

**SUBJECT: BOTANY**

Sr.No.	Course	Paper	Objectives
1	F.Y.B.Sc. Sem I	BOT.101-Microbial Diversity Algae and Fungi	• To study the diversity among microbes
			• To study systematic morphology and structure of bacteria viruses, algae and fungi.
			• To study the life cycle pattern of bacteria, viruses, algae and fungi.
			• To study the useful and harmful activities of bacteria, viruses, algae and fungi.
2	F.Y.B.Sc. Sem I	BOT.102-Plant Taxonomy	• To study the diversity of angiosperms.
			• To study the comparative among the families of angiosperm.
			• To study the economic importance of the angiosperm plant.
			• To study the distinguishing features of angiosperm families.
3	F.Y.B.Sc. Sem II	BOT.201-Diversity of archegoniate	• To study salient features archegoniate.
			• To make students aware of the status of higher cryptogams and gymnosperms as a group in plant kingdom.
			• To study the life cycle of selected genera.
			• To study economic and ecological importance of archegoniate
4	F.Y .BSc. Sem II	BOT.202-Plant Ecology	• To know scope and importance of the discipline.
			• To study plant communities and ecological adaptation in plant.
			• To know about conservation of biodiversity.
			• To study the botanical regions of india and vegetation type of Maharashtra.
5	S.Y.B.Sc. Sem I	BOT.112-Plant For Human Welfare	• Understand the role plant in human welfare.
			• Gain knowledge about various plant of economic use.
			• To know importance of plant and plant product.
			• Understand the chemical contain of the plant products.
			• Know about the utility of plant resources.
6	S.Y.B.Sc. Sem II	BOT.121- Fungi Lichens and plant pathology	• understand the biodiversity of fungi.
			• To know the economic importance of fungi.
			• Understand the features of lichens.
			• Know the terminologies in importance of plant pathology.
			• Know the control measures of plant disease.
7	S.Y.B.Sc.	BOT.122-Industrial Botany	• Gain thorough knowledge about various plant groups from primitive to highly evolved plant.

			<ul style="list-style-type: none"> <li>• Become aware of application of different plant in various industries.</li> <li>• To highlight the potential of these studies to become entrepreneur.</li> <li>• To equip the students with skills related to laboratory as well as industries based studies.</li> <li>• To make the students aware about conservation and sustainable use of plant.</li> <li>• To create foundation for further studies in botany.</li> <li>• To address the socio economical challenges related to plant science.</li> </ul>
8	S.Y.B.Sc.	BOT 103 Practical Course [Based on BOT 111,BOT 112]	<ul style="list-style-type: none"> <li>• Understand the morphological diversity among bacteria, viruses and algae.</li> <li>• Observe vegetative and reproductive parts of various life forms of bacteria, viruses and algae.</li> <li>• Detect chemical content in various plant products.</li> <li>• Learn about the industrial applications of various plants and plant products.</li> <li>• Visit nearby locality to observe algal and fungal diversity as well as plant disease.</li> <li>• Visit either of industries and prepare a scientific report.</li> </ul>
9	S.Y.B.Sc. Sem III	BOT 231 Bryophytes and Pteridophytes	<ul style="list-style-type: none"> <li>• Understand the morphological diversity of bryophytes and Pteridophytes.</li> <li>• Understand the economic importance of the bryophytes and Pteridophytes.</li> <li>• Know the evolution of Bryophytes and Pteridophytes.</li> </ul>
10	S.Y.B.Sc.	BOT 232 Morphology of Angiosperm [60 lectures]	<ul style="list-style-type: none"> <li>• Understand the habit of angiosperm plant body.</li> <li>• Know the vegetative characteristics of plants.</li> <li>• Learn about the reproductive characteristics of the plants.</li> <li>• Understand the plant morphology.</li> </ul>
11	S.Y.B.Sc.	BOT 241 Plant Physiology	<ul style="list-style-type: none"> <li>• Know the importance and scope of plant physiology</li> <li>• Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions,C3 and C4 pathway</li> <li>• To understand the plants and plant cell in relation to water</li> <li>• Learn about the movement of sap and absorption of water in plant movements.</li> <li>• Understand the plant movements.</li> </ul>
12	S.Y.B.Sc.	BOT 243 Taxonomy of Angiosperm	<ul style="list-style-type: none"> <li>• Understand the diversity of angiosperm.</li> <li>• Understand the comparative account among the families of angiosperm.</li> <li>• Know the economic importance of the angiosperm plants.</li> <li>• Understand the distinguishing features of angiosperm families.</li> </ul>

13	T.Y.B.Sc.	BOT 351 Cryptogams	• Know the salient features of cryptogam's plants.
			• Become aware of the status of cryptogams as a group in plant kingdom.
			• Understand the life cycle of selected genera.
			• Learn about the economic and ecological importance of cryptogams plants.
14	T.Y.B.Sc.	BOT 352 Angiosperm Taxonomy	• Understand the status of angiosperm in plant kingdom.
			• Realize the origin of angiosperm with respect to time, place, origin and probable ancestors.
			• Know the Pre-Darwinian and Post-Darwinian system of classification.
			• Understand various angiosperm families emphasizing their morphological, distinctive features and biology.
15	T.Y.B.Sc.	BOT 353 Genetics and Molecular Biology	• Know the role of cytology and photochemistry in taxonomy.
			• Gain knowledge about Cell Science.
			• Understand cell wall, plasma membrane, cell organelles and cell division.
			• Learn the scope and importance of molecular biology.
16	T.Y.B.Sc.	BOT 354 Advanced Plant Physiology	• Understand the biochemical nature of nucleic acid their role in living systems, experimental evidence to prove DNA as a genetic material.
			• Understand the protein synthesis and role of genetic code in polypeptide formation.
			• Learn and understand about mineral nutrition in plants.
			• Understand the growth and developmental process in plants.
17	T.Y.B.Sc.	BOT 355 Plant Ecology And Phytogeography	• Know about movements in plants.
			• Understand the process of translocation of solutes in plants.
			• Know the nitrogen metabolism and its importance.
			• Know the scope and importance of the discipline.
18	T.Y.B.Sc.	BOT 351 Plant Biotechnology	• Understand plant communities and ecological adaptation in plants.
			• Understand Bioremediation, Global Warming and climate change.
			• To learn about conservation of biodiversity, on-conventional energy and pollution.
			• Discover botanical regions of India and vegetative types of Maharashtra.
18	T.Y.B.Sc.	BOT 351 Plant Biotechnology	• Understand current status and future of biotechnology in India.
			• Understand the importance of interdisciplinary approaches of biotechnology.
			• Gain advanced knowledge of different instruments related to biotechnology.

			<ul style="list-style-type: none"><li>• Recognize the impact of biotechnology on socio-economic of biotechnology.</li></ul>
			<ul style="list-style-type: none"><li>• Gain knowledge of industrial application of biotechnology.</li></ul>
			<ul style="list-style-type: none"><li>• Develop the skills among the students for employment or entrepreneurship.</li></ul>

**SUBJECT: CHEMISTRY**

Sr.No.	Class	Course	Objectives
1	F.Y.B.Sc.	CH-101 Physical And Inorganic Chemistry	<ul style="list-style-type: none"> <li>Understand Electrolytic conductance, Equivalent conductance and Kohlrausch law and its applications.</li> </ul>
			<ul style="list-style-type: none"> <li>Learn about adsorption, Mechanism of adsorption, Types of adsorption and isotherms.</li> </ul>
			<ul style="list-style-type: none"> <li>Develop an ability to use conceptual and mathematical tools to express and predict atomic and molecule</li> </ul>
			<ul style="list-style-type: none"> <li>Predict atomic structure chemical bonding or molecular geometry based on accept models</li> </ul>
			<ul style="list-style-type: none"> <li>Convert scientific equation in straight line physical parameter for slope and intercept</li> </ul>
			<ul style="list-style-type: none"> <li>Understand deviation of real gas from ideal behavior</li> </ul>
			<ul style="list-style-type: none"> <li>Understand critical constant and Vander wall's constant.</li> </ul>
			<ul style="list-style-type: none"> <li>To learn about Atomic and ionic size, Ionization energy, Electron affinity and Electronegativity. Their Variation in period and a group</li> </ul>
			<ul style="list-style-type: none"> <li>Understand Electrolytic conductance, Equivalent conductance and Kohlrausch law and its applications.</li> </ul>
2	F.Y.B.Sc.	CH-102 Organic And Inorganic Chemistry	<ul style="list-style-type: none"> <li>Understand the general properties of organic compounds application of organic compounds</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the mono functional compounds common and IUPAC nomenclature of various type of organic compounds</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the alkane, alkene and alkyne by many organic reaction</li> </ul>
			<ul style="list-style-type: none"> <li>Understand halo alkane and arene and their reactins.</li> </ul>
			<ul style="list-style-type: none"> <li>classification, nomenclature, methods of preparation and reactions of alcohol, phenol and ether</li> </ul>
			<ul style="list-style-type: none"> <li>Understand ionic product of water Buffer solution</li> </ul>
			<ul style="list-style-type: none"> <li>VSEPR theory and Geometry of molecules.</li> </ul>
3		CH-103 Chemistry Practical	<ul style="list-style-type: none"> <li>Calibrate the apparatus like volumetric flask pipette and burette</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the determination of solubility product conductometrically.</li> </ul>
			<ul style="list-style-type: none"> <li>Carry out qualitative analysis of acetic and basic radicals</li> </ul>

			<ul style="list-style-type: none"> <li>• Learn the application of types of titration for various estimation</li> <li>• Carry out quantitative analysis by gravimetric method</li> <li>• Carry out inorganic qualitative analysis.</li> </ul>
<b>4</b>		CH-201 Physical And Inorganic Chemistry	<ul style="list-style-type: none"> <li>• Identify kinetic theory of ideal gases and critical constants.</li> <li>• Evaluate thermodynamics data</li> <li>• To Understand Surface tension and Viscosity</li> <li>• To Understand metallurgical processes</li> <li>• To know characteristics of P block elements</li> </ul>
<b>5</b>		CH-202 Organic And Inorganic Chemistry	<ul style="list-style-type: none"> <li>• To know classification, nomenclature, methods of preparation and reactions of aldehyde, ketone, aliphatic and aromatic.</li> <li>• Understand the mono functional compounds common and IUPAC nomenclature of various type of organic compounds</li> <li>• Understand the carboxylic acids and derivatives by many organic reaction</li> <li>• Understand amines and aromatic amines and their reactions.</li> <li>• Understand volumetric analysis.</li> <li>• Chemical bonding and structure and valence bond theory</li> </ul>
<b>6</b>		CH-203 Chemistry Practical	<ul style="list-style-type: none"> <li>• Handle viscometer to determine the viscosity of liquid</li> <li>• Carry out quantitative analysis by instrumental method using conductometer</li> <li>• Estimate of aniline / phenol</li> <li>• Perform qualitative analysis of organic compound</li> <li>• Carry out quantitative analysis by volumetric method and gravimetric methods</li> </ul>
<b>7</b>	<b>S.Y.B.Sc.</b>	CH-231 Physical and Inorganic Chemistry	<ul style="list-style-type: none"> <li>• Understand the electronic structure, size of atom ions ionization energy metallic and nonmetallic of D-block element</li> <li>• Understand concept Helmholtz free energy</li> <li>• Understand numerical calculation of Gibbs free energy</li> <li>• Understand concept of vapor pressure of liquids</li> <li>• Understand the concept of physical properties of metals</li> <li>• Learn methods of purification of ores</li> </ul>

<b>8</b>	CH-232 Organic and Analytical Chemistry	<ul style="list-style-type: none"> <li>Review the concept of isomers and discuss the isomer which result from free rotation of C-C single bond, from a chirality, from restricted R,S and E,Z nomenclature</li> </ul>
		<ul style="list-style-type: none"> <li>Study of amines their formation reactivity</li> </ul>
		<ul style="list-style-type: none"> <li>Study reactivity ,preparation and reaction of organo Li,Cu,Zn compound</li> </ul>
		<ul style="list-style-type: none"> <li>Understand the importance of analytical chemistry in analysis of compound by titrimetric , gravimetric and instrumental methods</li> </ul>
		<ul style="list-style-type: none"> <li>Know the importance of sampling method and ways of interpretation of result of analysis</li> </ul>
		<ul style="list-style-type: none"> <li>Determine the causes of error and their minimization during analysis</li> </ul>
		<ul style="list-style-type: none"> <li>Learn the application of types of titration for quantitative analysis samples</li> </ul>
<b>9</b>	CH-233 Chemistry Practical	<ul style="list-style-type: none"> <li>Understand techniques chromatography for separation of organic compound in the mixture</li> </ul>
		<ul style="list-style-type: none"> <li>Understand recrystallization for purification of organic compound</li> </ul>
		<ul style="list-style-type: none"> <li>Prepare various inorganic complex</li> </ul>
		<ul style="list-style-type: none"> <li>Analyze compound by titrimetric , gravimetric and instrument methods</li> </ul>
		<ul style="list-style-type: none"> <li>Understand to determine thermodynamic parameter</li> </ul>
<ul style="list-style-type: none"> <li>CST of phenol</li> </ul>		
<b>10</b>	CH-241 Physical And Organic Chemistry	<ul style="list-style-type: none"> <li>Understand Colligative properties and its application calculation of molecular weight of solute</li> </ul>
		<ul style="list-style-type: none"> <li>Understand concept of electromotive force and its measurement</li> </ul>
		<ul style="list-style-type: none"> <li>Understand about properties of Lanthanides and actinides</li> </ul>
		<ul style="list-style-type: none"> <li>Understand concept of s-s , s-p , p-p , p-d &amp; d-d combination of orbital</li> </ul>
<ul style="list-style-type: none"> <li>Understand about classification of electrodes</li> </ul>		
<b>11</b>	CH-242 Organic and Analytical Chemistry	<ul style="list-style-type: none"> <li>Understand the synthesis and reaction of 5,6 member and condensed heterocyclic system</li> </ul>
		<ul style="list-style-type: none"> <li>Understand the synthesis of synthetic reagent and their synthetic utility</li> </ul>
		<ul style="list-style-type: none"> <li>Know the mechanism and stereochemistry if E1 , E2 reaction</li> </ul>
		<ul style="list-style-type: none"> <li>Understand the concept of quantitative analysis by gravimetric methods</li> </ul>

			<ul style="list-style-type: none"> <li>Understand the concept for separation of analytes in samples by layer, paper and chromatography methods</li> </ul>
<b>12</b>		CH-243 Chemistry Practical	<ul style="list-style-type: none"> <li>Carry out qualitative analysis of organic compound</li> </ul>
			<ul style="list-style-type: none"> <li>Determine molecular weight by depression of freezing point methods</li> </ul>
			<ul style="list-style-type: none"> <li>Handle landsbergers apparatus for determine of molecular weight</li> </ul>
			<ul style="list-style-type: none"> <li>Estimate of Nickel and Barium gravimetrically</li> </ul>
			<ul style="list-style-type: none"> <li>Make use of potentiometer for determination of standard electrode potential</li> </ul>
<b>13</b>	<b>TY B.Sc SEM V</b>	CH-351 Physical Chemistry	<ul style="list-style-type: none"> <li>Understand spontaneous and nonspontaneous processes</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the importance of salt bridge in electrochemical cell</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the concept electrochemical cell and determination of potential of cell</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the laws of photochemistry (Grothus Draper Law and Stark Einstem law)</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the concept quantum yield and fluoresce and phosphoresce from jalblonski diagram</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the various devices to measure the radiation from radioactive sample</li> </ul>
			<ul style="list-style-type: none"> <li>To study phase rule.</li> </ul>
<b>14</b>		CH-352 Inorganic Chemistry	<ul style="list-style-type: none"> <li>Understand the basic concept of the co-ordination compound and identify the types of given ligand chelates</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the different physical method for study of complexes and assumption drawback and isomerism in Werner's theory</li> </ul>
			<ul style="list-style-type: none"> <li>Understand effective atomic number (EAN) and how to calculate EAN for given any complexes</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the modern theories of metal-ligand bond related bond to valence bond theory</li> </ul>
			<ul style="list-style-type: none"> <li>Application of CFT related to different geometry e square to planer tetrahedral octahedral</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the basic concept about CFT spin magnetic moment crystal field stabilization energy related to weak and strong field limitation of theory</li> </ul>



			<ul style="list-style-type: none"> <li>Understand the modern theories of metal-ligand bond related to molecular orbital theory and difference between B T ,C.F.T. and MOT</li> </ul>
<b>15</b>		CH-353 Organic Chemistry	<ul style="list-style-type: none"> <li>Understand polarity picture of carbonyl group and nucleophilic addition reaction to it</li> </ul>
			<ul style="list-style-type: none"> <li>Introduce concept of aromaticity and nucleophilic aromatic substitution reaction</li> </ul>
			<ul style="list-style-type: none"> <li>Molecular rearrangement involving migration to C,N and oxygen</li> </ul>
			<ul style="list-style-type: none"> <li>Drawing the resonating structure reaction</li> </ul>
			<ul style="list-style-type: none"> <li>Understand Nucleophilic substitution of reaction</li> </ul>
<b>16</b>		CH-354 Analytical Chemistry	<ul style="list-style-type: none"> <li>Understand procedure of extraction of metal ions using solvent extraction process</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the application of ions exchange chromatography method for the separation of cation and anion using different types of resins</li> </ul>
			<ul style="list-style-type: none"> <li>Understand application of size exclusion chromatography for the separation of analytes based on their size and shape</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the work of gas chromatography unit and apply the knowledge to separate volatile compound in sample</li> </ul>
			<ul style="list-style-type: none"> <li>Understand principle choice of column material for HPLC and its application and its application</li> </ul>
			<ul style="list-style-type: none"> <li>Understand principle of Electrophoresis and choice of technique of electrophoresis for various application</li> </ul>
<b>17</b>		CH-355 Industrial Chemistry	<ul style="list-style-type: none"> <li>Understand general accept of industrial chemistry</li> </ul>
			<ul style="list-style-type: none"> <li>Understand manufacturing of sugarcane</li> </ul>
			<ul style="list-style-type: none"> <li>Understand various types of fertilizer</li> </ul>
			<ul style="list-style-type: none"> <li>Understand manufacturing of beer and sprit</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the aspects of small scale industry</li> </ul>
<b>18</b>		CH-356 B Environmental Chemistry	<ul style="list-style-type: none"> <li>Understand the concept to awareness about environment chemistry</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the concept to atmospheric and different layer and composition</li> </ul>

			<ul style="list-style-type: none"> <li>• Understand the concept to awareness about air pollution and inorganic and organic inorganic pollutant</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept to, water pollution sewage waste water industrial pollution agriculture pesticide water pollution</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the different methods of water treatment, water effluent and sewage water</li> </ul>
<b>19</b>		CH-357/367 Physical Chemistry Practical	<ul style="list-style-type: none"> <li>• Prepare molar and normal solution of various concentration</li> </ul>
			<ul style="list-style-type: none"> <li>• Determine concentration of unknown solutions by spectrophotometric method</li> </ul>
			<ul style="list-style-type: none"> <li>• Measure the pH , pKa and Ka of various acids by Potentiometry</li> </ul>
			<ul style="list-style-type: none"> <li>• Measure refractive index molar refraction and unknown concentration of various solvent</li> </ul>
			<ul style="list-style-type: none"> <li>• Determine the molecule weight of given polymer of a given polymer by turbidimetry</li> </ul>
			<ul style="list-style-type: none"> <li>• Investigate the reaction rate.</li> </ul>
<b>20</b>		CH-358/368 Inorganic Practical	<ul style="list-style-type: none"> <li>• Estimate ores and alloy by gravimetric and volumetric method</li> </ul>
			<ul style="list-style-type: none"> <li>• Separate and analyze binary mixtures by qualitative methods</li> </ul>
			<ul style="list-style-type: none"> <li>• Prepare and determine percent purity of various inorganic complexes</li> </ul>
			<ul style="list-style-type: none"> <li>• Perform chromatographic technique (paper chromatography)</li> </ul>
			<ul style="list-style-type: none"> <li>• Estimate lead iron by gravimetric method</li> </ul>
			<ul style="list-style-type: none"> <li>• Estimate titanium and iron by spectrophotometric methods</li> </ul>
<b>21</b>		CH-359/369 Organic Practical	<ul style="list-style-type: none"> <li>• Separate and analyze binary water insoluble mixture</li> </ul>
			<ul style="list-style-type: none"> <li>• Separate and analyze binary water soluble mixture</li> </ul>
			<ul style="list-style-type: none"> <li>• Estimate – acetamide, glucose by volumetric methods</li> </ul>
			<ul style="list-style-type: none"> <li>• Estimate basicity of various acid</li> </ul>
			<ul style="list-style-type: none"> <li>• Prepare various organic compounds</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand Think layer chromatographic technique and physical constant</li> </ul>
<b>22</b>		<b>TY B.Sc SEM VI</b> CH-361 Physical Chemistry	<ul style="list-style-type: none"> <li>• Understand the type of spectra, Rotational vibration and Electronic energy levels</li> </ul>
			<ul style="list-style-type: none"> <li>• Difference between order and Molecularity</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the first second and third order reaction</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept anisotropic, isotropic, etch figure , polymorphism</li> </ul>

			<ul style="list-style-type: none"> <li>• Learn concept photoelectric effect , Compton effect and Heisenberg's uncertainty</li> </ul>
<b>23</b>		CH-362 Inorganic Chemistry	<ul style="list-style-type: none"> <li>• Understand the concept of X-ray analysis</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the electronic structure extraction user oxidation states biological role of Cu</li> </ul>
			<ul style="list-style-type: none"> <li>• Known about the all basic theory of acid and bases</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept of Hard and Soft acid bases concept theories application and limitation</li> </ul>
			<ul style="list-style-type: none"> <li>• Known the different type and theories of corrosion and how to protect Metal from corrosion</li> </ul>
<b>24</b>		CH-363 Organic Chemistry	<ul style="list-style-type: none"> <li>• Understand common term in spectroscopy</li> </ul>
			<ul style="list-style-type: none"> <li>• Learn physical methods of structure determine which include IR , UR and NMR</li> </ul>
			<ul style="list-style-type: none"> <li>• Solve the problem based on IR , UR , and NMR</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand retro synthesis</li> </ul>
			<ul style="list-style-type: none"> <li>• Predict synthons and reagent</li> </ul>
<b>25</b>		CH-364 Analytical chemistry	<ul style="list-style-type: none"> <li>• Solve the problem based on retro synthesis</li> </ul>
			<ul style="list-style-type: none"> <li>• Perform the analysis using instrumental method</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept of spectrometry , know the principle of instrument and application</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand principle , working and application of flame and plasma emission spectrometry</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand principle , instrumentation and application of Atomic Absorption spectrometry</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand principle , instrumentation and application of turbidimetry and Nephelometry</li> </ul>
<b>26</b>		CH-365 Industrial Chemistry	<ul style="list-style-type: none"> <li>• Understand principle , instrumentation and application of thermogravimetric method like TGA , DTA , &amp; DSC</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the process of manufacturing of petrol and gasoline</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the process of manufacturing of methanol</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the process of manufacturing of soap</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the process of manufacturing detergent</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the classification of dyes and paints</li> </ul>

			<ul style="list-style-type: none"> <li>• Understand properties of drug</li> </ul>
<b>27</b>		CH-366 Polymer Chemistry	<ul style="list-style-type: none"> <li>• Understand the basic concept of polymerization</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the process manufacturing of polymerization</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand various technique of polymerization</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand preparation. Properties of PE PVC polystyrene polyacrilonytrile</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept glass transition temperature</li> </ul>

**SUBJECT: ECONOMICS**

<b>Sr.No.</b>	<b>Class</b>	<b>Course</b>	<b>Objectives</b>
<b>1</b>	F.Y.B .A.	(G-1:GENERAL ECONOMICS) paper code Eco G-101(B):Economy of Maharashtra since Reform Era-1 <sup>st</sup> General [Optional]Paper	<ul style="list-style-type: none"><li>• To aware students about the various issues of the Economy of Maharashtra.</li><li>• To increase the understanding of students about social and Economic problems before Economy of Maharashtra.</li><li>• To prepare students for competitive examinations.</li></ul>
<b>2</b>	S.Y.B.A.	[ECONOMICS]General [Optional]Paper 1.Paper course No Eco-231&241 2.Paper title :Indian Economy Since 1980-1&2 <sup>nd</sup>	<ul style="list-style-type: none"><li>• To enable students to have understanding the various issues of the Indian Economy.</li><li>• To develop the analyzing capability in the context of current Indian Economic Problems.</li><li>• To able students for appearing the MPSC, UPSC and other competitive Examinations.</li></ul>
<b>3</b>	T.Y.B.A.	[ECONOMICS] 1.Paper course No Eco-351&361:General Paper 2.Paper title: Indian Economy Since 1980-3 <sup>rd</sup> &4 <sup>th</sup>	<ul style="list-style-type: none"><li>• To enable students to have understanding the various issues of the Indian Economy.</li><li>• To develop the analyzing capability in the context of current Indian Economic Problem.</li><li>• To able students for appearing the MPSC, UPSC and other Competitive Examinations.</li></ul>

**SUBJECT: ENGLISH**

Sr.No.	Class	Course	Objectives
1	F.Y.B.A.	Optional English	<ul style="list-style-type: none"> <li>• Development of the apprehensive capability of the students.</li> <li>• Understanding of the basic forms of poetry.</li> <li>• Inculcation of moral and human values among the students.</li> </ul>
2	S.Y.B.A.	Compulsory English	<ul style="list-style-type: none"> <li>• Development of the communicative competence of the students.</li> <li>• The student could acquaint with the formal and informal style of language.</li> <li>• Development of the writing skill of the students.</li> <li>• The student could develop understanding capability through written texts.</li> </ul>
3	S.Y.B .A.	Eng. spl. paper II	<ul style="list-style-type: none"> <li>• The students learn the basic ideas of particular literary period.</li> <li>• To help the students to grasp the content and critical appreciation of the prescribed texts.</li> <li>• Inculcation of different aspects of literature.</li> </ul>
4	T.Y.B.A	Eng.spl.paper.3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• The students learn the growth of Indian and American literature.</li> <li>• Development of the evaluative, analytical, critical aspect of literature among the students.</li> <li>• To help the students to acquaint with the social, political and cultural background.</li> </ul>
5	T.Y.B.A	Eng.spl.paper IV	<ul style="list-style-type: none"> <li>• The students understand the properties and functions of language.</li> <li>• Inculcation of phonological competence among the students.</li> <li>• Acquaintance with the English grammatical forms and function to the students.</li> <li>• The students are acquainted with the morphological concepts, process, syntactic and semantic levels of language.</li> </ul>
6	M.A. Part I	Eng. 111and 121 An Introduction to Linguistics	<ul style="list-style-type: none"> <li>• Acquaintance with the nature of human language.</li> <li>• Introduction to the development and recent trends in the field of linguistics.</li> <li>• Awareness of the relation of language, brain, society machine and law.</li> <li>• Development of the stylistic competence for analyzing literary text.</li> </ul>
7	M.A. Part II	Eng. 233 and 243 English Language and Literature Teaching	<ul style="list-style-type: none"> <li>• Students understand the important aspects of English language and literature teaching.</li> <li>• Introduction of the concepts like curriculum, lesson plan, effective teaching method and evaluation.</li> <li>• Students keep pace with the advent of new technology and its role in ELLT.</li> </ul>

<b>8</b>	F.Y.B.A.	Optional English	• Introduction of the basic forms of literature to the students
			• Students get inspiration to develop their creative ability and reading habit.
			• Development of reading skill and expressive capability of the students.
<b>9</b>	M.A. Part II	ENG 234 and 244[B]-American Literature	• Introduction of the trends and tendencies in American literature to the students.
			• Make aware students about the social, political and cultural issues reflected in American literature.
			• The students get acquaintance with the different genres in American literature.
<b>10</b>	M.A. Part II	ENG 233 and 243 Basic Research in English Language and Literature.	• To acquaint the term of 'Research' to the students.
			• Introduction of basic elements of research in English language and literature.
			• To acquaint students with nature, aspects, types and areas of research in English language and literature.
<b>11</b>	M.A. Part I	ENG 111 and ENG 121-An Introduction to Linguistics.	• Introduction of the developments in the field of linguistics and nature of human language.
			• The students get awareness of the relation of brain, society, machine and law.
			• Development of the stylistics competence of the students.
<b>12</b>	M.A. Part I	ENG 112 and ENG 122-English Poetry.	• To acquaint the most significant English poets, different trends in English poetry.
			• The students get acquaintance with the different thematic patterns, poetic structures and poetic devices.
			• Development of the ability to interpret, analyze and evaluate English poems among the students.
<b>13</b>	F.Y.B .A.	Compulsory English	• It develops the students interest in using English language in communications.
			• It helps the marginalized rural and tribal students to develop their confidence and ability while gaining education.
<b>14</b>	S.Y.B.A.	English General II	• It makes students familiar with literary people and refresh their own creative powers.
			• It helps the students to understand the background, aspects genres of novel.
			• The students develops keenness of vision and moral values.
<b>15</b>	S.Y.B.A.	Eng. Spl. paper I	• The syllabus help to interpret life and shape the mind of the interpreter.
			• The essay opens the wonderful faculty of mind to make the student feel and think.

			<ul style="list-style-type: none"> <li>• It enables the students to appreciate poetical literature critically.</li> </ul>
<b>16</b>	T.Y.B.A.	Compulsory English	<ul style="list-style-type: none"> <li>• It empowers the students with communicative competence.</li> </ul>
			<ul style="list-style-type: none"> <li>• The grammar enhance their linguistic skills.</li> </ul>
			<ul style="list-style-type: none"> <li>• The literature imbibe ethical and spiritual values among the students.</li> </ul>
<b>17</b>	T.Y. B.A.	English General Paper III	<ul style="list-style-type: none"> <li>• It provides profound knowledge on the background of drama ,its aspects ,genres and dramatic art.</li> </ul>
			<ul style="list-style-type: none"> <li>• The students get acquaint with the types of dramas its forms and features.</li> </ul>
			<ul style="list-style-type: none"> <li>• The students learn the movements and periods of dramas.</li> </ul>
<b>18</b>	F.Y.B.SC.	English	<ul style="list-style-type: none"> <li>• It enables the students to remove the psychological barriers and reach the path of success.</li> </ul>
			<ul style="list-style-type: none"> <li>• It makes the students strengthen its communicative skills.</li> </ul>
			<ul style="list-style-type: none"> <li>• It enables the students to understand the different social and cultural issues around the world.</li> </ul>
<b>19</b>	S.Y.B.SC.	English	<ul style="list-style-type: none"> <li>• It provides the learners with the variety of perspectives on contemporary issues and awareness about critical aspects of everyday life.</li> </ul>
			<ul style="list-style-type: none"> <li>• The prose and essays equip the students to face the challenges of daily life.</li> </ul>
			<ul style="list-style-type: none"> <li>• It makes them aware with the aftermath of globalization policies and the problems associated with urbanization.</li> </ul>
<b>20</b>	M.A. Part II	Fiction	<ul style="list-style-type: none"> <li>• To acquaint the students with growth and development of English novel.</li> </ul>
			<ul style="list-style-type: none"> <li>• It helps to learn the contribution of the novelist to the genre novel.</li> </ul>
			<ul style="list-style-type: none"> <li>• It helps the students to familiarize with varieties of English and to understand the human values psyches and issues raised in the praised novel.</li> </ul>
<b>21</b>	M.A. Part II	Literary Theory and Concept	<ul style="list-style-type: none"> <li>• To introduce the students with wide range to critical methods, literary theories and concepts.</li> </ul>
			<ul style="list-style-type: none"> <li>• To enable to use the various critical approaches and advanced literary theories.</li> </ul>
			<ul style="list-style-type: none"> <li>• To familiarize the learners with the trends and cross disciplinary nature of literary theories.</li> </ul>
<b>22</b>	M.A. Part I	English Drama	<ul style="list-style-type: none"> <li>• To enable the students with the wide range of theatrical practices around the world.</li> </ul>
			<ul style="list-style-type: none"> <li>• To enable the students to get a historical perspective</li> </ul>
			<ul style="list-style-type: none"> <li>• of English dramas.</li> </ul>
			<ul style="list-style-type: none"> <li>• To acquaint the students with the elements of dramas and theatre.</li> </ul>



<b>23</b>	M.A. Part I	Indian Writing in English	<ul style="list-style-type: none"><li>• To acquaint the students with the works of Indian authors writing in English.</li><li>• To introduce the students with the development of different genres in Indian writing in English.</li><li>• To make the students aware of social, political and cultural issues reflected in Indian writing in English.</li></ul>
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**SUBJECT: GEOGRAPHY**

Sr.No.	Class	Course	Objectives
1	F.Y.B.Sc.	Paper I Physical Geography I	• Understand the effect of rotation of revolution the Earth
			• Know the internal structure of the earth know the importance of longitudes & latitudes International Date line and Standard time
			• Understand interior structure of the earth
			• Understand Theory regarding of Origin of Continents and oceans
			• Study the formation of Rocks Understand the work of internal and external forces and their associated landforms.
2		Paper II Physical Geography II	• Understand the importance of Atmosphere
			• Understand the composition of atmosphere
			• Know Measurement of Atmospheric Pressure and formation of Pressure Belts
			• Understand the types of winds
3	SYBSc	Paper I Environmental Geography I & II	• To create the environmental awareness and environmental problems amongst the students.
			• To acquaint the students with fundamental concepts of Environmental Geography.
			• To aware the students about the processes and patterns in the natural environment.
			• To acquaint the students with past, present and future utility and potentials of Environmental Geography at regional, national and global levels.
			• To aware the students about the causes and effects of environmental pollution, global warming, ozone depletion, deforestation, etc.
			• To acquaint the students with environmental hazards and disaster management, Conservation and aware students about various Environmental Acts.
			• To acquaint the students with basic knowledge of our country.
4		Paper II Physical & Economic Geography of India	• To aware the students about physiography, drainage, climate, soils and natural vegetation of India.
			• To aware the students with natural resources available in the country and need of conservation and protection of them.
			• To make the students ready for NET, SET and competitive examinations.

			<ul style="list-style-type: none"> <li>To acquaint the students with prospects and problems of agriculture, industries, trade and transport in India.</li> </ul>
5		Paper III Practical Geography	<ul style="list-style-type: none"> <li>To acquaint the students with basic knowledge and interpretation of Topographical Maps and surveying</li> </ul>
			<ul style="list-style-type: none"> <li>To acquire the knowledge of weather instruments.</li> </ul>
			<ul style="list-style-type: none"> <li>To provide basic information about weather maps and weather images.</li> </ul>
			<ul style="list-style-type: none"> <li>To acquaint the students about how to interpret weather maps and satellite images.</li> </ul>
			<ul style="list-style-type: none"> <li>To acquire the knowledge of leveling by different instruments.</li> </ul>
			<ul style="list-style-type: none"> <li>To give informal education to students through excursions and aware the students about socio-economic conditions of villages.</li> </ul>
6	FYBA	Physical Geography I & II	<ul style="list-style-type: none"> <li>To acquaint the student the knowledge about earth, rotation and structure</li> </ul>
			<ul style="list-style-type: none"> <li>To provide information regarding weathering of Rocks.</li> </ul>
7	SYBA	Gg. 231: G2 Human Geography	<ul style="list-style-type: none"> <li>Understand the relationship of man and environment</li> </ul>
			<ul style="list-style-type: none"> <li>Studies of races of man kinds.</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the modes of life of Eskimo, Pigmy, Gonad , Bhil And Nagas.</li> </ul>
			<ul style="list-style-type: none"> <li>Importance of Right to Information Acts.</li> </ul>
8		Gg. 232: S1 Geography of Maharashtra	<ul style="list-style-type: none"> <li>Understand the Geographical Personality of Maharashtra</li> </ul>
			<ul style="list-style-type: none"> <li>Study the Major river in Maharashtra</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the Geographical Personality of Maharashtra</li> </ul>
			<ul style="list-style-type: none"> <li>Study of major crops of Maharashtra.</li> </ul>
			<ul style="list-style-type: none"> <li>Acquire knowledge of forests in Maharashtra.</li> </ul>
9		Gg. 241: G2 Economic Geography	<ul style="list-style-type: none"> <li>Study the Human Economic Activities</li> </ul>
			<ul style="list-style-type: none"> <li>Explain the Weber theory Rostov modal</li> </ul>
			<ul style="list-style-type: none"> <li>Understand the mineral and power resources</li> </ul>
			<ul style="list-style-type: none"> <li>Study of the distribution of engineering, cotton sugar Industries in India</li> </ul>
			<ul style="list-style-type: none"> <li>Study of India's foreign trade</li> </ul>
10		Gg. 242 S1 Regional Geography Of India	<ul style="list-style-type: none"> <li>Understand the location Physiography, Drainage, Climate, and Vegetation of India</li> </ul>
			<ul style="list-style-type: none"> <li>To know the silent feature, problems and prospects of Agriculture.</li> </ul>
			<ul style="list-style-type: none"> <li>Study the Problems And Prospect of Industrial Area.</li> </ul>
			<ul style="list-style-type: none"> <li>Population Composition India.</li> </ul>

<b>11</b>		S2 Practical Geography Study of Scales, Projections and Surveying	• Understand the different surviving techniques.
			• Knowledge about preparation of layout.
			• Understand the socio economic condition of the villages.
			• Acquire knowledge of preparation of drawing of profile with the help of Dumpy level.
<b>12</b>	TYBA	S3 Environmental Geography	• Understand Structure, Components of Atmosphere.
			• Study about Nutrient cycling.
			• Acquire knowledge about biodiversity.
			• Understand the value of Resource.
			• Understand environmental problems there Cause, Effect and Remedies.
			• Get knowledge about environmental hazards and management.
			• Make aware about conservation of resources.
			• Understand the various environmental protection acts.
<b>13</b>		S3 Remote Sensing & GIS	• Understand the History of Remote Sensing
			• Know Arial Photographs and Satellite Imageries
			• Acquire Knowledge about Indian Remote sensing.
			• Investigate components and function of GIS
			• Study GIS Data models.
			• Introduce GPS and Its Functions.
			• Make use GIS & GPS software.
<b>14</b>		G3 Population Geography	• Understand the history of population
			• Understand the types of data
			• Study of distribution and density of population.
			• Get knowledge of population theories.
			• Investigate Current Issues and Problems in India
<b>15</b>		G3 Political Geography	• Understand the history of Political Geography.
			• Get knowledge about Evolution of states & nations.
			• Get knowledge of Geopolitical theories.
			• Investigate Problems and disputes in India
<b>16</b>			• Introduce the student of top sheet, weather map.

		S4 Practical: Interpretation of Toposheet, weather reports, Cartography	<ul style="list-style-type: none"><li>• Understand the mechanism function of topographical maps.</li><li>• Understand interpretation if weather images.</li><li>• Get knowledge about Geo Statistical Methods.</li></ul>
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**SUBJECT : HINDI**

Sr.No.	Class	Course	Objectives
1	FYBA	(Hindi-G1)	• Develop Hindi reading and linguistic comprehension of students.
			• Develop interest in literature, fiction and poetry.
			• Use their vocabulary for developing moral and social in life.
			• Make special use of language for their expression.
			• Understand the basic forms of fiction and poetry.
			• Know the importance of language in human life.
2	SYBA	(Hindi-G2)	• Understand the types of Hindi short story writing.
			• Know Indian Poetry structure in ancient and modern era.
			• Develop interest in poetry.
			• Understand the basic forms of near epic poem (Khandkavya).
3	TYBA	(Hindi-G3)	• Introduction of the minor genres such as one act play, essay.
			• Study grammar which acquainted them to the correct usage of language.
			• Inculcate moral and human values with themselves.
			• Develop the literary tendencies.
4	SYBA	(HinS-1)	• Know the concept and process of literature.
			• Get information about Literary forms of Hindi.
			• Know Indian Poetry structure in ancient and modern era.
			• Know the importance of criticism, Ras, Alankar, Chhand.
5	SYBA	(Hin S-2)	• Understand novel forms and their types.
			• Know the concept and process of dramatics
			• Use literature to develop their social and moral sense in life.
6	TYBA	(Hindi S-3)	• Understand socio-cultural and political impact on Hindi Literature.
			• Get information about historical literary forms of Hindi.
			• Get information about Sant Poet and their Literature.
			• Learn values through literary works.
			• Study the historical development of Hindi literature
7	TYBA	(Hindi S-4)	• Inculcation of phonological competence among students.
			• Study the various dialects of Hindi.

			<ul style="list-style-type: none"><li>• Get acquainted with morphological concepts and processes.</li></ul>
			<ul style="list-style-type: none"><li>• Get acquainted with the basic concepts in syntactic and semantic levels of Hindi language.</li></ul>
			<ul style="list-style-type: none"><li>• Understand the communication process and method.</li></ul>
			<ul style="list-style-type: none"><li>• Get acquainted with Hindi grammatical forms and functions.</li></ul>

**SUBJECT : HISTORY**

Sr.No.	Class	Course	Objectives
1	F.Y.B.A.	History Gen. paper .I	• To Create a patriotism and nationalism among the students
			• To develop the spirit of nationalism among students
			• To bring an awareness among the students as responsible citizens of the country
			• To imbibe liberty,equality and fraternity among the students
			• To develop positive attitude and appreciate contributions of freedom fighters towards the independence of India
			• To inculcate the rational thinking among the students
2	S.Y.B.A.	History Gen. paper II	• To understand the inspirations behind the establishment of swarajya
		[1630-74]	• Explain the reason behind Chhatrapati Shivaji's early conflicts with the regional lords and the outsiders
		Sem. III	• To know about the administrative need and the importance of grand coronation of Chhatrapati Shivaji
3	S.Y.B.A.	Rise of Maratha power [1674-1707] Sem. IV	• To understand the formation of welfare state during the Maratha rule
			• To understand the industrial an agricultural aspects of Shivaji,'s regime
			• To know the administrative aspects of the swarajya
			• To know the conflict for throne after the death of Shivaji
4	S .Y .BA.	History spl. paper I	• To understand the political scenario of India and the eve of British empire
		Modern India	• To inform students regarding the establishment of British rule in India
		[1757-1805]sem.III	• To understand the land revenue system under the east India company
5	S.Y.B.A.	History spl. Paper I	• To understand the policy of explanation of British power in India
		Modern India	• To evaluate the economical policy of east India company in India
		[1805-1857] Sem.IV	• To understand the role of social reformers in the modern India
6	S. Y. B.A.	History spl.paper II	• To perceive various sources to student of ancient India
		History of Ancient India [B.C 3000-B.C400]	• To understand the glory of India history in the age of Harappan civilization
		Sem.III	• To comprehend the history of Vedic period.
			• To know the philosophy of Jainism and Buddhism
7	S.Y.B.A.	History spl. Paper Sem. IV	• To know about the mauryan empire to perceive socio economic maurya



		History of Ancient India [BC 400-1206]	<ul style="list-style-type: none"> <li>• To comprehend about the Gupta periods</li> <li>• To understand the history of satvahanas,shungas,kushanas and vakatakas</li> <li>• To know about the sangam age ,the cholas,pallavas and chalukyys</li> </ul>
<b>8</b>	T.Y.B.A. Sem5th	History General paper III History of Modern World [1789-1900]	<ul style="list-style-type: none"> <li>• To make aware about world history</li> <li>• To learn about the causes and after match of French revolution</li> <li>• To understand the factors responsible for the end of monarchy in France</li> <li>• To grasp the historical process which leads to rise of nationalism in Europe</li> <li>• To understand how industrial revolution encourage to colonial expansion</li> </ul>
<b>9</b>	T.Y.B .A. Sem.Iv	History General paper III History of Modern World[1901-1945]	<ul style="list-style-type: none"> <li>• To comprehend the importance of the world peace right after the world war 1<sup>st</sup>.</li> <li>• To know the ideology of Dr. Sen-Yet-Sen and republican revolution in China</li> <li>• To evaluate the Russian revolution and the first experiment of the communist government</li> <li>• To understand the fascism and the rise of dictatorship in Europe</li> <li>• Explain the aftermaths of the world war 2<sup>nd</sup> on the world politics</li> <li>• To understand how Russia and America emerged as super powers on the verge of cold war</li> </ul>
<b>10</b>	T.Y.B. .A. Sem5th	History spl. paper III Expansion of the Maratha Power [1707-1761]	<ul style="list-style-type: none"> <li>• To understand the importance of history of the Marathas in 18<sup>th</sup> century</li> <li>• To acess the circumstance under which rise of the Peshwas took place.</li> <li>• To comprehend the political scenario of the Maratha power in the early in the 18<sup>th</sup> century.</li> <li>• To know the policies adopted by early Peshwas.</li> </ul>
<b>11</b>	T. Y.BA Sem.IV	History spl. Paper III Expansion and fall of the Maratha power [1761-1818]	<ul style="list-style-type: none"> <li>• To explain the circumstances of the Maratha power after the battle of Panipat</li> <li>• To know the reason of political disintegration of the Mrathas</li> <li>• To understand the nature of Anglo Maratha relations</li> <li>• To understand the central end provisional administrations of Marathas under the Peshwas</li> </ul>
<b>12</b>	T.Y.BA Sem.V	History spl. Paper IV History of Sultanate[1206-1526]	<ul style="list-style-type: none"> <li>• To understand early difficulties of Sultans in India</li> <li>• To grasp territorial expansion of saltanat periods</li> <li>• To understand the administrative setup of saltanat from central to local level</li> <li>• To the system of trade and commerce during the period of sultanats</li> <li>• To grasp the attitude of emperors towards religion under the regime of sultanats</li> </ul>

<b>13</b>	T.Y.BA Sem.VI	History spl.paper IV History of Mughal [1526-1707]	• To understand the political situations of India on the eve of Barbarians invasion
			• To grasp territorial expansion of Mughal empire
			• To understand the emergence and consolidation of Sher-Shah
			• To grasp the Mughal concept of divine theory of kingship and state
			• To understand the administrative setup of Mughals.

**SUBJECT: INFORMATION TECHNOLOGY**

Sr.No.	Class	Course	Objectives
1	F Y BSc.	IT-101 C++ SEM I and SEM II	<ul style="list-style-type: none"> <li>Develop a greater understanding of the issues involved in programming language design and implementation</li> </ul>
			<ul style="list-style-type: none"> <li>The lectures discussed these topics. Thus, the students learned this objective through the lectures, and were assessed on this on the midterm and final exam.</li> </ul>
			<ul style="list-style-type: none"> <li>Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms</li> </ul>
			<ul style="list-style-type: none"> <li>Three of the four homework's were based on these three programming paradigms; the first homework was in Fortran. The second homework used OCaml (functional), the third Prolog (logic), and the fourth Smalltalk (OOP).</li> </ul>
			<ul style="list-style-type: none"> <li>Implement several programs in languages other than the one emphasized in the core curriculum (Java/C++)</li> </ul>
			<ul style="list-style-type: none"> <li>There were five languages for which the students had to develop a program. The first four were the four listed in objective 2. The last program was their final project, which they chose the language. The languages chosen were Ada 95, Delphi, Euphoria, PHP, Pascal, PostScript, Python, and Ruby.</li> </ul>
			<ul style="list-style-type: none"> <li>Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing</li> </ul>
2	S Y BSc.	IT-201 Data structure SEM I and SEM II	<ul style="list-style-type: none"> <li>Data Structures Course Objectives</li> </ul>
			<ul style="list-style-type: none"> <li>Be familiar with basic techniques of algorithm analysis</li> </ul>
			<ul style="list-style-type: none"> <li>Be familiar with writing recursive methods</li> </ul>
			<ul style="list-style-type: none"> <li>Master the implementation of linked data structures such as linked lists and binary trees</li> </ul>
			<ul style="list-style-type: none"> <li>Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure</li> </ul>
			<ul style="list-style-type: none"> <li>Master the standard data structure library of a major programming language (e.g. java.util in Java 5)</li> </ul>
			<ul style="list-style-type: none"> <li>Master analyzing problems and writing program solutions to problems using the above techniques.</li> </ul>
3	T. Y. B.Sc.	<b>UG-IT-311 System Programming</b>	<ul style="list-style-type: none"> <li>Distinguish between Operating Systems software and Application Systems software.</li> </ul>

			<ul style="list-style-type: none"> <li>• Describe commonly used operating systems.</li> <li>• Identify the primary functions of an Operating System.</li> <li>• Describe the “boot” process.</li> <li>• Identify Desktop and Windows features.</li> <li>• Use Utility programs.</li> <li>• Discuss the pros and cons of the three major operating systems.</li> </ul>
<b>4</b>		<b>UG-IT-312 Database Management System</b>	<ul style="list-style-type: none"> <li>• Differentiate database systems from file systems by enumerating the features provided by database systems and describe each in both function and benefit.</li> <li>• Define the terminology, features, classifications, and characteristics embodied in database systems.</li> <li>• Analyze an information storage problem and derive an information model expressed in the form of an entity relation diagram and other optional analysis forms, such as a data dictionary.</li> <li>• Demonstrate an understanding of the relational data model.</li> <li>• Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.</li> <li>• Formulate, using relational algebra, solutions to a broad range of query problems.</li> <li>• Formulate, using SQL, solutions to a broad range of query and data update problems.</li> <li>• Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.</li> <li>• Use an SQL interface of a multi-user relational DBMS package to create, secure, populate, maintain, and query a database.</li> <li>• Use a desktop database package to create, populate, maintain, and query a database.</li> <li>• Demonstrate a rudimentary understanding of programmatic interfaces to a database and be able to use the basic functions of one such interface</li> <li>• Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.</li> </ul>
<b>5</b>		<b>UG-IT-313 Data Communication</b>	<ul style="list-style-type: none"> <li>• Show clear understanding of the basic concepts of data communications including the key aspects of networking and their interrelationship, packet switching, circuit</li> </ul>

			switching and cell switching as internal and external operations, physical structures, types, models, and internetworking.
			<ul style="list-style-type: none"> <li>• Demonstrate the ability to unambiguously explain networking as it relates to the connection of computers, media, and devices (routing).</li> </ul>
			<ul style="list-style-type: none"> <li>• Able to intelligently compare and contrast local area networks and wide area networks in terms of characteristics and functionalities. Able to identify limitations of typical communication systems.</li> </ul>
			<ul style="list-style-type: none"> <li>• Able to evaluate the performance of a single link, logical process-to-process (end-to-end) channel, and a network as a whole (latency, bandwidth, throughput).</li> </ul>
			<ul style="list-style-type: none"> <li>• Able to differentiate among and discuss the four levels of addresses (physical, logical, port, and specific used by the Internet TCP/IP protocols).</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the concept of reliable and unreliable transfer protocol of data and how TCP and UDP implement these concepts, to understand the client/server model and socket API with their implications, skills to implement a network protocol based on socket programming.</li> </ul>
			<ul style="list-style-type: none"> <li>• Demonstrate an understanding of the significance and purpose of protocols and standards and their key elements and use in data communications and networking.</li> </ul>
<b>6</b>		<b>UG-IT-314 Software Engineering</b>	<ul style="list-style-type: none"> <li>• How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment</li> </ul>
			<ul style="list-style-type: none"> <li>• An ability to work in one or more significant application domains</li> </ul>
			<ul style="list-style-type: none"> <li>• Work as an individual and as part of a multidisciplinary team to develop and deliver quality software</li> </ul>
			<ul style="list-style-type: none"> <li>• Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle</li> </ul>
			<ul style="list-style-type: none"> <li>• Demonstrate an ability to use the techniques and tools necessary for engineering practice</li> </ul>
<b>7</b>		<b>UG-IT-315 Internet Programming using PHP</b>	<ul style="list-style-type: none"> <li>• Create and compile advanced dynamic web projects using client – JQuery (Javascript) and server – PHP technology.</li> </ul>
			<ul style="list-style-type: none"> <li>• Demonstrate understanding of database applications with MySQL.</li> </ul>
			<ul style="list-style-type: none"> <li>• Demonstrate understanding of (X)HTML(5)+CSS programming.</li> </ul>
			<ul style="list-style-type: none"> <li>• Show understanding of the logic behind advanced web applications.</li> </ul>

			<ul style="list-style-type: none"> <li>• Demonstrate an understanding of Content Management Systems</li> </ul>
<b>8</b>		<b>UG-IT-316 JAVA Programming-I</b>	<ul style="list-style-type: none"> <li>• Knowledge of the structure and model of the Java programming language, (knowledge)</li> </ul>
			<ul style="list-style-type: none"> <li>• Use the Java programming language for various programming technologies (understanding)</li> </ul>
			<ul style="list-style-type: none"> <li>• develop software in the Java programming language, (application)</li> </ul>
			<ul style="list-style-type: none"> <li>• Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)</li> </ul>
			<ul style="list-style-type: none"> <li>• Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)</li> </ul>
			<ul style="list-style-type: none"> <li>• Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)</li> </ul>

**SUBJECT: Mathematics**

Sr.No.	Class	Course	Objectives
1	FYBSc	MTH 101: Matrix Algebra	<ul style="list-style-type: none"><li>• Upon successful completion of this course the student will be able to:</li><li>• Understand concepts on matrix operations and rank of the matrix.</li><li>• Understand use of matrix for solving the system of linear equations.</li><li>• Understand basic knowledge of the eigen values and eigen vectors.</li><li>• Apply Cayley-Hamilton theorem to find the inverse of the matrix.</li><li>• Know the matrix transformation and its applications in rotation, reflection, translation.</li></ul>
2		MTH 102: Calculus	<ul style="list-style-type: none"><li>• Upon successful completion of this course the student will be able to:</li><li>• Understand basic concepts on limits and continuity.</li><li>• Understand use of differentiations in various theorems.</li><li>• Know the mean value theorems and its applications.</li><li>• Make the applications of Taylor's, Maclaurin's theorem.</li><li>• Know the applications of calculus.</li></ul>
3		MTH 103(: Graph Theory	<ul style="list-style-type: none"><li>• to apply operations on graph</li><li>• able to solve the problems related to applications of the Graphs such that Existence of Graphs for given number of Vertices and Edges, Coloring of the graphs, Konigsberg Seven Bridge Problem, Travelling salesman Problem, Dijkstra's algorithm, Warshall's algorithm, formation of flowchart using rooted trees</li></ul>
3		MTH 201: Ordinary Differential Equations	<ul style="list-style-type: none"><li>• Upon successful completion of this course the student will be able to:</li><li>• Understand basic concepts in differential equations.</li><li>• Understand method of solving differential equations</li><li>• Understand use of differential equations in various fields.</li></ul>
5		MTH 202: Theory of Equations	<ul style="list-style-type: none"><li>• Students can find out roots of any equation of degree less than or equal to five. Theory of equations is highly useful in various subjects like algebra, linear algebra, calculus, ordinary and partial differential equations etc.</li></ul>
6		MTH 203(: Laplace Transform	<ul style="list-style-type: none"><li>• Upon successful completion of this course the student will be able to:</li><li>• Understand basic concepts on Laplace and Inverse Laplace transforms. Understand convolution theorem.</li><li>• Understand use of Laplace transform in solving Differential Equations.</li></ul>

<b>7</b>	SYBSC	MTH -231: Calculus of Several Variables	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Understand basic concepts on limits and continuity on several variables.</li> <li>• Understand use of differentiations in various theorems.</li> <li>• Know the applications of calculus.</li> </ul>
<b>8</b>		MTH -232(: Algebra	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to solve the problems of groups</li> <li>• To solve the problems on homomorphism and isomorphism</li> <li>• To understand the structure of ring, field, integral domain.</li> </ul>
<b>9</b>		MTH -241 : Complex Variables	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• To understand the properties of complex numbers and complex variables.</li> <li>• Able to solve the problems of residue and poles</li> <li>• To learn the importance of analytic functions.</li> </ul>
<b>10</b>		MTH-242(: Differential Equations	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Understand concepts in higher order differential equations.</li> <li>• Understand method of solving higher order differential equations</li> <li>• Understand use of higher order differential equations in various fields.</li> </ul>
<b>11</b>	TYBSC	MTH-351: Topics in Metric Spaces	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• To understand the distance function.</li> <li>• To solve the examples of metric.</li> <li>• To understand connectedness and compactness in metric spaces.</li> </ul>
<b>12</b>		MTH-352: Integral Calculus	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to understand the concept of differentiability and integrability.</li> <li>• Able to apply for measuring area and volumes.</li> <li>• Able to solve improper integral.</li> </ul>
<b>13</b>		MTH-353: Modern Algebra	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to solve the problems of polynomial ring.</li> <li>• To solve the problems on homomorphism and isomorphism</li> <li>• Able to solve problems related to ring, field, integral domain and vector space.</li> </ul>
<b>14</b>		MTH-354: Lattice Theory	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• To understand the structure of poset and lattice.</li> <li>• To understand the concepts of ideals and homomorphism.</li> </ul>



			<ul style="list-style-type: none"> <li>• To learn hasses diagrammatical representation of lattice.</li> </ul>
<b>15</b>		MTH-355(: Elementary Number Theory	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to understand the concepts in number theory</li> <li>• Able to apply the problems of numbers in computer science.</li> <li>• Able to understand the applications of number theory in computer science and different areas.</li> </ul>
<b>16</b>		MTH-356(: Vector Analysis	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to solve the problems of vectors.</li> <li>• It is widely used in physical sciences.</li> <li>• To know importance of stockes theorem.</li> </ul>
<b>17</b>		MTH -361 : Measure and Integrations Theory	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to understand the concept of Measurable set and Measurable Function.</li> <li>• Ito know Lebesgue Integral, Square Integral, Inequalities.</li> </ul>
<b>18</b>		MTH-362: Methods of Real Analysis	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to understand the concept of sequences and Series.</li> <li>• Able to solve problems of Fourier Series.</li> </ul>
<b>19</b>		MTH – 363 Linear Algebra	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Able to understand the concepts of vector spaces, linear transformations.</li> <li>• To solve the problems on eigen values and eigen vectors.</li> <li>• Able to solve problems related to linear transformations.</li> </ul>
<b>20</b>		MTH-364 : Ordinary and Partial differential Equations	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Understand concepts in ordinary and partial differential equations.</li> <li>• Understand method of solving ODE and PDE.</li> <li>• Understand use of ODE and PDE in various fields.</li> </ul>
<b>21</b>		MTH-365(: Optimization Techniques	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Understand simplex method, Assignment Problem and Transportation Problem.</li> <li>• Understand method of solving simplex method, Assignment Problem and Transportation Problem.</li> <li>• Understand use of optimization techniques in various fields.</li> </ul>
<b>22</b>		MTH -366( : Differential Geometry	<ul style="list-style-type: none"> <li>• Upon successful completion of this course the student will be able to:</li> <li>• Understand concepts in Differential Geometry.</li> </ul>

			<ul style="list-style-type: none"><li>• Understand method of solving problems of D. G..</li><li>• Understand use of D.G. in various fields.</li></ul>
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**SUBJECT: PHYSICS**

Sr.No.	Class	Course	Objectives
1	F.Y.B.SC. Sem.I	PHY 101-Basic Mechanics	• Apply the concept of use of knowledge of mechanics to real life problems.
			• Understanding of the course will create scientific temperament.
			• To develop ability among the students to identify, remember and grasp the meaning of basic facts, concept and principles of physics.
2	F.Y.B.SC. Sem.I	PHY 102-Dynamics and Elasticity	• To develop observational skills, confidence in using scientific equipments and relate the knowledge of scientific concepts to quantitative and physical measurements.
			• Apply the concept of use of knowledge of dynamics and elasticity to real life problems.
			• Understanding of the course will create scientific temperament.
3	F.Y.B.SC. Sem.I	Physics Lab-DSC1A lab-Mechanics PHY103-LAB-1 <sup>ST</sup>	• To calculate errors from given data.
			• To determine the height of building using sextant.
			• To determine the moment of inertia of flywheel.
			• To measure the length using vernier-caliper, screw gauge and travelling microscope.
			• To determine the Young's Modulus of a wire by optical lever method.
			• To determine the modulus of rigidity of wire by Maxwell's needle.
			• To determine 'g' by Bar pendulum.
			• To determine 'g' by Kater's pendulum.
			• To determine the elastic constants of a wire by Searle's method.
			• To determine the 'g' and velocity for freely falling body using Digital Timing Technique.
			• To study the motion of spring and calculate a. Spring Constant    b. Value of 'g'.
			• To determine the moment of inertia of a Disc.
• To determine Y by using flat spiral spring.			
• To determine Y of rectangular beam by bending.			
• To determine n by using flat spiral spring.			

			<ul style="list-style-type: none"> <li>• To determine n by torsional oscillation.</li> <li>• To determine Y by vibrational cantilever.</li> <li>• To determine Poisson's ratio of rubber by using rubber cord/tube.</li> <li>• Determination of coefficient of viscosity of water by Poiseuille's method.</li> <li>• Verification of Bernoulli's theorem.</li> </ul>
4	F.Y.B.SC. Sem.II	PHY201-Electricity and Electrostatics	<ul style="list-style-type: none"> <li>• To impart knowledge of basic concept in Electricity and Electrostatics.</li> <li>• Apply the concept of use of knowledge of Electricity and Electrostatics to real life problems.</li> <li>• Understanding of the course will create scientific temperament.</li> </ul>
5	F.Y.B.SC.	PHY202-Dielectrics, Magnetism and Electromagnetism	<ul style="list-style-type: none"> <li>• Apply the concept of use of knowledge of magnetism and dielectrics to real life problems</li> <li>• Understanding of the course will create scientific temperament</li> </ul>
6	F.Y.B.SC.	PHY 203-LAB 2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• To use millimeters for measuring</li> <li>• a. Resistance, b. A.C and D.C Voltages, c. D.C Current and d. Checking electrical fuses.</li> <li>• Ballistic Galvanometer</li> <li>• Measurement of charge and current sensitivity.</li> <li>• Measurement of CDR.</li> <li>• Determine a high resistance by leakage method .</li> <li>• d. To determine self-inductance of coil by Rayleigh's method.</li> <li>• To compare capacitances using Desauty's bridge.</li> <li>• Measurement of field strength B and its variation in a solenoid</li> <li>• To study the characteristics of series RC circuit.</li> <li>• To study the a series LCR circuit and determine</li> <li>• a. Resonant frequency</li> <li>• b. Quality factor.</li> <li>• To study a parallel LCR circuit and determine its</li> <li>• Anti-resonant frequency</li> <li>• b. Quality factor.</li> <li>• To determine a low resistance by Careyfooster's Bridge.</li> <li>• Verification of Kirchhoff's law.</li> </ul>

			<ul style="list-style-type: none"> <li>• To verify Thevenin's theorem.</li> <li>• To verify Norton's theorem.</li> <li>• To verify maximum power transfer theorem.</li> <li>• To verify Joule's law.</li> <li>• To determine time constant of R-C circuit using charging and discharging of condenser through resistor.</li> <li>• Determination of time constant of L-R circuit.</li> <li>• Electric billing with energy meter.</li> <li>• Frequency of AC using vibrating wire and magnet.</li> <li>• To determine efficiency and turns ratio of transformer.</li> </ul>
<b>7</b>	S.Y..B.Sc. Sem.I	PHY-231-Waves and Oscillations	<ul style="list-style-type: none"> <li>• To understand composition of two S.H.M.S of equal frequencies along same line of vibration, at right angles.</li> <li>• To demonstrate Lissajous figure by mechanical, optical and electrical methods.</li> <li>• To understand free and damped oscillations.</li> <li>• To solve differential equation of damped harmonic oscillators, energy equation and application and application to series L-C-R circuit.</li> <li>• To demonstrate resonance and its types mechanical resonance, acoustics resonance, electrical resonance and optical resonance.</li> <li>• To solve differential equation of forced oscillation, energy equation and application to series L-C-R circuit.</li> <li>• To understand Piezoelectric effect and magnetostriction effect.</li> <li>• To understand Doppler effect in sound and light.</li> </ul>
<b>8</b>	S.Y.B.Sc.	PHY-232[A]-Electronics-1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• To understand P-N junction diode, Zener diode.</li> <li>• To understand LED and diode.</li> <li>• To understand Half wave, full wave and bridge rectifier and filters.</li> <li>• To understand concept of voltage regulation and zener diode as a voltage regulator.</li> <li>• To understand basic construction and operation of transistor.</li> <li>• To distinguishing between transistor circuit configuration [CB,CE,CC].</li> <li>• To learn, Decimal, Binary, hexadecimal number system.</li> </ul>

			<ul style="list-style-type: none"> <li>To state De Morgan's theorems and understand symbols Boolean expression and truth table for gates.</li> </ul>
<b>9</b>	S.Y.B.Sc.	PHY-241-Modern physics	<ul style="list-style-type: none"> <li>To solve problems associated with energy crisis by means of photo thermal and photovoltaic conversion.</li> </ul>
			<ul style="list-style-type: none"> <li>To demonstrate construction and working of flat plate collector, liquid flat plate collector solar cell collector and types of solar cell.</li> </ul>
			<ul style="list-style-type: none"> <li>To understand basic photovoltaic systems and solar MODULES FOR POWER GENERATION</li> </ul>
			<ul style="list-style-type: none"> <li>To understand laser , its types applications.</li> </ul>
			<ul style="list-style-type: none"> <li>To understand basic idea of Hologram, construction and reconstruction of Hologram.</li> </ul>
			<ul style="list-style-type: none"> <li>To verify experimentally of discrete atomic energy levels and correspondence principle</li> </ul>
			<ul style="list-style-type: none"> <li>To understand atomic spectra and distinguish classical planetary model and Bohr's theory.</li> </ul>
			<ul style="list-style-type: none"> <li>To understand uncertainty principle and its applications in nonexistence of electron in nucleus, determination of ground state of electron and size of hydrogen atom.</li> </ul>
<b>10</b>	S.Y.B.Sc.	Physics-242-Optics	<ul style="list-style-type: none"> <li>To learn power of lens ,spherical aberration in lens and to distinguish chromatic aberration and Achromatic aberration</li> </ul>
			<ul style="list-style-type: none"> <li>To understand concept of interference pattern due to reflected light in parallel sided thin films and in thin wedge shaped film</li> </ul>
			<ul style="list-style-type: none"> <li>To demonstrate experimental setup for Newton's rings ,theory and its applications to determined wavelength of source and reflective index of lights</li> </ul>
			<ul style="list-style-type: none"> <li>To demonstrate Michelson interferometer [experimental setup and its application for measurement of wavelength of monochromatic source ]</li> </ul>
			<ul style="list-style-type: none"> <li>To distinguish between Fresnel and Fraunhofer diffraction</li> </ul>
			<ul style="list-style-type: none"> <li>To understand Fraunhofer diffraction of single slide and double slits</li> </ul>
			<ul style="list-style-type: none"> <li>To understand theory of plane transmission grating and its resolving power</li> </ul>
			<ul style="list-style-type: none"> <li>To state Brewsters law and Maluss law for polarization by double refraction in crystal</li> </ul>

			<ul style="list-style-type: none"> <li>• To understand construction of Polaroid, quarter and half wave plates Nicol prism</li> <li>• To understand productions and detection of circularly and elliptically polarized light</li> <li>• To demonstrate principle and working of polarimeter or sacherimeter</li> </ul>
<b>11</b>	S.Y.B.Sc.	Physics-233 practical course 1 <sup>st</sup> section 1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Determination of the decrement factor by using logarithmic decrement [in air / water]</li> <li>• Study of acoustic resonance by using bottle as a resonator</li> <li>• Determination of velocity of sand by using kund's tube</li> <li>• study of electrical resonance by using series L-C-R circuit</li> <li>• study of acoustic resonance by using resonance tube</li> <li>• study of resonance using kater's pendulum</li> <li>• comparison of capacities by De Saughty's methods</li> <li>• R,T,Q using damped harmonic motion</li> <li>• Demonstration of Lissajou's figure by using C.R.O.</li> </ul>
<b>12</b>		Section -2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Study of full wave rectifier with capacitor filter and to calculate its ripple factor</li> <li>• Study of zener diode as a voltage regulator</li> <li>• Study of CE transistor characteristics to find out 'B' of the transistor</li> <li>• Study of logic gates [AND, OR and NOT] using diode and transistor .</li> <li>• verification of De Morgan's Theorems [using ICS]</li> <li>• To study the characteristics of light emitting diode [LED]</li> <li>• Experimental verification of NAND gate as a universal building block</li> <li>• Experimental verification of NOR gates as a universal building block</li> <li>• To study I-V characteristics of</li> <li>• a]a resister and</li> <li>• b]a p-n junction diode and compare it.</li> <li>• frequency response of CE single stage transistor amplifier and to calculate its band width,</li> </ul>
<b>13</b>	Physics	Practical course 2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Determination of an electronic charge using PN junction diode</li> <li>• Determination of an energy gap of a 'Ge' semiconductor.</li> <li>• I-V characteristics of photo cell</li> <li>• To verify inverse square law of light using a photo cell</li> </ul>

			<ul style="list-style-type: none"> <li>• Determination of planck's constant by using LED</li> <li>• Comparison of luminous intensities of two light sources by using photo voltaic cell</li> <li>• Determination of efficiency of a solar cell</li> <li>• Determination of the wavelength of a given source of light using newton's rings</li> <li>• Determination of unknown wavelength of source using diffraction grating</li> <li>• Determination of unknown wavelength of given source by Fresnel's biprism</li> <li>• Measurement of beam divergence of a LASER beam</li> <li>• Measurement of wavelength of a LASER beam</li> <li>• Measurement of beam size of a LASER beam</li> <li>• Determination of specific rotation <math>\alpha</math> of optically active substance using polarimeter</li> <li>• R.I. of prism</li> <li>• Dispersive power of prism .</li> </ul>
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**SUBJECT : POLITICS**

Sr.No.	Class	Course	Objectives
1	F.Y B.A.	Sem-I Introduction to Indian Constitution	<ul style="list-style-type: none"> <li>To know the importance of Indian Constitution.</li> <li>It will enhance abilities among students to be responsible citizens in the form of democratic system.</li> <li>It will introduce importance of fundamental rights and fundamental duties of India.</li> </ul>
		Sem-II Introduction to Indian Constitution	<ul style="list-style-type: none"> <li>To introduce the executive and legislative system in India.</li> <li>To introduce judiciary system in India.</li> <li>To introduce Electoral Process in India</li> <li>To study the emerging challenges before the Indian Democracy.</li> </ul>
2	S.Y.B.A.	SEM-III Socio-Political Movements in Maharashtra	<ul style="list-style-type: none"> <li>To know the historical perspective of movement in Maharashtra</li> <li>To know the Samyukta Maharashtra Movement</li> <li>To know the Dalit and Adivasi Movement</li> </ul>
		SEM-IV-Administration of Maharashtra	<ul style="list-style-type: none"> <li>To introduce to Historical, Social and Geographical background of Maharashtra</li> <li>To introduce Importance, objectives &amp; functions of district Administration</li> <li>To introduce Panchayati Raj Institutions</li> </ul>
3	T.Y.B.A.	SEM-V- Personnel Administration and Management	<ul style="list-style-type: none"> <li>To introduce the administration</li> <li>To know the importance Personnel administration</li> <li>To know the characteristics Personnel administration</li> </ul>
		SEM-VI- Personnel Administration and Management	<ul style="list-style-type: none"> <li>This syllabus can improve the leadership quality for good Governance.</li> <li>To study the Types, Characteristic, Functions of Management</li> <li>To study the New trends in Management.</li> </ul>

**SUBJECT : URDU**

Sr.No.	Class	Course	Objectives
1	F.Y B.A.	Islamic Studies SEM. I , II	• To study the life and personality of prophet ( peace be upon him) as an ideal reformer.
			• To study the teaching of prophet (P B U H) for tolerance co-existence & communal harmony.
			• To study Islamic history, specially the role of Islam in India
2		Persian	• To impart knowledge of Persian language.
			• To develop learners the skill of reading, writing ,understanding & speaking.
			• To study the history of Persian language.
3	S.Y.B.A.	Islamic Studies SEMESTER III and IV	• To study the Islamic reforms. such as importance of education , equality, empowerment of women, abolishment of slavery and class system, distribution of inherits with justice etc.
			• To elaborate the role of Islamic teaching in national integration, co-existence & human rights.
			• To study the life & contribution of Islamic thinkers & reformers.
4		Persian	• To study the language and literature of Persian language.
			• To increase the vocabulary of Persian( foreign language)
			• To study the selected prose & poetry.
			• To develop in students skill of translation.
5	T.Y.B.A.	Islamic studies SEMESTER III and IV	• To study the holy book, Quran to understand the Islamic way of life .
			• To study Hadith, as it is the important source of Islamic knowledge after Quran.
			• To study fiqh to understand the teachings and advises of Islam in day to day life. Does & Dents of Islamic shariya.
	Persian	• To study the ancient remarkable works of great Persian writers and poets.	
		• To study the history of Persian language and literature.	
		• To study the Persian a foreign language.	
7	F.Y.B.A.	Urdu General SEMESTER I and II	• To impart basic ideas & knowledge about Urdu language and literature.
			• To improve the Skill of correct speaking of Urdu with right pronunciation.

			<ul style="list-style-type: none"> <li>To educate the basic concept of Dastan , Afsana ,Inshaiya and Shairy of Khandesh .</li> </ul>
8	S.Y.B.A.	Urdu General Semester III and IV	<ul style="list-style-type: none"> <li>To introduced the significance of maktoob Nigarikhaka Nigari and swanah Nigari in student.</li> </ul>
			<ul style="list-style-type: none"> <li>To develop the concept of biographics and sketches.</li> </ul>
			<ul style="list-style-type: none"> <li>To make the students understood forms of poetry like nazm and his poets.</li> </ul>
9	S.Y.B.A.	Urdu special paper I Semester III and IV	<ul style="list-style-type: none"> <li>To enable students understood the various form of literature and Urdu poets.</li> </ul>
			<ul style="list-style-type: none"> <li>To enable student for grasping the contents of each text mentioned for prose and poetry.</li> </ul>
			<ul style="list-style-type: none"> <li>To educate the basic concepts of language.</li> </ul>
10	S.Y.B.A.	Urdu Special paper II Semester III and IV	<ul style="list-style-type: none"> <li>Students should understand the important aspects of Urdu afsana.</li> </ul>
			<ul style="list-style-type: none"> <li>Students should understand the important aspects of Marsiya.</li> </ul>
			<ul style="list-style-type: none"> <li>To develop critical abilities along with skills listening, reading and writing more intensively effectiely.</li> </ul>
11	T.Y.B.A.	Urdu General Semester V and IV	<ul style="list-style-type: none"> <li>To introduce the significance khaka Nigari and swanah Nigariin students.</li> </ul>
			<ul style="list-style-type: none"> <li>To inculcate the habits biographics of A.P.J Ab .Kalam.</li> </ul>
			<ul style="list-style-type: none"> <li>To develop Urdu sahafat .(media).</li> </ul>
			<ul style="list-style-type: none"> <li>To educate the basic concept of Nazam and Ghazal.</li> </ul>
12	T.Y.B.A.	Urdu Special paper III Semester V and VI	<ul style="list-style-type: none"> <li>To impart the knowledge of language.</li> </ul>
			<ul style="list-style-type: none"> <li>To train students in the close reading of Nazm in the light of Urdu literature.</li> </ul>
			<ul style="list-style-type: none"> <li>To develop in the student a critical out look towards literature.</li> </ul>
13	T.Y.BA	Urdu Special Paper IV Semester V and VI	<ul style="list-style-type: none"> <li>To impart basic ideas about the language and literature.</li> </ul>
			<ul style="list-style-type: none"> <li>To make students understood the basic concept of urdu fiction and qasida.</li> </ul>
			<ul style="list-style-type: none"> <li>To enable students for grasping the contents of each text mentioned for prose and poetry.</li> </ul>

**SUBJECT: ZOOLOGY**

Sr.No.	Class	Course	Objectives
1	F.Y.B.Sc.	ZOO 111: Non Chordates – I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the evolution, history of phylum.</li> <li>• Understand about the Non Chordate animals.</li> <li>• To study the external as well as internal characters of Non-chordates.</li> <li>• To study the distinguishing characters of Non-chordates.</li> <li>• Understand the economic importance of Mollusca.</li> </ul>
		ZOO-112 Cell Biology	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the Scope of cell biology, because cell is the basic unit of life.</li> <li>• Understand the Main distinguishing characters between plant cell and animal cell.</li> <li>• To study and understand the whole cell organelles with their structure and function.</li> <li>• Understand the cell cycle and know the importance of various cells in body of organisms.</li> <li>• Understand the various applications of cells by using cell biology like study of various types of tumour.</li> </ul>
		ZOO-121 Chordate-I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the phylum Chordate.</li> <li>• Understand the basic concepts about chordates.</li> <li>• Understand the external morphology and sexual dimorphism in chordates.</li> <li>• Study and understand the various systems, adaptation and dentition in Mammals.</li> </ul>
		ZOO-122 Applied Zoology I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the concepts of Goatary and Lac culture.</li> <li>• Understand the various Indian breeds and their distribution and characteristics of Goats.</li> <li>• To aware the students about Goatary and its economic importance.</li> <li>• Understand the Various concepts in Lac Cultivation.</li> <li>• To know the Economical importance of lac Cultivation.</li> </ul>

		<ul style="list-style-type: none"> <li>• This is a job oriented subject.</li> </ul>
	ZOO-111 Non Chordates-I (Sem-I)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the various internal systems like Digestive system, nervous system with the help of charts.</li> <li>• Understand the functions of Gemmules and spicules.</li> <li>• Understand the economic importance of Molluscan shells.</li> <li>• To study and understand the classification of whole phyla includes in Non-chordates with the help of charts/models/pictures.</li> <li>• Understand the evolutionary history of Non chordates.</li> </ul>
	ZOO-112: Cell Biology (Sem-I)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the Systematic position and external morphology of <i>Caloteseversicolor</i>.</li> <li>• Understand and study the various systems like Digestive systems</li> <li>• To study and understand the Scales, Fins, Arial adaptation and Dental formula.</li> <li>• Understand the Classification various classes of phylum Chordate i.e.Pisces, Reptiles,Aves and Mammals.</li> <li>• Compulsory visit to any Ecosystem gives more knowledge to the students.</li> </ul>
	ZOO 122: Applied Zoology I (Sem-II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the concept of Goatary and Lac cultivation.</li> <li>• To study and understand the various diseases and treatment of Goats.</li> <li>• Observation of Lac Producing insects and their life cycle.</li> <li>• Understand the various techniques of isolation of seed lac from raw lac.</li> <li>• Compulsory visit to the Goatary and Lac Cultivation Industry gives more knowledge to the students.</li> </ul>
	Practicals : ZOO 111: Non - Chordates –I (Sem- I)	<ul style="list-style-type: none"> <li>• Study of external characters of prawn.</li> <li>• Study various systems of Prawn.</li> <li>• Study of permanent slides of spicules and gemmules.</li> <li>• Study of Collection and identification Molluscan Shells.</li> <li>• Study the classification of phyla up to class level with help of charts/models/pictures/ simulations, from, Porifera, Coelenterata,</li> </ul>

			Platyhelminthes, Nematohelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata.
		Practical: ZOO : Cell biology -(Sem- I)	<ul style="list-style-type: none"> <li>• Study of animal cell and cell organelles by using microphotographs –</li> <li>• Mitochondria, Endoplasmic reticulum, Golgi complex, Nucleus, Lysosomes and ribosomes</li> <li>• Study of mitosis and meiosis.</li> <li>• Study of vital staining of mitochondria by Janus green.</li> <li>• The preparation of blood smears to study various blood corpuscles.</li> <li>• Study of mammalian gametes-Sperm and ova.</li> <li>• Study of RBC membrane fragility - Isotonic, Hypotonic and Hypertonic solutions.</li> </ul>
		Practical: ZOO 121: Chordate – I (Sem- II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Students will be able to study of systematic position and external morphology of <i>Calotesversicolor</i>.</li> <li>• Students will be able to study various systems of <i>Calotesversicolor</i>.</li> <li>• Students will be able to study the body wall of <i>Calotes</i>, Scales and fins of fishes, Aerial adaption in Pigeon and Dental formula of mammals.</li> <li>• Students will be able to study the classification of phyla up to class level with help of charts/ models/pictures/ simulations, from Pisces to Mammalia.</li> </ul>
		Practical: Zoo-122: Applied Zoology – I Sem- II	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Identify of at least any four Indian Goatary breed with reference to their distribution and breed characteristics.</li> <li>• Study of diseases and treatment of Goats.</li> <li>• Study of observation of Lac insect life cycle (with adult Male and female).</li> <li>• Study of scrapping of raw Lac from branches.</li> <li>• Study of isolation of seed lac from raw lac (Scrapped).</li> </ul>
<b>2</b>	<b>S.Y.B.Sc.</b> <b>S.Y.B.Sc.</b>	ZOO 231: Non Chordates-II	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the Characters of class Asterias with help of animal Sea star.</li> <li>• Understand the internal as well as external morphology of that animal.</li> </ul>

		<ul style="list-style-type: none"> <li>• To study and understand the concepts-Metamorphosis, regeneration and autonomy.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the Mouthparts of insects.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the Canal system in sponges.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the Locomotion in Protozoa.</li> </ul>
		<ul style="list-style-type: none"> <li>• To observe and study the Foot in Mollusca.</li> </ul>
	ZOO 232: Medical Zoology	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
		<ul style="list-style-type: none"> <li>• To study and understand the scope and branches of Medical Zoology.</li> </ul>
		<ul style="list-style-type: none"> <li>• To aware the students for various parasites and diseases which spreads in human with the help of study of host-parasite relationship.</li> </ul>
		<ul style="list-style-type: none"> <li>• To increase awareness for the health in students.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the various disease causing vectors like Mosquitoes.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand regarding the typhoid, cholera like disease.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the importance of medical diagnostic and also understand the term forensic Entomology.</li> </ul>
	ZOO 241: Chordates -II	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
		<ul style="list-style-type: none"> <li>• To study and understand the external as well as internal characters of class Aves, by studying animal <i>Columbia livi adomestica</i>.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the various systems of pigeon.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the General Topics like Accessory respiratory organs in fishes.</li> </ul>
		<ul style="list-style-type: none"> <li>• Able to know the reptiles of Mesozoic era.</li> </ul>
	ZOO 242: Applied Zoology	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
		<ul style="list-style-type: none"> <li>• Introduce the term apiculture to the students.</li> </ul>
		<ul style="list-style-type: none"> <li>• To aware the students and provides the economic importance of Apiculture.</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the Bee keeping equipment and apiary management.</li> </ul>
		<ul style="list-style-type: none"> <li>• To study and understand the various species of Bees.</li> </ul>
	ZOO 231: Non Chordates –II (Sem – I -Paper –I)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the Systematic Position, Habit and Habitat, External Characters, Pedicellariae , Body Wall, Endoskeleton , Coelom of <i>Asterias</i></li> </ul>
		<ul style="list-style-type: none"> <li>• Understand the various systems of <i>Asterias</i>.</li> </ul>

			<ul style="list-style-type: none"> <li>• Understand the various mouth parts in Insects.</li> <li>• Understand the various Canal System in Sponges.</li> <li>• Understand the various Locomotion in Protozoa.</li> <li>• Understand the various Foot in Mollusca.</li> </ul>
		ZOO 232: Medical Zoology (Sem – I-Paper –II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the Scope and branches of Medical Zoology.</li> <li>• Understand the Parasites and Host w.r.t. there types, sources of infection and mode of transmission.</li> <li>• Understand the Health and Diseases.</li> <li>• Understand major insect vectors of public health importance.</li> <li>• Understand various insect vectors of medical importance.</li> <li>• Understand Epidemic diseases like Typhoid and Cholera.</li> <li>• Understand Introduction and importance, Post mortem changes, Role of Insects in Forensic Entomology.</li> <li>• Understand the importance of medical diagnostics i.e. Hb estimation, Cholesterol level, Blood and Urine sugar level, Sonography, Angiography, CT scan and M.R. I.</li> </ul>
		ZOO 233 – Practical corresponding to ZOO -231-Sem-I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the external characters and water vascular system in sea star Understand different system in <i>Asteias</i>.</li> <li>• Understand the various Canal System in Sponges.</li> <li>• Understand the locomotion in protozoa and Modification of foot in molluscs.</li> <li>• To understand the viruses like Chikungunya, Swine flu, Tetanus.</li> <li>• To aware the mounting of mouth parts of insects.</li> </ul>
		ZOO 233 – Practical corresponding to ZOO 232-Sem-I	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> <li>• Understand the various pathogens like Chikungunya virus, Swine flu, Anthrax virus, Tetanus.</li> <li>• Aware regarding parasite w.r.t. life cycle and pathogenicity: E. histolytica, Ascaris male/ female, Taeniasolium,</li> </ul>



			<ul style="list-style-type: none"> <li>• Understand various insect vectors with the help of permanent slide / photographs: HeadLouse, Flea, House fly, Bed bug.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Comparative study of mosquitoes: Aedes, Culex and Anopheles.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding epidemic diseases: Typhoid and Cholera w.r.t. sign and symptoms, source of infection, prevention and control measures.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand regarding diagnostic study of Hb estimation and Urine sugar level tests.</li> </ul>
		ZOO 241: Chordates-II (Sem –II-Paper–I–)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Systematic position, Habits and Habitat, and distribution of <i>Columba livia</i>.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding morphology and exoskeleton of <i>Columba livia</i>.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand regarding internal anatomy and economic importance of <i>Columba livia</i>.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Accessory respiratory organs in fishes.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding Reptiles of Mesozoic era.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand an adaptations in aquatic Mammals.</li> </ul>
		ZOO 242: Applied Zoology-II (Sem –II-Paper–II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand an introduction to apiculture, Scope and history of bee keeping.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Systematic Position of bee species.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding the Morphology and Anatomy of bee.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Colony organization and life cycle of honey bee.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding the Bee behavior and communications.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the Bee keeping equipments and apiary management.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding the Bees and agriculture.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand regarding the Bee diseases, enemies and bee products.</li> </ul>
		ZOO 243 Practical corresponding to ZOO 241 (Sem-II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the External characters of <i>Columba livia</i> and Study of exoskeleton.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand an internal anatomy of <i>Columba livia</i>.</li> </ul>

			<ul style="list-style-type: none"> <li>• Aware regarding the temporary mountings of scales and fins in fishes.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand regarding study of dinosaurs like <i>Brontosaurus</i>, <i>Tyranosaurus</i>, <i>Stegosaurus</i>, <i>Triceratops</i>, <i>Pteranodon</i>.</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware regarding adaptations in aquatic Mammals like Whale and Seal.</li> </ul>
		ZOO 243 – Practical corresponding to ZOO 242-(Sem-II)	<ul style="list-style-type: none"> <li>• On completion of the course, students are able to:</li> </ul>
			<ul style="list-style-type: none"> <li>• Study of systematic position and external morphology of honey bee</li> </ul>
			<ul style="list-style-type: none"> <li>• Study of <i>Apis</i> species of honey bee and Study of life cycle of honey bee.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand the temporary mountings of pollen basket, sting apparatus and mouth parts.</li> </ul>
			<ul style="list-style-type: none"> <li>• Study of architecture of honey comb and Study of bee box (Langstroth hive).</li> </ul>
			<ul style="list-style-type: none"> <li>• Aware of diseases, pests, parasites and predators of honey bee.</li> </ul>
			<ul style="list-style-type: none"> <li>• Study of bee keeping equipment and their uses.</li> </ul>
			<ul style="list-style-type: none"> <li>• Study of honey bee products and their uses.</li> </ul>
			<ul style="list-style-type: none"> <li>• Understand regarding the honey adulteration detection test.</li> </ul>