristics of the plant.</li> </ol>



BOT.302: PLANT PHYSIOLOGY	<ol style="list-style-type: none"> <li>1. Understand the plants and plant cells in relation to water.</li> <li>2. Learn about the movement of sap and absorption of water in plant body.</li> <li>3. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.</li> <li>4. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.</li> </ol>
BOT.401: PLANT EMBRYOLOGY	<ol style="list-style-type: none"> <li>1. Understand structure and development in microsporangium and megasporangium.</li> <li>2. Understand microsporogenesis and megasporogenesis and development of gametes.</li> <li>3. Know fertilization, endosperm and embryogeny.</li> </ol>
BOT.402: PLANT METABOLISM	<ol style="list-style-type: none"> <li>1. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.</li> <li>2. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.</li> <li>3. Aware the role of Mineral Nutrients in Growth and Development.</li> <li>4. Metabolic Processes of Photosynthesis and Respiration, Hormonal Regulation of Growth and</li> <li>5. Understand the process of translocation of solutes in plants.</li> </ol>
BOT.242 TAXONOMY OF ANGIOSPERMS	<ol style="list-style-type: none"> <li>1. Understand the diversity of angiosperms.</li> <li>2. Understand the comparative account among the families of angiosperms.</li> <li>3. Know the economic importance of the angiosperm plants.</li> <li>4. Understand the distinguishing features of angiosperm families.</li> </ol>
BOT233 and 243: PRACTICAL COURSE (BASED ON BOT.231, BOT.232 & BOT.241, BOT.242)	<ol style="list-style-type: none"> <li>1. Know various tissue systems.</li> <li>2. Understand the normal and anomalous secondary growth in plants and their causes.</li> <li>3. Know the physiological techniques.</li> <li>4. Develop practical skill among the students.</li> </ol>

#### Department of Compute Science

Class	Course	Outcomes(Student will be able to)
FYBSc	CS 111 Essentials of Computer	<ol style="list-style-type: none"> <li>1. Understand the History of Computers.</li> <li>2. Understand What is Computer and Types of computer language.</li> <li>3. Aware about various types of Computers, types of input and output devices.</li> <li>4. Preparation of Algorithm and Flowchart of Program.</li> <li>5. Learn computer networks, its types and basics of Internet.</li> <li>6. Understand computer viruses and its types.</li> </ol>



	CS 112 C Programming Language-I	<ol style="list-style-type: none"> <li>1. Develop their programming skills.</li> <li>2. Understand basic structure of 'c' program.</li> <li>3. Declaration of variables and constants.</li> <li>4. Understand operators, expressions and preprocessors.</li> <li>5. Understand arrays , it's declaration and uses</li> <li>6. Develop their programming skills.</li> <li>7. Understand basic structure of 'c' program.</li> <li>8. Declaration of variables and constants.</li> </ol>
	CS 121 Internet Computing	<ol style="list-style-type: none"> <li>1. Understand the Types of Webpage it's Structure, Site Organization Model , SitePlanning and Testing.</li> <li>2. Understand how to design website with different website development models.</li> <li>3. Familiar with HTML tags.</li> <li>4. Designing website using HTML language.</li> <li>5. Design advanced website using CSS.</li> </ol>
	CS 122 Programming Language- II	<ol style="list-style-type: none"> <li>1. Design programs using Functions, Pointers , Structures and Unions in C language.</li> <li>2. Write a program using File Handling.</li> <li>3. Writing programs for drawing different graphical shapes.</li> </ol>
	CS-113 and 123 LAB Course on Paper I & II	<ol style="list-style-type: none"> <li>1. On completion of the course, students are able to develop programs using C to meet real world needs and able to develop their own websites. This course provides platform to enhance student's basic skills required for advanced programming.</li> </ol>
SYBSc	COMP 211 : Data Structure-I	<ol style="list-style-type: none"> <li>1. Know what is data structure and different types of its algorithmic notations.</li> <li>2. Analyze the time and space requirement of any algorithm.</li> <li>3. Understand different linear data structures for conversion of mathematical expressions.</li> <li>4. Know the file structures.</li> <li>5. Know what is data structure and different types of its algorithmic</li> </ol>
	COMP 212 : Programming in C++ -I	<ol style="list-style-type: none"> <li>1. Be familiar with Object Oriented Programming Environment with its features.</li> <li>2. Differentiate between Structure oriented programming and object oriented programming.</li> <li>3. Understand different object modelling techniques and analysis like Generalization , Aggregation and Metadata</li> <li>5. Write Reusable , Extensible and Robust programs in C++.</li> </ol>
	COMP 221 : Data Structure – II	<ol style="list-style-type: none"> <li>1. Know different non-linear data structures that can be used to represent hierarchical relationship between objects.</li> <li>2. Traverse and represent the graphs in computer.</li> <li>3. Understand the different approaches of sorting and searching elements in the arrays.</li> <li>4. Study of different tree structures.</li> <li>5. Understand different techniques of designing the algorithms.</li> </ol>





	COMP 212 : Programming in C++ -II	<ol style="list-style-type: none"> <li>1. Explore polymorphism using Function and Operator Overloading.</li> <li>2. Write programs for handling runtime errors using exception.</li> <li>3. Understand the concepts of pointers in C++.</li> <li>4. Understand the different aspects of hierarchy of classes and their extensibility.</li> <li>5. Write generic programs using templates and STL</li> </ol>
	COMP 213 and 223 : Practical Course	<ol style="list-style-type: none"> <li>1. On completion of the course, students are able to develop programs using C++ based on object oriented concepts and write the ROBUST, EXTENSIBLE and EFFICIENT programs.</li> <li>2. Students are able to develop program using different data structures.</li> </ol>
TYBSc	CS-501 System Programming	<p>Get aware about system software and their tools like Editors and Debug Monitors.</p> <ul style="list-style-type: none"> <li>• Understand the concept of smaco programming.</li> <li>• Understand detail working of Assembler , Macro and Macro Preprocessor, Compiler and linker &amp; Loader.</li> </ul>
	CS-502 Database Management System	<p>Get aware of Describing &amp; storing data.</p> <ul style="list-style-type: none"> <li>• Know about E-R Model by overview of database design..</li> <li>• Know about functional dependency and Data Normalization.</li> <li>• Understand Database Implementations.</li> <li>• Make use of Concurrency control, Backup &amp; recovery for large or huge of databases.</li> </ul>
	CS-503 Software Engineering	<p>Get aware of evaluation of software and Software Development</p> <ul style="list-style-type: none"> <li>• Life Cycle (SDLC) and different models.</li> <li>• Study of different stages of Software Engineering.</li> <li>• Learn use of Fact finding Techniques , Types of Requirement Modeling and Data Modeling Concepts, design concepts.</li> <li>• Know about Cohesion &amp; Coupling , Decision Table &amp; Decision Tree, .Know about Software Coding &amp; Testing.</li> <li>• Get aware about Elements of Software Quality Assurance</li> </ul>
	CS-504 Computer Aided Graphics	<p>Differentiate between interactive and non interactive graphics.</p> <ul style="list-style-type: none"> <li>• Explore different line and circle drawing algorithms.</li> <li>• Perform 2D and 3D transformation on different images.</li> <li>• Know about detail working of image clipping and windowing.</li> <li>• Understand raster graphics and hidden surface elimination</li> </ul>
	CS-505 Python Programming-I	<p>.Basic principal of python programming language .Construct and apply various filter for specific task .Apply the best feature of mathematics, engineering and natural science to program real life problem</p>
	Elective -B UG-CS- 506 ( B) JAVA Programming-I	<ul style="list-style-type: none"> <li>• Get knowledge about JDK Environment.</li> <li>• Explore polymorphism using Function and Operator Overloading.</li> <li>• Understand the different aspects of hierarchy of classes and their extensibility.</li> <li>• Understand the concepts of streams and files.</li> <li>• Write programs for handling runtime errors using exception</li> </ul>





CS-601 Operating System	<p>.Know about functions and services of operating system, different types of operating systems..</p> <ul style="list-style-type: none"> <li>• Aware about different CPU scheduling algorithms</li> <li>• Get familiar with different memory management techniques.</li> <li>• Understand different disk and drum scheduling algorithms as well as</li> <li>• deadlock concepts.</li> <li>• Get introductory knowledge about android operating system</li> </ul>
CS-602 R-DBMS	<ul style="list-style-type: none"> <li>• E-R Model by overview of database design..</li> <li>• Use database technique SQLAND PLSQL</li> <li>• Understand Database Implementations.</li> <li>• Use advanced concept of pogramming</li> </ul>
CS-603 Computer Network	<ul style="list-style-type: none"> <li>• Understand applications of network, network structures and protocol.</li> <li>• Aware about details of physical, datalink, network and transport layer of TCP/IP network model, OSI Reference Model.</li> <li>• Understand about different aspects of network security like firewalls, IP security and VPNs.</li> </ul>
CS-604 Theoretical Computer Science	<ul style="list-style-type: none"> <li>• Understand what is Push down Automata and its applications.</li> <li>• Understand concepts of Context free grammar and normalization of CFG.</li> <li>• Convert regular expression to Finite Automata, design PDA..</li> <li>• Design Turing Machines for various applications like enumerator, function computer and universal turning machine.</li> </ul>
CS-505 Python Programming-II	<ul style="list-style-type: none"> <li>• Basic principal of python programming language</li> <li>• Construct and apply various filter for specific task</li> <li>• Apply the best feature of mathematics, engineering and natural science to program real life problem</li> <li>• Basic principal of python programming language</li> <li>• Construct and apply various filter for specific task</li> </ul>
Elective - B CS-606(B) JAVA Programming-II	<ul style="list-style-type: none"> <li>• Program using graphical user interface with Swing classes.</li> <li>• Handle different kinds of events generated while handling windows.</li> <li>• Create programs using menus and dialog boxes.</li> <li>• Program for websites using applets.</li> <li>• Understand advanced java concepts like JDBC and servlets.</li> </ul>
CS-Lab-507Lab on Python Programming I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to develop basic programs using python</li> </ul>
CS-Lab-508Lab on Computer Aided Graphics	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to develop different programs for demonstrating different Computer graphics algorithms like circle, line drawing and clipping</li> </ul>
Elective B) CS-Lab-509 Lab on Java programming-I	<p>On completion of the course, students are able to develop basic programs.</p>
CS-Lab-607Lab on Python Programming II	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to develop basic programs using python</li> </ul>



CS-Lab-608 Lab on RDBMS	· On completion of the course, students are able to develop database management system using features and services provided by MS SQL
Elective -B CS-Lab-609 Lab on JAVA Programming –II and CS-L	On completion of the course, students are able to develop efficient programs which provides graphical user interface for easy handling of computers using JAVA.

### Department of Political Science

Class	Course	Outcomes ( Students will gain an understanding of )
F.Y.B.A.	Introduction to Indian Constitution (111111/111121)	<p>On Completion of F.Y.B.A. Syllabus of 'Introduction to Indian Constitution' students are able to-</p> <ol style="list-style-type: none"> <li>1. They will know the basic ideas of Indian Constitution.</li> <li>2. They will understand their Fundamental Rights to create responsibility among Indian Citizenship.</li> <li>3. They will be able to explain the composition, powers &amp; functions of Government.</li> <li>4. They will identify the Center-State relationship.</li> <li>5. They will get information of various Amendments of the Indian Constitution.</li> <li>6. They will understand election process and role of election commission in the development of democracy.</li> <li>7. They will comprehend the emerging challenges before Indian Democracy.</li> </ol>
S.Y.B.A. (G2)	Socio-Political Movement in Maharashtra (231122/241111)	<p>On Completion of S.Y.B.A. Syllabus of 'Socio-Political Movement in Maharashtra' students are able to-</p> <ol style="list-style-type: none"> <li>1. They will understand various socio-political traditions in Maharashtra.</li> <li>2. They will interpret various Social Reformers and their work in development of humanbeing.</li> <li>3. They will grasp various causes of Socio-Political Movement.</li> <li>4. They will realize the differences between the past &amp; present situation of Maharashtra State.</li> </ol>



		5. They will collect information about the structure & functioning of Local Self Government.
S.Y.B.A. (S1)	Modern Political Ideologies (231144/241144)	On Completion of S.Y.B.A. (S1) Syllabus of 'Modern Political Ideologies' students are able to- <ol style="list-style-type: none"> <li>1. They will identify the political philosophy of political Ideologies.</li> <li>2. They will be able to compare political ideologies.</li> <li>3. They will understand merits &amp; demerits of various political ideologies.</li> <li>4. They will implement moral ethics &amp; values in their political life.</li> </ol>
S.Y.B.A. (S2)	Indian Political Thought (231177/241177)	On Completion of S.Y.B.A. (S2) Syllabus of 'Indian Political Thought' students are able to- <ol style="list-style-type: none"> <li>1. They will know the contribution of Political Thinkers in development of India.</li> <li>2. They will be able to inculcate moral ethics &amp; values in their life.</li> <li>3. They will identify the struggle and patriotism of Thinkers.</li> <li>4. They will understand the political career of Indian Thinkers.</li> </ol>
T.Y.B.A. (G3)	Personnel Administration & Management (31115/31116)	On Completion of T.Y.B.A. (G3) Syllabus of 'Personnel Administration & Management' students are able to- <ol style="list-style-type: none"> <li>1. Students will understand the importance of Personnel Administration for welfare state.</li> <li>2. They will be aware about the process of recruitment &amp; training.</li> <li>3. They will get information of promotion &amp; retirement process.</li> <li>4. They will be able to know employer &amp; employee relations.</li> <li>5. They will know the Administrative leadership &amp; Management.</li> <li>6. They will grasp the policy formation &amp; new trends.</li> </ol>
T.Y.B.A. (S3)	Western Political Thought (31145/31146)	On Completion of T.Y.B.A. (S3) Syllabus of 'Western Political Thought' students are able to- <ol style="list-style-type: none"> <li>1. They will be able to know the ideas of Western Political Thinkers.</li> <li>2. They will understand how idea can develop as per the change in the society.</li> </ol>



		<ol style="list-style-type: none"> <li>3. They will be able to evaluate the western thought with present situation.</li> <li>4. They will be aware about the various opinion about social contract theory, origin of statetheory etc.</li> </ol>
T.Y.B.A. (S4)	Modern Political Analysis(31175/31176)	<p>On Completion of T.Y.B.A. (S4) Syllabus of 'Modern Political Analysis' students are able to-</p> <ol style="list-style-type: none"> <li>1. Students will understand the nature &amp; scope of Tradition &amp; Modern Political Analysis.</li> <li>2. They will get information of Political System.</li> <li>3. They will know the Interdisciplinary Approach &amp; Human Rights.</li> <li>4. They will evaluate the role of media in politics.</li> </ol>

### DEPARTMENT OF ENGLISH

Class	Course	Outcomes ( Students will gain an understanding of )
F.Y.B.A.	Compulsory English.	<ol style="list-style-type: none"> <li>1. Students will be capable to comprehend written texts.</li> <li>2. Will make them aware of the importance of communicative competence.</li> <li>3. Optional English.</li> <li>4. Will make them aesthetic pleasure of literate.</li> <li>5. Will introduce to the students the basic forms of poetry.</li> <li>6. Will create interest among students for literature in English.</li> </ol>
S.Y.B.A.	Compulsory English.	<ol style="list-style-type: none"> <li>1. Will make the students to use correct English grammar.</li> <li>2. Will introduce the students to the various forms of literature in English. English Spl. Paper1(S1)</li> <li>3. Will acquaint the students with the major dramatis, essayists of the 16th and 17th century English literature.</li> <li>4. Will learn students about history of English literature and its salient feature.</li> </ol>
	English S2	<ol style="list-style-type: none"> <li>1. Student will collect basic ideas about 18<sup>th</sup> and 19<sup>th</sup> century English. Literature with special reference to poetry and novel.</li> <li>2. Students will be capable to grasp the</li> </ol>




		content and critical appreciation of the prescribed texts.
	G2 English.	<ol style="list-style-type: none"> <li>1. Students will be oriented to different types of English novel</li> <li>2. Student will be introduced to the recent trends in novel form.</li> </ol>

**Department of Economics**

<b>Class</b>	<b>Name and code of Course</b>	<b>Course outcomes</b>
F. Y. B.A	G – I General Economics Paper code – Eco G-101 (A) Principles of Micro-economics I Paper code – Eco Gen. – 201 (1) Principles of Micro-economics – II	<ol style="list-style-type: none"> <li>1) To make student aware of to the basic principles of microeconomics theory.</li> <li>2) To introduced the student's behaviour of consumer producer in Economy price determination in market and also factor pricing.</li> <li>3) Student aware how to microeconomic concepts can be applied to analyze real life situation.</li> <li>4) The students will be able to Demonstrate marginal productivity theory of distribution theory of wages identify different types of rent illustrate different theories of interest and profits.</li> <li>5) Understand how factor market works illustrate basic tools in welfare economics and illustrate the concept of social is welfare functions and compensation principles.</li> </ol>
SYBA – G-2	Indian Economy since 1980 III and IV Paper – DSC- I and II Eco-351, 361	<ol style="list-style-type: none"> <li>1) To enable students to have understanding the various issues of Indian Economy.\</li> <li>2) The student knows to develop the analyzing capability in the context of current Indian Economic problems.</li> <li>3) It helps in developing understanding of the students related to different sectors of Indian Economy.</li> <li>4) Student will be able to understand how planning and infrastructure support can develop on Economy.</li> <li>5) Grasp the importance of planning undertaken by the government of India, have knowledge on the various</li> </ol>



		objectives, failures and achievements as the foundation of the ongoing planning and economic reform taken by the government.
SYBA S-I	Agricultural Economics DES I Eco – 351A, 361 A	<ol style="list-style-type: none"> <li>1) The students would be able to understand the agricultural policies and its effect on agricultural development.</li> <li>2) Understand the globalization and its impact on agricultural development.</li> <li>3) Draw distinctive features of rural and urban economy of agricultural and non-agricultural which can influence the whole economy.</li> <li>4) Make them aware of the availability of rich natural endowments to achieve sustainable agricultural development with this knowledge they can challenge the problems of unemployment, inequality, shortage of food productions poverty and be useful to complete advanced agricultural economics.</li> </ol>
S.Y.B.AS2	DSE Eco-233 & 243  Advanced Macro Economics I & II	<ol style="list-style-type: none"> <li>1. To make student aware of the basic theoretical framework underlying the field of macroeconomics.</li> <li>2. It helps students to study the aggregates and to provide overall idea about national economic policies and its implications.</li> <li>3. Macro Economics paper provides theoretical foundation of some advanced issues and policies.</li> <li>4. The paper attempt to discuss the functional relationship between economic aggregates.</li> <li>5. The students understand the elementary theoretical foundation of key issue and policies.</li> </ol>
SYBA SEC-I & II Eco- 234, Eco-244	Skill Enhancement Course  Research Methodology for Economics I and II Outcomes of Course  	<ol style="list-style-type: none"> <li>1) Expose the students to research methodology used to social sciences.</li> <li>2) Understand the research process identification of research problems, formulation of objectives, construction of hypothesis, sampling technique data collection and data analysis hypothesis testing interpretation of results report</li> </ol>

		<p>writing.</p> <p>3) Identify and discuss the role and importance of research in the social sciences.</p> <p>4) Identify and discuss the issues and concepts salient to the research process.</p> <p>5) The students will be able to Explain key Research concepts and issues. Read comprehend and explain research articles in their academic disipline.</p>
T.Y.B.A G-3	DSC-I Eco-351 & 361 Indian Economy since 1980 III & IV	<p>1) It will help in developing the conceptual framework of govt. policies and programmes.</p> <p>2) It will acquaint students with latest data and will enhance analytical skills.</p> <p>3) After studying the structure aspects of Indian Economy, Student will be exposed to economic reforms in India and problems of Indian Economy eg. Financial system in India, Money and Banking in India.</p> <p>4) To understand the various issues of Indian Economy.</p>
TYBA-S3	Economics of Public Finance I & II DES III Eco – 352A, 362 A Outcomes of Course	<p>1) To help students the understand the various issues of public finance and plaices.</p> <p>2) Student will be able to understand. How to develop the analyzing capabilityin the context of public finance and policies.</p> <p>3) To able the students for appearing MPSC, UPSC and other competitive examination.</p> <p>4) To know the application of public economics in analyzing various energy policies.</p> <p>5) To have conceptual clarity of public expenditure and revenue theories.</p> <p>4) To comprehend various types of public goods and its real world application.</p>
TYBA GE-1 (A & B)	Indian Economics Environment I and IIGE I Eco – 355, 365	<p>1) Students would be able to realize the importance and influence of environment on the economics including the quality of manpower.</p> <p>2) Understand that environment problem is not the problem of a single country or region but global problem/issue. So policy formulation may be for all</p>





		<p>countries.</p> <p>3) Demonstrate the scientific management of waste materials; realize the role and importance of individual to keep the environment clear.</p> <p>4) The students know the Economics for Business and How to applicable in the Indian Economy.</p> <p>5) The students know about the information of Indian Economics Environment</p>
TYBA	<p>SEC-III &amp; IV Eco-354, Eco-364 Skill Enhancement Course</p> <p>Modern Banking in Market</p>	<p>1) Students understand the conditions of financial markets and its impact in the economy.</p> <p>2) Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p> <p>3) Students would be able to explain the broad features of Indian financial institutions with its apex bank's objectives and purview.</p> <p>5) Students understand the instruments to central credit in the country. Students identify that modern banking systems include both privately owned central banks.</p> <p>6) Students know the depth knowledge of banking and finance with practical</p> <p>4) inputs and prepares them as a responsible customer of a bank.</p>
TYBA	<p>DSE-IV (A and B) Eco-353, Eco-363</p> <p>Theory of International Trade and Practices – I and II</p>	<p>1) The students would be able to identify the basic difference between inter-regional and international trade.</p> <p>2) Understand how international trade has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.</p> <p>3) Realize the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.</p> <p>4) Students know the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.</p>



		5) Students should be aware of the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures, adopted to correct the deficits and identify the need for having trade reforms.
<b>Department of Psychology</b>		
FYBA	G 1 -Foundation of Psychology	<ol style="list-style-type: none"> <li>1) Students are aware about out the history of development and scientific nature of psychology.</li> <li>2) Students are aware about different methods to study human behaviour.</li> <li>3) Students are aware about the scope of Psychology and career in Psychology.</li> <li>4) The students are aware about theories of personality and element of personality.</li> <li>5) Students are aware about to understand different cognitive processes</li> </ol>
SYBA	G 2 - Human Developmental Psychology	<ol style="list-style-type: none"> <li>1) Students are aware about the concept of development.</li> <li>2) Students are aware about different Pre-natal and Post-natal stages in humandevelopment.</li> <li>3) Students are aware about hazards in developmental process.</li> <li>4) Students are aware about different theories of development.</li> <li>5) Students are aware about physical, psychological, social aspects of humandevelopment.</li> </ol>
TYBA	G 3 - Management of Interpersonal Relations	<ol style="list-style-type: none"> <li>1) Students are aware about effective skills of communication.</li> <li>2) Students are aware about how to develop assertive communication style.</li> <li>3) Students are aware about how to establish intimate relationship and developmarital adjustment in life.</li> <li>4) Students aware about how to choose career.</li> </ol>



		5) Students are aware about how to cope with occupational hazards.
<b>Department of Geography</b>		
FYBA semI	Physical Geography I	1.Students will able to applying geographical knowledge to everyday living.2.Students gain knowledge about earths interior. 3.Students understand the process of erosion and deposition.
FYBA sem.II	Physical Geography II	1.Students understand the structure of atmosphere 2.Students understand the types of winds and rainfall. 3.Students know the distribution of pressure belts and ocean currents.
SYBA sem III	DSC-C(Gg231) General Cartography	1. Students acquaint the knowledge about practical and theoretical understanding of cartography
SYBA sem IV	DSC-D(Gg241) Human Geography	1. Students understand the relationship between man and environment2.Students know the Human life in various regions 3.Students know the racial groups of World and India
TYBA semVI	Population Geography	1. Students acquaint with the human resources of the nation2.Students understand the recent problems of population. 3. Students familiarize the students with different theories of population growth.
TYBA semV	Environmental Geography	1. Students enable to develop critical thinking for shaping strategies for environmental protection and conservation of biodiversity.  2.Devlop empathy for various life forms and appreciate the ecological linkages within the web of life.  3.Capability to identify relevant environmental issues and develop frameworkto make informed decisions.
<b>DEPARTMENT OF HISTORY</b>		
F. Y. B. A.	HIS- DSC A-1and A2 History Of India (1857-1950)	1. To introduce various perspectives of Indian Freedom Movement  To develop the spirit of nationalism among students  3. To bring awareness among the



		<p>students as responsible citizens of the country</p> <ol style="list-style-type: none"> <li>To inspire students from different type colleges of social reformers and freedom fighters to bring positive changes in the society</li> <li>To inculcate rational thinking among the students</li> </ol>
S. Y. B. A	HIS- DSC- 231 History Of Marathas (1605-1750 A. D.)	<ol style="list-style-type: none"> <li>To create and enhance interest about regional history among students</li> <li>To inform student how Shivaji Maharaj created the Maratha empire in adverse circumstances</li> <li>To motivate students for the research work of Maratha history</li> <li>The course will study examine various aspect of Maratha history</li> </ol>
	SEC – HIS 234 Sem. III Research Methodology in History SEC – HIS 244 Sem. IV Introduction of Archives in India	<ol style="list-style-type: none"> <li>To provide adequate conceptual base, bring better understanding of history and its forces, help interrogate existing paradigms and challenge the outdated help in developing critique, help research in terms of formulating hypotheses &amp; develop and frames of interaction with other social sciences and attain certain level of Interdisciplinary approach.</li> <li>To create awareness among the students about the role of Archives in the preservation of Heritage.</li> <li>To introduce the importance of Archives in study of History</li> <li>To create awareness to conserve the historical records in their local areas.</li> <li>To encourage students to visit Archives. To create interest of students to pursuer career in the field of Archives</li> </ol>
T. Y. B. A.	HIS- 351 A Sem. V History of Modern World (1789-1900) HIS- 361 A Sem. V History of Modern World (1901-1945)	<ol style="list-style-type: none"> <li>To develop an interest in student about History as discipline</li> <li>To introduce and help students understand the concept of Modern European history</li> <li>To introduce various perspective of history of modern Europe</li> <li>To inculcate feelings of Liberty equality and fraternity among students</li> </ol>



5. To encourage students to pursue career via competitive exams

### Department of Marathi

Sr.no.	Paper	Program Outcomes
1	F.Y.B.A G -1  S.Y.B.A G-2	At the general level, students are acknowledged with Marathi literature, language and culture. It helps them to develop the interest in understanding the Marathi
	T.Y.B.A. G-3	Literature, its various forms and aesthetic. It also helps to develop the communication and writing skills to face the modern era of globalization.
2	S.Y.B.A S-1  S.Y.B.A. S-2	At this stage, the special level papers helps students to acquire the deep knowledge of literature its various forms, authors, critics, poetry, history of ancient and modern Marathi literature. It also helps to understand the process of creation of poetry, and methods of evaluation of poetry, conceptual theories, culture and philosophy. The basic outcomes of the course are that the students are introduced with the society, human values through the literature, which helps them to become a person with values.
3	T.Y.B.A. S-3 T.Y.B.A. S-4	At the third year course, students are introduced with linguistic and literature theories. Through the literary theories they got aware of the development and new aspects in literature as well as society. In fact it is said that , literature is the mirror of the society, At this stage students are prepared f to read, understand the 'isms' movements, values, criticism through literature. It also helps to develop lingual skills. Language is a social tool. Through linguistics students got aware of communication skills. This course helps students to achieve basic skills of life through which they could manage the bread and butter needs and also cultivate human values.

### Department of Hindi

S.N.	CLASS & PAPER	LEARNING OUT COMES
1.	F.Y.B.A. GENERAL	Through this syllabus student will get the knowledge of Hindi Writers & Poets. They value the national unity through HINDI language.



2.	F.Y.B.A. Hindi	Through this syllabus students will understand the correct language to write and speak.
3.	S.Y.B.A. GENERAL-2 SPECIAL-1 SPECIAL-2	Good language will make their personality special among others. Through this study they become a very good writer, poet, novelist, dramatist etc. They can go for journalism course also which will provide them jobs.
4.	T.Y.B.A GENERAL SPECIAL-3 SPECIAL-4	Through Writer's Autobiography student will learn the lessons of great lives. They will understand about the poetic concept of Drama.



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