



S.I.C.E.Society's

Degree College of Arts, Science & Commerce, Ambarnath (W.)

Jambhul Phata, Chikhloli, Ambarnath(W)-421505

(Affiliated to University Of Mumbai)

Metric No. 2.6.1. Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.

INDEX

Sr. No.	Programme and Course outcomes at Department level	Page Number
1.	Chemistry	01 - 42
2.	Physics	43- 49
3.	Mathematics	50- 53
4.	Botany	54 - 59
5.	Zoology	60 - 62
6.	Microbiology	63 - 74
7.	Computer Science	75 - 89
8.	Information Technology	90 - 104
9.	Commerce	105 - 114
10.	BAF (Bachelor of Accounting and Finance)	115 - 121
11.	BBI (Bachelor of Banking & Insurance)	122 - 135
12.	BMS (Bachelor of Management Studies)	136 - 151
13.	BA (Bachelor of Arts)	152 - 162



DEPARTMENT OF CHEMISTRY

CLASS T.Y.B.Sc.

For T.Y.B.Sc. Chemistry Syllabus Choice Based Credit System (CBCS) was implemented from the Academic year 2018-2019

**Chemistry -I
USCH601**

1. Electrochemistry
&
Applied
Electrochemistry

2. Polymers

3. Basics of Quantum
Chemistry

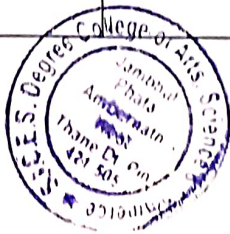
4. Renewable Energy
Resources

1. Students will be able to understand electrochemical cell, its classification, ion specific electrodes. Students will be able to classify cells: Chemical cells and Concentration cells. Chemical cells with and without transference, Electrode Concentration cells, Electrolyte concentration cells with and without transference
Students will comprehend the applications of electrochemistry, Polarization, Decomposition Potential and Overvoltage factors affecting decomposition potential and Tafel's equation

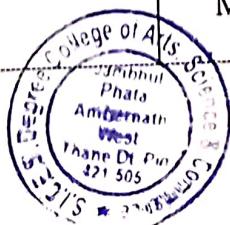
2. Learners will understand principles of Polymer Chemistry and Classification of polymers
Students will be able to calculate Molar masses of polymers: Number average, Weight average, Viscosity average molar mass. Light Emitting Polymers & Stabilizers

3. The learner gets insights of the basics of Quantum Chemistry. Students will be able to explain Black body radiation, photoelectric effect, Compton effect, Quantum mechanics, Planck's theory of quantization, de -Broglie's equation and Heisenberg's uncertainty principle. Students will be able to understand Schrodinger's time independent wave equation (No derivation expected), interpretation and properties of wave function.

4. Students will have an overview on renewable energy resources like solar energy and Hydrogen as a fuel.



	<p>5. NMR-Nuclear Magnetic Resonance Spectroscopy</p> <p>6. Electron Spin Resonance Spectroscopy</p>	<p>5. Students will be able to explain the basic principles of Nuclear Magnetic Resonance Spectroscopy. To understand the principles and applications of Nuclear Chemistry.</p> <p>6. Students will be able to describe the principle of Electron Spin Resonance Spectroscopy and its fundamental equation, g-value - dimensionless constant or electron g-factor, hyperfine splitting. Learners will be familiar with ESR Instrumentation and ESR spectrum of hydrogen and deuterium.</p>
<p>Chemistry -I USCH501</p>	<p>1. Molecular Spectroscopy</p> <p>2. Chemical Thermodynamics</p>	<p>1. The Students will be able to explain molecular spectroscopy and their types understand Rotational Spectrum, Vibrational spectrum, Vibrational-Rotational spectrum of diatomic molecule's, selection rule, nature of spectrum, P and R branch lines. Anharmonic oscillator - energy levels, selection rule, fundamental band, overtones. Application of vibrational-rotational spectrum in determination of force constant and its significance. Students will be able to describe Infrared spectra of simple molecules like H₂O and CO₂. Students will be able to understand Scattering effect and electromagnetic radiation of Raman Spectroscopy and also Raman spectra Stoke's lines, anti-Stoke's lines, Raman shift, quantum theory of Raman spectrum, comparative study of IR and Raman spectra, rule of mutual exclusion- CO₂ molecule</p> <p>2. Students will understand the principles of Chemical Thermodynamics and thermodynamic properties Colligative properties of Vapor pressure and relative lowering of vapor pressure. Measurement of lowering of vapor pressure - Static and Dynamic method. Learners will be also able to explain Elevation in boiling point of a solution and Depression in freezing point of a solution. Students will understand the Osmotic Pressure and thermodynamic derivation of Van't Hoff equation, Van't Hoff Factor. Measurement of Osmotic Pressure - Berkeley and Hartley's Method, Reverse Osmosis.</p>



	<p>3. Chemical Kinetics</p> <p>4. Nuclear Chemistry</p> <p>5. Surface Chemistry & Colloidal State</p>	<p>3. Learners will comprehend Collision theory of reaction rates and its application to Unimolecular reaction Lindemann theory and Bimolecular reaction. Classification of reactions as slow, fast and ultra -fast.</p> <p>4. Students will be able to define and explain the basic terms-decay constant, half-life and average life and units of radioactivity, the detection and Measurement of Radioactivity and Application of use of radioisotopes as Tracers. Students will become aware of Nuclear reactions, nuclear transmutation Fission Process and Fusion Process.</p> <p>5. Students will become familiar with the principles of surface chemistry and its uses in solid phase catalysis also Surfactants: Classification and applications of surfactants in detergents and food industry. Students will become aware of chemistry of colloids and its use as surfactants.</p>
<p>Practical's USCHP01/ P02</p>	<p>Instrumental & Non-Instrumental Experiments</p>	<p>Students will become aware of different instruments, glassware, learn drawing graphs, calculations and develop necessary techniques and skills for working in laboratories by carrying out following experiments</p> <p><i>Non-Instrumental Experiments;</i></p> <ol style="list-style-type: none"> 1. Chemical Kinetics; <ol style="list-style-type: none"> i. To interpret the order of reaction graphically from the given experimental data and calculate the specific rate constant. ii. To determine the order between $K_2S_2O_8$ and KI by fractional change method. 2. Viscosity; To determine the molecular weight of high polymer polyvinyl alcohol (PVA) by viscosity measurement. 3. Surface phenomena; To investigate the adsorption of acetic acid on activated charcoal and test the validity of Freundlich adsorption isotherm. 4. Colligative properties- To determine the molecular weight of compound by Rast Method



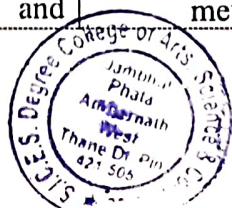
		<p><i>Instrumental Experiments;</i></p> <p>5. Potentiometry;</p> <p>i. To determine the amount of iodide, bromide and chloride in the mixture by potentiometric titration with silver nitrate.</p> <p>ii. To determine the solubility product and solubility of AgCl potentiometrically using chemical cell.</p> <p>iii. To determine the number of electrons in the redox reaction between ferrous ammonium sulphate and ceric sulphate potentiometrically.</p> <p>6. Conductometry;</p> <p>i. To titrate a mixture of weak acid and strong acid against strong base and estimate the amount of each acid in the mixture conductometrically.</p> <p>ii. To determine the velocity constant of alkaline hydrolysis of ethyl acetate by conductometric method.</p> <p>7. Colorimetry; To estimate the amount of Fe(III) in the complex formation with salicylic acid by Static Method.</p> <p>8. pH-metry; To determine acidic and basic dissociation constants of amino acid and hence to calculate isoelectric point.</p>
--	--	--

<https://siccscollege.edu.in/wp-content/uploads/2021/01/4.41-T.-Y.-B.Sc.-Physical-Chemistry-6-Units-Sem-VI.pdf>

USCH602	<p>1. Theories of the metal-ligand bond (I)</p>	<p>1. Students will be able to understand Limitations of Valence Bond Theory and Crystal Field Theory and effect of crystal field on central metal valence orbital's in various geometries from linear to octahedral (from coordination number 2 to coordination number 6).</p> <p>Learners will be acquainted with the splitting of d orbital's in octahedral, square planar, tetrahedral crystal fields and Distortions from the octahedral geometry Crystal field splitting parameters Δ, Crystal field stabilization energy (CFSE), calculation of CFSE for octahedral complexes with d_0 to d_{10} metal ion configurations.</p> <p>Students will become aware of consequences of crystal field splitting on various properties of the first transition series and Limitations of CFT</p>
---------	---	--



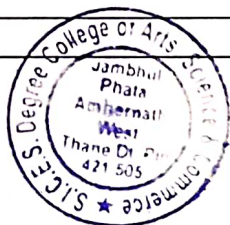
	<p>2. Theories of the metal-ligand bond (II) with respect to Molecular orbital Theory for coordination compounds,</p> <p>Reactivity and Stability of Metal-Complexes</p> <p>Electronic Spectra</p> <p>3. Organometallic Compounds of main group metal</p> <p>Metalloenes and Catalysis</p> <p>4. Metallurgy, Chemistry of Group 18 and</p>	<p>2. Students will be able to understand Identification of the central metal orbitals and their symmetry bonds with ligand orbitals. Students will also understand the construction of ligand group orbitals and -molecular orbitals for an ML_6 complex. Examples like $[FeF_6]^{-4}$, $[Fe(CN)_6]^{-4}$, $[FeF_6]^{-3}$, $[Fe(CN)_6]^{-3}$, $[CoF_6]^{-3}$, $[Co(NH_3)_6]^{+3}$.</p> <p>Students will also be able to understand Thermodynamic and kinetic perspectives of metal complexes with examples. Stability constants and factors affecting thermodynamic stability</p> <p>Students will be able to make comparison between Inorganic and organic reactions. Understand the types of reactions in metal complexes. Inert and labile complexes</p> <p>Ligand substitution reactions</p> <p>Students will become aware about origin of electronic spectra Then types of electronic transitions in coordination compounds, Selection rules for electronic transitions and Electronic configuration and electronic micro states, Terms and Term symbols for transition metal ions, rules for determination of ground state term.</p> <p>Students will also be able to learn determination of Terms for p2 and d1 electronic configurations.</p> <p>3. Students will be familiar with; General characteristics of various types of organometallic -bonded and electron deficient σ compounds, viz. ionic, compounds.</p> <p>General synthetic methods of and Some chemical reactions of organometallic compounds.</p> <p>Students will be able to learn Metalloenes Synthesis of Ferrocene, properties, structure and bonding on the basis of VBT</p> <p>Learners will understand the comparison between homogeneous and heterogeneous catalysis.</p> <p>4. Students will be able to understand the general steps, types of metallurgies and metallurgy of copper with reference to</p>
--	--	--



	<p>Bioinorganic Chemistry.</p>	<p>occurrence, physic chemical principles, Extraction of copper from pyrites & refining by electrolysis. Learners will become aware of historical perspectives, general characteristics and trends in physical and chemical properties of Group 18. Students will also able to understand Isolation of noble gases such as compounds of Xenon (oxides and fluorides) with respect to preparation and structure (VSEPR) and Uses of noble gases. Learners will learn bioinorganic Chemistry, essential and non-essential elements in biological systems and biological importance of metal ions.</p>
<p>Chemistry -II USCH502</p>	<p>To understand the basic principles of Inorganic chemistry.</p> <p>1. Molecular Symmetry.</p> <p>Molecular Orbital Theory for heteronuclear diatomic molecules and polyatomic species.</p> <p>2. Solid State Chemistry</p> <p>Structures of Solids</p>	<p>1. Students will understand the importance of Symmetry and Symmetry elements and Symmetry operations in chemistry. The concept of a Point Group with illustrations using the g point groups for instance $C_{\infty V}$, $D_{\infty C}$, C_{2V}, C_{3V}, C_{2h} and D_{3h}. Learners will be able to make comparison between homonuclear and heteronuclear diatomic molecules. Students will also understand the heteronuclear diatomic molecules like CO, NO and HCl, appreciation of modified MO diagram for CO. Students will be able to draw and understand the molecular orbital theory from correlation diagram of H_3 and H_3^+ and molecular shape to molecular orbital approach in AB_2 molecules. Application of symmetry concepts for linear and angular species considering σ- bonding only.</p> <p>2. Students will know the meaning of various terms involved viz. crystal lattice, lattice point, unit cell and lattice constants in the Structures of Solids. Learners will get the knowledge of Closest packing of rigid spheres (hcp, ccp), packing density in simple cubic, bcc and fcc lattices. Students will be also made to understand the relationship between density, radius of</p>



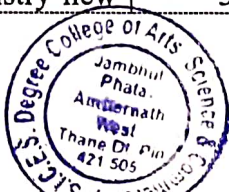
	<p>Superconductivity</p> <p>3. Chemistry of Inner Transition Elements</p> <p>4. Chemistry of Non-aqueous Solvents</p> <p>Comparative Chemistry of Group 16 and Group 17</p>	<p>unit cell, lattice parameters and Stoichiometric point defects in solids. Students will be able to study the discovery of superconductivity and various terms involved in it and application of superconductors.</p> <p>3. Students will be able to learn the position in periodic table and electronic configuration of lanthanides and actinides. They will also understand the lanthanide contraction and its consequences, oxidation states, ability to form complexes, Magnetic and spectral properties. Learners will also understand the occurrence, extraction and separation of lanthanides by ion exchange method and principles and technique of Solvent extraction method. Applications of lanthanides.</p> <p>4. Students will be able to learn the classification of solvents and importance of non-aqueous solvents, Characteristics and study of liquid ammonia, dinitrogen tetra oxide as non-aqueous solvents. Students will also be able to understand the comparative Chemistry of Group 16 Comparative Chemistry of Group 17 elements.</p>
<p>Practical's USCHP05/ USCHP06</p>	<p>1. Inorganic preparations</p> <p>2. Qualitative analysis by wet tests.</p>	<p>Students will be able to develop expertise and skill in synthesizing inorganic compounds/ coordination compounds by performing following experiments.</p> <p>Prepare various inorganic complex and determine its % purity.</p> <ol style="list-style-type: none"> 1.Preparation of Potassium diaquobis(oxalato)cuprate (II) 2. Preparation of Ferrous ethylene diammonium sulphate. 3.Preparation of bisacetylacetonatocopper(II) 4.Preparation of Tris(acetylacetonato) iron(III) 5. Green synthesis of bis(dimethylglyoximate)nickel(II) complex using nickel carbonate and sodium salt of dmg . 6. Preparation of potassium trioxalato aluminum (III)
<p>https://sicescollege.edu.in/wp-content/uploads/2021/01/4.41-T.-Y.-B.Sc_-Inorganic-Chemistry-6-Units-Sem-VI.pdf</p>		



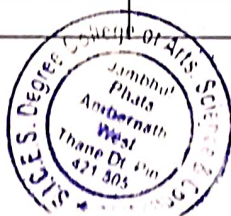
<p>USCH603</p>	<p>Students will be able to understand</p> <ol style="list-style-type: none"> 1. Stereochemistry 2. Amino acids & Proteins 3. Molecular Rearrangements Mechanism of the rearrangements with examples and stereochemistry. 4. Carbohydrates 	<ol style="list-style-type: none"> 1. Students will be able to identify and understand the Stereoselectivity and stereospecificity, the idea of enantioselectivity (ee) and diastereoselectivity (de), Topicity: enantiotopic and diastereotopic atoms, groups and faces. Moreover students will also learn Stereochemistry of S_Ni (reaction of alcohol with thionyl chloride) Elimination reactions and Addition reactions to olefins. 2. Students will become familiar with general structure, configuration, and classification α-Amino. Also Methods of preparations. And general idea of primary, secondary, tertiary & quaternary Proteins structure. Students will become aware of the importance of Biomolecules, their structures and reactions. 3. Students will develop the ability to think about mechanism of the rearrangement reactions with examples and stereochemistry wherever applicable such as Migration to the electron deficient carbon (Pinacol-pinacolone rearrangement), Migration to the electron deficient nitrogen (Beckmann rearrangement), Migration involving a carbanion (Favorski rearrangement), and understand the multicomponent reactions Michael addition, Wittig reaction. 4. Students will be able to classify reducing and non-reducing sugars and understands D-L notation Students are also identify the Structures of monosaccharides and able to draw structures in Fischer projection and Haworth formula Interconversion: open chain and Haworth forms of monosaccharides with 5 and 6 carbons. Chair conformation with stereochemistry of D-glucose, Students familiar with the concepts diastereomers, anomers, and epimers. Mutarotation in D-glucose with mechanism Chain lengthening & shortening reactions.
----------------	--	---



	<p>Nucleic Acids</p> <p>5. Spectroscopy</p> <p>6. Polymer</p> <p>7. Catalysts and Reagents</p>	<p>Students will be able to draw Structures of nucleosides and nucleotides in DNA and RNA. Structures of nucleic acids (DNA and RNA) including base pairing.</p> <p>5. Students will learn the basics concepts of U.V., I.R, NMR spectroscopy and Mass spectrometry and its applications in structure determination of Organic compounds and able to predict the correct structure from molecular formula.</p> <p>6. Students will be able to explain the terms monomer, polymer, homopolymer, copolymer, thermo plastics and thermosets. Polymers classification, Synthesis and its applications. Students will also learn Stereochemistry of polymers. Additives to polymers: Plasticizers, stabilizers and fillers. Biodegradable polymers: Classification and uses. polylactic acid structure, properties and use for packaging and medical purposes</p> <p>7. Students will become aware of the selectivity and applications of catalysts and reagents.</p>
<p>Chemistry - III USCH503</p>	<p>Students will be able to understand</p> <p>1. Mechanism of organic reactions</p> <p>2. Basics of Photochemistry</p> <p>3. Stereochemistry new</p>	<p>1. Students will understand the basic terms, various concepts involved in mechanism of elimination reactions, NGP reactions, Acyl nucleophilic substitution (Tetrahedral mechanism) Students will become familiar with Pericyclic reactions, classification and nomenclature and Electro cyclic reactions</p> <p>2. Students will be able to identify difference between thermal and photochemical reactions. Students will be able to explain the Jablonski diagram i.e. singlet, triplet states and the concept of allowed and forbidden transitions photosensitization. Students will be able to understand Photochemical reactions of olefins such as photoisomerization, photochemical di-π methane rearrangement and Photochemistry of Norrish I, Norrish II cleavages and Photo reduction</p> <p>3. Students will be able to describe</p>



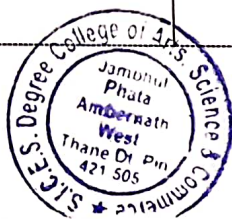
	<p>concepts of different kinds of Organic compounds</p> <p>4. Agrochemicals & Bio-pesticides</p> <p>5. Heterocyclic chemistry</p> <p>6. IUPAC Systematic nomenclature of the Bicyclic compounds, Biphenyls, Cummulenes, Quinolines and isoquinolines</p> <p>7. Types of Organic Synthesis, Green chemistry and synthesis and Planning of organic synthesis</p> <p>8. Basics of Ultra violet- Visible spectroscopy and Mass Spectroscopy</p> <p>9. Types of Natural Products</p>	<p>Molecular chirality, elements of symmetry & Chirality of compounds without a stereogenic center</p> <p>4. Students will be able to classify insecticides, herbicides, fungicide, rodenticide, pesticides, and understands plant growth regulators, Advantages & disadvantages of agrochemicals</p> <p>5. Learners will be able to understand the Reactivity & preparation of heterocyclic compounds like pyridine-N-oxide, quinoline and iso-quinoline. Students will be able to write reactions of pyridine-N-oxide: halogenations, nitration and reaction with $\text{NaNH}_2/\text{liq. NH}_3$, $n\text{-BuLi}$ and reactions of quinoline and isoquinoline.</p> <p>6. Students will be able to predict the correct names to allenes, spiranes, biphenyls, cummulenes, Quinolines, isoquinoline or also be able to draw a correct structure from given name of organic molecule.</p> <p>7. Students will understand the basic concept of Linear and convergent synthesis, criteria for an ideal synthesis, concept of chemo selectivity and regioselectivity with examples, calculation of yields. Multicomponent Mannich reaction and Biginelli reactions. And planning of organic synthesis Students will become aware about environmentally green methods & able to describe Twelve Principles of green chemistry and its applications in chemical field.</p> <p>8. Students will understand basic concepts of UV-visible spectroscopy & the concept of chromophore, auxochrome, bathochromic and hypsochromic shifts, their effects on the molecules and interactions.</p> <p>9. Students will be able to differentiate between the types of Natural products like Terpenoids, Citral, Alkaloids Introduction and occurrence, Nicotine & Hormones.</p>
--	---	--



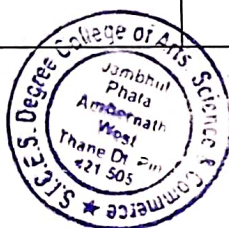
Practical's USCHP09/10	Students will be able to achieve the knowledge of micro scale techniques of organic qualitative analysis and Separation of Binary liquid-liquid and liquid- solid mixture	<ol style="list-style-type: none"> 1. To gain skill for separation of Solid-Solid or Solid-Liquid binary mixture of organic components. 2. Apply the principles of organic qualitative analysis to identify the Unknown organic molecules. 3. To confirm structure of the organic compounds.
---	---	---

<https://sicescollege.edu.in/wp-content/uploads/2021/01/4.41-T.-Y.-B.Sc.-Organic-Chemistry-6-Units-Sem-V1.pdf>

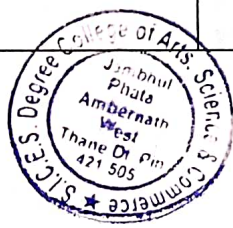
Chemistry -IV USCH604	Students will be able to understand <ol style="list-style-type: none"> 1. Electro Analytical Techniques Polarography Amperometric Titrations 2. Methods of Separation – II Gas Chromatography Ion Exchange Chromatography 3. Food and Cosmetics Analysis Introduction to food chemistry 	<ol style="list-style-type: none"> 1. Students will be able to understand the concept & principles of potentiometric titration, Polarography and Amperometric titration and their applications in chemical analysis. Learners will be learning principle, rotating Platinum Electrode of amperometric titrations, titration curve, titration curves with example and advantages and limitations of Amperometric titrations. 2: Students will become aware of the Principle, terms involved, theory and block diagram and components, types of columns, stationary phases in GSC and GLC, Detectors: TCD, FID, ECD. Qualitative, Quantitative analysis and applications Comparison between GSC and GLC Students will understand the Principle of ion-exchange chromatography and their types. Ideal properties of resin and factors affecting separation of ions and applications of Ion Exchange Chromatography with reference to Preparation of demineralized water, Separation of amino acids 3. Students will be able to learn the techniques of food processing, food preservation, types of food preservation. Determination of boric acid by titrimetry and sodium benzoate by HPLC Study and analysis of food products and detection of adulterants
--	---	---



	<p>Cosmetics</p> <p>4. Thermal Methods and Analytical Method Validation</p>	<p>Students will understand the concept of various type cosmetics like face powder, Lipstick, deodorants and Antiperspirants.</p> <p>4. Students will understand various thermal methods (TGA, DTA and Thermometric titration) and their methods of analysis, Thermometric titration, and Neutron activation analysis and their application in chemical analysis.</p> <p>Learners will be able to study the need for validation of a method and validation parameters viz. Specificity, Selectivity, Precision, Linearity, Accuracy and Robustness.</p>
<p>Chemistry -IV USCH504</p>	<p>Students will be able to understand;</p> <p>1. Introduction to Quality Concepts, Chemical Calculations and Sampling</p> <p>Quality in Analytical Chemistry</p> <p>Chemical Calculations</p> <p>Sampling</p> <p>2. Classical Methods of Analysis (Titrimetry)</p> <p>Redox Titrations</p>	<p>1. The Students will know the acceptable practices for the analysis and consistent interpretation of data obtained from chemical and other analysis.</p> <p>Students will be learning the Concepts of Quality, Quality Control, Quality Assurance and Importance of Quality concepts in Industry. Chemical Standards and Certified Reference Materials; Importance in chemical analysis Quality of material: Various grades of laboratory reagents</p> <p>Students will learn the Inter conversion of various concentration units and Conversion of concentration from one unit to another unit with examples. Percent composition of elements in chemical compounds Learners are expected to understand and able to solve the numerical and word problems.</p> <p>Students will learn samplings, types of sampling, samplings of gases, liquids, solids etc. and Collection, preservation and dissolution of the sample.</p> <p>2. Students will able to understand Construction of the titration curves and calculation of Esystem in aqueous medium in case of one electron system and Multielectron system. Theory of redox indicators, Criteria for selection of an indicator Use of diphenyl amine and ferroin as redox indicators</p>



	<p>Complexometric Titrations</p> <p>3. Optical Methods</p> <p>Atomic Spectroscopy: Flame Emission spectroscopy (FES) and Atomic Absorption Spectroscopy (AAS)</p> <p>Molecular Fluorescence and Phosphorescence Spectroscopy</p> <p>Turbidimetry and Nephelometry</p> <p>1. Methods of Separation – I Solvent Extraction High Performance Liquid chromatography (HPLC)</p> <p>High Performance Thin Layer Chromatography (HPTLC)</p>	<p>Learners will be able to learn the construction of titration curve, use of EDTA as titrant and its standardization, absolute and conditional formation constants of metal EDTA complexes, Selectivity of EDTA as a titrant. Factors enhancing selectivity with examples. Types of EDTA titrations and advantages and limitations of EDTA as a titrant.</p> <p>2. The students will understand the optical instrumental methods like FES and AAS, fluorescence, Phosphorescence, Turbidimetry and Nephelometry their applications in atomic & molecular analysis. Students will learn the energy level diagrams, Atomic spectra, Absorption and Emission Spectra</p> <p>Learners will study the Principle of Flame Photometry and quantification methods of FES and AAS – Calibration curve method, Standard addition method and Internal standard method. Comparison between FES and AAS.</p> <p>4. Students will learn the Separation of samples by chromatographic techniques like paper, Thin layer, HPLC & HPTLC and their applications in chemical separation. Students will understand the factors affecting extraction, Graph of percent extraction versus pH. Concept of $[pH]_{1/2}$ and its significance. Students will also learn Principle, apparatus and applications of Craig's counter current extraction. Principle, process and applications of solid phase extraction with special reference to water and industrial effluent analysis.</p>
<p>Practical's USCHP13/14</p>	<p>Instrumental & Non-Instrumental Experiments</p>	<p>Students will be able to develop a good practical hand with more precision and accuracy by performing following experiments.</p> <p>It is expected from learners to Calculate percent error for all the below mentioned experiments.</p> <p>1 Estimation of Chromium in water sample spectrophotometrically by using Diphenyl carbazide.</p> <p>2 Estimation of reducing sugar in honey by Willstatter method.</p> <p>3 Estimation of Mg^{+2} & Zn^{+2} by anion</p>



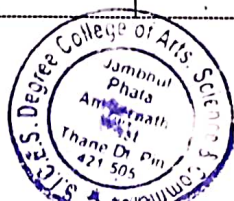
		<p>exchange resin using an anion exchange resin.</p> <p>4 Estimation of acetic acid in Vinegar sample by using Quinhydrone electrode potentiometrically.</p> <p>5 Determination of phosphoric acid in cola sample pH metrically.</p> <p>6 Spectrophotometric estimation of fluoride</p> <p>7 Estimation of magnesium content in Talcum powder by complexometry, using standardized solution of EDTA</p> <p>8 Determination of COD of water sample.</p> <p>9 To determine potassium content of a Fertilizer by Flame Photometry (Calibration curve method).</p> <p>10 To determine the amount of persulphate in the given sample solution by back titration with standard Fe (II) ammonium sulphate solution.</p> <p>11 To determine the amount of sulphate in given water sample turbidimetrically.</p>
--	--	---

<https://sicescollege.edu.in/wp-content/uploads/2021/01/4.41-T.-Y.-B.Sc.-Analytical-Chemistry-6-Units-Sem-V1.pdf>

<p>USACDD 601</p>	<p>1. Students will be able to understand the discovery, design and development, metabolism of drug chemotherapeutic agents and use of nano particles in medicinal chemistry</p>	<p>Students will be able to explain,</p> <ol style="list-style-type: none"> 1. Discovery of a Lead compound: Screening, drug metabolism studies and clinical observation, Lipinski's rule of 5, 2. Medicinal properties of compounds from Natural Sources: Antiinfective and anticancer properties of Turmeric (Curcumin), 3. Development of drug: The Pharmacophore identification, modification of structure or functional group, Structure activity relationship, (Sulphonamides). 4. Structure modification to increase potency: Homologation, Chain branching and Extension of the structure. 5. Computer assisted drug design. <p>Students will be able to explain,</p> <ol style="list-style-type: none"> 1. Drug Metabolism: Introduction, Absorption, Distribution, Biotransformation, Excretion Different types of chemical transformation of drugs with specific examples. 2. Chemotherapeutic Agents: Study of the following chemotherapeutic agents with respect to their chemical structure, chemical class, therapeutic uses, side effects and introduction to MDR wherever applicable. 3. Students will be able to describe, Antibiotics and antivirals Antimalarials, Anthelmintics and
--------------------------	--	--



	<p>1. Students will understand the classification of dyes based on constitution and applications and synthesis of selected dyes.</p> <p>2. Students will understand, organic pigment, unit process and method of dyeing fabrics.</p> <p>3. Students will learn about dyestuff industry</p>	<p>AntiFungal agents, Antiamoebic Drugs, Antitubercular, anti-leprotic drugs, anti-neoplastic, anti-HIV drugs intermediate.</p> <p>4. Students are made to understand the concept of carbon nano tubes.</p> <p>1. Students will know classification of dyes based on chemical constitution</p> <p>2. Students will become aware of Health and Environmental hazards of synthetic dyes.</p> <p>3. Students will understand properties of non-textile and use of dyes.</p> <p>4. Students will learn about organic pigments and difference between lakes-tonners and dyes-pigments.</p> <p>5. Students will become familiar with basic idea of unit process and primary intermediates.</p> <p>6. Students will learn synthesis and use of specific dyes.</p> <p>7. Students are made to understand the ecology and toxicity of dyes.</p>
<p>USACDD501</p>	<p>1. Student will understand meaning of drug, various routes and dosages of drug's administration and mode of action of drugs.</p> <p>2. Students will become aware of various drugs, their structures, properties, synthesis, uses.</p> <p>1. Students will become aware of dye-stuff Industry, Substrates for Dyes : Types of fibres, Classification of dyes based on applications and dyeing methods.</p>	<p>1. Students will understand the classification of drugs.</p> <p>2. Students will become aware of oral and parenteral routes of drug administration along with its advantages and disadvantages.</p> <p>3. Students are provided with a brief introduction of Pharmacodynamic agents. .</p> <p>4. Students will learn about analgesics, antipyretics, anti-inflammatory drugs, antihistamine drugs etc.</p> <p>5. Students will learn to classify cardiovascular drugs</p> <p>7. Students will learn the synthesis and uses of drug intermediate.</p> <p>Students will become aware of,</p> <p>1. Definition of dyes, requirements of a good dye i.e., Colour, Chromophore and Auxochrome, Solubility, Linearity, Coplanarity, Fastness, Substantivity, Economic viability. Definition of fastness and its properties and Mordants with examples, Explanation of nomenclature or abbreviations of commercial dyes with at least one example suffixes – G, O, R, B, K, L, C, S H, 6B, GK, 6GK,</p> <p>Naming of dyes by colour index (two examples) used in dye industries.</p>



2. Student will be able to explain, Natural Dyes: Definition and limitations of natural dyes. Examples and uses of natural dyes w.r.t Heena, Turmeric, Saffron, Indigo, Madder, Chlorophyll names of the chief dyeing material/s in each natural dye [structures not expected], Synthetic dyes: Definition of synthetic dyes, primaries and intermediates. Important milestones in the development of synthetic dyes – Emphasis on Name of the Scientist, dyes and the year of the discovery is required. (structure is not expected)

3. Student will be able to explain, Natural: cellulosic and proteinaceous fibres, examples – wool, silk and cotton structures and names of dyes applied on each of the. Semi – synthetic: definition and examples [structures not expected]. Synthetic: Nylon, Polyesters and Polyamides structures and names of dyes applied on each of them. Blended fabrics: definition and examples [structures not expected]. Binding forces of dyes on substrate: ionic forces, covalent linkages, hydrogen bonding, vander-waals forces

4. Student will come to know in detail, Classification of dyes based on applications and dyeing methods, Dyeing methods

Basic Operations involved in dyeing process:

i. Preparation of fibres ii. Preparation of dyebath
iii. Application of dyes iv. Finishing

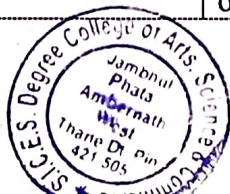
Dyeing Method of Cotton Fibres:

(i) Direct dyeing (ii) Vat dyeing
(iii) Mordant dyeing (iv) Disperse dyeing

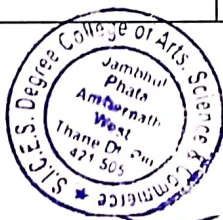
5. Students will become aware of Classification of dyes based on applicability on substrates (examples with structures)

(a) Acid Dyes- Orange II,
(b) Basic Dyes-methyl violet,
(c) Direct cotton Dyes- Benzofast Yellow 5GL
(d) Azoic Dyes – Diazo components; Fast yellow G, Fast orange R. Coupling components. Naphthol AS, Naphthol ASG
(e) Mordant Dyes-Eriochrome Black A, Alizarin.
(f) Vat Dyes- Indanthrene brown RRD,
(g) Sulphur Dyes- Sulphur Black T (no structure)
(h) Disperse Dyes-Celliton Fast brown 3R,
(i) Reactive Dyes- Cibacron Brilliant Red B,

6. Students will be able to comprehend, Optical Brighteners: General idea, important characteristics of optical brighteners and their classes [Stilbene,



	<p>2. Students will be able to describe, Colour and Chemical Constitution of Dyes, Unit process and Dye Intermediates,</p>	<p>Coumarin, Heterocyclic vinylene derivatives, Diaryl pyrazolines, Naphthylamide derivatives] general structure of each class.</p> <p>1. Students will become aware of, Absorption of visible light, Colour of wavelength absorbed, Complementary colour. Relation between colour and chemical constitution. (i) Armstrong theory (quinonoid theory) and its limitations. (ii) Witt's Theory: Chromophore, Auxochrome, Bathochromic & Hypsochromic Shift, Hypochromic & Hyperchromic effect (iii) Valence Bond theory, comparative study and relation of colour in the following classes of compounds/dyes: Benzene, Nitrobenzene, Nitroanilines, Nitrophenols, Benzoquinones, Azo, Triphenyl methane, Anthraquinones. (iv) Molecular Orbital Theory.</p> <p>2. Students will be able to explain Unit processes: definition and brief ideas of below unit processes: (a) Nitration (b) Sulphonation (c) Halogenation (d) Diazotization: (3 different methods & its importance) (e) Ammonolysis (f) Oxidation NB: Definition, Reagents, Examples of each unit processes mentioned above with reaction conditions (mechanism is not expected)</p> <p>3. Students will be able to describe, Benzene derivatives: Benzenesulphonic acid; 1,3-Benzenedisulphonic acid; sulphanilic acid; o-, m-, p-chloronitrobenzenes; o-, m-, p-nitroanilines; o-, m-, p-phenylene diamines; Naphthol ASG Naphthalene Derivative: Schaeffer acid; Tobias acid; Naphthionic acid; N.W. acid; cleve-6-acid; H-acid; Naphthol AS, Anthracene Derivative: 1-Nitroanthraquinone; 1-Aminoanthraquinone Anthraquinone-2-sulphonic acid; Benzanthrone.</p>
<p>Practical's USACDD6P1</p>	<p>1. Students will able to develop necessary skill required for synthesis of dyes</p>	<p>Students will learn synthesis of certain dyes and will also learn TLC and writing reports in following experiments</p> <ol style="list-style-type: none"> 1. O-Methylation of β-naphthol. 2. Preparation of Paracetamol form p-aminophenol. 3. Preparation of Fluorescein 4. TLC of a mixture of dyes (safranin-T, Indigo carmine, methylene blue)



USACDD5P1	1. Students will able to develop necessary skill required for estimation of drugs	<p>II] Preparation of monograph of any one drug from syllabus by I.P. method. OR Industrial visit Report.</p> <p>Students will learn about estimation, synthesis and dyeing methods by performing following experiments</p> <ol style="list-style-type: none"> 1. Estimation of Ibuprofen (back titration method) 2. Estimation of Acid neutralizing capacity of a drug 3. Preparation of Aspirin from salicylic acid. 4. Separation of components of natural pigments by paper chromatography (eg: chlorophyll) <p>II] Project: Preparation of Orange II dye (semi-microscale 1.0gms) and its use for dyeing different fabrics</p>
-----------	---	---

<https://sicescollege.edu.in/wp-content/uploads/2021/01/4.41-T.-Y.-B.Sc.-Chemistry-Applied-Component-Sem-V-and-SEM-VI-Drug-Dyes-pdf.pdf>

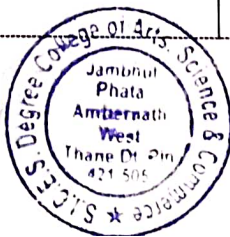
CLASS S.Y.B.Sc.

1) For S.Y.B.Sc. Chemistry Syllabus Choice Based Credit System (CBCS) was implemented from the Academic year 2017-2018

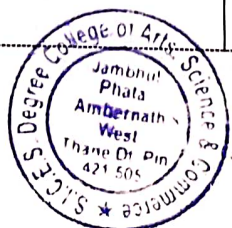
<p>Chemistry -I USCH301</p>	<p>1. Students will be able to explain the concept of Chemical Thermodynamics in detail</p> <p>2. Students will be able to understand the topic of Electrochemistry in detail.</p>	<p>Students will comprehend the concept of</p> <ol style="list-style-type: none"> 1. Free Energy Functions: Helmholtz Free Energy, Gibb's Free Energy, Variation of Gibb's free energy with Pressure and Temperature. 2. Gibbs-Helmholtz equation, van't Hoff reaction isotherm and van't Hoff reaction isochore. (Numericals expected). 3. Thermodynamics of Open System: Partial Molal Properties, Chemical Potential and its variation with Pressure and Temperature, Gibb's Duhem equation. 4. Concept of Fugacity and Activity <p>Students will be able to explain,</p> <ol style="list-style-type: none"> 1. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. 2. Kohlrausch law of independent migration of ions. 3. Applications of conductance measurements: determination of degree of ionization and ionization constant of weak electrolyte, solubility and solubility product of sparingly soluble salts, ionic product of water. (Numericals expected).
---	--	--



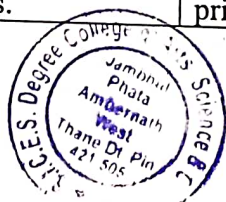
	<p>3. Students will be able to understand the topic of Chemical Bonding in detail.</p>	<p>4. Transference number and its experimental determination using Moving boundary method. (Numericals expected). Factors affecting transference number.</p> <p>1. Students will be able to explain, i) Non-Directional Bonding- 1 Ionic Bond: Conditions for the Formation of Ionic Bond. 2.Types of Ionic Crystals 3. Radius Ratio Rules 4. Lattice Energy, Borne-Lande Equation 5. Kapustinski Equation 6 Born-Haber Cycle and its Application</p> <p>2. Students will be able to explain, ii) Directional Bonding: Orbital Approach. 1. Covalent Bonding The Valence Bond Theory- Introduction and basic tenets. 2. Interaction between two hydrogen atoms and the Potential energy diagram of the resultant system. 3. Corrections applied to the system of two hydrogen atoms- Formation of H₂ 4. Homonuclear diatomic molecules from He₂ to Ne₂ 5. Resonance and the concept of Formal Charge; Rules for Resonance or Canonical structures. 6. Bonding in Polyatomic Species: The role of Hybridization. And types of hybrid orbitals- sp, sp², sp³, sp³d, sp²d² and sp²d sp³d². 7. Equivalent and Non-Equivalent hybrid orbitals 8. Contribution of a given atomic orbital to the hybrid orbitals (with reference to sp³ hybridization as in CH₄, NH₃ and H₂O and series like NH₃, PH₃, AsH₃, BiH₃)</p> <p>Students will be able to explain, 1. Atomic Orbitals and Molecular Orbitals. 2. Students will be able to explain, Linear combination of atomic orbitals. to give molecular orbitals LCAO-MO approach for diatomic homonuclear molecules. 3. Wave mechanical treatment for molecular orbitals (H₂⁺ and H₂) 4 Molecular orbital Theory and Bond Order</p>
	<p>4. Students will be able to explain Molecular Orbital Theory in detail.</p>	



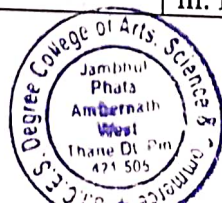
	<p>5. Students will be able to explain, Reactions and reactivity of halogenated hydrocarbons</p> <p>6. Students will be able to describe Organomagnesium and organolithium compounds</p> <p>7. Students will be able to understand in detail, Alcohols, phenols and epoxides</p>	<p>and magnetic property: with reference to O_2, O_2^+, O_2^-, O_2^{2-} (Problems and numerical problems expected wherever possible)</p> <p>Students will be able to explain,</p> <ol style="list-style-type: none"> 1. Alkyl halides: Nucleophilic substitution reactions: SN_1, SN_2 and SN_i mechanisms with stereochemical aspects and factors affecting nucleophilic substitution reactions- nature of substrate, solvent, nucleophilic reagent and leaving group. 2. Aryl halides: Reactivity of aryl halides towards nucleophilic substitution reactions. Nucleophilic aromatic substitution (SN_{Ar}) addition-elimination mechanism and benzyne mechanism. <p>1. Students will be able to explain Organomagnesium and organolithium compounds: Nomenclature, nature, type and reactivity of carbon-metal bond. Preparation using alkyl / aryl halide. Structure, stability and reactions with compounds containing acidic hydrogen, carbonyl compounds, CO_2, cyanides and epoxides.</p> <p>1. Students will be able to explain, Alcohols, phenols and epoxides-</p> <ol style="list-style-type: none"> a. Alcohols: Nomenclature, Preparation: Hydration of alkenes, hydrolysis of alkyl halides, reduction of aldehydes and ketones, using Grignard reagent. Properties: Hydrogen bonding, types and effect of hydrogen bonding on different properties. Acidity of alcohols, Reactions of alcohols. 2. Learner will be able to comprehend, <ol style="list-style-type: none"> b. Phenols: Preparation, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols. 3. Learner will become aware of,
--	--	---



		<p>c. Epoxides: Nomenclature, methods of preparation and reactions of epoxides: reactivity, ring opening reactions by nucleophiles (a) In acidic conditions: hydrolysis, reaction with halogen halide, alcohol, hydrogen cyanide. (b) In neutral or basic conditions: ammonia, amines, Grignard reagents, alkoxides.</p>
USCH 401	<p>1. Students will become aware of topics related to Electrochemistry in detail.</p>	<p>Learner will be able to comprehend the concepts of</p> <ol style="list-style-type: none"> 1. Electrochemical conventions, Reversible and irreversible cells. 2. Nernst equation and its importance, Types of electrodes, Standard electrode potential, Electrochemical series (Numericals expected). 3. Thermodynamics of a reversible cell, calculation of thermodynamic properties: ΔG, ΔH and ΔS from EMF data. (Numericals expected) 4. Calculation of equilibrium constant from EMF data. (Numericals expected) 5. Concentration cells with transference and without transference. Liquid junction potential and salt bridge. 6. pH determination using hydrogen electrode and quinhydrone electrode. (Numericals expected)
	<p>2. Students will be able to describe the concept of phase equilibria in detail.</p>	<p>Students will be able to define and explain the terms and topics of,</p> <ol style="list-style-type: none"> 1. Phases, components and degrees of freedom of a system, criteria of phase equilibrium. Gibbs Phase Rule and its thermodynamic derivation. 2. Derivation of Clausius – Clapeyron equation and its importance in phase equilibria. (numericals expected) 3. Phase diagrams of one-component systems (water and sulphur). 4. Two component systems involving eutectics, congruent and incongruent melting points (lead-silver system).
	<p>3. Students will be able to compare the elements of transition series.</p>	<p>1. Learner will be able to explain, Position in the periodic table; Natural occurrence principal ores and minerals;</p>



	<p>4. Students will be able to learn the concept of coordination compounds in depth</p>	<p>Significance of special stability of d0, d5 and d10 leading to variable oxidation states; Unusual oxidation states and their stabilities in aqueous solutions (with special reference to vanadium, and chromium.)</p> <p>2. Student will understand, Origin of colour for transition metals and their compounds: such as reflectivity, surface coatings, particle size, packing density for metals and nature of d-orbitals, number of electrons in the d-orbitals, geometry, and ability for charge transfer).</p> <p>3. Student will be able to explain Magnetic properties of transition metal compounds: Origin of magnetism-spin and orbital motion of electrons; equation for spin only and spin-orbital magnetism in terms of Bohr magnetons (No derivation of relevant equations expected); Reasons for quenching of orbital moments.</p> <p>4. Students will learn Chemistry of Titanium and vanadium: properties of Oxides and chlorides; use in titrimetric analysis</p> <p>5. Students will learn different Qualitative tests for transition metal ions: General considerations in devising tests (with reference to Chromium, Manganese, iron, Cobalt Nickel and Copper)</p> <p>1. Students will be able to learn</p> <ol style="list-style-type: none"> Historical perspectives: Early ideas on coordination compounds Basic terms and nomenclature. Types of ligands Isomerism :General Types with special reference to stereoisomerism of coordination compounds (C.N=6) Evidence for the formation of coordination compounds, <p>2. Student will be able to describe Theories of coordination compounds</p> <ol style="list-style-type: none"> Werner's Theory of coordination compounds, Effective atomic number rule. Eighteen electron Rule
--	---	--



5. Students will be able to understand and learn about carboxylic acids and sulfonic acids

3. Students will be able to explain the Nature of the Metal-Ligand Bond:

i. Valence Bond Theory; Hybridisation of the central metal orbitals- sp^3 , sd^3/d^3s sp^3d^2/d^2sp^3 , sp^2d ,

ii. Inner and outer orbital complexes of (suitable examples of Mn(II) Fe(II), Fe(III), Co(II)/Co(III), Ni(II), Cu(II) Zn(II) complexes with ligands like aqua, ammonia CN^- and halides may be used)

iii. Limitations of V.B.T

4. Students will become aware of Application of coordination compounds.

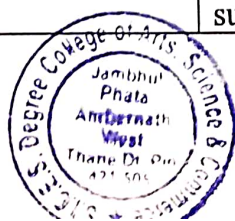
1. Students will be able to explain Nomenclature, structure and physical properties, acidity of carboxylic acids, effects of substituents on acid strength of aliphatic and aromatic carboxylic acids

2. Students will be able to explain Preparation of carboxylic acids: oxidation of alcohols and alkyl benzene, carbonation of Grignard and hydrolysis of nitriles.

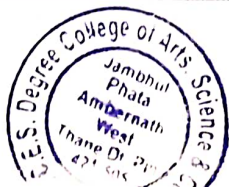
3. Students will comprehend Reactions: Acidity, salt formation, decarboxylation, Reduction of carboxylic acids with $LiAlH_4$, diborane, Hell-Volhard-Zelinsky reaction, Conversion of carboxylic acid to acid chlorides, esters, amides and acid anhydrides and their relative reactivity.

4. Students will be able to write Mechanism of nucleophilic acyl substitution and acid-catalysed nucleophilic acyl substitution. Interconversion of acid derivatives by nucleophilic acyl substitution. Mechanism of Claisen condensation and Dieckmann condensation.

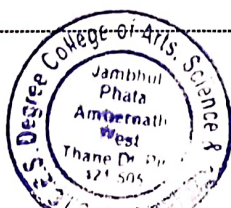
5. Students will be able to explain Nomenclature, preparation of aromatic sulphonic acids by sulphonation of benzene (with mechanism), toluene and naphthalene, Reactions: Acidity of arene sulfonic acid, Comparative acidity of carboxylic acid and sulfonic acids. Salt formation,



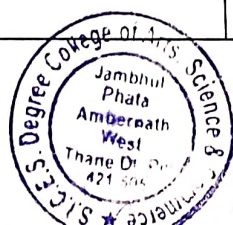
		desulphonation. Reaction with alcohol, phosphorous pentachloride, IPSO substitution.
<p>Chemistry - II USCH302</p>	<p>1. Students will become aware about the concept of chemical kinetics</p> <p>2. Students will be able to describe different types of solutions in detail.</p> <p>3. Students will be able to</p>	<p>1. Students will learn about Types of Complex Chemical reactions: Reversible or opposing, consecutive and parallel reactions (No derivations, only examples expected), Thermal chain reactions: H. and Br. reaction. (only steps involved, no kinetic expression expected).</p> <p>2. Students will be able to learn Effect of temperature on the rate of reaction, Arrhenius equation, Concept of energy of activation (E_a). (Numericals expected).</p> <p>3. Students will become familiar with the Theories of reaction rates: Collision theory and activated complex theory of bimolecular reactions. Comparison between the two theories (Qualitative treatment only)</p> <p>1. Students will be able to comprehend Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law-non-ideal solutions. Vapour pressure-composition and temperature - composition curves of ideal and non-ideal solutions. Distillation of solutions. Lever rule. Azeotropes.</p> <p>2. Learner will learn about Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids with respect to Phenol-Water, Triethanolamine - Water and Nicotine - Water systems Immiscibility of liquids- Principle of steam distillation. Nernst distribution law and its applications, solvent extraction.</p> <p>1. Learner will become aware of Electron</p>



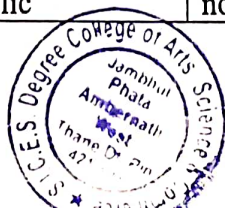
	<p>explain p block elements with respect to boron, silicon, germanium and nitrogen.</p> <p>4. Students will be able to explain the chemistry of carbonyl compounds in detail especially with respect to aldehydes and ketones.</p>	<p>deficient compounds – BH_3, BF_3, BCl_3 with respect to Lewis acidity and applications. Preparation of simple boranes like diborane and tetraborane. Structure and bonding in diborane and tetraborane (2e-3c bonds), Synthesis of Borax.</p> <p>2. Students will be familiar with Chemistry of Silicon and Germanium Silicon compounds: Occurrence, Structure and inertness of SiO_2, Preparation of structure of $SiCl_4$, Occurrence and extraction of Germanium, Preparation of extra pure Silicon and Germanium</p> <p>2.3 Chemistry of Nitrogen family.</p> <p>3. Students will be able to explain Trends in chemical reactivity - Formation of hydrides, halides, oxides with special reference to oxides of nitrogen. Oxides of nitrogen with respect to preparation and structure of NO, NO_2, N_2O and N_2O_4. Synthesis of ammonia by Bosch – Haber process.</p> <p>1. Students will comprehend Nomenclature of aliphatic, alicyclic and aromatic carbonyl compounds. Structure, reactivity of aldehydes and ketones and methods of preparation; Oxidation of primary and secondary alcohols using PCC, hydration of alkynes, action of Grignard reagent on esters, Rosenmund reduction, Gattermann – Koch formylation and Friedel Craft acylation of arenes</p> <p>2. Students will be able to write General mechanism of nucleophilic addition, and acid catalyzed nucleophilic addition reactions. Reactions of aldehydes and ketones with $NaHSO_3$, HCN, $RMgX$, alcohol, amine, phenyl hydrazine, 2,4-Dinitrophenyl hydrazine, $LiAlH_4$ and $NaBH_4$.</p> <p>3. Students will develop skill in writing Mechanisms of following reactions: Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt and Cannizzaro reaction. Keto-enol tautomerism: Mechanism of acid and base catalysed enolization</p> <p>4. Students will become familiar with Active methylene compounds: Acetylacetone, ethyl acetoacetate diethyl malonate, stabilised</p>
--	--	---



		enols. Reactions of Acetylacetone and ethyl acetoacetate (alkylation, conversion to ketone, mono- and dicarboxylic acid)
USCH402	1. Learner will become aware of solid-state chemistry	<p>1. Learner will comprehend Recapitulation of laws of crystallography and types of crystals</p> <p>2. Learner will learn Characteristics of simple cubic, face centered cubic and body centered cubic systems, interplanar distance in cubic lattice (only expression for ratio of interplanar distances are expected)</p> <p>3. Students will become familiar with the Use of X-rays in the study of crystal structure, Bragg's equation (derivation expected), X-rays diffraction method of studying crystal lattice structure, structure of NaCl and KCl. Determination of Avogadro's number (Numericals expected)</p>
	2. Students will be able to learn catalysis in detail	<p>1. Students will be able to learn Types of catalysis, catalytic activity, specificity and selectivity, inhibitors, catalyst poisoning and deactivation</p> <p>2. Learner will be able to write Mechanisms and kinetics of acid-base catalyzed reactions, effect of pH. Mechanisms and kinetics of enzyme catalyzed reactions (Michaelis-Menten equation)</p> <p>3. Learner will know Effect of particle size and efficiency of nanoparticles as catalyst.</p>
	3. Learner will be able to explain the topic of ions in aqueous medium.	<p>1. Learner will understand Acidity of Cations and Basicity of Anions Hydration of Cations; Hydrolysis of Cations predicting degree of hydrolysis of Cations-effect of Charge and Radius. Latimer Equation. Relationship between pKa, acidity and z^2/r ratios of metal ions graphical Presentation</p> <p>2. Students will be able to Classify cations on the basis of acidity category – Non acidic, Moderately acidic, strongly acidic, very</p>



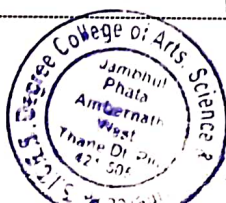
		<p>strongly acidic with pKa values range and examples</p> <p>3. Students will be able to explain Hydration of Anions; Effect of Charge and Radius; Hydration of anions- concept, diagram classification on the basis of basicity</p> <p>4. Students will be able to explain Uses and Environmental Chemistry of volatile Oxides and oxo-acids-</p> <p>i. Physical properties of concentrated oxo-acids like sulfuric, Nitric and Phosphoric acid</p> <p>ii. Uses and environments aspects of these acids</p>
	<p>4. Students will understand the topic of amines in detail.</p>	<p>1. Students will be able to explain Nomenclature, effect of substituent on basicity of aliphatic and aromatic amines;</p> <p>2. Students will understand Preparation: Reduction of aromatic nitro compounds using catalytic hydrogenation, chemical reduction using Fe-HCl, Sn-HCl, Zn-acetic acid, reduction of nitriles, ammonolysis of halides, reductive amination, Hofmann bromamide reaction.</p> <p>3. Students will become familiar with Reactions- Salt Formation, N-acylation, N-alkylation, Hofmann's exhaustive methylation (HEM), Hofmann-elimination reaction, reaction with nitrous acid, carbylamine reaction, Electrophilic substitution in aromatic amines: bromination, nitration and sulphonation.</p>
	<p>5. Students will learn about Diazonium salts</p>	<p>1. Students will know diazonium salts w.r.t. Preparation and their reactions/synthetic application - Sandmeyer reaction, Gattermann reaction, Gomberg reaction, Replacement of diazo group by -H, -OH. Azo coupling with phenols, naphthols and aromatic amines, reduction of diazonium salt to aryl hydrazine and hydroazobenzene</p>
	<p>6. Learner will be familiar with heterocyclic</p>	<p>1. Students will learn about Classification, nomenclature, electronic structure,</p>



	<p>compounds in detail.</p>	<p>aromaticity in 5-numbered and 6-membered rings containing one heteroatom;</p> <p>2. Students will learn Synthesis of Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, and Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis)</p> <p>3. Students will become familiar with the Reactivity of furan, pyrrole and thiophene towards electrophilic substitution reactions on the basis of stability of intermediate and of pyridine on the basis of electron distribution. Reactivity of pyridine towards nucleophilic substitution on the basis of electron distribution.</p> <p>4. Learner will become aware of Reactions of furan, pyrrole and thiophene: halogenation, nitration, sulphonation, Vilsmeier-Haack reaction, Friedel-Crafts reaction. Furan: Diels-Alder reaction, Ring opening. Pyrrole: Acidity and basicity of pyrrole. Comparison of basicity of pyrrole and pyrrolidine.</p> <p>5. Student will learn about Pyridine: Basicity. Comparison of basicity of pyridine, pyrrole and piperidine. Sulphonation of pyridine (with and without catalyst), reduction and action of sodamide (Chichibabin reaction).</p>
<p>Chemistry - III USCH303</p>	<p>1. Learner will be able to know the role of analytical chemistry</p>	<p>1. Students will learn about Language of analytical chemistry: important terms and their significance in Analytical Chemistry.</p> <p>2. Students will become aware of Purpose of Chemical Analysis; Analysis Based (i) On the nature of information required: (Proximate, Partial, Trace, Complete Analysis) and (ii) On the size of the sample used (Macro, semi-micro and micro analysis)</p> <p>3. Students will learn Classical and Non-Classical Methods of Analysis; their types and importance.</p> <p>4. Students will become aware of Significance of Sampling in Analytical Chemistry- Terms involved in Sampling, Types of Sampling, Sampling techniques, Results of Analysis., Errors in Analysis and their types, Precision</p>



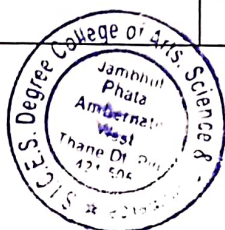
	<p>2. Students will become aware of Classical methods of analysis</p> <p>3. Students will understand the concept of Neutralization reactions.</p> <p>4. Students will become familiar with gravimetric analysis.</p>	<p>and Accuracy in Analysis Corrections for Determinate Errors. (Problems including Numericals expected wherever required)</p> <p>1. Students will become familiar with Titrimetric Methods Terms involved in Titrimetric methods of analysis. Comparing volumetry and Titrimetry, The Conditions suitable for titrimetry, Types of titrimetry – Neutralisation (Acidimetry, alkalimetry), Redox, (Iodometry, Iodimetry,) Precipitation and Complexometric titrations and indicators used in these titrations, Tools of Titrimetry: Graduated glasswares and Calibration, Standard solutions (Primary and Secondary standards in Titrimetry) and Calculations in Titrimetry.</p> <p>1. Students will learn the Concept of pH and its importance in Neutralisation Titrations, End point and Equivalence point of Neutralisation titrations, Determination of End point by using</p> <ol style="list-style-type: none"> Indicators causing colour change Change in potential, (by potentiometry) Change in conductance (by conductometry) <p>Construction of titration curve (on the basis of change in pH)of a titration of</p> <ol style="list-style-type: none"> Strong acid-weak base Strong base-weak acid <p>1. Students will learn General Introduction to Gravimetry. Types of Gravimetric Methods – Precipitation Gravimetry:</p> <ol style="list-style-type: none"> Steps involved in precipitation gravimetry analysis Conditions for precipitation Completion of precipitation, Role of Digestion, Filtration, Washing, Drying Ignition of precipitate.
--	--	--



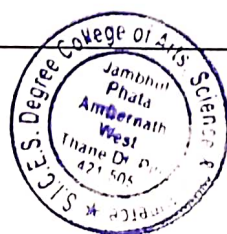
	<p>5. Students will learn about Basic Concepts in Instrumental methods</p> <p>6. Students will learn about Spectrometry</p>	<p>2. Learner will know the Applications of Gravimetric Analysis: Determination of sulfur in organic compounds; Estimation of Nickel in Cu-Ni alloy using dimethyl glyoxime; Determination of Aluminum by converting it to its oxide.</p> <p>1. Students will learn Relation between the Analyte, Stimulus and measurement of change in the observable property.</p> <p>2. Learner will be able to draw Block Diagram of an Analytical instrument.</p> <p>3. Learner will become aware of Types of Analytical Instrumental methods based on</p> <ol style="list-style-type: none"> i. Optical interactions (eg. Spectrometry: uv-visible, Polarimetry) ii. Electrochemical interactions (eg. Potentiometry, Conductometry,) iii. Thermal interactions (eg. Thermogravimetry) <p>1. Students will learn Interaction of electromagnetic radiation with matter: Absorption and Emission spectroscopy</p> <p>2. Learner will know Basic Terms: Radiant Power, Absorbance, Transmittance, Monochromatic light, Polychromatic light, Wavelength of maximum absorbance, Absorptivity and Molar Absorbivity, Statement of Beer's Law and Lambert's Law, Combined Mathematical Expression of Beer - Lambert's Law, Validity of Beer-Lambert's Law, Deviations from Beer-Lambert's Law ((Real deviations, Instrumental deviations and Chemical deviations) (Numerical problems based on Beer-Lambert's Law)</p> <p>3. Students will learn Instrumentation for absorption spectroscopy: Colorimeters and Spectrophotometers, Block Diagrams for Single beam and Colorimeter, and Spectrophotometer(Principles, Construction and working-Details of Components expected i.e.source,Sampleholder,Filters/Monochromators, Detectors such as Photomultiplier tube)</p>
--	---	--



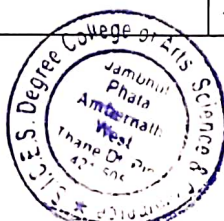
		<p>4. Students will become aware of Applications of UV-Visible Spectrophotometry (a) Qualitative analysis such as Identification of functional groups in Organic compounds ,Chromophores and Auxochrome, cis and trans isomers (b) Quantitative analysis by Calibration curve method and</p> <p>5. Students will learn about Photometric Titrations: Principle, Instrumentation, Types of Photometric titration Curves with examples.</p>
USCH403	<p>1. Students will become aware of Separation Techniques in Analytical Chemistry</p> <p>3. Students will become aware with the topic of Solvent extraction</p>	<p>1. Students will get introduced to Analytical Separations and its importance in analysis. Estimation of an analyte without effecting separation.</p> <p>2. Students will know Types of separation methods Based on Solubilities (Precipitation, Filtration Crystallisation), Based on Gravity-Centrifugation, Based on volatility-Distillation, Based on Electrical effects-Electrophoresis, Based on retention capacity of a Stationary Phase -Chromatography; Based on distribution in two immiscible phases-Solvent Extraction; Based on capacity to exchange with a resin-Ion Exchange.</p> <p>3. Students will learn Electrophoresis: Principles, Basic Instrumentation, Working and Application in separation of biomolecules like enzymes and DNA.</p> <p>1. Students will learn about Nernst distribution Law, Distribution Ratio, Partition Coefficient. Conditions of extraction: Equilibration time, Solvent volumes, temperature, pH. Single step and multi-step extraction, Percentage extraction for single step and multistep extraction. Separation factor. Batch and continuous extraction</p>



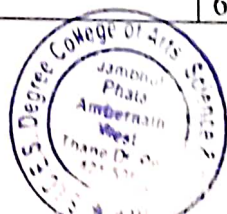
	<p>4. Students will comprehend the concept of Chromatography in detail.</p> <p>5. Students will become aware of Instruments based on the electrochemical properties of the analytes</p> <p>6. Students will be able to explain Nature of Indeterminate Errors</p>	<p>1. Students will be introduced to Chromatography, Classification of chromatographic methods based on stationary and mobile phase, Paper Chromatography: Principle, techniques and applications of Paper Chromatography in separation of cations, Thin layer Chromatography Principle, technique and Applications in determining the purity of a given solute; Following progress of a given reaction.</p> <p>1. Students will become aware of Potentiometry: Principle, Role of Reference and indicator electrodes, Applications in Neutralisation reactions with reference to the titration of a Strong acid against a Strong Base (using quinhydrone electrode)</p> <p>2. Students will learn about Graphical methods for detection of end points.</p> <p>3. Learner will become aware of pHmetry: Principle, Types of pH meters, Principle, Construction Working and Care of Combined Glass electrode Applications in Titrimetry (Strong acid-Strong Base) biological and environmental analysis.</p> <p>4. Student will be familiar with Conductometry: Principle, Conductivity cell its construction and care, Applications in Neutralization Titrimetry with respect to</p> <ol style="list-style-type: none"> Strong Acid-Strong Base Strong Acid-Weak Base Strong Base-weak Acid Weak Acid- Weak Base. <p>Advantages & limitations of conductometric titrations.</p> <p>1. Students will become aware of The true and acceptable value of a result of analysis, Measures of central tendency: mean, median, mode, average, Measures of dispersion: Absolute deviation, relative deviation, relative</p>
--	---	--



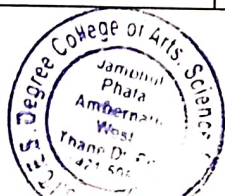
		<p>average deviation, standard deviation, (s, sigma) variance, coefficient of variation</p> <p>7. Students will become aware of Distribution of random errors</p> <p>8. Students will be able to comprehend the Concept of Confidence limits and confidence interval and its computation</p> <p>9. Learner will know the Criteria for rejection of doubtful result</p> <p>10. Students will become aware of the Test of significance</p> <p>11. Learner will become aware of Graphical representation of data and obtaining best fitting straight line</p>	<p>1. Students will learn Gaussian distribution curve, Equation and salient features of Gaussian distribution curve</p> <p>1. Students will learn about (i) Population standard deviation (ii) Student's t test (iii) Range</p> <p>1. Students will learn (i) 2.5 d rule (ii) 4.0 d rule (iii) Q test</p> <p>1. Students will learn (i) Null hypothesis (ii) F-test (variance ratio test)</p> <p>1. Students will be able to explain Graphical representation of data and obtaining best fitting straight line (a) For line passing through origin (b) For line not passing through origin [Numerical problems wherever possible, expected.]</p>
<p>Practical's USCHP1 USCHP2 & USCHP3</p>	<p>1. Students will be able to develop necessary understanding and skills in experiments concerned with physical chemistry</p>	<p>Students will be able to develop skill in handling various apparatus, instruments and in performing titrations and calculations by performing following experiments. Unit I: Physical Chemistry-</p> <p>1. To verify Ostwald's dilution law for weak acid conductometrically. 2. To determine dissociation constant of weak acid conductometrically. 3. To determine the critical solution temperature (CST) of phenol - Water System.</p>	



	<p>2. Students will be able to develop necessary understanding and skills in experiments concerned with inorganic chemistry.</p> <p>3. Students will be able to develop necessary understanding and skills in experiments concerned with organic chemistry.</p>	<p>4. Determination of energy of activation of acid catalyzed hydrolysis of methyl acetate.</p> <p>5. To investigate the reaction between $K_2S_2O_8$ and KI with equal initial concentrations of the reactants</p> <p>6. To determine solubility of sparingly soluble salts (any two) conductometrically.</p> <p>Learner will be able to develop skill in performing semi micro tests, titrations and calculations by performing following experiments.</p> <p>Unit II: Inorganic Chemistry</p> <p>1. Identification of cations in a given mixture and Analytically separating them [From a mixture containing not more than two of the following: $Pb(II)$, $Ba(II)$, $Ca(II)$, $Sr(II)$, $Cu(II)$, $Cd(II)$, $Mg(II)$, $Zn(II)$, $Fe(II)$, $Fe(III)$, $Ni(II)$, $Co(II)$ $Al(III)$, $Cr(III)$]</p> <p>2. Crystallization of potassium iodate and to estimate its purity before and after the separation.</p> <p>3. Estimation of total hardness</p> <p>4. Investigation of the reaction between Copper sulphate and Sodium Hydroxide (Standard EDTA solution to be provided to the learner).</p> <p>Students will be able to develop expertise and skill in synthesizing organic compounds by performing following experiments.</p> <p>Unit III: Organic Chemistry</p> <p>Short organic preparation and their purification: Use 0.5-1.0g of the organic compound. Purify the product by recrystallization. Report theoretical yield, percentage yield and melting point of the purified product.</p> <p>Preparation of:</p> <ol style="list-style-type: none"> 1. Cyclohexanone oxime from cyclohexanone. 2. Glucosazone from dextrose or fructose 3. Tribromoaniline from aniline. 4. β-Naphthylbenzoate 5. m-Dinitrobenzene from nitrobenzene 6. Phthalic anhydride from phthalic acid by
--	---	---



	<p>4. Students will be able to develop necessary understanding and skills in experiments concerned with analytical chemistry</p>	<p>sublimation 7. Acetanilide from aniline 8. p-Bromoacetanilide from acetanilide 9. Iodoform from acetone (Any eight preparations)</p> <p>Learner will become aware of various apparatus, glassware, instruments used in analytical chemistry, will develop skill in performing gravimetric estimations and will also become familiar with the concepts of buffers and colorimetry by performing following experiments.</p> <p>Tools of Analytical Chemistry-I: a) Analytical glass wares like burettes, pipettes, Standard flasks, Separating funnels. b) Weighing tools such as two pan balance and monopan balance, digital balances: c) Incineration devices: Burners, Electrical Incinerators, Muffle Furnace, d) Drying Devices: Hot Air Oven, Microwave Oven, Desiccators, Vacuum desiccators e) Monochromators, Filters, Sample holders, Prisms, Diffraction Gratings, Photoemissive cells, Photomultiplier tubes</p> <p>(The learner should draw diagrams and write-ups providing uses, care and maintenance of the items mentioned in (a) and principle, construction and uses of items (b) to (e) in his journal.</p> <p>2. Gravimetric estimation of Nickel (II) as Ni-DMG and calculation of % error. (The learner is expected to know the role of the various reagents/chemicals used In the estimation, various steps involved. They should write the complete and Balanced chemical reaction for the formation of the Ni(DMG)₂ complex.</p> <p>3. Colorimetric Determination of Copper Ions in given Solution by using calibration curve method and calculation of % error. (The learner is expected to learn the relation between concentration and Absorbance, to draw a calibration curve, use the slope of the calibration curve and compare it with the calculated slope. They are also expected to state the error estimate of their results).</p>
--	--	--



Practical's
USCHP4
USCHP5 &
USCHP6

1. Students will be able to develop necessary understanding and skills in experiments concerned with physical chemistry.

2. Students will be able to develop necessary understanding and skills in experiments concerned with inorganic chemistry.

4. Determination of buffer capacity of acid buffer and basic buffer.
(The learner is expected to learn the use pH meter, standardization of pH meter, use of Henderson's equation and calculation of buffer capacity)

5. Estimation of Aspirin

6. Gravimetric estimation of barium ions using K_2CrO_4 as precipitant calculation of % error.

(The learner is expected to learn the skills of using the counterpoise technique used in this gravimetric estimation; Using counterpoise method whatman No.42 for filtration. In such a case no incineration or use of silica crucible is required.

They are also expected to state the error estimate of their results)

Students will be able to develop expertise and skill in handling instruments and also enhance their writing abilities.

Unit I: Physical Chemistry

1. To determine standard EMF and the standard free energy change of Daniel cell potentiometrically .

2. To determine the amount of HCl in the given sample potentiometrically.

3. Compare the strengths of HCl and H_2SO_4 by studying kinetics of acid hydrolysis of methyl acetate.

6. Industrial visit report.

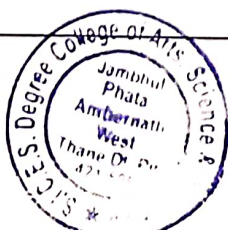
Students will be able to develop expertise and skill in synthesizing inorganic compounds/ coordination compounds by performing following experiments.

Unit II: Inorganic Chemistry

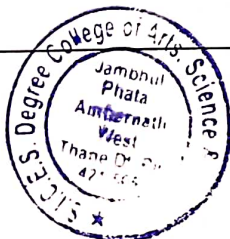
1. Inorganic preparation – Nickel dimethyl glyoxime using microscale method.

2. Complex cation – Tris (ethylene diamine) nickel (II) thiosulphate.

3. Complex anion – Sodium Hexanitrocobaltate (III) The aim of this



	<p>3. Students will be able to develop necessary understanding and skills in experiments concerned with organic chemistry</p> <p>4. Students will be able to develop necessary understanding and skills in experiments concerned with analytical chemistry</p>	<p>experiment is to understand the preparation of a soluble cation (sodium) and a large anion hexanitrocobaltate(III) and its use to precipitate a large cation (potassium)</p> <p>4. Inorganic salt – Calcium or magnesium oxalate using PFHS technique</p> <p>Students will be able to develop expertise and skill in identifying organic compounds by performing following experiments.</p> <p>Unit III: Organic Chemistry Qualitative Analysis of bi-functional organic compounds on the basis of</p> <ol style="list-style-type: none"> 1. Preliminary examination 2. Solubility profile 3. Detection of elements C, H, (O), N, S, X. 4. Detection of functional groups 5. Determination of physical constants (M.P/B.P) <p>Solid or liquid Compounds containing not more than two functional groups from among the following classes may be given for analysis: Carboxylic acids, phenol, carbohydrates, aldehydes, ketones, ester, amides, nitro, anilides, amines, alkyl and aryl halides.</p> <p>Students are expected to write balanced chemical reactions wherever necessary. (Minimum 6 compounds to be analyzed)</p> <p>Learner will become aware of various electrodes, apparatus, glassware, instruments used in analytical chemistry, will develop skill in performing gravimetric estimations and will also become familiar with the concepts of solvent extraction and chromatography by performing following experiments.</p> <p>Tools of Analytical Chemistry-II</p> <ol style="list-style-type: none"> a. Filtration Flasks, Funnels, Separating Funnels, Distillation apparatus, Vacuum Distillation assembly, Centrifuge machine, Electrophoresis apparatus.
--	--	---



b. Development chamber for chromatography
c. Electrodes like Reference Electrodes and Indicator Electrodes (with respect to care and maintenance.)
d. Conductivity cell (with respect to care and maintenance.)
e. Combined Glass electrode (with respect to care and maintenance.)
f. Types of Salt Bridges and preparation of any one or use of salt bridge, its effect on the potential of a given electrode/cell
(The learner should draw diagrams and write-ups providing uses of the items mentioned in (a and b) and Principle, Construction care and Uses of items (c) to (f) in his journal.)

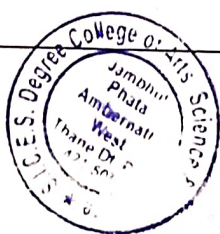
2. Paper chromatography: Separation of cations like Fe(III), Ni(II) and Cu(II) in a sample.

3. Separation of a solute between two immiscible solvents to determine the distribution ratio and/or extraction efficiency. (Solutes could be as their aqueous solutions and the organic solvent ethyl acetate) Suggested solute for the distribution study: Fe (III) in aqueous solutions.
(The learner is expected to learn the technique of solvent extraction by using separating funnel, method to estimate the concentrations of the solute distributed in the two immiscible phases, determination of the extraction efficiency)

4. Conductometric titration: Estimation of given acid by conductometric titration with strong base and calculation of % error. (The learner is expected to learn the handling of the conductometer and the conductivity cell, determination of end point by plotting a graph. They are also expected to state the error estimate of their results).

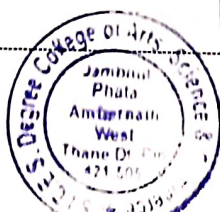
5. Estimation of Fe(II) in the given solution by titrating against $K_2Cr_2O_7$ potentiometrically and calculation of % error. (The learner is expected to learn the handling of the potentiometer, use of Platinum electrode and reference electrode like SCE. They will learn to determine end point by plotting a graph. They are also expected to state the error estimate of their results).

6. Gravimetric estimation of Sulfate as $BaSO_4$ and calculation of % error. (The learner is expected to write a balanced chemical reaction, need for digestion of the precipitate

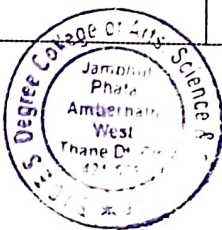


		and the skill required to carry out the incineration and to estimate the % error.) (The learner is expected to write a balanced chemical reaction, need for digestion of the precipitate and the skill required to carry out the incineration and to estimate the % error.)
https://sicescollege.edu.in/wp-content/uploads/2021/01/4.207-S.Y.B.Sc.-Chemistry-Sem-III-IV.pdf		

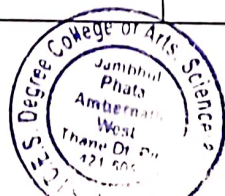
CLASS F.Y.B.Sc.			
Class	Course/Course Code/Title	Program outcomes (PO's) (Students will be able to have)	Course Outcomes (CO's) (Students will be able to have)
2) For F. Y. B. Sc. Chemistry Syllabus Choice Based Credit System (CBCS) was implemented from the Academic year 2016-2017			
Chemistry -I USCH101	1. Chemical Thermodynamics 2. Chemical Calculations 3. Atomic structure 4. Periodic Table and Periodicity 5. Basics of Organic Chemistry		1. The Students will understand the concept, laws of thermodynamics and able to understand effects of parameters on processes / system 2. Students will be familiar with concentration term, its importance and able to prepare solutions in different concentration by solving problems 3. Students will also be able to describe the location of three subatomic particles in an atom (protons, neutrons, and electrons), quantum numbers (n, l, ml, ms) and their use in explain atomic structure and energy states. 4. Students will become aware of the arrangement of elements in periodic table periodic trends, position of element in the periodic table, the periodicity in atomic and ionic radii, electronegativity, ionization energy, electron affinity of elements of the periodic table 5. Student will be able to classify Organic compounds on the basis of their structure and functional group and place Common, IUPAC nomenclature to structure and draw a structure from name 6. Students will be familiar with the concepts of electrophile, nucleophiles, and intermediates along the reaction pathways. Mechanism of organic reactions (effect of nucleophile/ leaving group, solvent).



USCH201	<ol style="list-style-type: none"> 1. Gaseous State 2. Chemical Equilibria and Thermodynamic Parameters 3. Concepts of Qualitative Analysis 4. Acid – base Theories 5. Chemistry of Aliphatic Compounds 	<ol style="list-style-type: none"> 1. Students will become aware of gas laws in various real-life situation, behavior of real gases, the conditions required for liquefaction of gases and critical phenomena 2. Students will become familiar with the laws of thermodynamics and will be able to understand effects of parameters on processes / system 3. Students will be able to observe the changes in chemical reaction and will learn to prepare reagent papers for Qualitative analysis 4. Students will learn different Acid-Base concepts and Classify them on as HSAB 5. Student will learn concepts of Hydrocarbon like Alkane, Alkene & Alkynes, physical and chemical properties of them, Elimination reactions with mechanism, will be able to write chemical reactions by using rules like Markownikoff/ Anti Markownikoff addition rule, saytzeff and Hoffmans rule for Elimination reactions
Chemistry -II USCH102	<ol style="list-style-type: none"> 1. Chemical Kinetics 2. Liquid state 3. Comparative Chemistry of Main group elements 	<ol style="list-style-type: none"> 1. Students will understand the terms like Rate of reaction, rate constant, measurement of reaction rates, order and molecularity of reaction, and Determination of order of reaction. 2. Students will learn terms related to surface tension like Surface tension, methods of determination of surface tension by drop number method by Numericals method, determination of viscosity by Ostwald, determination of refractive index by Abbe's refractometer & classification and structure of thermotropic phases, applications of liquid crystals and numericals of all terms 3. Students will become aware about Metallic and non-metallic nature, oxidation states, electronegativity, anomalous behaviour of second period elements, allotropy, catenation, diagonal relationship. Comparative chemistry of carbides, nitrides, oxides and hydroxides of group I and group II elements and get knowledge of daily used Some important compounds like- NaHCO_3, Na_2CO_3, NaCl, NaOH, CaO, CaCO_3; oxides of carbon, oxides and oxyacids of sulphur and nitrogen with respect to

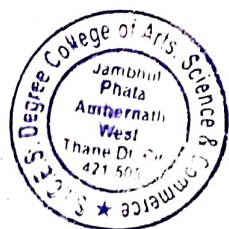


	4. Stereochemistry I	<p>environmental aspects.</p> <p>4. Students will be able to understand three dimensional special arrangement of atoms / groups. Different formulae for asymmetric compound and their interconversions; Geometrical isomerism in alkene and cycloalkanes: cis-trans and syn-anti isomerism E/Z notations with C.I.P rules. Optical Isomerism: terms related to it and draw different types of isomeric structures and assign them configuration by using rules.</p>
USCH202	<p>1. Ionic Equilibria</p> <p>2. Molecular Spectroscopy</p> <p>3. Solid state Chemistry</p> <p>4. Chemical bonds and reactivity</p> <p>5. Oxidation – Reduction Chemistry</p>	<p>1. Students will become aware about the electric current, Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water, ionization of weak acids and bases, pH scale, common ion effect, Buffers: Introduction, types of buffers, derivation of Henderson equation for acidic and basic buffers, buffer action, buffer capacity and solve numericals on it</p> <p>2. Students will learn about Electromagnetic radiation, electromagnetic spectrum, Planck's equation, interaction of electromagnetic radiation with matter: and clearly understand Absorption, emission, scattering, fluorescence, electronic, vibrational and rotational transitions, Beer-Lambert's law and solve problems on this</p> <p>3. Students will learn different types of solids, crystal lattice, lattice points, unit cell, space lattice and lattice plane, laws of crystallography: Law of constancy of interfacial angle, law of symmetry and law of rational indices and their problems</p> <p>4. Students will be able to differentiate types of chemical bond & made comparison between ionic and covalent bonds, draw Lewis dot structure, understand draw structure by using VSEPR theory, its applications and limitations</p> <p>5. Students will become familiar with oxidation reduction concept, oxidation & reduction potential its effect on chemical reaction, they will learn to balance chemical equation and calculate oxidation state of elements from species / compound.</p>



	<p>6. Stereochemistry-II: Cycloalkanes and Conformational Analysis</p> <p>7. Aromatic Hydrocarbons</p>	<p>6. Students will learn different types of cycloalkanes and their relative stability, Baeyer strain theory, Conformation analysis of cyclohexane: Chair, Boat and Twist boat forms; Relative stability with energy and related shapes their stability in nature</p> <p>7. Students will learn about Aromatic compounds and aromaticity, electrophilic reactions of aromatic compounds and its mechanism.</p>
<p>Practical's USCHP1 & USCHP2</p>	<p>1. Physical Chemistry</p> <p>2. Inorganic Chemistry</p> <p>3. Organic Chemistry</p>	<p>1. Student will be able to handle apparatus properly during the practical</p> <p>2. Learner will develop a titrimetric analysis skill and will learn to connect practical knowledge to theory knowledge like titrant, Titrant, Indicator, Equivalence Point, End point etc.</p> <p>3. Learner will develop a technique and skill for selection of solvent and recrystallization of the sample</p> <p>4. Students will become confident to calibrate and use instruments like colorimeter, pH meter, etc.</p> <p>5. Students will learn to write results or conclusion of experiment on the basis of observations</p> <p>6. Students will be able to analyze inorganic salts qualitatively and identify cations and anions present in a given unknown mixture of salts.</p> <p>7. Student will be able to analyze unknown sample of organic compound and characterize it.</p>

<https://sicescollege.edu.in/wp-content/uploads/2021/01/4.12-F.-Y.-B.-Sc.-Chemistry.pdf>



Shareshalini

HEAD DEPARTMENT OF CHEMISTRY
SREE SREE DEGREE COLLEGE OF ARTS, SCIENCE & COMMERCE
Jambhul Phata, Ambernath (W)

SICES Degree College of Arts, Science and Commerce

Chikloli, JambhulPhata, Ambernath (W)

Department of Physics

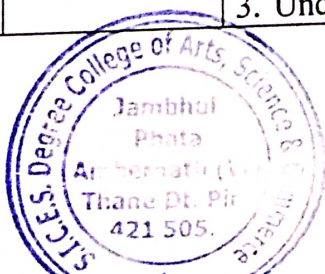
Program outcomes and course outcomes

Program : B. Sc. (Physics)

Program Outcomes:

1. Students are expected to attain the course outcomes of all courses in current syllabus.
2. To understand the concepts covered in current syllabus from all branches of physics
3. The ability to interpret, analyze and apply physical concepts should be enhanced
4. The develop skills of practical, calculation, graph plotting, error estimation, and moderate innovations are expected.

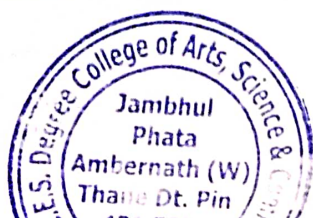
Class	Semester	Course Name	Course Outcomes
T.Y.B.Sc	VI	USPH601 Classical Mechanics	<ol style="list-style-type: none"> 1. This course will introduce the students to different aspects of classical mechanics. 2. They would understand the kinds of motions that can occur under a central potential and their applications to planetary orbits. 3. The students should also appreciate the effect of moving coordinate system, rectilinear as well as rotating. 4. The students are expected to learn the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle. 5. They should also be able to solve simple examples using this formalism. The introduction to simple concepts from fluid mechanics and understanding of the dynamics of rigid bodies is also expected. 6. Finally, they should appreciate the drastic effect of adding nonlinear corrections to usual problems of mechanics and nonlinear mechanics can help understand the irregularity we observe around us in nature.
T.Y.B.Sc	VI	USPH602 Electronics	<ol style="list-style-type: none"> 1. Understand the basics of semiconductor devices and their applications. 2. Understand the basic concepts of operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation. 3. Understand the basic concepts of timing pulse



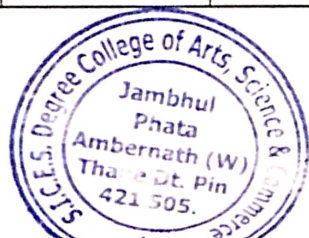
			<p>generation and regulated power supplies</p> <ol style="list-style-type: none"> Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication. Develop quantitative problem solving skills in all the topics covered.
T.Y.B.Sc	VI	USPH603 Nuclear Physics	<ol style="list-style-type: none"> Upon successful completion of this course, the student will be able to understand the fundamental principles and concepts governing classical nuclear and particle physics and have a knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation. Knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.
T.Y.B.Sc	VI	USPH604 Special Theory of Relativity	<ol style="list-style-type: none"> Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time. Understand the transformation equations for: Space and time, velocity, frequency, mass, momentum, force, Energy, Charge and current density, electric and magnetic fields. Solve problems based on length contraction, time dilation, velocity addition, Doppler effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.
T.Y.B.Sc	VI	USPH605 Practicals of Course USPH601 + USPH602 USPH606 Practicals of Course USPH603 + USPH604	<ol style="list-style-type: none"> Understanding relevant concepts. Planning of the experiments. Layout and adjustments of the equipment Understanding designing of the experiments Attempts to make the experiments open ended Recording of observations and plotting of graphs Calculation of results and estimation of possible errors in the observation of results.
T.Y.B.Sc	VI	USACEI601	<ol style="list-style-type: none"> Understand the concepts in Digital Electronics



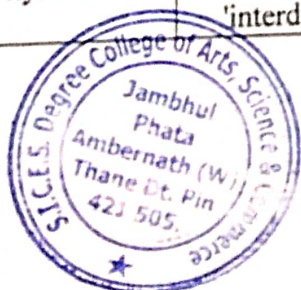
		Digital Electronics, Microprocessor and its applications, Programming in C++	<ol style="list-style-type: none"> 2. To introduce to 8085 Microprocessor and Basic Assembly Language Programming-I 3. To interpret Basic Assembly Language Programming-II and 8255 PPI 4. To understand and practice Basic Concepts of Object Oriented Programming and C++
T.Y.B.Sc	VI	USACEI6P1 Digital Electronics, Microprocessor and its applications, Programming in C++	<ol style="list-style-type: none"> 1. Understanding relevant concepts. 2. Planning of the experiments 3. Layout and adjustments of the equipment 4. Understanding designing of the experiments 5. Attempts to make the experiments open ended 6. Recording of observations and plotting of graphs 7. Calculation of results and estimation of possible errors in the observation of results
T.Y.B.Sc	V	USPH501 Mathematical Methods in Physics	<ol style="list-style-type: none"> 1. From this course, the students are expected to learn some mathematical techniques required to understand the physical phenomena at the undergraduate level and get exposure to important ideas of statistical mechanics. 2. The students are expected to be able to solve simple problems in probability, understand the concept of independent events and work with standard continuous distributions. 3. The students will have idea of the functions of complex variables; solve nonhomogeneous differential equations and partial differential equations using simple methods. The units on statistical mechanics would introduce the students to the concept of microstates, Boltzmann distribution and statistical origins of entropy. 4. It is also expected that the student will understand the difference between different statistics, classical as well as quantum.
T.Y.B.Sc	V	USPH502 Solid State Physics	<ol style="list-style-type: none"> 1. Understand the basics of crystallography, Electrical properties of metals, Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity. 2. Understand the basic concepts of Fermi probability distribution function, Density of states, conduction in semiconductors and BCS theory of superconductivity. 3. Demonstrate quantitative problem solving skills in all the topics covered
T.Y.B.Sc	V	USPH503 Atomic and	<ol style="list-style-type: none"> 1. The application of quantum mechanics in atomic physics



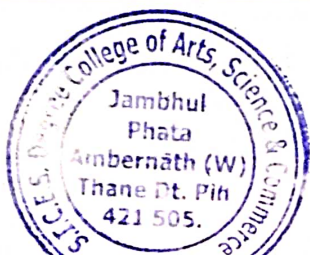
		Molecular Physics	<ol style="list-style-type: none"> The importance of electron spin, symmetric and antisymmetric wave functions and vector atom model Effect of magnetic field on atoms and its application Learn Molecular physics and its applications.
T.Y.B.Sc	V	USPH504 Electrodynamics	<ol style="list-style-type: none"> Understand the laws of electrodynamics and be able to perform calculations using them. Understand Maxwell's electrodynamics and its relation to relativity Understand how optical laws can be derived from electromagnetic principles. Develop quantitative problem solving skills.
T.Y.B.Sc	V	USPHP05 Practicals of Course USPH501 + USPH502 USPHP06 Practicals of Course USPH503 + Course USPH504	<ol style="list-style-type: none"> Understanding relevant concepts. Planning of the experiments Layout and adjustments of the equipment Understanding designing of the experiments Attempts to make the experiments open ended Recording of observations and plotting of graphs Calculation of results and estimation of possible errors in the observation of results
T.Y.B.Sc	V	USACEI501 Analog Circuits and Instruments	<ol style="list-style-type: none"> Understand the working of Electronic Components Understand the principles behind Transducers and Display Devices To relate physics and daily life Measuring Instruments The importance of Signal Generation and Signal Conditioning and power Supplies
T.Y.B.Sc	V	USACEI5P1 Analog Circuits and Instruments	<ol style="list-style-type: none"> Understanding relevant concepts. Planning of the experiments Layout and adjustments of the equipment Understanding designing of the experiments Attempts to make the experiments open ended Recording of observations and plotting of graphs Calculation of results and estimation of possible errors in the observation of results
S.Y.B.Sc.	IV	USPH401 Optics and Digital Electronics	<ol style="list-style-type: none"> Understand the diffraction and polarization processes and applications of them in physical situations. Understand the applications of interference in design and working of interferometers. Understand the resolving power of different



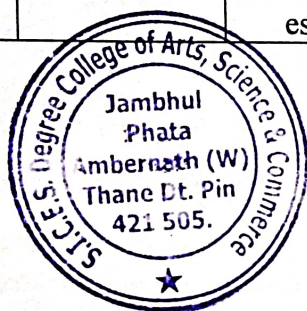
		<p>optical instruments.)</p> <ol style="list-style-type: none"> Understand the working of digital circuits Use IC 555 timer for various timing applications. Demonstrate quantitative problem solving skills in all the topics covered.
		<p>USPH402 Quantum Mechanics</p> <ol style="list-style-type: none"> Understand the postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics. Demonstrate quantitative problem solving skills in all the topics covered.
		<p>USPH403 Applied Physics-II</p> <ol style="list-style-type: none"> Understand the concepts of mechanics & properties of matter & to apply them to problems. Comprehend the basic concepts of thermodynamics & its applications in physical situation. Learn about situations in low temperature. Demonstrate tentative problem solving skills in all above areas.
		<p>USPHP4 Practical course -4 (Group A,B,C and Demo)</p> <ol style="list-style-type: none"> Understand & practice the skills while performing experiments. Understand the use of apparatus and their use without fear & hesitation. Correlate their physics theory concepts to practical application Understand the concept of errors and their estimation.
III		<p>USPH301 Mechanics and Thermodynamics</p> <ol style="list-style-type: none"> Understand the concepts of mechanics & properties of matter & to apply them to problems. Comprehend the basic concepts of thermodynamics & its applications in physical situation. Learn about situations in low temperature. Demonstrate tentative problem solving skills in all above areas.
		<p>USPH302 Vector calculus ,Analog Electronics</p> <ol style="list-style-type: none"> Understand the basic concepts of mathematical physics and their applications in physical situations. Understand the basic laws of electrodynamics and be able to perform calculations using them. Understand the basics of transistor biasing, operational amplifiers, their applications Understand the basic concepts of oscillators and be able to perform calculations using them. Demonstrate quantitative problem solving skill in all the topics covered.
		<p>USPH303 Applied Physics -I</p> <ol style="list-style-type: none"> Students will be exposed to contextual real life situations. Students will appreciate the role of Physics in interdisciplinary areas related to materials, Bio



			<p>Physics, Acoustics etc.</p> <ol style="list-style-type: none"> The learner will understand the scope of the subject in Industry & Research. Experimental learning opportunities will foster creative thinking & a spirit of inquiry.
		USPHP3 Practical course -3 (Group A,B,C and Skill)	<ol style="list-style-type: none"> Understand & practice the skills while performing experiments. Understand the use of apparatus and their use without fear & hesitation. Correlate the physics theory concepts to practical application. Understand the concept of errors and their estimation.
F.Y.B.Sc.	II	USPH201 Mathematica I Physics	<ol style="list-style-type: none"> Understand the basic mathematical concepts and applications of them in physical situations. Demonstrate quantitative problem solving skills in all the topics covered.
		USPH202 Electricity and Electronics	<ol style="list-style-type: none"> Understand the basic mathematical concepts and applications of them in physical situations. Demonstrate quantitative problem solving skills in all the topics covered.
		USPHP2 Practical II	<ol style="list-style-type: none"> Understand & practice the skills while performing experiments. Understand the use of apparatus and their use without fear & hesitation. Correlate the physics theory concepts to practical application. Understand the concept of errors and their estimation.
	I	USPH101 Classical Physics	<ol style="list-style-type: none"> Understand Newton's laws and apply them in calculations of the motion of simple systems. Use the free body diagrams to analyze the forces on the object. Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them. Understand the concepts of lens system and interference. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process. Demonstrate quantitative problem solving skills in all the topics covered
		USPH102 Modern Physics	<ol style="list-style-type: none"> Understand nuclear properties and nuclear behavior. Understand the type isotopes and their



			<p>applications.</p> <p>3. Demonstrate and understand the quantum mechanical concepts.</p> <p>4. Demonstrate quantitative problem solving skills in all the topics covered.</p>
		USPHP1 Practical I	<p>1. To demonstrate their practical skills.</p> <p>2. To understand and practice the skills while doing physics practical</p> <p>3. To understand the use of apparatus and their use without fear.</p> <p>4. To correlate their physics theory concepts through practical.</p> <p>5. Understand the concepts of errors and their estimation.</p>



SICES Degree college of Art's,Science&Commerce

Chikloli,Jambhulphata,Ambernath(w)

Department of Mathematics

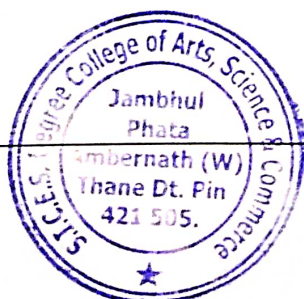
Program Outcomes and Course Outcomes

Program:B.Sc. (Mathematics)

Program Outcomes: -

- 1.Students are expected to attain the course outcomes of all courses in current syllabus.
- 2.To understand the concepts covered in current syllabus from all branches of Mathematics.
- 3.The ability to interpret,analyze and apply mathematical concepts should be Enhanced.
4. The develop skills of practical,calculation,error estimation and moderate innovations are expected.

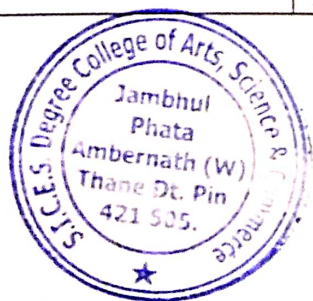
Class	Semester	Course code& Name	Course Outcomes
S.Y.B.Sc.	IV	USMT401 Calculus IV	1.Understand the partition of an integräl. 2.Understand the upper, lower& Rieman sum of a Bounded function. 3.Understand properties of upper & lower integrals. 4. Understand Leibnitz Rule for Derivatives of integrals. 5.Understand the properties of Beta function & Gamma function. 6.Sketching of Regions in R^2 .
		USMT402 Algebra IV	1.Understand Group, properties of group and Integral powers of an element of a group. 2.Understand subgroups and Standard subgroups. 3.Learn about order of element and finite and infinite group. 4.Understand cyclic groups , Cyclic sub-groups and their



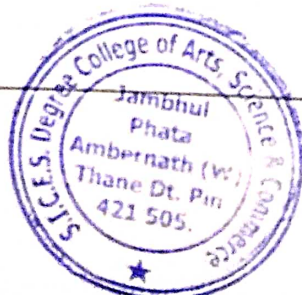
			<p>Properties.</p> <p>5. Understand left and right cosets in a groups.</p> <p>6. Understand Lagrange's theorem.</p> <p>7. Understand properties of Group Homomorphism.</p>
		<p>USMT403 Differential Equations</p>	<p>1. Understand Existence and Uniqueness theorem and Lipschitz function.</p> <p>2. Learn about first order first degree differential Equation.</p> <p>3. Understand Homogeneous & Non - Homogeneous differential Equations.</p> <p>4. Learn about Exact differential Equations, Non-Exact differential Equations and integrating factors.</p> <p>5. Understand Linear and Bernoulli differential Equation.</p> <p>6. Understand Vector space, Wronskian and linear independence</p> <p>7. Understand method of undetermined coefficients and method of variation of parameters.</p> <p>8. Learn about linear system of differential equations</p> <p>9. Understand Homogeneous linear system with constant co-efficients</p>
		<p>USMPT404 Practical Course (Group A,B&C)</p>	<p>1. Understand & practice the skills while solving problems.</p> <p>2. Understand the uses of properties while solving various problems.</p> <p>3. Correlate their mathematical concepts to practical application.</p> <p>4. Understand the concepts of errors and their estimation.</p>
	III	<p>USMT301 Calculus III</p>	<p>1. Understand the concepts of Euclidean space, scalar fields, Directional derivatives and Partial derivatives.</p> <p>2. learn about properties of total derivatives.</p> <p>3. Understand Gradient of a scalar field.</p> <p>4. The relation between Higher order partial derivatives and mixed partial derivatives.</p> <p>5. Understand Maxima, Minima &</p>



			Saddle points.
		USMT 302 Algebra III	<ol style="list-style-type: none"> 1. Understand Row Space, Column Space, Row Rank and Column Rank. 2. learn about Matrix and Linear Transformations. 3. Understand Determinant as n-linear skew-symmetric function. 4. Find determinants via permutation. 5. Understand minors and cofactors of a matrix. 6. Understand Inner product spaces.
		USMT 303 Discrete Mathematics	<ol style="list-style-type: none"> 1. Understand Countable and uncountable sets. Counting Principles, Two way counting. 2. learn about Stirling numbers of Second kind, Pigeon hole principle. 3. Understand Multinomial theorem. 4. Relation between permutation and combination of multiset. 5. Learn about Inclusion, Exclusion principle, Euler phi function and Recurrence Relations.
		USMPT304 Practical course (Groups A, B & C)	<ol style="list-style-type: none"> 1. Understand & practice the skills while solving various problems. 2. Understand the use of mathematical results while solving problems. 3. Correlate the mathematical theory concepts to practical application. 4. Understand the concepts of errors and their estimation.
F.Y. B.Sc.	II	USMT201 Calculus II	<ol style="list-style-type: none"> 1. Understand left hand, Right hand and removable discontinuity. 2. Relation between the concepts of limit and continuity. 3. Learn about removable discontinuity and Essential discontinuity. 4. Understand intermediate value theorem, Bolzano weierstrass theorem. 5. Understand the properties of differentiable functions, Differentiability of inverse functions, Composite functions, implicit functions.
		USMT202 Discrete Mathematics	<ol style="list-style-type: none"> 1. Understand Countable and uncountable sets. Counting Principles, Two way counting.



			<ol style="list-style-type: none"> 2.learn about Stirling numbers of Second kind,Pigeon hole principle. 3.Understand Multinomial theorem. 4.Relation between permutation and combination of multiset. 5.Learn about Inclusion,Exclusion principle, Euler phi function and Recurrence Relations.
		USMPT203 Practical Course (Group A&B)	<ol style="list-style-type: none"> 1.Understand & practice the skills while solving various problem. 2.Understand the use of mathematical results while solving problems.
	I	USMT101 Calculus I	<ol style="list-style-type: none"> 1.Understand algebraic and order properties of real-numbers and inequalities. 2.Learn about Housdorff property and LUB axiom of R also Archimedianproperty. 3.Relation between convergence and divergence of sequences. Sandwich theorem. 4. Difference between Monotonic Sequences,Cauchy Sequences,Subsequences. 5.Understand applications of differential equations.
		USMT102 Algebra I	<ol style="list-style-type: none"> 1.Relation between Division Algorithm and Euclidean Algorithm. 2.Understand Prime numbers,Fundamental theorem of Arithmetic. 3.Understand functions,Bijective and Invertible functions. 4.Learn about Binary operations,Equivalence relations,Polynomials.
		USMPT103 Practical Course (Group A&B)	<ol style="list-style-type: none"> 1.To demonstrate their practical skills. 2. To understand the use of mathematical formulae and their use without mistake. 3.To correlate their mathematical theory concepts through practice. 4.To understand and Practice the skill while solving various problems. 5.Understand the concepts of errors and their estimation.





SICES Degree College of Arts, Science and Commerce

Chikloli, Jambhul Phata, Ambar Nath (W)

Department of Botany

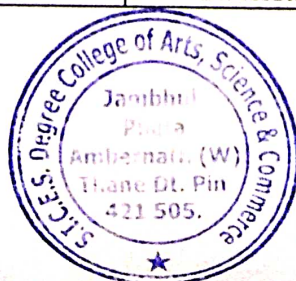
Program outcomes and Course outcomes

Program : B. Sc. (Botany)

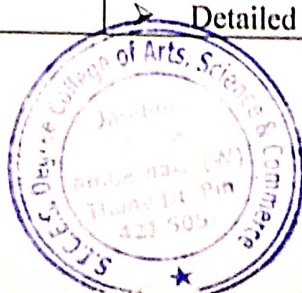
Program Outcomes:

1. Student completing the course is able to identify various life forms of plants, design and execute experiments related to basic studies on evolution and with different branches of Biology.
2. Students are also familiar with the use of bioinformatics tools and databases and in the application of statistics to biological data.
3. Students acquire knowledge about varieties of plant species, horticultural skill and knowledge about the importance of environment.
4. Student completing the course is capable to perform short research projects using various tools and techniques in plant sciences and develop scientific temper and research attitude.

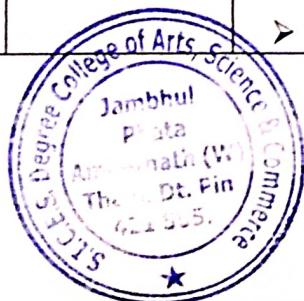
Course Name	Semester	Name of Subject/Paper	Course Outcomes
S.Y.B.Sc.	IV	USBO401 Plant Diversity - II	<ul style="list-style-type: none"> ➤ Understand Symbiotic relationships lichen and their ecological significance ➤ Knowing the learning the diversity in Pteridophyta ➤ Understand past environment with the study of palaeobotany, fossils and geological time scale. ➤ Learning the diversity in gymnosperms and economic importance of Conifers.
		USBO402 Form and Function - II	<ul style="list-style-type: none"> ➤ Knowing the process and need of secondary growth in plant, mechanical tissue system and vascular bundles functions in plant. ➤ Understand mechanism of Photosynthesis, Photoperiodism. ➤ Study of Ecological factors, community ecology and assessment of Soil Pollutants.
		USBO403 Current Trends In Plant Sciences - I	<ul style="list-style-type: none"> ➤ Understand the designing of gardens and application of horticulture (Entrepreneurship) ➤ Knowing the Application of plant tissue culture and R-DNA technology. ➤ Understand Virtual data/ literature study and



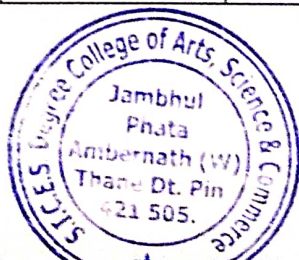
			use of bioinformatics. (Computational biology)
		USBOP4 Practical (Paper – I, Paper – II, Paper – III)	<ul style="list-style-type: none"> ➤ Understand effect of pathogens on plants. ➤ Learning the diversity and stages of life cycle in Pteridophyta and gymnosperms. ➤ Knowing the reason of secondary growth, mechanical tissue system and vascular bundles functions in plant. ➤ Study of Ecological factors and assessment of soil pH, water holding capacity and organic content. ➤ Understand application of plant tissue culture and R-DNA technology. ➤ Identification of the cloning vectors – pBR322, pUC 18, Ti plasmid. ➤ Knowing the designing of gardens and application of horticulture. ➤ Understand application of biostatistics on data
	III	USBO301 Plant Diversity - II	<ul style="list-style-type: none"> ➤ Understand detailed study of diversity in algae, bryophyte and its future applications in industry and environment. ➤ Knowing the learning of principles and working of microscopy, Chromatography and Electrophoresis. ➤ Understand detailed study of morphology of flowers and some angiosperm families. Plant identification skills.
		USBO302 Form and Function - II	<ul style="list-style-type: none"> ➤ Understand basic concept of cell biology and cell division. ➤ Knowing the effect of Chromosomal Aberrations, Variation in Chromosome Number, Sex linkage and Sex determination. ➤ Understand application in genetic counseling. ➤ Learning the basic molecular biology concept learning. Research orientation
		USBO303 Current Trends In Plant Sciences - I	<ul style="list-style-type: none"> ➤ Identification and Understand economic importance of forest products and Spices and condiments. ➤ Develop Entrepreneurial skills among the learners. ➤ Detailed study of secondary metabolites and



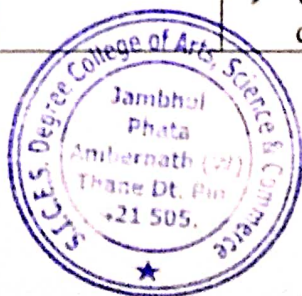
			<p>its application for drug making.</p> <ul style="list-style-type: none"> ➤ Able to identify morphology of chromosomes. ➤ Knowing the effect of Chromosomal Aberrations and Extra nuclear genetics. ➤ Detailed study of some families. ➤ Separating amino acid with Chromatography ➤ Identification and knowing the economic importance of forest products and Spices and condiments ➤ Detailed study of secondary metabolites and its application for drug making Adulterant varieties among the plants. ➤ Understand Industry based on plant products.
		USBOP3 Practical (Paper – I, Paper – II, Paper – III)	<ul style="list-style-type: none"> ➤ Learning the diversity in algae, bryophyte and its future application. ➤ Understand effect of pathogens on plants. ➤ Understand ultra-structure of cell organelles. ➤ Able to identify morphology of chromosomes. ➤ Knowing the effect of Chromosomal Aberrations with the study of karyotypes. ➤ Separating amino acid and carotenoids with Chromatography. ➤ Identification and knowing the economic importance of forest products and Spices and condiments ➤ Basic molecular biology concept learning of DNA sequencing and m-RNA strand.
F.Y.B.Sc.	II	USBO201 Plant Diversity – 1	<ul style="list-style-type: none"> ➤ Identify the different location of the plants belonging to Pteridophyta. ➤ Understand classification, occurrence, structure, ➤ Reproduction and life cycle of <i>Nephrolepis</i>. ➤ Describe the stellar - evolution. ➤ Understand general characteristic of Gymnosperms. ➤ Write about the classification, occurrence, structure, reproduction life - cycle <i>Cycas</i>. ➤ Understand economic importance of gymnosperms. ➤ Understand the basic structure of leaf, its types, margin, shapes, apex and base of each leaf and their modification. ➤ Understand basic structure of inflorescences and its types along with the modification. ➤ Describe in detail the plants belonging to



		family ➤ <i>Malvaceae</i> and <i>Amaryllidaceae</i> .
	USBO202 Forms and Function - 1	<ul style="list-style-type: none"> ➤ To know about plant cell, tissues, its types. ➤ Understand the structure and development of monocot and dicot leaf, stem and root, stomata and epidermal appendages. ➤ Understand about photosynthesis, pigment system, photo system, and photosynthetic light reaction. Know about C3, C4 and CAM cycle. ➤ Understand the importance of photosynthesis. ➤ Understand Medicinal Botany, the concept of primary and secondary metabolites. ➤ Know about different medicinal plants and the family's active constituents and their therapeutic uses. ➤ Gains knowledge to restore traditional indigenous approaches
	USBOP2 Practical II	<ul style="list-style-type: none"> ➤ Identify and describe the different stages in the life – cycle, anatomy of <i>Nephrolepis</i>. ➤ Understand stelar evolution present in Pteridophytes. ➤ Identify and describe the anatomy, reproductive parts economic - importance, and give the industrial uses of <i>Cycas</i>. ➤ Understand the leaf, its types and inflorescence. ➤ Understand the comparative account among the families of angiosperms. ➤ Identify the structure of leaf, stem, roots and stomata of monocotyledonous and dicotyledonous plants. ➤ Study and gain knowledge about the separation Chlorophyll pigments by Paper Chromatography. ➤ Study and gain knowledge about the separation of Amino Acids by Paper Chromatography. ➤ Identify the colour change because of change in pH: Anthocyanin Black grapes/ Purple cabbage. ➤ Study and identify the plants and plants parts from Grandama's pouch.
I	USBO101 Plant Diversity – 1	<ul style="list-style-type: none"> ➤ Identify the different location, their habitat, cell structure, pigments, and reserve food of the algae. ➤ Understanding their reproduction types, the



			<p>different types of alternation of generation of <i>Nostoc</i> and <i>Spirogyra</i>.</p> <ul style="list-style-type: none"> ➤ Write about economic importance of algae. ➤ Write about the classification, occurrence, structure, reproduction, life - cycle of <i>Rhizopus</i> and <i>Aspergillus</i>. ➤ Know the benefits and Harmful effects of Fungi ➤ Understand different mode of nutrition in fungi. ➤ Understand basic structure of Hepaticae ie. Know the geographical distribution, anatomy, reproduction and alternation of generation. ➤ Describe the habitat, anatomy, reproduction and life cycle of <i>Riccia</i>.
		USBO102 Forms and Function - 1	<ul style="list-style-type: none"> ➤ To understand structure and difference between prokaryotic and eukaryotic cell. ➤ Know the chemical composition and its functions. ➤ Understand the structures and functions of Endoplasmic reticulum, Chloroplast. ➤ Understand Ecosystem, its types and interaction, Energy pyramid, Energy flow models ➤ Understand concept of phenotype and genotype, heredity and variation. ➤ Understand Mendelian genetics and different laws. And gene interaction with various examples.
		USBO1 Practical I	<ul style="list-style-type: none"> ➤ Understand the parts of a Microscope and its working. ➤ Identify and describe the different stages in the life - cycle of <i>Nostoc</i> and <i>Spirogyra</i>. ➤ Understand economic - importance algae. ➤ Identify and describe the different stages in the life - cycle of <i>Rhizopus</i> and <i>Aspergillus</i>. ➤ Understand economic - importance Fungi and give the industrial uses of the same. ➤ Identify and describe the different stages in the life - cycle of <i>Riccia</i> ➤ Identify and study various stages of Mitosis in root tip of <i>Allium cepa</i>. ➤ Understand and identify difference in cell inclusion. ➤ Understand and identify the plants adapted to different environmental conditions.



			<ul style="list-style-type: none">➤ Understand to calculate Mean, Median, Mode, Standard deviation and statistical problems.➤ Understand the differences in chromosomes of human and plants.
--	--	--	---

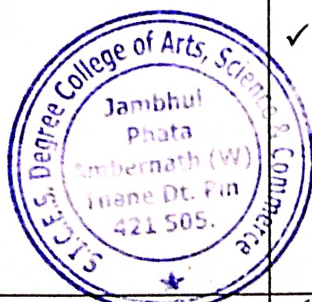


SICES DEGREE COLLEGE OF ARTS, SCIENCE & COMMERCE,
AMBERNATH(W)

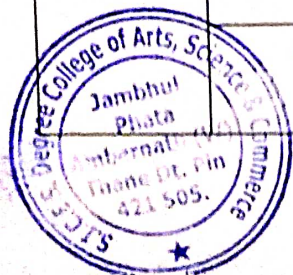
DEPARTMENT OF ZOOLOGY

PROGRAM OUTCOMES AND COURSE OUTCOMES

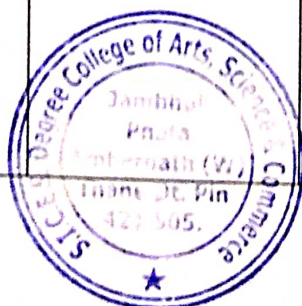
Programme BSc. Zoology (FY & SY)			
<u>Programme Specific Outcomes</u>			
<ul style="list-style-type: none"> ✓ Apply the knowledge of various branches of Zoology at FY & SY BSc and learner will enhance their interest and love for the fauna and its protection ✓ Develop positive attitude towards sustainable development of Nature ✓ Understand the unity of life with the rich diversity of organisms, their ecological, Genetic and evolutionary significance ✓ Develop skill to handle laboratory instruments, specimens, chemicals and acquire the basis of research. ✓ Acquire the scientific attitude of solving problems with critical thinking 			
Class	Semester	Course Name	Course outcomes
FYBSc	I	USZO101 Wonders of Animal World, Biodiversity and its Conservation	<ul style="list-style-type: none"> ✓ Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation ✓ Identify and list out common animals and their wonders
		USZO102 Instrumentation and Animal biotechnology	<ul style="list-style-type: none"> ✓ Identify various potential risk factors to health of humans ✓ Explain the importance of genetic engineering ✓ Use tools of information technology for all activities related to zoology
		USZOP1(Practical of both courses)	<ul style="list-style-type: none"> ✓ Students will understand and identify the wonders of animal kingdom and inculcate observation habit ✓ Students will be skilled to select and operate suitable instruments for the studies. ✓ learners aware of risks involved in handling of different hazardous chemicals, sensitive (electrical/electronic) instruments and infectious biological specimens especially during practical sessions in the laboratory and
	II	USZO201 Ecology and	<ul style="list-style-type: none"> ✓ Explain the role and impact of different environmental conservation



		Wildlife Management	<ul style="list-style-type: none"> programmes ✓ Identify animals beneficial to humans
		USZO02 Nutrition, public health and hygiene	<ul style="list-style-type: none"> ✓ Students will develop character for Promoting optimum conservation of water ✓ encouragement for maintaining adequate personal hygiene, ✓ optimum use of electronic gadgets, avoiding addiction
		USZOP2Practical of both courses	<ul style="list-style-type: none"> ✓ Learner will able to identify common human parasite and pathogens ✓ Develop skill to Estimate environmental parameters like water CO2 and Salinity and also Biomolecule content of the food and realise the importance of them in diet ✓ Develop skill for histology
SYBSC	III	USZO301 Genetics	<ul style="list-style-type: none"> ✓ understand the importance of heredity, chromosome, nucleic acids ✓ sex-determination mechanisms and appreciate the regulation of gene expressions
		USZO302 Comparative Physiology	<ul style="list-style-type: none"> ✓ Explain various physiological changes in our bodies in evolutionary hierarchy ✓ Able to correlate with habit and habitat ✓ Analyze the impact of environment on our bodies
		USZOE303A ELECTIVE 1 Ethology, Parasitology and Economic Zoology	<ul style="list-style-type: none"> ✓ Realise the behaviour of person is under control of stimulus and understand the difference in behaviours of organism ✓ Aware about economically important animals ✓ Identify various methodology and perspectives of applied branches of zoology for the possibilities of self-employment.
		USZOP3 (Practical based on 3papers)	<ul style="list-style-type: none"> ✓ Develop skill to extract DNA & RNA from the given tissue ✓ Ability to carry out routine clinical analysis of blood and urine ✓ Hands on experience of smearing method of slide preparation and using micrometer for measurement of microbes
	IV	USZO401 Evolution, Population	<ul style="list-style-type: none"> ✓ Learner will gain insights into the origin of life and will analyse and critically view the different theories of evolution.



		Genetics and Scientific Attitude and Scientific Research	<ul style="list-style-type: none"> ✓ Student will know how the change in the gene pool leads to evolution of species ✓ The learner would develop qualities such as critical thinking and analysis ✓ The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research
		USZO402 Cell Biology	<ul style="list-style-type: none"> ✓ Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell ✓ Learner will get insight into the structure of biomolecules and their role in sustenance of life
		USZOE1403 Elective 1 Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms	<ul style="list-style-type: none"> ✓ Student will understand the concepts of Embryology and fertilization ✓ Learners will be able to understand human reproductive physiology → Learners will become familiar with advances in ART and related ethical issues. ✓ The learners will be sensitized about the adverse effects of pollution and measures to control it. ✓ Understand various genetic abnormalities and genetics control ✓ Aware about stem cell research and prenatal diagnostic techniques
		USZOP4((Practical based on 3papers)	<ul style="list-style-type: none"> ✓ Hands own experience for calculation of population density, WBC cell by smear preparation, Environmental parameters like DO , Soil parameters, Sound meter, refractometer, conductometer etc ✓ Students will learn to write abstract and bibliography and develop presentation skill by preparing and presenting by using PPT. ✓ Develop review writing skills from documentaries and programmes ✓ Develop skill for biochemical analysis and identify human genetic disorder by seeing symptoms ✓ Gain knowledge to Identify different development stages of organism in larval stages



SICES Degree College of Arts, Science and Commerce

Chikloli, Jambhul Phata, Ambarnath (W)

DEPARTMENT OF MICROBIOLOGY

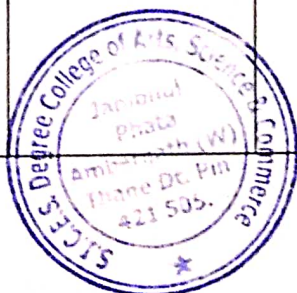
Program outcomes and course outcomes

Program : B. Sc. (Microbiology)

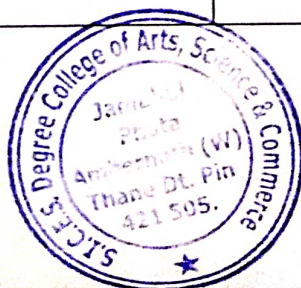
Program Outcomes:

1. The syllabus is framed at equipping the students with basic knowledge in various branches of Microbiology such as Microbial Genetics, Molecular Biology, Virology, Medical Microbiology, Immunology, Microbial Biochemistry and Industrial Microbiology.
2. Additionally, it also makes students aware of interdisciplinary sciences such as Bioinformatics and Bioinstrumentation.
3. The approach towards designing syllabus has been to retain the classic concepts of Microbiology as well as keeping abreast with the latest discoveries in Microbiology and other interdisciplinary fields.
4. The revised syllabus aims at inculcating a spirit of learning and kindling curiosity towards the subject in the minds of learners, resulting in their pursuit of higher education in Microbiology.

Class	Semester	Course Name	Course Outcomes
T.Y.B.Sc	VI	USMB601rDNA Technology, Bioinformatics & Virology	<ol style="list-style-type: none">1. r DNA technology: This module will make the student understand the methods to construct recombinant DNA molecules, also know the tools required like vectors, restriction enzymes etc.2. Application of rDNA technology and Bioinformatics: The learner will know about applications of r DNA technology, through bioinformatics the student will understand the use of databases and software tools for understanding biological data.3. Gene Regulation and Basic Virology: The student will know about gene expression in



			<p>prokaryotes, operon as a unit of gene regulation, regulation of gene expression in prokaryotes and bacteriophages. The student will also understand about general structure, life cycle and classification of viruses.</p> <p>4. Advanced Virology: The learner will understand the basic structure and life cycle of different viruses and their cultivation. The student will get basic knowledge on Prions, Virioids and viruses causing cancer.</p> <p>5. Practicals: The students will acquire skill to perform the laboratory techniques and experiments based on the above topics. The students will understand computational biology and insilico analytical techniques.</p>
		<p>USMB602 Medical Microbiology & Immunology: Part - II</p>	<ol style="list-style-type: none"> 1. Give details of the virulence factors and morphological and cultural features of the pathogen 2. Correlate these virulence factors with the pathogenesis and clinical features of the disease 3. Comment on the mode of transmission, and modes of prophylaxis of these diseases 4. Given a few key clinical features, identify the likely causative agent. 5. Comment on the methods of diagnosis of the disease. 6. Understand the structure and role of T and B cells in generating adaptive immunity and thereby study effector responses in both Humoral & Cell Mediated Immunity Acquire an understanding of the role of immune system in disease: 7. Understand the activation of complement system 8. Apply the concept of immunity to prevention of disease by development of vaccines



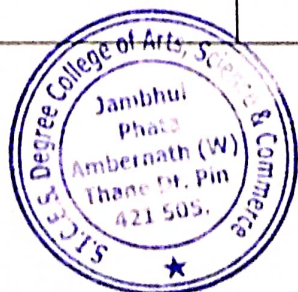
		USMB603 Microbial Biochemistry: Part-II	<ol style="list-style-type: none"> 1. Metabolism of Lipids, Fatty acids, Nucleotides and Amino acids 2. Catabolism of Protein and aliphatic hydrocarbons 3. Regulation of metabolic process at various levels 4. Photosynthesis 5. Metabolism of inorganic molecules with special reference to nitrate and sulfate 6. Biological Nitrogen fixation 7. Lithotrophy
		USMB604 Bioprocess Technology: Part-II	<ol style="list-style-type: none"> 1. Understand the actual process involved in fermentations of important products. 2. To apply the knowledge of applications of animal and plant tissue culture techniques. 3. Learn the applications of immobilized enzymes in various fields. 4. Understand the working of important instruments used in biochemical analysis and bioassay. 5. Learn the salient features of quality management and regulatory procedures.
		USMBP07 (Practicals based on USMB601& 602)	<p>At the end of the USMB601 course the learner will also acquire the following practical skills in:</p> <ol style="list-style-type: none"> 1. Molecular Biology practicals 2. Bioinformatics practicals 3. Animal Tissue Culture practicals <p>At the end of the USMB602 course the learner will also acquire the following practical skills in:</p> <ol style="list-style-type: none"> 1. Detection of Blood group by direct and reverse typing methods 2. Detection of Malaria 3. Detection of VDRL, Widal antigens 4. Detection of MBC of antibiotic 5. Detection of isoagglutination titre
		USMBP08 (Practicals based on USMB603	<p>At the end of the USMB603 course the learner will also acquire the following practical skills</p> <ol style="list-style-type: none"> 1. Screening of microorganisms producing



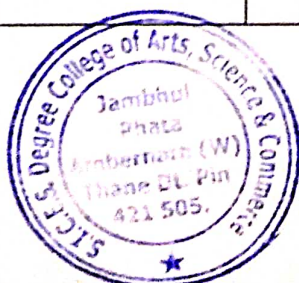
		&604)	<p>lipase, PHB and protease</p> <ol style="list-style-type: none"> 2. Detection of activity of enzymes which play an important role in amino acid and nitrate metabolism 3. Quantitative detection of important metabolic products such as protein and uric acid. 4. Quantitative detection of an important metabolic enzymes- protease <p>At the end of the USMB604 course the learner will also acquire the following practical skills</p> <ol style="list-style-type: none"> 1. Techniques involved in running a bioassay, immobilization of cells & sterility testing 2. Preliminary techniques in animal & plant tissue culture.
		USACBT601	<ol style="list-style-type: none"> 1. Students will be trained to address issues of Bioenergy and Bio fuels 2. They will be skilled to respond to issues related to genetic engineering in plantbiotechnology. 3. The learner will be able to comprehend details of the role of biotechnology in society
		USACBTP2	<p>Practicals: The students will acquire skill to perform the laboratory techniques and experiments based on USACBT601</p>
Class	Semester	Course Name	Course Outcomes
T.Y.B.Sc.	V	USMB501 Microbial Genetics	<ol style="list-style-type: none"> 1. DNA Replication: The learner will understand the sequence of events, mechanism, enzymes and proteins involved in replication of DNA in prokaryotes and eukaryotes. 2. Transcription, Genetic Code and Translation: The student will know the central dogma of biology its two-step transcription and translation, maturation of RNA. 3. Mutation and DNA repair: The learner will know the concept of mutation, its types, causes and their effects. This module will also make them understand types of mutagens, damage to DNA due to



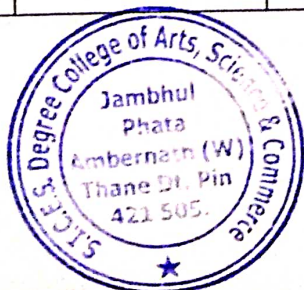
			<p>mutagenesis, various mechanisms of DNA repair.</p> <p>4. Genetic exchange: The student shall understand the various mechanisms of gene transfer in bacteria and genetic recombination.</p>
		<p>USMB502 Medical Microbiology & Immunology: Part-I</p>	<ol style="list-style-type: none"> 1. Give details of the virulence factors and other features of the pathogen. 2. Correlate these virulence factors with the pathogenesis and clinical features of the disease. 3. Comment on the mode of transmission, and therefore modes of prophylaxis of these diseases. 4. Comment on the methods of diagnosis of the disease. 5. Conceptualize how the adaptive immune responses coordinate to fight invading pathogens and the organs and tissue involved. 6. Discuss the role of antigen in initiating the immune response. 7. Correlate the structure & functions of immunoglobulin. 8. Understand the importance of cytokines, MHC, APCs, Cytokines, and the role in adaptive immunity. 9. Understand the various antigen –antibody reactions.
		<p>USMB503 Microbial Biochemistry: Part-I</p>	<ol style="list-style-type: none"> 1. Understand the architecture of the membrane and how solute is transported inside the cell. 2. Describe and explain the electron transport chains in prokaryotes and mitochondria and understand the mechanism of ATP synthesis. 3. Explain bioluminescence mechanism and its significance 4. Discuss the experimental aspect of studying catabolism and anabolism and the various pathways for the breakdown of carbohydrates



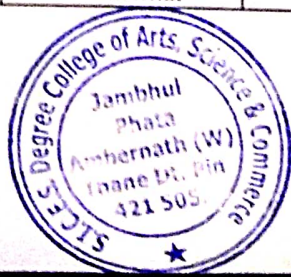
			<p>along with reactions in amphibolic pathways.</p> <ol style="list-style-type: none"> Describe various other pathways which produce different end products. Describe anabolic reactions in carbohydrate synthesis. Apply the concepts of energetics and catabolism in biodegradation of various substrates.
		USMB504 Bioprocess Technology: Part-I	<ol style="list-style-type: none"> Describe the applications of microbes and its strain improvement in Industrial Microbiology. Apply kinetic formula to determine growth and productivity parameters of batch continuous, fed batch and solid substrate fermentations Describe the design of bioreactors for different applications and its process parameters Design media, growth conditions and techniques for producing and recovering different types of products of commercial value. Learner will be well versed with the containment and levels of containment.
		USMBP05 (Practicals based on USMB501 & 502)	Practicals: The students will acquire skill to perform the laboratory techniques and experiments based on USMB501 & 502.
		USMBP06 (Practicals based on USMB503 & 504)	Practicals: The students will acquire skill to perform the laboratory techniques and experiments based on USMB503 & 504.
		USACBT501	<ol style="list-style-type: none"> Students will become competent by gaining knowledge of bioremediation, industrial production and animal biotechnology which will enhance their chances for employment and for further education. The students will acquire knowledge to carry



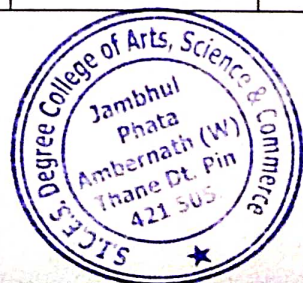
			out techniques in biotechnology and will understand the applications of transgenic animals and the methods used for obtaining transgenic animals
		USACBTP1	Practicals: The students will acquire skill to perform the laboratory techniques and experiments based on USACBT501.
S.Y.B.Sc.	IV	USMB401 Metabolism & Basic Analytical Techniques	<ol style="list-style-type: none"> 1. Understand the cell metabolism and metabolic pathways 2. Understand Enzymology and Enzyme terminologies 3. Comprehend the basic concepts of enzyme kinetics 4. The student will be able to understand the properties of biomolecules that help to sustain life 5. Learn about theory of chromatographic separation process and the application of theoretical knowledge in optimization of chromatographic separation 6. Students will learn concepts, fundamentals and types of centrifugation technique and Electrophoresis
		USMB402 Applied Microbiology	<ol style="list-style-type: none"> 1. Course provides learning opportunities in the basic principles of medical microbiology and infectious disease 2. Understand the beneficial role of microorganisms in food processing and the microbiology of different types of foods 3. Understand the significance of microorganisms in various food and role of intrinsic and extrinsic factors on microbial growth in foods leading to spoilage, and understand the principles underlying the preservation methods. 4. Understand of the basis of food safety regulations



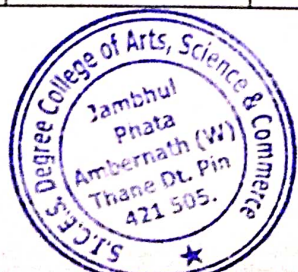
			<p>and laboratory procedures for the microbiological analysis of food.</p> <p>5. Study the different types of microorganisms in milk and their activities - fermented dairy products and spoilage</p>
		<p>USMB403 OPTION-B Advances & Applications Of Microbiology and Soft Skills</p>	<p>1. A working knowledge in nanobiotechnology techniques and its application in bioengineering, biomedicine and agricultural/environmental issues</p> <p>2. An introduction to quantitative and qualitative research methods</p> <p>3. Enable students to acquire expertise in the use and application of the methods of data collection and analysis</p> <p>4. The ethical and philosophical issues associated with research in education</p> <p>5. Conceptualize the principles and production process of different types of Biofertilizers and Biopesticides</p>
		<p>USMBP4 Practical course - 4</p>	<p>2. Understand & practice the skills while performing experiments.</p> <p>3. Understand the use of Laboratory instruments and their use</p> <p>4. Correlate the microbiology theory concepts to practical application.</p> <p>5. Understand the concept of errors and their estimation.</p>
S.Y.B.Sc	III	<p>USMB301 Biomolecules and Microbial taxonomy</p>	<p>1. Understand all the classification of biomolecules and their biochemical functions</p> <p>2. Correlate the reactions of biomolecules that are basis for identification tests and biochemical pathways</p> <p>3. Differentiate between Nucleic acid structure and its chemistry in Prokaryotes and Eukaryotes</p> <p>4. Learn about microbial taxonomy and its application in research</p>
		<p>USMB302 Environmental</p>	<p>1. Appreciate and Learn the diversity of</p>



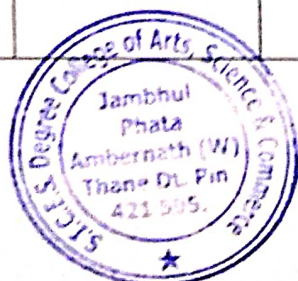
		Microbiology	<p>microorganisms and significance of microorganism in the environment</p> <ol style="list-style-type: none"> 2. Understand various aspects of environmental microbiology - air, water and soil 3. Understand aeromicrobiology and methods of air sanitization 4. Comprehend about water pollution, methods of determination of sanitary quality of water and sewage treatment methods employed in waste water treatment 5. Understand the various biogeochemical cycles - Carbon, Nitrogen, Phosphorus cycles etc.
		USMB303 OPTION-A Introduction to Clinical Microbiology	<ol style="list-style-type: none"> 1. Know various Culture media and their applications and also learn various techniques for isolation of pure cultures 2. Get an overview about the disease and mode of transmission of common infectious diseases 3. Overview of Epidemiology and terminologies in epidemiology 4. understand about new emerging diseases 5. Learn physical and chemical methods applied in control of microorganisms 6. Introduction to biosafety measures in clinical laboratories
		USMBP3 Practical course - 3	<ol style="list-style-type: none"> 1. Understand & practice the skills while performing experiments. 2. Understand the use of Laboratory instruments and their use 3. Correlate the microbiology theory concepts to practical application. 4. Understand the concept of errors and their estimation.
F.Y.B.Sc.	II	USMB201 Basics of Microbiology	<ol style="list-style-type: none"> 1. Understanding the structure & lifecycle of different type of viruses and bacteriophages. 2. Learning general properties and importance



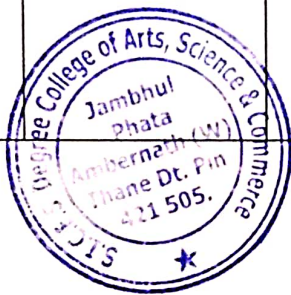
			<p>of Nocardia and Streptomyces</p> <ol style="list-style-type: none"> Understanding mechanisms possessed by certain bacteria that can survive in extreme conditions. Understanding structure and significance of photosynthetic and non-photosynthetic microorganisms. Understanding different phases in the growth of bacteria and environmental factors that will influence microbial growth.
		<p>USMB202 Exploring Microbiology</p>	<ol style="list-style-type: none"> Studying the interactions between them like mutualism, commensalism, predation, parasitism etc. Understanding of the role played by the microflora associated with the human body. Learning about the multiple defense mechanisms available to humans to combat pathogenic infections and reducing or eliminating the pathogen Learning advanced tools like EM, Fluorescent microscope and confocal microscope. Learning the principles, applications and maintenance of instruments routinely used in the microbiology laboratory.
		<p>USMBP2 Practical course.</p>	<ol style="list-style-type: none"> Students will able to identify and characterize fungi and actinomycetes. Students will be able to find out the number of bacteria present in a given sample. Students will understand the growth cycle of an organism. They will understand the importance of symbiotic association like nitrogen fixing bacteria. Importance of Virulence factor in causing



			<p>disease will be known to them.</p> <p>6. The basic concept of colorimeter will be known to them and will able to handle pH meter to find the pH of given solution</p>
F.Y.B.Sc	I	USMB101 Fundamentals of Microbiology	<ol style="list-style-type: none"> 1. Understanding the discovery of microorganism, the scope and future of microbiology 2. Understanding the difference between prokaryotic and eukaryotic structure of cell. 3. Understanding and applying various biosafety measures in microbiology laboratory. 4. Basic concepts of chemical foundation, types of bonds and their importance in biomolecules. 5. Understanding the unique properties of water that makes water a universal solvent.
		USMB102 Basic Techniques In Microbiology	<ol style="list-style-type: none"> 1. Understanding the history, principle, parts of the compound microscope and their functions. 2. Understanding the techniques of smear preparation, the principles of staining methods. 3. Knowing the differences in the definitions of various antimicrobial agents, their general properties, methods of evaluating them and factors affecting their effectiveness. 4. Understanding the modes of action, advantages, disadvantages and applications of different physical and chemical agents used to control microorganisms. 5. Learning about the different media needed to cultivate them, methods of isolation and cultivation of microorganisms.
		USMBP1 Practical course	<ol style="list-style-type: none"> 1. The student will be able to perform basic experiments to study microorganisms in the laboratory. 2. Students will able to handle Compound Light Microscope.



			<ol style="list-style-type: none">3. Basic techniques of staining and characterization of microbes based on morphology will be known to them.4. Students will gain the knowledge of different physical and chemical methods of control of microorganism.5. Student will able to detect macromolecules like protein, DNA, RNA in the given sample.
--	--	--	---



SICES Degree College of Arts, Science and Commerce

Chikloli, Jambhul Phata, Ambernath (W)

Department of Computer Science

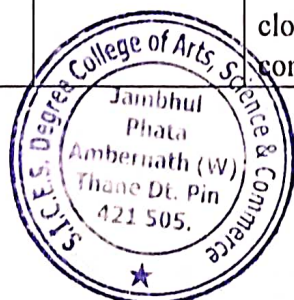
Program outcomes and course outcomes

Program : B. Sc.(Computer Science)

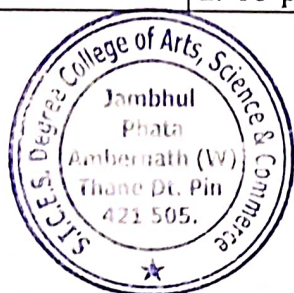
Program Outcomes:

1. This Program is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals.
2. The objective of this Program is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals.
3. Form strong foundation of Computer science.
4. Introduce emerging trends to the students in gradual way.
5. Groom the students for the challenges of ICT industry
6. The proposed curriculum is more contextual, industry affable and suitable to cater the needs of society and nation in present day context.
7. Program is systematically designed considering the current industry needs in terms of skills sets demanded under new technological environment.

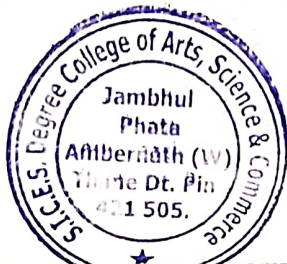
Class	Semester	Course Name	Course Outcomes
T.Y.B.Sc	VI	USCS601 Wireless Sensor Networks and Mobile Communication	After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. Also implement and evaluate new ideas for solving wireless sensor network design issues.
T.Y.B.Sc	VI	USCS602 Cloud Computing	After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology. Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. They should explain the core issues of cloud computing such as security,



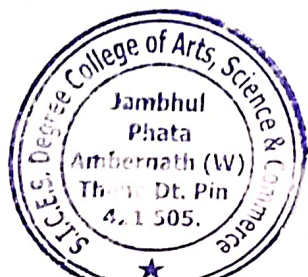
			privacy, and interoperability
T.Y.B.Sc	VI	USCS603 Cyber Forensics	The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law
T.Y.B.Sc	VI	USCS604 Information Retrieval	After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.
T.Y.B.Sc	VI	USCS605 Digital Image Processing	Learner should review the fundamental concepts of a digital image processing system. Analyze the images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.
T.Y.B.Sc	VI	USCS606 Data Science	After completion of this course, the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.
T.Y.B.Sc	VI	USCS607 Ethical Hacking	Learner will know to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.
T.Y.B.Sc	VI	USCSP601 Practical of Elective-I USCS601: Wireless Sensor Networks and Mobile Communication USCS602:	<p>1. In this era of wireless and adhoc network, connecting different wireless devices and understanding their compatibility is very important. Information is gathered in many different ways from these devices. Learner should be able to conceptualize and understand the framework. On completion, will be able to have a firm grip over this very important segment of wireless network.</p> <p>2. To provide learners with the comprehensive and</p>



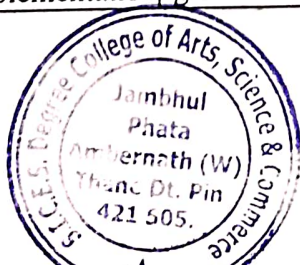
		Cloud Computing USCS603: Cyber Forensics	<p>in-depth knowledge of Cloud Computing concepts, technologies, architecture, implantations and applications. To expose the learners to frontier areas of Cloud Computing, while providing sufficient foundations to enable further study and research.</p> <p>3. To understand the procedures for identification, preservation, and extraction of electronic evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered</p>
T.Y.B.Sc	VI	USCSP602 Practical of Elective-II USCS604: Information Retrieval USCS605: Digital Image Processing USCS606:Data Science	<p>1. Learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.</p> <p>2. To study two-dimensional Signals and Systems. To understand image fundamentals and transforms necessary for image processing. To study the image enhancement techniques in spatial and frequency domain. To study image segmentation and image compression techniques.</p> <p>3. Understanding basic data science concepts. Learning to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. Making aware of how to address advanced statistical situations, Modeling and Machine Learning.</p>
T.Y.B.Sc	VI	USCSP603 Project Implementation	<p>This curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her ability in the subject practically through the Project Implementation. In Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course</p>
T.Y.B.Sc	VI	USCSP604 Practical of Skill Enhancement	<p>Student to evaluate his/her computer science domain specific skills and also to meet industry expectations.</p>



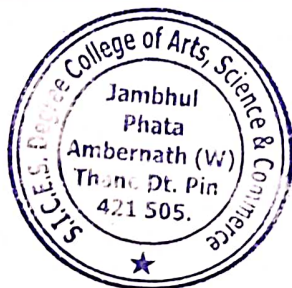
		USCS607 : Ethical Hacking	
T.Y.B.Sc	V	USCS501 Artificial Intelligence	After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning.
T.Y.B.Sc	V	USCS502 Linux Server Administratio n	Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration.
T.Y.B.Sc	V	USCS503 Software Testing and Quality Assurance	Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.
T.Y.B.Sc	V	USCS504 Information and Network Security	Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network.
		USCS505 Architecting of IoT	Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics.
		USCS506 Web Services	Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security



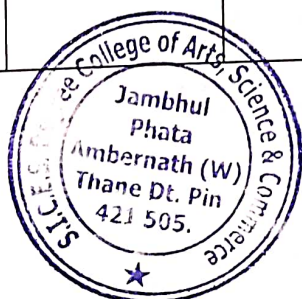
			and QoS issues of Web Services
		USCS507 Game Programming	Learner should study Graphics and gaming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn
V		USCSP501 Practical of Elective-I USCS501: Artificial Intelligence USCS502: Linux Server Administratio n USCS503: Software Testing and Quality Assurance	<ol style="list-style-type: none"> 1. After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning 2. Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration. 3. Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance
	V	USCSP502 Practical of Elective-II USCS504: Information and Network Security USCS505: Architecting of IoT USCS506: Web Services	<ol style="list-style-type: none"> 1. Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network. 2. Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics. 3. Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services
	V	USCSP503 Project Implementatio	This curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her



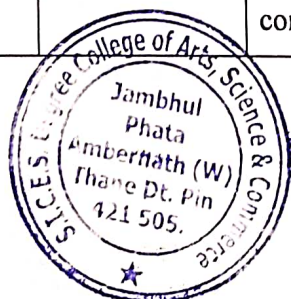
		n	ability in the subject practically through the Project Implementation. In Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course
	V	USCSP504 Practical of Skill Enhancement USCS507 :: Game Programming	Student to evaluate his/her computer science domain specific skills and also to meet industry expectations.
S.Y.B.Sc.	IV	USCS401 Fundamentals of Algorithms	1. Understand the concepts of algorithms for designing good program 2. Implement algorithms using Python
		USCS402 Advanced Java	1) Understand the concepts related to Java Technology 2) Explore and understand use of Java Server Programming
		USCS403 Computer Networks	1. Learner will be able to understand the concepts of networking, which are important for them to be known as a 'networking professionals'. 2. Useful to proceed with industrial requirements and International vendor certifications.
		USCS404 Software Engineering	1. Understand the concepts of algorithms for designing good program
		USCS405 Linear Algebra using Python	1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the concepts through program implementation 3. Instill a computational thinking while learning linear algebra.



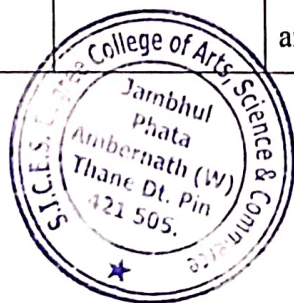
IV	USCS406 .Net Technologies	<ol style="list-style-type: none"> 1. Understand the .NET framework 2. Develop a proficiency in the C# programming language 3. Proficiently develop ASP.NET web applications using C# 4. Use ADO.NET for data persistence in a web application
	USCS407 Android Developer Fundamentals	<ol style="list-style-type: none"> 1) Understand the requirements of Mobile programming environment. 2) Learn about basic methods, tools and techniques for developing Apps 3) Explore and practice App development on Android Platform 4) Develop working prototypes of working systems for various uses in daily lives
	USCSP401 Practical I USCS401 Fundamentals of Algorithms + USCS402 Advanced JAVA + Computer Networks USCS403	<ol style="list-style-type: none"> 1. To understand basic principles of algorithm design and why algorithm analysis is important, To understand how to implement algorithms in Python 2. Explore advanced topic of Java programming for solving problems. 3. Useful to proceed with industrial requirements and International vendor certifications.
	USCSP402 Practical II USCS405+ USCS406+ USCS407	<ol style="list-style-type: none"> 1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the .NET framework 3) Explore and practice App development on Android Platform 4) Develop working prototypes of working systems for various uses in daily lives



S.Y.B.Sc.	III	USCS301 Theory of Computation	1. Understand Grammar and Languages 2. Learn about Automata theory and its application in Language Design 3. Learn about Turing Machines and Pushdown Automata 4. Understand Linear Bound Automata and its applications
S.Y.B.Sc.	III	USCS302 Core Java	1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets. 4. Knowledge and implementation of AWT package.
S.Y.B.Sc.	III	USCS303 Operating System	1. To provide a understanding of operating system, its structures and functioning 2. Develop and master understanding of algorithms used by operating systems for various purposes.
S.Y.B.Sc.	III	USCS304 Database Management Systems	1. Master concepts of stored procedure and triggers and its use. 2. Learn about using PL/SQL for data management 3. Understand concepts and implementations of transaction management and crash recovery
S.Y.B.Sc.	III	USCS305 Combinatorics and Graph Theory	1. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings. 2. Understand the combinatorial features in real world situations and Computer Science applications. 3. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts

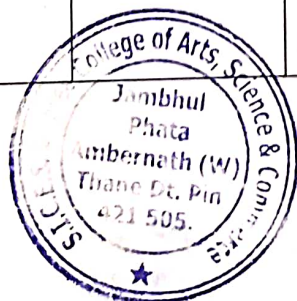


			and apply them to solve problems
S.Y.B.Sc.	III	USCS306 Physical Computing and IoT Programming	<ol style="list-style-type: none"> 1. Enable learners to understand System On Chip Architectures. 2. Introduction and preparing Raspberry Pi with hardware and installation. 3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's 4. Learn how to make consumer grade IoT safe and secure with proper use of protocols
S.Y.B.Sc.	III	USCS307 Web Programming	<ol style="list-style-type: none"> 1. To design valid, well-formed, scalable, and meaningful pages using emerging technologies. 2. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites 3. To develop and implement client-side and server-side scripting language programs. 4. To develop and implement Database Driven Websites. 5. Design and apply XML to create a markup language for data and document centric applications.
S.Y.B.Sc.	III	USCSP301 Practical I USCS302 : Core JAVA + USCS303 Operating System +USCS304 Database Management Systems	<ol style="list-style-type: none"> 1. Object oriented programming concepts using Java, Knowledge of input, its processing and getting suitable output. Understand, design, implement and evaluate classes and applets. Knowledge and implementation of AWT package. 2. To provide a understanding of operating system, its structures and functioning, Develop and master understanding of algorithms used by operating systems for various purposes.. 3. Master concepts of stored procedure and triggers and its use. Learn about using PL/SQL for data

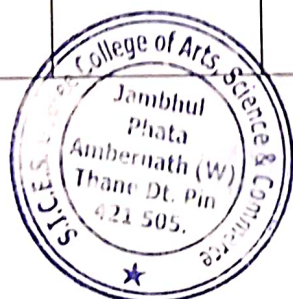


			<p>management</p> <p>4. Understand concepts and implementations of transaction management and crash recovery</p>
S.Y.B.Sc.	III	<p>USCSP302 Practical II USCS305: Combinatorics and Graph Theory + USCS306: Physical Computing and IoT Programming + USCS307: Web Programming</p>	<ol style="list-style-type: none"> 1. Understand the combinatorial features in real world situations and Computer Science applications. 2. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems. 3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's 4. Learn how to make consumer grade IoT safe and secure with proper use of protocols 5. To design valid, well-formed, scalable, and meaningful pages using emerging technologies. 6. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
F.Y. B.Sc.	II	<p>USCS201 Programming with C</p>	<ol style="list-style-type: none"> 1) Students should be able to write, compile and debug programs in C language. 2) Students should be able to use different data types in a computer program. 3) Students should be able to design programs involving decision structures, loops and functions. 4) Students should be able to explain the difference between call by value and call by reference 5) Students should be able to understand the dynamics of memory by the use of pointers.

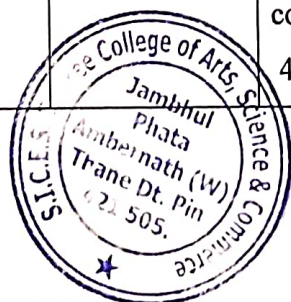
			6) Students should be able to use different data structures and create/update basic data files.
		USCS202 Programming with Python – II	<ol style="list-style-type: none"> 1) Students should be able to understand how to read/write to files using python. 2) Students should be able to catch their own errors that happen during execution of programs. 3) Students should get an introduction to the concept of pattern matching. 4) Students should be made familiar with the concepts of GUI controls and designing GUI applications. 5) Students should be able to connect to the database to move the data to/from the application. 6) Students should know how to connect to computers, read from URL and send email
		USCS203 Linux	<ol style="list-style-type: none"> 1) Upon completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution. 2) This course shall help student to learn advanced subjects in computer science practically. 3) Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set
		USCS204 Data Structures	<ol style="list-style-type: none"> 1) Learn about Data structures, its types and significance in computing 2) Explore about Abstract Data types and its implementation 3) Ability to program various applications using different data structure in Python



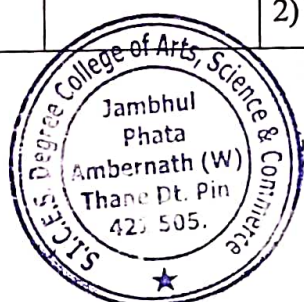
		USCS205 Calculus	<p>1) Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions.</p> <p>2) Ability to appreciate real world applications which uses these concepts.</p> <p>3) Skill to formulate a problem through Mathematical modeling and simulation.</p>
		USCS206 Statistical Methods and Testing of Hypothesis	<p>1) Enable learners to know descriptive statistical concepts</p> <p>2) Enable study of probability concept required for Computer learners</p>
		USCS207 Green Technologies	<p>1) Learn about green IT can be achieved in and by hardware, software, network communication and data center operations.</p> <p>2) Understand the strategies, frameworks, processes and management of green IT</p>
		USCSP2 Practical of USCS201 + USCS202 + USCS203+ USCS204+ USCS205+ USCS206	<p>1) Students should be able to write, compile and debug programs in C language.</p> <p>2) The objective of this paper is to explore the style of structured programming to give the idea to the students how programming can be used for designing real-life applications by reading/writing to files, GUI programming, Students should be able to use different data types in a computer program</p> <p>3) Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set.</p> <p>4) This course introduces various tools and techniques commonly used by Linux programmers, system administrators and end users to achieve their day to day work in Linux</p>



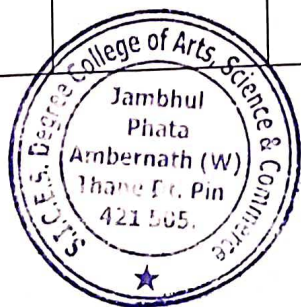
			<p>environment.</p> <p>5) To explore and understand the concepts of Data Structures and its significance in programming. Provide and holistic approach to design, use and implement abstract data types. Understand the commonly used data structures and various forms of its implementation for different applications using Python.</p> <p>6) Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions</p> <p>7) Enable learners to know descriptive statistical concepts</p>
F.Y. B.Sc.	I	USCS101 Computer Organization and Design	<p>1) To learn about how computer systems work and underlying principles</p> <p>2) To understand the basics of digital electronics needed for computers</p> <p>3) To understand the basics of instruction set architecture for reduced and complex instruction sets</p> <p>4) To understand the basics of processor structure and operation</p> <p>5) To understand how data is transferred between the processor and I/O devices</p>
		USCS102 Programming with Python- I	<p>1) Students should be able to understand the concepts of programming before actually starting to write programs. 2) Students should be able to develop logic for Problem Solving.</p> <p>3) Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.</p> <p>4) Students should be able to apply the problem</p>



			solving skills using syntactically simple language
		USCS103 Free and Open Source Software	1) Upon completion of this course, students should have a good working knowledge of Open Source ecosystem, its use, impact and importance. 2) This course shall help student to learn Open Source methodologies, case studies with real life examples
		USCS104 Database Systems	1) Students should be able to evaluate business information problem and find the requirements of a problem in terms of data. 2) Students should be able to design the database schema with the use of appropriate data types for storage of data in database. 3) Students should be able to create, manipulate, query and back up the databases
		USCS105 Discrete Mathematics	1) To provide overview of theory of discrete objects, starting with relations and partially ordered sets. 2) Study about recurrence relations, generating function and operations on them. 3) Give an understanding of graphs and trees, which are widely used in software. 4) Provide basic knowledge about models of automata theory and the corresponding formal languages.
		USCS106 Descriptive Statistics and Introduction to Probability	1) Enable learners to know descriptive statistical concepts 2) Enable study of probability concept required for Computer learners
		USCS107 Soft Skills Development	1) To know about various aspects of soft skills and learn ways to develop personality 2) Understand the importance and type of



			<p>communication in personal and professional environment.</p> <p>3) To provide insight into much needed technical and non-technical qualities in career planning.</p>
		<p>USCSP01 Practical of USCS101 + USCS102 + USCS103+ USCS104+ USCS105+ USCS106</p>	<p>1. To understand the structure and operation of modern processors and their instruction sets</p> <p>2. The objective of this paper is to introduce various concepts of programming to the students using Python.</p> <p>3. Open Source has acquired a prominent place in software industry. Having knowledge of Open Source and its related technologies is an essential for Computer Science student. This course introduces Open Source methodologies and ecosystem to students.</p> <p>4. The objective of this course is to introduce the concept of the DBMS with respect to the relational model, to specify the functional and data requirements for a typical database application and to understand creation, manipulation and querying of data in databases</p> <p>5. Provide basic knowledge about models of automata theory and the corresponding formal languages.</p> <p>6. The purpose of this course is to familiarize students with basics of Statistics. This will be essential for prospective researchers and professionals to know these basics.</p>





S.I.C.E.Society

Degree College of Arts, Science & Commerce, Ambarnath

(W.) Jambhul Phata, Chikhlohi, Ambarnath (W)-421505

(Affiliated to University of Mumbai)

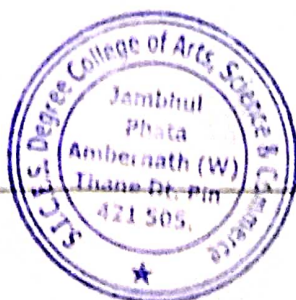
B.Sc. - (Information Technology)

Program Specific Outcomes (Min. 5 – Max. 8)

Upon completion of the B. Sc. Information Technology programme, students will be able to:

1. Develop knowledge of scientific theories and methods, gain experience in working independently with scientific questions and their ability to express clearly on academic issues keeping in view legal, ethical, social security and issues.
2. Communicate effectively in written and oral context with specialized and non-specialized audiences.
3. Identify information technology related problems, analyze them and design the system or provide the solution for the problem.
4. Apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies.
5. Function in multidisciplinary teams by working cooperatively, creatively and responsibly as a member of a team.
6. Recognize the need to engage in lifelong learning through continuing education and research

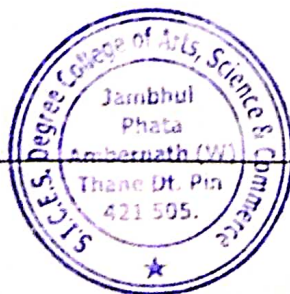
NAME OF PROGRAM	COURSE - SEMESTER	PAPER NAME/ SUBJECT NAME	COURSE OUTCOMES
BSc – INFORMATION TECHNOLOG	F.Y.I.T Sem-I	USIT101:IMPERATIVE PROGRAMMING	<ol style="list-style-type: none">1. To understand the concept of keyword ,variable declaration in a program2. Implement the concept of Concept of Nested Ifs,Cocept of Arrays,




Y			matrix addition, Functions declaration and its return values, Structure in c
		USIT102: DIGITAL ELECTRONICS	<ol style="list-style-type: none"> 1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics. 2. To understand and examine the structure of various number systems and its application in digital design. 3. The ability to understand, analyze and design various combinational and sequential circuits. 4. Ability to identify basic requirements for a design application and propose a cost effective solution. 5. The ability to identify and prevent various hazards and timing problems in a digital design. 6. To develop skill to build, and troubleshoot digital circuits.
		USIT103: Operating system	<ol style="list-style-type: none"> 1. Analyze the structure and functions of operating systems. 2. Understand role of operating system as process manager, resource manager, file system manager, memory manager and I/O manager 3. Understand the Mutual exclusion and Deadlock detection 4. Understand benefits of cloud and



			<p>virtualization.</p> <p>5. Understand differences of three types of computing: multiprocessor, multicomputer and distributed systems</p>
		USIT104:Discrete Mathematics	<p>1. Understand the basic principles of set theory</p> <p>2. Develop an important new skill, the ability to write a mathematical proof, which is an excellent training for writing good computer programs.</p> <p>3. To solve the complex probability problems</p> <p>4. To understand graphs and trees and its application in solving real world problem</p>
		USIT105:Communication skills	<p>1. Apply business communication strategies and principles to prepare effective</p> <p>2. Communication for domestic and international business situations.</p> <p>3. Identify ethical, legal, cultural, and global issues affecting business communication.</p> <p>4. Utilize analytical and problem solving skills appropriate to business communication.</p> <p>5. Participate in team activities that lead to the development of collaborative work skills.</p>
BSc – INFORMATIO N TECHNOLOG	FYIT Sem-II	USIT201: OOPS	<p>1. Understand key features of the object-oriented programming language such as encapsulation</p>



Y			<p>(abstraction), inheritance, and polymorphism.</p> <ol style="list-style-type: none"> 2. Design and implement object-oriented applications. 3. Analyze problems and implement simple C++ applications using an object-oriented software engineering approach.
		<p>USIT202:Microprocessor Architecture</p>	<ol style="list-style-type: none"> 1. Understand the architecture and functional block of 8051 microcontroller 2. Programmer's model for 8086.Segmented memory operation. Instruction set of 8086. Addressing modes supported by 8086 instruction set.
		<p>USIT203:Web Programming</p> 	<ol style="list-style-type: none"> 1. Support the development of web pages 2. Write scripts using JavaScript in a web page 3. Effectively incorporate JavaScript in a web page 4. Create forms and check for data accuracy 5. Use JavaScript system objects 6. Embed objects in a web page 7. Effectively use decision and looping statements in JavaScript programs
		<p>USIT204:Numerical</p>	<ol style="list-style-type: none"> 1. Analyze the different samples of

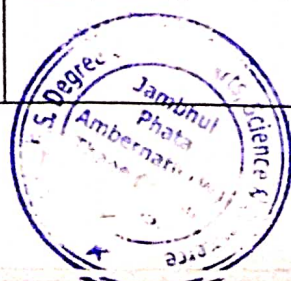
		and Statistical Methods	<p>data at different level of significance using various hypothesis testing.</p> <ol style="list-style-type: none"> 2. Develop a framework for estimating and predicting the different sample of data for handling the uncertainties. 3. Understand error, source of error and its effect on any numerical computation and also analyzing the efficiency of any numerical algorithm. 4. Learn how to obtain numerical solution of nonlinear equations using Bisection, Newton – Raphson and fixed-point iteration methods 5. Solve system of linear equations numerically using direct and iterative methods. 6. Understand the methods to construct interpolating polynomials with practical exposure
		USIT205:Green Computing	<ol style="list-style-type: none"> 1. Student are encouraged to save energy 2. Go green concepts are introduced 3. Going paperless is initiated 4. Solar energy concept is implemented



NAME OF PROGRAM	COURSE - SEMESTER	PAPER NAME/ SUBJECT NAME	COURSE OUTCOMES
BSc – INFORMATIO N TECHNOLOG Y	S.Y.I.T Sem-III	USIT301: PYTHON PROGRAMMING	<ol style="list-style-type: none"> 1. Define and demonstrate the use of built-in data structures "lists" and "dictionary". 2. Design and implement a program to solve a real world problem. 3. Design and implement GUI application and how to handle exceptions and files. 4. Make database connectivity in python programming language.
		USIT302: DATA STRUCTURES	<ol style="list-style-type: none"> 1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms 2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs 3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs 4. Demonstrate different methods for traversing trees 5. Compare alternative implementations of data structures with respect to performance 6. Compare and contrast the benefits of dynamic and static data structures implementations 7. Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack 8. Design and implement an appropriate hashing function for an application




		USIT303: COMPUTER NETWORKS	<ol style="list-style-type: none"> 1. Recognize the technological trends of Computer Networking. 2. Discuss the key technological components of the Network. 3. Evaluate the challenges in building networks and solutions to those. 4. Have a basic knowledge of the use of cryptography and network security. 5. Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols. 6. Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure 7. Have a working knowledge of datagram and internet socket programming
		USIT304: Database Management Systems	<ol style="list-style-type: none"> 1. Effectively explains the basic concepts of databases and data models. 2. Explains the features of database management systems, architecture of database systems, and the role of database users. 3. Defines the basics of the relational data model. 4. Lists the database design process steps. 5. Develops an Entity-Relationship model based on user requirements. 6. Converts an Entity-Relationship diagram to Relational Schema. 7. Explains Functional Dependency and Functional Decomposition 8. Designs SQL queries to create database tables and make structural modifications.
		USIT305: Applied Mathematics	<ol style="list-style-type: none"> 1. To interpret and solve the matrix problems like rank of matrix, linear independency of vectors. 2. Identify, formulate and solve the



			<p>Linear Differential Equations.</p> <p>3. To solve the problems based on Laplace transformation</p> <p>4. To solve the problems of multiple integrations</p>
BSc – INFORMATIO N TECHNOLOG Y	SYIT Sem-IV	USIT401: CORE JAVA	<ol style="list-style-type: none"> 1. To understand the concept of object oriented programming 2. To install jdk setup and run java program 3. To develop programs for inheritance, multithreading, applets, exception handling and file handling.
		USIT402: INTRODUCTION TO EMBEDDED SYSTEM	<ol style="list-style-type: none"> 1. Understand hardware and software design requirements of embedded systems. 2. Analyze the embedded systems' specification and develop software programs. 3. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.
		USIT403:Computer Oriented Statistical Techniques	<ol style="list-style-type: none"> 1. To learn techniques to calculate the measures of central tendency and different measures of dispersion to gain insight into consequences of plan by probability techniques and processing samples using sampling techniques.



			<ol style="list-style-type: none"> 2. Drawing valid conclusion using estimation theory and proper decision using decision theory. 3. To measure experimental result based on hypothesis using chi square techniques. 4. To learn techniques to correlate the relationship between various variables. 5. Learning the basic programming concepts and methods of R software. 6. Gaining knowledge on Implementation of various statistical techniques using R tool.
		USIT404: SOFTWARE ENGINEERING 	<ol style="list-style-type: none"> 1. How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment 2. An ability to work in one or more significant application domains 3. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software 4. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle 5. Demonstrate an ability to use the techniques and tools necessary for engineering practice
		USIT405: COMPUTER GRAPHICS AND	<ol style="list-style-type: none"> 1. Understand the basics of computer graphics, different graphics systems and

		ANIMATION	<p>applications of computer graphics.</p> <ol style="list-style-type: none"> 2. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis. 3. Use of geometric transformations on graphics objects and their application in composite form. 4. Extract scene with different clipping methods and its transformation to graphics display device. 5. Explore projections and visible surface detection techniques for display of 3D scene on 2D screen. 6. Render projected objects to naturalize the scene in 2D view and use of illumination models for this.
--	--	------------------	---

NAME OF PROGRAM	COURSE - SEMESTER	PAPER NAME/ SUBJECT NAME	COURSE OUTCOMES
	R		



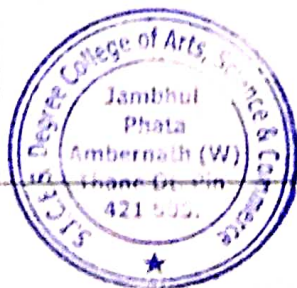
<p>BSc – INFORMATIO N TECHNOLOG Y</p>	<p>T.Y.I.T Sem-V</p>	<p>USIT501 : Software Project Management</p>	<ol style="list-style-type: none"> 1. Professional terminologies of software industry. 2. Problem solving algorithms and techniques. 3. Understand the development work environment 4. To make students realize software project management is not just theory subject to pass, instead it will help them live their professional life with ease. 5. This subject makes a student realize that whether a student becomes a project manager in future or not, still even as an employee he/she should learn to be an efficient team player 6. The objective is to understand the pattern behind project dissertation and to know the nuances of managing the software projects.
		<p>USIT502: Internet of Things</p>	<ol style="list-style-type: none"> 1. This course focuses on the latest microcontrollers with application development, product design and prototyping. 2. Ideally suited for engineering students and graduates with a basic understanding of electronics and microprocessors. 3. The Internet of Things (IOT) is the next wave, world is going to witness. 4. Today we live in an era of connected devices (mobile phones, computers

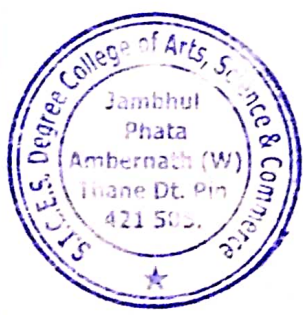


			<p>etc.), the future is of connected things (Eg: home appliances, vehicles, lamp-posts, personal accessories, your pets, industrial equipment's and everything which you use in day-to-day life).</p> <p>5. Internet of Things is a term given to the attempt of connecting objects to the internet and also to each other - allowing people and objects themselves to analyze data from various sources in real-time and take necessary actions in an intelligent fashion.</p> <p>6. Learners are able to design & develop IOT Devices. They should also be aware of the evolving world of M2M Communications and IOT analytics</p>
		<p>USIT503 : Advanced Web Programming</p>	<ol style="list-style-type: none"> 1. Apply three-tier architecture concepts and advanced database techniques in web application 2. use object-oriented techniques in Web programming 3. develop rich interactive environments for the Web 4. create sites that utilize data validation techniques and secure code build sites that use session management
		<p>USIT505: Linux System Administration</p>	<ol style="list-style-type: none"> 1. Explain the fundamental concepts of open-source operating system Linux. 2. Understand the basic set of commands and editors in Linux

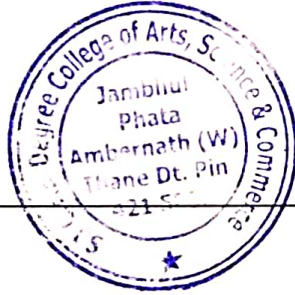


			<p>operating system.</p> <ol style="list-style-type: none"> Discuss shell programming in Linux operating system. Demonstrate the role and responsibilities of a Linux system administrator. Distinguish various filter and server commands
		USIT506:Enterprise Java	<ol style="list-style-type: none"> To understand the concept of servlets, jsp To understand and implement the concept of EJB To understand and implement the concept of pojo, hibernate, orm tools
BSc – INFORMATIO N TECHNOLOG Y	TYIT Sem-VI	USIT601: Software Quality Assurance	<ol style="list-style-type: none"> To implement the quality control principles and to make the quality product To implement the testing techniques and reduce the cost of software from failures To apply various testing technique like integration testing, system testing, boundary value testing
		USIT602: Security in Computing	<ol style="list-style-type: none"> Insight into secure design principles and defense models. Knowledge about storage and database security. Implement IDS, Firewalls and wireless security. Skills to implement secure cloud



			<p>environment for web and application security.</p> <ol style="list-style-type: none"> 5. Ability to implement physical security for implementing secure information environment. 6. Understand the principles and practices of cryptographic techniques. 7. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application
		USIT603: Business Intelligence	<ol style="list-style-type: none"> 1. Faster reporting, analysis or planning. 2. More accurate reporting, analysis or planning. 3. Better business decisions. 4. Improved data quality. 5. Improved employee satisfaction. 6. Improved operational efficiency. 7. Improved customer satisfaction. 8. Increased competitive advantage.
		USIT604: Principles of Geographic Information Systems 	<ol style="list-style-type: none"> 1. Explore mapped data, Spatial Data Types, Data Creation, Georeferencing, Spatial Analysis 2. Relate GIS with remote sensing technologies with recent trends in geospatial analysis 3. Analyze spatial data, using QGIS analysis tools 4. Develop and Manage Geodatabases for real world data 5. Create maps, images and apps to communicate spatial data in a meaningful way to others
		USIT607: Cyber Laws	<ol style="list-style-type: none"> 1. To understand the concept of

			<p>Intellectual property rights i.e. copyright, patent, trademark</p> <ol style="list-style-type: none">2. To understand the concept of IT Act 2000 and its various sections for infringement of patent, trademarks etc.3. How to battle the cyber squatters4. Understand the concept of domain name5. Data security
--	--	--	---





SICES Degree College of Arts, Science and Commerce

Chikloli, Jambhul Phata, Ambarnath (W)

Department of Commerce

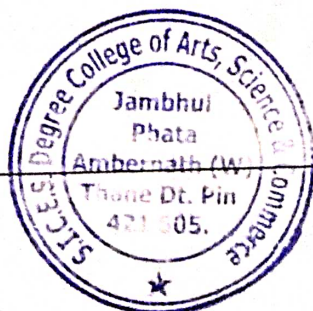
Program outcomes and Course outcomes

Program : Bachelor of Commerce

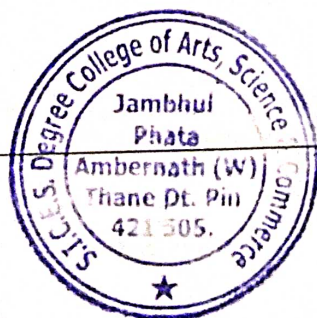
Program Outcomes:

- Enables learners to get theoretical and practical exposure in the commerce sector which includes Accounts, Commerce, Marketing, Management, Business Economics, and Environment etc.
- Strengthens their capacities in varied areas of commerce and industry aiming towards holistic development of learners.
- Enhances the capability of decision making at personal and professional levels
- After completing their graduation learners develop a thorough understanding of the fundamentals in Commerce, Finance and Marketing

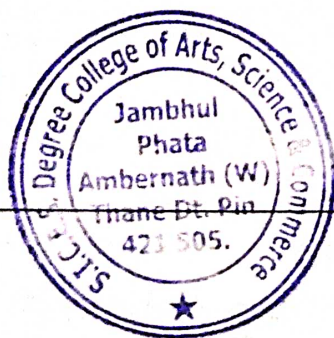
Class	Semester	Course Name	Course Outcomes
TY.BCOM	VI	Financial Accounting And Auditing- IX Financial Accounting	1. Calculate purchase consideration and with reference to accounting standard and pass entries for amalgamation, absorption and external reconstruction. 2. Pass entries for foreign currency transactions and recognize exchange difference. 3. Prepare preliminary Final Statement of Account of Liquidator. 4. Pass entries for underwriting commission and determine the liabilities. 5. Prepare the final accounts of LLP of small size and follow the steps for formation of LLP.
		Financial Accounting And Auditing -X Cost Accounting	1. Creates understanding on the various techniques of costing. 2. Summarise process cost accounting and prepare a process cost statement/accounts. 3. Understanding of Marginal costing and Interpret variances (Standard Costing.) 4. Concept of Contract Costing and Preparation of Contract accounts. 5. Preparation of Cost Control.



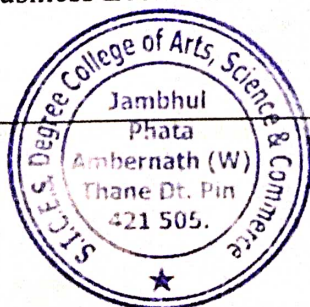
	Commerce (HRM) –VI	<ol style="list-style-type: none"> 1. Understanding Human Resource Planning and Human Resource Management 2. Information about significance of Training and Development, Mentoring, Counselling etc. 3. Motivational theories and its Applications. 4. Transition in Human Resource Management
	Business Economics –VI	<ol style="list-style-type: none"> 1. Creates an understanding of the nature of International Trade and commercial policy and economics integration, Balance of payment of country etc 2. Creates understanding of the rate of exchange and how the rate of exchange is determined.
	Indirect Taxation (Elective) -II	<ol style="list-style-type: none"> 1. Enables learners to acquire the knowledge of Goods and Services. 2. Explores the process of Registration, place and value of supply and computation of tax liability
	Marketing research –II	<ol style="list-style-type: none"> 1. The student should be able to understand the process of marketing research and its different process. 2. Understand different research methods 3. Apply selected research methods 4. Analyzed applications of business research tools in Marketing decision making
	Commerce (Marketing)	<ol style="list-style-type: none"> 1. Intercepts and familiarizes students with different and basic concepts of marketing mix, MIS and Marketing Research. 2. Updates students about marketing challenges faced by marketing managers in 21st century. 3. Makes students aware about competitive strategies for market leader, and various aspects of market.



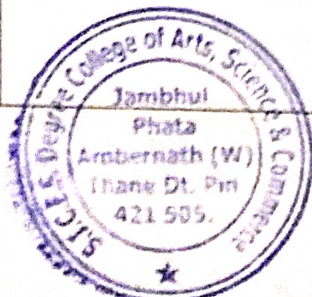
V	Financial Accounting	<ol style="list-style-type: none"> 1. Creates awareness about company accounts with provision of various companies act. 2. Provides knowledge about the buyback of shares, investment account with their accounting treatment. 3. Provides knowledge of Internal Reconstruction and provision of Internal Reconstruction 4. Understand the AS-13 Investment Accounting.
	Cost Accounting	<ol style="list-style-type: none"> 1. Impacts the knowledge of various costs on the basis of element behaviour and functions. 2. Explain the basic concept of cost and, how costs are presented in the cost sheet, including how materials, labour and overheads costs are added to a product at each stage of production cycle. 3. To Reconcile Profit between cost Accounting and financial accounting.
	Business Economics –V	<ol style="list-style-type: none"> 1. Assess the performance of commercial banks in agricultural credit. 2. Identifies and explains economic concepts and theories related to the behaviour of economic agents, markets, industry legal institutions, social norms and government policies.
	Direct & Indirect Taxation (Elective) -I	<ol style="list-style-type: none"> 1. Creates an understanding of the basic concept of Direct Tax and basic definition related to Direct Tax and assesse. 2. Provides learners an idea of the process and techniques of calculation of taxability and tax liability. 3. Pursue further professional courses in Income Tax and specialize in Taxation law.



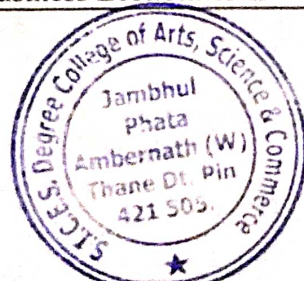
		Marketing Research –I	<ol style="list-style-type: none"> 1. Use appropriate research approaches including sampling, data collection and questionnaire design for specific marketing situations. 2. Analyses and interpret both qualitative and quantitative data 3. conduct and analyze a focus group discussion 4. Build a simple questionnaire from a web-based survey administration site.
S.Y.B.COM.	IV	Introduction to Auditing	<ol style="list-style-type: none"> 1. Understand the basic concepts & principles of audit, auditing standards, provisions of companies act and general procedures required in conducting audit. 2. Imparts knowledge of audit planning, procedures and documentation and assurance standards. 3. Internalise the broad principles of audit sampling techniques 4. Understand the inherent processes of vouching, verification, internal check and internal control which are a part of the audit process
		Accountancy and Financial Management - IV	<ol style="list-style-type: none"> 1. Imparts conceptual knowledge of Company Accounts. 2. Journal entries for issue of shares and Debenture. 3. Prepare vertical balance sheet as per revised Schedule III of Companies Act 2013. 4. Pass all entries for redemption of debentures and preference shares with necessary provisions.
		Commerce -IV	<ol style="list-style-type: none"> 1. Provides basic knowledge of production management, inventory management, and quality management. 2. Updates learners with recent trends in finance.
		Business Economics -IV	<ol style="list-style-type: none"> 1. Enables students to understand the primary functions of government like revenue, expenditure, debt and helps to analyze budget. 2. Provides students with the tools to understand the



		underlying concepts and practical trade-offs entailed in public finance policy alternatives.
	Advertising -II	<ol style="list-style-type: none"> 1. Creates understanding of the construction of effective advertisement. 2. Highlights the role of advertising for the success of brands and its importance within the marketing function of the company.
	Foundation course -IV	<ol style="list-style-type: none"> 1. Develops a basic understanding about rights of citizen, ecology, role of modern technology. 2. Provides an overview of significant skills required to address competition in career choices.
	Business Law -II	<ol style="list-style-type: none"> 1. Acquaints students with laws related to Indian Companies' Act 2013, IPR, Partnership Act 2008, and Consumer Protection Act. 2. Study that governs what happens with commercial matters, regulation of commercial entities and regulation of commercial transactions. 3. Provides a brief idea about the frame work of Indian business laws.
III	Accountancy and Financial Management - III	<ol style="list-style-type: none"> 1. Prepare final accounts of partnership firm along with either the effects of admission and retirement of the partners 2. Give effects of the goodwill when partners are admitted or getting retired from partnership firm 3. Compute purchase consideration and prepare necessary accounts for the amalgamation of partnership firm and also for the conversion of partnership firm into Ltd. Companies
	Introduction to Management Accounting	<ol style="list-style-type: none"> 1. Assist in planning and formulation of future policies 2. Help in interpretation of financial information 3. Interpret data through various techniques contributing to effective financial reporting relevant for short term



			and strategic decision 4. Enables them to know the concept of capital budgeting with reference to time value of money. 5. Enables understanding of the functions, advantages, limitations of management accounting.
		Commerce –III	1. Creates understanding of the concept of management along with evolution of management. 2. Let's students become aware about universal application of functions of Management..
		Business Economics-III	1. Creates awareness among students about various economic conditions of macro - economics such as inflation, unemployment etc. 2. Examines the economy as a whole and inspires a consistent way of thinking about key macroeconomic phenomena.
		Foundation course –III	1. Gives basic understanding on issues related to human rights violations, ecology and urban-rural disparities in access to health and education. 2. Creates the importance of developing scientific temper towards technology and its use in everyday life.
		Advertising –I	1. Updates students about current trends in advertising. 2. Acquaints students about various tools of IMC and careers in advertising.
		Business Law –I	1. Provides a brief idea about the frame work of Indian business law. 2. Provides business law study as a way to maintain order among businesses, brands, and companies alike. 3. Familiarizes the students with case law studies related to business law.
F.Y.B.Com	II	Business Economics-II	1.Understanding of



the fundamentals of microeconomics

2. Ability to analyze cause-effect relationship between economic variables

3. Ability to solve numerical problems based on economic concepts

4. Understand application of economics to business decision making and analyze, understand market competition

5. Understand why markets may fail and what role governments

Environmental Science – II

1. Acquire an attitude of concern for the environment.

2. Acquire the skills for identifying and solving environmental problems.

3. Apply systems concepts and methodologies to analyze and understand environmental processes.

4. Create better quality environment at the place of work and home.

5. Participate in improvement and protection of environment.

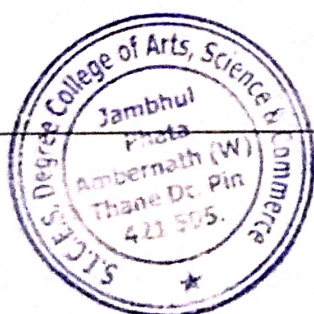
Accountancy and Financial Management- II

1. Understanding of the concepts and conventions of accounts.

2. Ability to solve numerical problems based on Branch Accounting.

3. Find out the actual profit of consignor.

4. prepare memorandum, trading account and to find out the actual amount of claim



	Foundation Course-II	<p>1. Students will understand the Indian society and the disparity that prevails.</p> <p>2. Students will be sensitized and have a basic understanding of issues on human rights, the constitution and political processes.</p> <p>3. Students will be inculcated with knowledge about stress and conflict, and learn to deal with them.</p>
	Mathematical and Statistical Techniques -II	<p>1. It is expected that the learners become fully conversant with the aspects of business, elements of business environment, entrepreneurship and setting up of business unit.</p> <p>2. Learners appreciate the importance of business in a developing economy.</p> <p>3. Learners consider entrepreneurship as a career option.</p>
	Commerce II	<p>1. Better understanding of Business Process</p> <p>2. Understanding impact of Environment on Business.</p> <p>3. Importance of Planning for Business success. Entrepreneurship as Career option</p>
	Business Communication-II	<p>1. To develop an awareness about the complexity of communication in a dynamic business environment.</p> <p>2. To develop effective oral, writing and listening skills among learners.</p> <p>3. To demonstrate the effective use of communication technology</p>



1

Commerce -I

1. Transmits understanding of basic concepts of business along with setting business unit and logical provisions for initiating business.
2. Gives clue to learners on entrepreneurship and exposes them to problems and prospects of women entrepreneurs.
3. Transfers to the learners the current trends in business.

Accountancy and Financial Management-I

1. Inculcates knowledge of various accounting concepts and policies.
2. calculate gross and net profit or loss, department-wise
3. Introduces the students to working knowledge of Accounting Standards issued by the ICAI.
4. Understand Hire purchase system and accounting treatment of hire Purchase system

Business Economics -I

1. Familiarizes the students with the basic concepts of micro economics and its applications to business situations.
2. Guides the students towards understanding the real world market situations & business applications.

Foundation Course -I

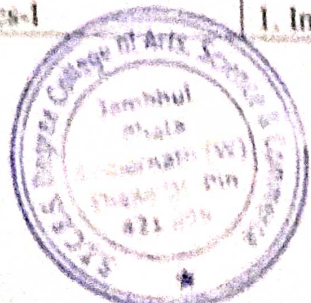
1. Creates understanding of multi-lingual, multi-religious, multi-cultural nature & political nature of Indian society.
2. Creates understanding of the Indian Constitution & the disparity in Indian society

Business Communication -I

1. Corporate communication helps future managers and employees in performing managerial functions smoothly.
2. Creates awareness, imparts knowledge, shapes attitudes and overall improves overall interaction between people.

Mathematics and Statistics-I

1. Introduces mathematics & statistics to undergraduate



			<p>students of commerce so that they can use them in the field of commerce & industries to solve the real life problems.</p> <p>2. Facilitates decision making with the help of decision making techniques</p>
		Environmental Studies	<p>1. Makes students learn the role of environment and ecosystem.</p> <p>2. Creates awareness about the relationship between population & environment</p>



SICES Degree College of Arts, Science and Commerce

Chikloli, Jambhul Phata, Ambarnath (W)

Department of BAF

Program outcomes and Course outcomes

Program : Bachelor of Commerce(Accounting and Finance)

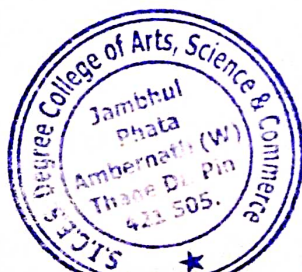
Program Outcomes:

1. The course supports Learners to gain knowledge in the field of accounting, taxation, auditing, risk management, financial accounting, managerial economics, and business law and business communications.
2. Learners can make their career as financial experts and also develop a better understanding of the markets as this course gives an in-depth understanding of the essential qualities and areas of expertise required for such jobs.
3. Students get opportunities to explore many career paths like investment and portfolio management, stock market, security analysis, mutual fund and capital market analysis, Money market ,accounting field, financial field etc.
4. The programme aims to develop professional skills among students and build a strong foundation in Accounts and Finance.

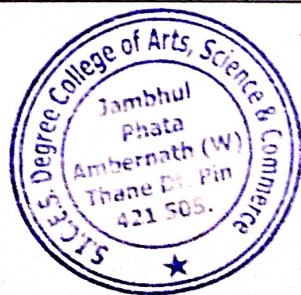
Class	Semester	Course Name	Course Outcomes
T.Y. BAF	VI	Cost Accounting -IV	1.Student will understand important concepts like Absorption costing, marginal costing, standard costing, budgetary control and variance analysis.
		Financial Management – III	1.Student will understand the topics like mergers & acquisition, business valuation, corporate restructuring, takeovers, hire purchase & lease financing etc.
		Economics Paper-III (Indian Economy)	1.Student will understand concepts like agricultural sector, industrial sector, service sector and external sector etc.
		Financial Accounting –	1.Student will understand the finalization of accounts



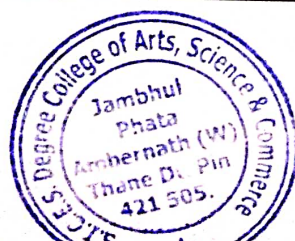
T.Y. BAF	VII		for electricity company, co- operativesociety. 2.This will also basic knowledge with regards to IFRS and Indian AccountingStandards.
		Taxation Paper IV (Indirect Tax Paper-III)	1.Enables learners to acquire the knowledge of Goods and Services. 2.Explores the process of Registration, place and value of supply and computation of tax liability.
		Project work	1.Students will understand project work by Research Methodology.
	V	Cost Accounting – III	1.Able to understand students the concepts likeuniform costing, operating costing, process costingwhich costing at each level and activity-basedcosting system.
		Financial Management – II	1.Student will be able to understand with practical implementation the topics like capital budgetingwith risk planning & analysis, decisions ondividend, valuation of mutual fund and bonds
		Management –II (Management Applications	1.Student understand to certain managerial skills with regards to marketing management, production management, human resource management, financial management.
		Financial Accounting -V	1.Able to understand practical concept with regards to company like underwriting of shares & debentures, buy-back of shares, amalgamation, absorption, internal & external reconstruction and Liquidation of companies..
		Financial Accounting - VI)	1.Student will understand finalization of accounts ofBanking Company, Insurance Company, Non-Banking Financial Company, Valuation ofgoodwill and shares also the new conceptaccounting for limited liability partnership.
Taxation Paper IV (Indirect Tax Paper-II)	1.Enables learners to acquire the knowledge of Goods and Services. 2.Explores the process of Registration, place and value of supply and computation of tax liability.		
S.Y. BAF	IV	Financial Accounting (Special Accounting Areas) – IV	1. Able to gain knowledge about preparation of finalaccounts of companies. 2.Able to understand the accounting effect ofredemption of preference share and debentures.



	Management Accounting (Introduction to Management Accounting)	<p>1.To demonstrate the computation of cash flows arising from operating, investing and financing activities .</p> <p>2.To identify the mechanisms available to evaluate and analyse the income statement and balance sheet with the help of comparative and common sized analysis, trend analysis and ratio analysis .</p> <p>3.To demonstrate the estimation methodology of working capital of business entity.</p>
	Taxation(Direct Tax-I)	<p>1. Creates an understanding of the basic concept of Direct Tax and basic definition related to Direct Tax and assessee.</p> <p>2. Provides learners an idea of the process and techniques of calculation of taxability and tax liability.</p>
	Information Technology in Accountancy – II	<p>1.To study the automation in accounting system.</p> <p>2.To impart knowledge on computerized accounting system.</p> <p>3.A detailed study of MIS reporting in Computer environment.</p> <p>4.To conduct a study on business process management and its life cycle.</p>
	Foundation Course in Management (Introduction to Management) – IV	<p>1.Discuss and communicate the management evolution and how it will affect future managers.</p> <p>2.Provides a deeper outlook of various functions of managing the organization.</p> <p>3.Evaluate leadership styles to anticipate the consequences of each leadership style.</p>
	Business Law (Company Law) – III	<p>1.Recall the definitions of terms such as ‘accounting standards’, ‘deposit’, ‘financial year’, ‘government company’, ‘depository’, ‘small person company’, ‘one- person company’, etc. as per the provisions of the Companies Act, 2013.</p> <p>2.Explain the various types of companies that can be formed. Differentiate between public and private Limited companies.</p> <p>3.Prepare company documents such as the Memorandum & Articles of Association.</p>
	Research Methodology	<p>1. Learner will depict the basic framework of research process.</p> <p>2. Learner will be able to understand of various research design, hypothesis and techniques.</p>



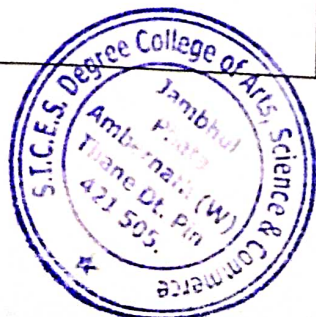
S.Y. BAF			<p>3.Learner will be helped to understand about getting knowledge about the types of data; classification of data collection, how to process the data, analysis of the data and interpretation of the data.</p> <p>4. Learner will be able to create a sense of wayhow to write report, interpretation andsubmission of data/ project.</p>
	III	Financial Accounting (Special Accounting Areas) – III	<p>1. Prepare final accounts of partnership firm along with either the effects of admission and retirement of the partners</p> <p>2. Give effects of the goodwill when partners are admitted or getting retired from partnership firm</p> <p>3. Compute purchase consideration and prepare necessary accounts for the amalgamation of partnership firm and also for the conversion of partnership firm into Ltd. Companies</p>
		Cost Accounting (Methods of Costing) – II	<p>1.Student will understand basic of cost accounting,reconciliation of cost sheet with financial accounts.</p> <p>2.Students will understand calculation of Contractcosting and process costing.</p>
		Taxation(Direct Tax-I)	<p>1. Creates an understanding of the basic concept of Direct Tax and basic definition related to Direct Tax and assesse.</p> <p>2. Provides learners an idea of the process and techniques of calculation of taxability and tax liability.</p>
		Information Technology in Accountancy – I	<p>1.To provide them with the fundamentalknowledge of the use of computers inbusiness.</p> <p>2.To understand the various concepts of information technology.</p> <p>3.To understand the methodology for onlinebusiness dealing, using e-commerce.</p>
	Foundation Course in Commerce (Financial Market	<p>1.To provide exposure to the students aboutinformation technology, networks andinternet.</p>	



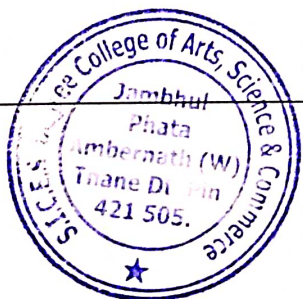
		Operations) – III	<p>2.To provide them with the fundamental knowledge of the use of computers in business.</p> <p>3.To understand the various concepts of e-commerce.</p>
		Business Law (Business Regulatory Framework) –	<p>1.To provide exposure to the students about Business Law.</p> <p>2.To provide them with the fundamental knowledge of the use of Law.</p> <p>3.To understand the various concepts & Acts governing the Indian Judiciary Systems.</p>
		Business Economics – II	<p>1.Student should be understand concepts like macroeconomics, prices and inflation, public revenue and expenditure,</p> <p>2.Student should understand the knowledge about fiscal and financial administration.</p>
FYBAF	II	Financial Accounting (Special Accounting Areas) – II	<p>1. Understanding of the concepts and conventions of accounts.</p> <p>2. Ability to solve numerical problems based on Branch Accounting.</p> <p>3. Find out the actual profit of consignor.</p> <p>4. prepare memorandum, trading account and to find out the actual amount of claim</p>
		Auditing (Introduction and Planning) – I	1.Able to understand the knowledge audit techniques with standards, understanding internal audit, planning, procedures and documentation.
		Innovative Financial Services	1.Able to understand the knowledge of Traditional Financial services, issue management, securitization, financial services & its mechanism, consumer finance and credit rating.
		Business Communication – II	<p>1.Get exposure to business writing.</p> <p>2.Get hands on experience of group discussions ,personal interview.</p> <p>3.Basic knowledge of Verbal ability skills to help with competitive exams</p>
		Foundation Course – II	1.Understand various concepts and theories of organizational behaviour to apply them in predicting



F.Y. BAF			<p>and influencing individual and group behaviour in organizations.</p> <p>2. Organizational behaviour provides the knowledge base for understanding behaviour within organizations.</p> <p>3. Students will be exposed to broad areas in OB theory, concepts, and research through this course.</p>
		Business Law (Business Regulatory Framework)	1. Student able to understand the legal framework with regards to the Law of Contract 1872, Sale of Goods Act 1930, Negotiable Instrument Act 1881, Consumer Protection Act 1986.
		Business Mathematics	<p>1. students to learn to apply commonly used mathematical concepts and statistical methods in business contexts and how to interpret analyses performed by others.</p> <p>2. To equip the student with a broad based knowledge of mathematics with emphasis on business application.</p>
F.Y. BAF	I	Financial Accounting (Elements of Financial Accounting)	<p>1. Inculcates knowledge of various accounting concepts and policies.</p> <p>2. calculate gross and net profit or loss, department-wise</p> <p>3. Introduces the students to working knowledge of Accounting Standards issued by the ICAI.</p> <p>4. Understand Hire purchase system and accounting treatment of hire Purchase system</p>
		Cost Accounting (Introduction and Element of Cost) - I	<p>1. To serve as a guide to price fixing.</p> <p>2. Understanding various areas of cost accounting</p>
		Financial Management (Introduction to Financial Management)	<p>1. It helps to study the role and responsibilities of finance manager, finance function, management of finance.</p> <p>2. As a prerequisite, the students should be having basic knowledge about elementary concepts of finance.</p> <p>3. Course aims to provide basic knowledge about financial management from accounting and finance's perspective</p>
		Business Communication - I	<p>1. Distinguish between verbal and non-verbal communication. Identify various modes of communication.</p> <p>2. Participate in debates and elocution</p>



		<p>thereby overcoming stage fear.</p> <p>3. Prepare curriculum vitae for self and others.</p> <p>4. Draft effective job letters like cover letter, job acceptance letter and resignation letter .</p>
	Foundation Course – I	<p>1. Society through its demographic composition, population distribution according to religion, caste and gender.</p> <p>2. Describe linguistic diversity, regional variation. Discuss violence against women and portrayal of women in media.</p> <p>3. Identify inequalities faced by people with physical and mental disabilities.</p> <p>4. Examine inequalities due to Caste system and inter group conflicts.</p>
	Commerce (Business Environment) – I	<p>1. Dynamics of Business and its Environment, Types of Business Environment.</p> <p>2. Perform Environmental Analysis using PESTEL Analysis & SWOT Analysis</p> <p>3. Discuss Ethical Dilemmas, Corporate Culture and Ethical Climate.</p> <p>4. Develop Entrepreneurship as a Career Option Examine Consumerism in India & discuss Consumer Protection Act 1986.</p>
	Business Economics – I	<p>1. Able to understand the knowledge of Traditional Financial services, issue management, securitization, financial services & its mechanism, consumer finance and credit rating.</p>





S.I.C.E.Society's

Degree College of Arts, Science & Commerce, Ambarnath

(W.)JambhulPhata, Chikhlohi, Ambarnath (W)-421505

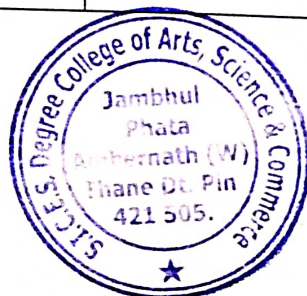
(Affiliated to University of Mumbai)

B.Com (Banking and Insurance)

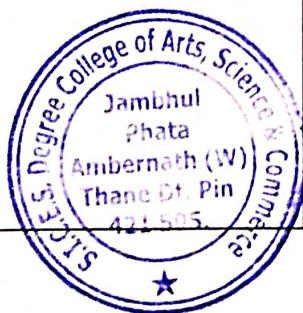
Program Specific Outcomes:

1. Students are made aware with new development and innovations in Banking and Insurance and Financial Sector.
2. In-depth knowledge of various features of Banking and Insurance which includes Financial Investment, Economics, Communication, Legal Parameters etc.
3. With help of BBI qualification, students can take up promising jobs in Banking and Insurance companies.
4. Students can also create a base to do a PG course in Banking and Insurance to achieve higher success in future.
5. Students are made self-sufficient to conduct their own transactions and investments in Banks and Insurance companies.

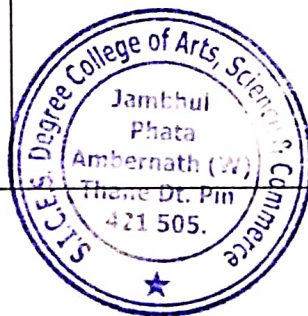
NAME OF PROGRAM	COURSE - SEMESTER	PAPER NAME/ SUBJECT NAME	COURSE OUTCOMES



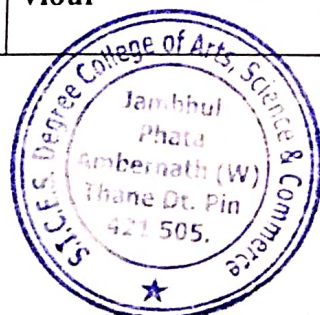
UG (BBI) : Semester I BACHELOR OF COMMERCE IN BANKING & INSURANCE	Environment and Management of Financial Services.	Subject provides to: <ul style="list-style-type: none"> • Deep understanding of Indian financial system, structures and kinds of financial services. • Study the significant and role of banking and insurance in mobilization of savings, investment and economic growth. • Study the risk associated with banking and insurance sectors and assets management system. • Help to understanding Prudential norms related to Banking and insurance sectors.
	Principles of Management	Subject provides to: <ul style="list-style-type: none"> • Enrich the management skills and knowledge among students with the help of traditional and modern theory of management. • Understanding of management function and process. • Study the organisational structures and importance in each level of management. • Learn leadership skills by studying Indian and international leader's quality and achievements in management field.
	Quantitative Methods – I	<ul style="list-style-type: none"> • To make the students learn data collection, representation and central tendency and application usage in industry. • To make the students understand usage of Measures of Dispersion, Probability theory. • To make students learn statistical techniques like Correlation and Regression. • To make students learn how are Index numbers used and basic fundamentals of insurance sector.



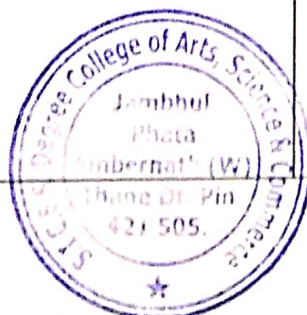
		Financial Accounting-I	Subject provides : <ul style="list-style-type: none"> • To have knowledge of basic accounting concept such as journal, ledger, subsidiary book, journal proper and bank reconciliation • To Imbibe knowledge on AS -6 (depreciation) and AS 10 (fixed assets) & AS-2 (Inventory Management) • To understand closing of accounts at the end of the year for sole trading concern and Partnership firms. • To Gain the knowledge of preparation of financial statements available for investor, creditors & Government. • Impart the knowledge of revenue recognition in accountancy under AS-9
		Business Communication-I	Subject provides to: <ul style="list-style-type: none"> • Deep understanding of Communication Skill and Business • Study the significant and role of Management Studies and Business skills and management system. • Help to understanding Prudential norms related to Business communication • Enrich the management skills and knowledge among students with the help of traditional and modern theory of management. • Understanding of management function and process.



		Foundation Course-I	<ul style="list-style-type: none"> • Creates understanding of multi-lingual, multi-religious, multi-cultural nature & political nature of Indian society. • Creates understanding of the Indian Constitution & the disparity in Indian society
		Business Economics-I	<ul style="list-style-type: none"> • Learner will analyse the basic concepts of business economics like opportunity cost principle, incremental and marginal concepts. • Learner will be able to understand the concepts of demand and supply and their analysis in business operations. • Learner will analyse and interpret the operations of markets under varying competitive conditions. • Learner will develop a pricing practices that prevails under different competitive market conditions.
	Semester II	Principles and Practices of Banking & Insurance	Subject provides to: <ul style="list-style-type: none"> • Study basic concept related to banking. • Enrich Knowledge related to Present Banking Scenario in India • Study the evaluation of Insurance in India and risk associated with Insurance sectors. • Study the claim settlement system in insurance sector and role of IRDA in the growth insurance sector.
		Organisational Behaviour	Subject provides to: <ul style="list-style-type: none"> • Study organisational behaviour concept, models, motivation



			<p>theories and techniques in banking and insurance industry.</p> <ul style="list-style-type: none"> • Learn IQ, EQ and SQ concept and Group dynamics • Develop soft and hard skills by understanding, how to cope with organisational culture and remove work conflicts for healthy environment of organisation. • Study the organisational development techniques and importance with example.
		Business law	<ul style="list-style-type: none"> • Students understand the importance of their act as a guideline as to what is accepted in society. • Without business law there would be conflict between social groups and communities. • Creating awareness about constitutional law is the foundation of all laws in a specific jurisdiction, principles of natural justice about rights and wrong rules and regulations. • Students understand law which is day to day application in any kind of Business and all the aspects of life.
		Quantitative Methods – II	<ul style="list-style-type: none"> • To make the students learn Testing of Hypothesis and application usage in Industry. • To make the students understand usage of Linear programming problem (LPP), Matrices and determinants. • To make students learn fundamental, mathematical concepts like ratio, proportion and percentage. • To make students understand



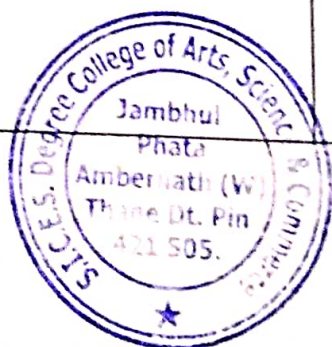
			Statistical applications in Investment management and Economic indicator.
		Financial Accounting-II	Subject provides : <ul style="list-style-type: none"> • It helps student to understand valuation of goodwill and Buyback of equity shares • To learn the terminology used & Accounting Treatment of Issue of Shares & Debentures, Redemption of Shares & Debentures . • Knowledge of Share valuation and methods to calculate share price as well as good will imparted among students • Understanding Procedure of Re-issue of shares and forfeiture of Shares
		Business Communication-II	Subject provides to: <ul style="list-style-type: none"> • Deep understanding of Communication Skill and Business Letters • Study the significant and role of Management Studies • Help to understanding Prudential norms related to Business letters • Enrich the management skills and knowledge among students with the help of traditional and modern theory of management. • Understanding of Business communication function and process.
		Foundation Course-II	<ul style="list-style-type: none"> • Students will understand the Indian society and the disparity that prevails. • Students will be sensitized and have a basic understanding of issues on human rights, the constitution and political processes. • Students will be inculcated with



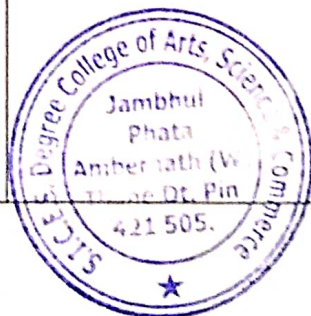
			knowledge about stress and conflict, and learn to deal with them.
	Semester III	Financial Management –I	Subject provides to: <ul style="list-style-type: none"> • Understand Concept of finance and sources of finance. • Study the goal setting technique and time value of money techniques. • Solve the practical problem related to capital budgeting. • Impart the knowledge of cost of capital and Capital structure.
		Information Technology in Banking & Insurance-I	Subject provides to: <ul style="list-style-type: none"> • Understand basic concept of Information technology and Electronic commerce. • Impart the knowledge of E-Banking in India. • Practical training session of latest Office Automation Software i.e. MS-Word and Ms-Excel. • Study the need and importance of cyber law and cyber security in banking and insurance sector in India.
		Foundation course - III (Banking Overview)	Subject provides to: <ul style="list-style-type: none"> • Enhance the knowledge of banking sectors in various areas of India. • Study the banking correspondence, Banking relationship with customer and banking ombudsmen in India. • Learn new banking technologies using in banking sectors. • Study contemporary developments in micro finance and Financial Inclusion.



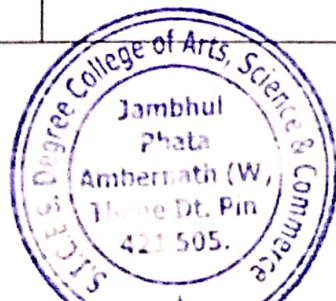
		Financial Market	<ul style="list-style-type: none"> • Describe the financial system of India. • Learner will know the participants in the financial markets. • Learner will understand the instruments of the money and bond markets. • Learner will understand the various derivative instruments.
		Management Accounting	<p>Subject provides :</p> <ul style="list-style-type: none"> • To impart basic management accounting knowledge as applicable to business • Importance of sources of capital and use of finance in business • Solve the practical problem related to working capital management • To provide the deep understanding of Ratio analysis and comparison method used in management accounting. • Objective of management accounting is to make them understand about use of statistical data and take a better and accurate decision while making an investment in company & help others.
		Direct Tax	<ul style="list-style-type: none"> • Familiarizes students to understand the tax structure in our country. • Provides practical knowledge which will be beneficial to the students in their life time. • Students know about computing tax liability of firm. • An aspect of tax liability is cleared.



		Organisational Behaviour	<ul style="list-style-type: none"> • Learner will analyze and compare different models used to explain individual behaviour in business organizations. • Learner will identify the processes used in developing communication and resolving conflicts and develops skills required in working groups. • Learner will understand the various dimension of organizational culture and its working mechanism. • Learner will illustrated with the practical application of organizational climate.
	Semester IV	Information Technology in Banking & Insurance-II	Subject provides to: <ul style="list-style-type: none"> • Study of various business models of E-Banking. • Impart the knowledge of Database Management System. • Practical training session of latest Office Automation Software i.e. Ms-PowerPoint and Internet Application. • Study the electronic payment and settlement system in India.
		Foundation course - IV (Insurance Overview)	Subject provides to: <ul style="list-style-type: none"> • Knowledge of Life insurance products with example of SBI and ICICI Product. • Understanding of General insurance product and role health Insurance present scenario. • Impart the knowledge of Home Insurance and motor Insurance in India among students. • Understanding the role of logistic management and Fire Insurance.



		Customer Relationship management	<ul style="list-style-type: none"> • Learner will understand the technique of retain costumer in the company • Implement various technological tools for data mining and also successful implementation of CRM in the Organizations • Design customer relationship management strategies by understanding customers' preferences for the long-term sustainability of the Organizations.
		Corporate and securities law	<ul style="list-style-type: none"> • To develop the skills of law refers rules and regulations that govern the way corporations operate. • Students understand how to regulate the internal affairs of the company. • To study about negotiable instrument and any form of ownership that can be tradable in market and protect their interests. • Create awareness about savings securities etc.
		Financial Management-II	Subject provides : <ul style="list-style-type: none"> • Understanding Working capital management and its components. • Knowledge and understanding the financial planning, Study of strategic financial Management. • Practical problem related to Receivable Management • To imbibe knowledge on Inventory Management, EOQ, Stock level and its Importance's.
		Cost Accounting	Subject provides : <ul style="list-style-type: none"> • To impart basic cost accounting



			<p>knowledge as applicable to banking and insurance with suitable illustrations</p> <ul style="list-style-type: none"> • Knowledge and understanding the concept and classification of cost Understanding and use of Standard costing Application of Marginal costing • Practical problem relates to Marginal Costing and Standard Costing • To Impart the knowledge of costing management tools for decision making process
		Business Economics-II	<ul style="list-style-type: none"> • Learner will get acquainted with the fundamental and modern theories of macro economies. • Learner will understand the concept of inflation and monetary policies. • Learner will understand the various constituents of fiscal policy.
	Semester V	International Banking & Finance	<p>Subject provides to:</p> <ul style="list-style-type: none"> • Understand fundamentals of International finance. • Study the International capital markets. • Enhance knowledge of Foreign Exchange Market. • Understand the risk management process and recent trends in international market.
		Research Methodology	<p>Subject provides to:</p> <ul style="list-style-type: none"> • Inculcate the research skills and analytical abilities among the students. • Study the type's research and data collection method. • Understand research



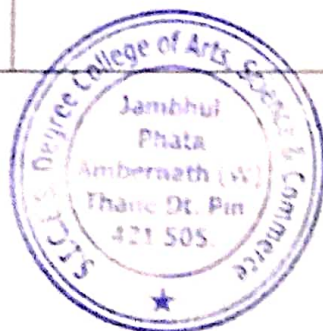
			<p>interpretation of data and testing of hypotheses using Statistical tools.</p> <ul style="list-style-type: none"> Enhance the report writing skills of students.
		Financial Reporting & Analysis	<ul style="list-style-type: none"> Learner will Read, understand, interpret and analyse general purpose financial reports of companies. Learner will read, understand, interpret and analyse financial reports of Banks and Insurance companies Demonstrate knowledge of accounting concepts and techniques; and make sound financial decisions in real world settings.
		Financial Services Management	<ul style="list-style-type: none"> To create understanding about financial system in India. To introduce various financial services such as merchant banking, securitization etc. To understand the regulatory framework of various financial services
		Auditing-I	<p>Subject provides :</p> <ul style="list-style-type: none"> Knowledge and understanding the concept of Auditing in the field of Banking and insurance. Principles, role and objectives of Auditing for the benefits of society. To inculcate the implication of concepts of auditing such as vouching verification. To provide the deep understanding of procedures followed in connection with auditing.



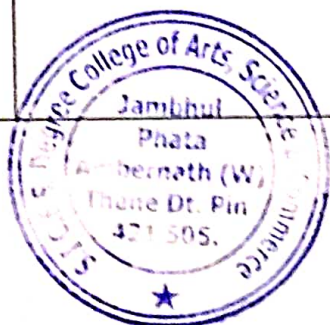
		Strategic Management	<ul style="list-style-type: none"> • Learner will get exposure of various perspectives and concepts in the field of strategic management. • Learner would be enable to understand the principles of strategic formulation, implementation and control undertaken in organizations. • Learner will develop skills for various model of strategic implementation. • Learner will be devise with different strategic approaches to manage a business successfully in a global context.
	Semester VI	Human Resource Management in Banking & Insurance	Subject provides to: <ul style="list-style-type: none"> • Understand the framework of Human resource management in banking and insurance sector. • Study the HR Procurement. • Understand HR Planning, recruitment and selection process in banking and insurance sector. • Study the training and development process in management and compensation system in banking and insurance industry.
		Central Banking	Subject provides to: <ul style="list-style-type: none"> • Study an Overview of Central Banking. • Understand the framework of policy of RBI. • In-depth Knowledge regarding banking Regulation and Supervision. • Comparative study of RBI and other countries central banks. Cyber security to protect e-banking system.



		Auditing-II	<p>Subject provides :</p> <ul style="list-style-type: none"> • Inculcate the audit skills and analytical abilities among the students. • Study the appointment, Removal, remuneration of auditor in companies including Banking & Insurance companies. • Imbibe the knowledge of types of audits as per requirement by society. • Types of audit reports, computerised auditing Knowledge also builds among students.
		Security analysis & Portfolio Management	<ul style="list-style-type: none"> • The course will help the students in taking investment decisions and in future if they pursue higher studies in this field they can become Financial Advisors as well • Learner will understand the term, which are often confronted while reading the newspaper, magazine such as beta & capital assets pricing model for better correlation practical world. • Calculate & Analyse concept of risk & return associated with various investments avenues. • Understand various model & techniques of security portfolio analysis. • Understand short term & long term investments avenues • Learner will understand various models and techniques of security and portfolio analysis.
		Turnaround Management	<ul style="list-style-type: none"> • Learner will understand the concept of sick industries and methods to overcome industrial sickness.



			<ul style="list-style-type: none"> Learner will be illustrated with various types of business scenarios viz outsourcing, networking, franchising, free-lancing, self-financing and start-ups.
		Project Work In Banking & Insurance	<ul style="list-style-type: none"> To inculcate the element of research analysis and scientific temperament among learners. To create awareness among learners regarding methodology of formulation and preparation of the project work.





SICES Degree College of Arts, Science and Commerce

Chikloli, JambhulPhata, Ambarnath (W)

Department of Commerce

Program outcomes and Course outcomes

Program : BMS

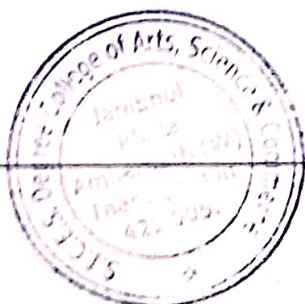
Program Outcomes:

1. The course will help the students to obtain the knowledge and skills needed to assume management positions in different organizations and helps students to understand how organizations work and are managed.
2. It provides comprehensive management training to students by way of interaction, projects, presentations, industrial visits, practical training, job orientation and placements.
3. It is a perfectly designed course for aspiring managers and budding CEOs of tomorrow.
4. Students will develop awareness of local, national and global management principles and practices.
5. Students will enhance their employability and entrepreneurial skills through which they can become successful entrepreneur.
6. This programme helps the students in becoming more focused & determined about their career.
7. The student acquire good communication skill to that will help them capable of making plans and taking appropriate decision in short term and long term aspects of business .

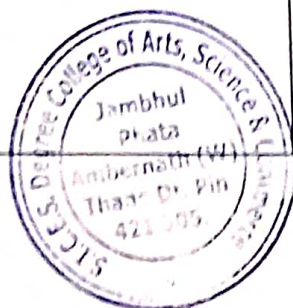
Class	Semester	Course Name	Course Outcomes
TYBMS	VI	Operations Research	1 To help students to understand operations research methodologies. 2. To help students to solve various problems practically. 3. To make students proficient in case analysis and interpretation.
		Human Resource Accounting	1. To make students understand the importance of human resource accounting and auditing concepts. 2. To inculcate the knowledge of Accounting and auditing tools with respect to Human resources.



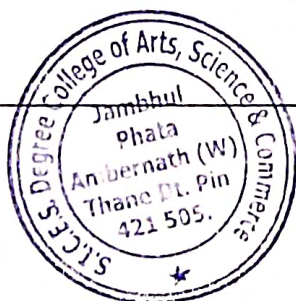
		<p>3. To well verse with process, approaches and valuation of Human at work with respect to national and international level.</p> <p>4. To find value of human at work and study the auditing procedure applied to Human resource department of organization.</p> <p>5. To study the challenges' faced for implication of human resource accounting and auditing.</p>
	Project Management	<p>1.The objective of this course is to familiarize the learners with the fundamental aspects of various issues associated with Project Management.</p> <p>2. To give a comprehensive overview of Project Management as a separate area of Management.</p> <p>3. To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of Project Management.</p>
	Indirect Tax	<p>1.Enables learners to acquire the knowledge of Goods and Services.</p> <p>2. Explores the process of Registration, place and value of supply and computation of tax liability.</p> <p>3. This covers the system of GST, its documentation, how to calculate GST, collection process of GST, registration of GST.</p>
	Brand Management	<p>1.To Define and Examine brand concepts used by Companies .</p> <p>2. To provide the appropriate theories, models, and other tools to make better branding decisions.</p> <p>3. To Formulate effective branding strategies for both consumer and business products/services.</p> <p>4. To offer diverse learning opportunities to develop analytical skills.</p>
	Retail Management	<p>1.Students will Familiarize with details retail managements concepts & operations.</p> <p>2.Learner will understand various legal & ethical aspects of retail management</p> <p>3.Learner will understand emerging trends in retail management</p>



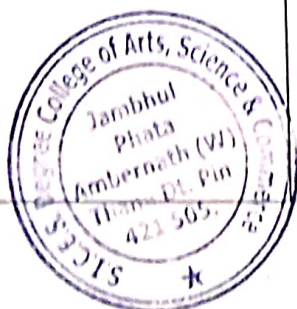
	International Marketing	<ol style="list-style-type: none"> 1. Understand the framework of International Marketing. 2. Study the International Marketing and there entries in International market. 3. Understand International Marketing and there barrier.
	Media Planning Management	<ol style="list-style-type: none"> 1. The learner understands the role of a Media Planner. 2. The learner gets knowledge about Client brief: decoding expectations of the client, Setting campaign. 3. The learner learns the online opportunities and challenges in this regard.
	HRM in Global Perspective	<ol style="list-style-type: none"> 1. Learner will get understand global prospective of IIRM. 2. Learner will understand the concepts of cross culture and their implications. 3. Learner will get to know about the emerging trends in IIRM.
	Organization Development	<ol style="list-style-type: none"> 1. To understand the concept of Organisational Development and its Relevance in the organization. 2. To Study the Issues and Challenges of OD while undergoing Changes. 3. To get an Understanding of Phases of OD. 4. To Study the OD Intervention to meet the Challenges faced in the Organization. 5. To get an Insight into Ethical Issues in OD.
	Strategic Financial Management	<ol style="list-style-type: none"> 1. Comprehend fundamental aspects of corporate finance management . 2. Have a comprehensive overview of corporate governance and assurance with respect to finance sector. 3. Understand the basic concept, functions of techniques of financial management such as dividend policy, advance techniques of capital budgeting



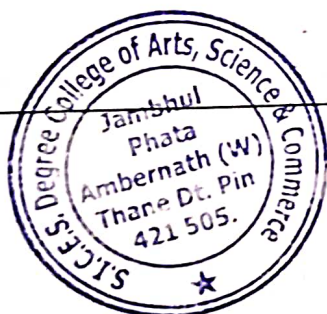
		HRM in service Sector management	<ol style="list-style-type: none"> 1.To make the learner understand the service sector, its importance in the concern of today's business. 2.The learner gets a deep knowledge about the management of services/service sector. 3. The learner can organize a start up in this sector. 4.The learner understands the role of HR Manager in this regard. 5.The learner can become a good HR by learning the subject.
	V	Logistics & Supply Chain Management	<ol style="list-style-type: none"> 1.Understand fundamentals of Logistic. 2.Understanding need of Supply Chain Management. 3.Understanding the role Logistic and Supply Chain Management. 4.Role of Material Handling and packaging.
		Corporate Communication & Public Relations	<ol style="list-style-type: none"> 1.Learner will understand the basics concepts of corporate communication and public relation. 2.Learner will get used to various theories of public relations. 3. Learner will get known about the emerging trends and technologies in public relations.
		Investment Analysis & Portfolio Management	<ol style="list-style-type: none"> 1.Provides knowledge of Investment Avenues. 2. Provides Knowledge of capital Market. 3. Enables a financial expert determine the value of assets in a portfolio. 4. Creates understanding of evaluation of securities with the help of certain fundamental business factors
		Direct Tax	<ol style="list-style-type: none"> 1.Creates an understanding of the basic concept of Direct Tax and basic definition related to Direct Tax and assessee. 2.Provides learners an idea of the process and techniques of calculation of taxability and tax



			<p>liability.</p> <p>3. Familiarizes students to understand the tax structure in our country.</p> <p>4. Provides practical knowledge which will be beneficial to the students in their life time.</p>
		Wealth Management	<p>1.To provide an overview of various aspects related to wealth management.</p> <p>2. To study the relevance and importance of Insurance in wealth management.</p> <p>3. To acquaint the learners with issues related to taxation in wealth management.</p> <p>4. To understand various components of retirement planning.</p>
		Financial Accounting	<p>1.Prepare statement of underwriter's liability.</p> <p>2.Liquidate joint to stock company as per procedure.</p> <p>3.Apply all legal provisions regarding calculation of buyback.</p>
		Service Marketing	<p>1.To Define and Examine service concepts used by service industries.</p> <p>2.To provide the appropriate theories, models, and other tools to make better decisions in Services.</p> <p>3.To offer diverse learning opportunities to develop analytical skills.</p> <p>4.To understand Demand and capacity management and productivity issues in Services.</p>
		Strategic Marketing Management	<p>1.Develop and critically assess marketing strategies</p> <p>2.Analyse marketing opportunities and threats</p> <p>3.Discuss strategic concepts and theories and their application in marketing environments.</p>



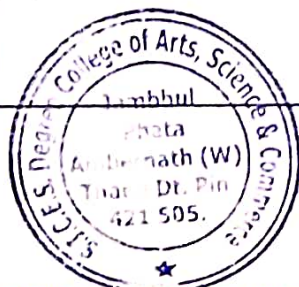
Sales & Distribution Management	<p>1.To develop understanding of the sales and distribution processes in organization.</p> <p>2. To impart the knowledge of Sales Forecasting and sales departmental activities.</p> <p>3. To study the related activities of organization towards sales department.</p> <p>4.To get familiarized with concept, approaches and the practical aspects of the key decision making variables in sales management and distribution channel management</p>
Customer Relationship Management	<p>1.Understand Concept of Customer Relationship management.</p> <p>2.Study the goal setting technique Customer Relationship management.</p> <p>3.Study the significant and role of Customer.</p>
Finance for HR Professionals & Compensation Management	<p>1.Understand the various dimensions of Compensation Management used by the companies to attract, retain, motivate and to reward employee performance.</p> <p>2. Familiarize the role of various bodies involved in Compensation Management.</p>
Strategic Human Resource Management & HR policies	<p>1.Integrated perspective on role of HRM in modern business.</p> <p>2. Ability to plan human resources and implement techniques of job design.</p> <p>3. Ability to handle employee issues and evaluate the new trends in HRM.</p>
Performance Management & Career Planning	<p>1.Enhance their skills in setting clear expectations and objectively measuring individual performance using objectives and competencies as key measures.</p> <p>2. Identify and practice some performance management strategies and techniques to enhance the performance and motivation in under-performing and high performing team members.</p>



		Industrial Relations	<p>1. Define labor relations, industrial relations systems, and participatory processes at work.</p> <p>2. Distinguish the procedure concerning worker participation and participatory institutions and instruments of trade union representation.</p>
SYBMS	IV	Financial Institution & Market	<p>1. Learner will understand the financial system of India.</p> <p>2. Outline the participants in the financial markets.</p> <p>3. Learner will understand the instruments of the money and bond markets.</p> <p>4. Learner will understand the various derivative instruments.</p> <p>5. The course will help the students in taking investment decisions and in future if they pursue higher studies in this field they can become Financial Advisors as well.</p>
		Training & Development in HRM	<p>1. Understand fundamentals of Training and Development.</p> <p>2. Understanding need of Training and Development</p> <p>3. Impart the knowledge of Human Resource Management</p> <p>4. Understanding the role of Training and Development.</p> <p>5. Understand the framework of Human resource management</p>
		Event Marketing	<p>1. To understand basic concepts and meaning of Event Marketing</p> <p>2. To impart knowledge about categories of events.</p> <p>3. To make student understand concept of targeting, segmenting and positioning in concern of Event Marketing</p> <p>4. To familiarize students about trends and challenges in Event Marketing.</p>
		Business Research Methods	<p>1. Learner will depicts the basic framework of research process.</p> <p>2. Learner will be able to understand of various research design, hypothesis and techniques.</p>



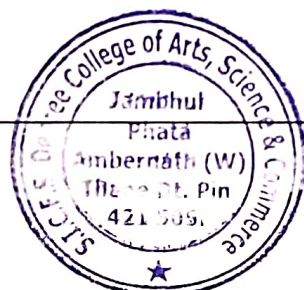
		<p>3.Learner will be helped to understand about getting knowledge about the types of data; classification of data collection, how to process the data, analysis of the data and interpretation of the data.</p> <p>4.Learner will be able to create a sense of way how to write report, interpretation and submission of data/ project.</p>
	IT in Business Management-II	<p>1.Analyse how information technology impacts a firm.</p> <p>2.Interpret how to use information technology to solve business problems</p> <p>3.Describe the role of information technology and information systems in business</p> <p>4.Learner will understand the working of ERP software.</p> <p>5.Learner will get knowledge of cloud compounding</p>
	Production & Total Quality Management	<p>1.Study of various business models and Production.</p> <p>2.Understand Concept of Production and Total Quality Management.</p> <p>3.Study the goal setting technique of Production.</p> <p>4.Study the significant and role of Production and Total Quality Management</p>
	Business Economic	<p>1.Learner will get acquainted with the fundamental and modern theories of macroeconomies.</p> <p>2..Learner will understand the concept of inflation and monetary policies.</p> <p>3.Learner will understand the various constituents of fiscal policy.</p>
	Human Resource Planning & Information System	<p>1.Understand the core issues involved in human resource planning (HRP) and forecasting.</p> <p>2.Explores different factors that managers should consider while making decisions in developing their human resources plans.</p>



		<p>3.To develop necessary skill set for application of various HR issues.</p> <p>4.To analyse the strategic issues and strategies required to select and develop manpower resources.</p>
	Audit	<p>1.To enable students get acquaint with the various concepts of auditing.</p> <p>2. To ensure students understand and practice the various techniques of auditing while managing their finances.</p> <p>3. To understand the concept of Vouching and Verification.</p>
	Rural Marketing	<p>1.Know the agriculture & rural marketing environment so that they understand consumer & marketing characteristics.</p> <p>2. Understand the emerging challenges in upcoming global economic scenarios.</p> <p>3.Ability to frame marketing strategies with 4Ps model for Rural Markets.</p> <p>4.To understand behaviour of rural consumers.</p>
	Ethics & Governance	<p>1.Understand the importance and application of ethics in modern business practices.</p> <p>2. Through case studies, students will develop a moral and ethical perspective of looking at business problems.</p> <p>3. Understand emerging trends and growing importance of good governance and CSR by organizations.</p> <p>4.Understand the significance of ethics & ethical practices in businesses which are indispensable for progress of a country.</p>
III	Environmental Management	<p>1.To make students aware of Environment, Biogeochemical cycles and Resources available in Environment, it's types and exploitation.</p> <p>2) To make students to know about Environment degradation such as pollution, global warming and also about disaster and waste management.</p> <p>3) To make students to gain knowledge regarding</p>



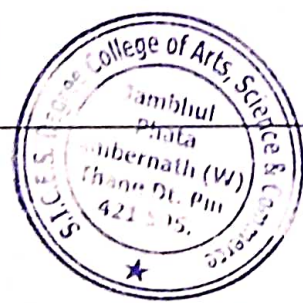
		<p>sustainability and role of business and also various Act's such as water, air wildlife.</p> <p>4) To make students to explore their knowledge towards innovations in business and also to make meaningful use of non- conventional energy sources and to go through innovative business models.</p>
	Business Planning & Entrepreneurial Management	<p>1.Understand Concept of Business planning</p> <p>2.Study the goal setting technique Business planning and Entrepreneur Management .</p> <p>3.Study the significant and role of Entrepreneur Study the Types of Entrepreneurs.</p>
	Accounting for Managerial Decisions	<p>1.To acquaint management learners with basic accounting fundamentals.</p> <p>2.To develop financial analysis skills among learners.</p> <p>3. The course aims at explaining the core concepts of business finance and its importance in managing a business</p>
	Strategic Management	<p>1.Learner will get exposure of various perspectives and concepts in the field of strategic management.</p> <p>2.Learner would be enable to understand the principles of strategic formulation, implementation and control undertaken in organizations.</p> <p>3.Learner will develop skills for various model of strategic implementation.</p>
	IT in Business Management	<p>1.The learner will understand the importance of Information technology In business</p> <p>2.The learners will become computer literate and will be able to access, create, save and manage documents, spread sheets, make effective presentations, emails and use the internet effectively.</p> <p>3.The learner will gain a comprehensive understanding of the E-Commerce landscape, current and emerging business models and the technology and infrastructure underpinnings of the business.</p> <p>4.The learner will be able to develop an understanding on how internet can help in growth of the business.</p>



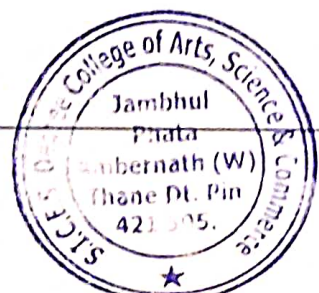
			<p>5.The learner will gain an understanding on the importance of security, privacy and ethical issues as they relate to E-Commerce.</p>
		Corporate Finance	<p>1.The objectives of develop a conceptual frame work of finance function and to acquaint the participants with the tool's techniques and process of financial management in the realm of financial decision making.</p> <p>2. The course aims at explaining the core concepts of corporate finance and its importance in managing a business.</p> <p>3. To providing understanding of nature, importance, structure of corporate finance related areas and to impart knowledge regarding source of finance for a business.</p>
		Basis Of Financial services	<p>1.Learner will understand the instruments of the money and bond markets.</p> <p>2.Outline the participants in the financial markets.</p> <p>3.The course will help the students in taking investment decisions and in future if they pursue higher studies in this field they can become Financial Advisors as well.</p> <p>4.How mutual funds operate.</p> <p>5.Various types of Mutual fund.</p> <p>6.Various types of Insurance.</p>
		Consumer Behaviour	<p>1.Develop an understanding about the consumer decision making process and its application in the marketing function of a firm.</p> <p>2.Have a basic knowledge about the issues & dimensions of consumer behaviour.</p> <p>3.To develop the skills of understanding & analyzing consumer information & using it to create marketing oriented strategies.</p> <p>4. To identify different consumer decision making models.</p>



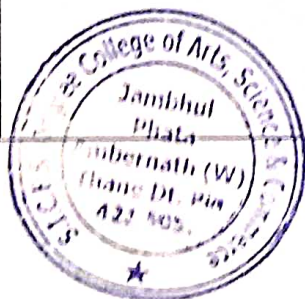
		Motivation & Leadership	<p>1.To gain knowledge of the leadership strategies for motivating people and changing organizations.</p> <p>2. To study how leaders, facilitate group development & problem solving.</p> <p>3.To acquaint the students about the practical approaches to Motivation & leadership & its application in the Indian Context.</p> <p>4. To study how to motivate the workforce working in the firm.</p>
		Advertising	<p>1.Learner will be able to understanding the overall role advertising plays in the business culture.</p> <p>2.Learner will understand and identify the different mode of advertising and their planning strategies.</p> <p>3.Learner will identify and discuss a range of creative strategies in advertising.</p> <p>4.Learner will be able illustrate the budget require to full fill the campaign for the client.</p>
		Recruitment & Selection	<p>1.It helps to understand the process of selection the right candidate for the right job.</p> <p>2. It also helps to understand the requirements of job interview process and policy is higher the best possible candidates for organisation.</p> <p>3. It also gives an opportunity to develop a range of skills and explore to achieve its goal.</p>
FYBMS	II	Business Environment	<p>1.Learner will understand the concepts of business environment and their practicality in the day to day business atmosphere.</p> <p>2.Learner will study and examine how different factors and trends related and their implication on business venture.</p> <p>3.Learner will be able to conduct a business analysis of the micro and macro level environment.</p>
		Industrial Law	<p>1.To develop industrial skills among students.</p> <p>2. Students should be able to understand how to tackle with unfair labour practices and provides for the rights privileges obligations and responsibilities.</p>



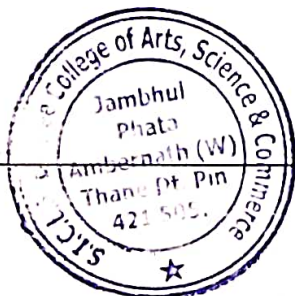
		3. It helps to regulate individual and collective employment relations
	Foundation course-II	<p>1. Students will understand the Indian society and the disparity that prevails.</p> <p>2. Students will be sensitized and have a basic understanding of issues on human rights, the constitution and political processes.</p> <p>3. Students will be inculcated with knowledge about stress and conflict, and learn to deal with them.</p>
	Business Communication-II	<p>1. Deep understanding of Communication Skill and Business Letters</p> <p>2. Study the significant and role of Management Studies.</p> <p>3. Help to understanding Prudential norms related to Business letters.</p> <p>4. Enrich the management skills and knowledge among students with the help of traditional and modern theory of management.</p> <p>5. Understanding of Business communication function and process.</p>
	Principles Of Management	<p>1. Learner will be able to understand the basic concepts of management and their managerial effectiveness.</p> <p>2. Learner will identify the different roles which are fulfilled for managerial activities.</p> <p>3. Learner will know the various theories of management and philosophies and determine the most effective action to take in specific situations.</p> <p>4. Learner will evaluate the global context for taking managerial actions of planning, organizing, directing, co-ordination and controlling.</p>
	Principles of Marketing	<p>1. Enrich the management skills and knowledge among students with the help of traditional and modern theory of management.</p> <p>2. Understanding of marketing function and process.</p>



			3. Study the organizational structures and importance in each level of management and marketing idea.
		Business Mathematics	<p>1. To understand the various concepts of financial mathematics such as simple interest, compound interest, and annuity, permutation and combination.</p> <p>2. To understand the concept of calculus such as there are waiters and application of derivatives.</p> <p>3. To understand the concept of numerical analysis such as interpolation.</p>
I		Introduction to Financial Accounts	<p>1. Record transactions in the appropriate ledger accounts using the double-entry bookkeeping system</p> <p>2. Understand and apply the essential numerical skills required for bookkeeping and accounting</p> <p>3. Understand and explain the relationship between the accounting equation and double-entry bookkeeping</p> <p>4. Prepare a trial balance, balance sheet and a profit and loss account.</p> <p>5. Deal with Bank reconciliation statements.</p>
		Business Law	<p>1. Provides a brief idea about the framework of Indian business laws.</p> <p>2. Enables the students to understand the corporate governance system, including the law related to agency.</p> <p>3. Imparts knowledge about strong legal system of any society's well-being, rules & regulations.</p> <p>4. Develop an understanding of law which has day to day application in any kind of business.</p>
		Business Statistics	<p>1. To understand the basics of statistics and organizing of data in presentation format.</p> <p>2. To understand the various tools used in statistics.</p> <p>3. To understand the knowledge of probability and the standard statistical distribution.</p> <p>4. To understand the concept of decision theory by using various methods.</p>



		Business Communication-I	<p>1.Deep understanding of Communication Skill and Business .</p> <p>2.Study the significant and role of Management Studies and Business skills and management system.</p> <p>3.Help to understanding Prudential norms related to Business communication.</p> <p>4.Enrich the management skills and knowledge among students with the help of traditional and modern theory of management.</p> <p>5.Understanding of management function and process.</p>
		Foundation Of Human Skills	<p>1.Understand the basic behaviour pattern of Human, which is the important resource of business.</p> <p>2.Deal & negotiate with different kinds of human nature with greater awareness of the human behaviour.</p> <p>3.To overcome the stress and conflicts in life and to balance the work life.</p> <p>4. To face the organization politics in today's world.</p> <p>5. To develop team building and group behaviour in the organization and in the society.</p>
		Business Economics-I	<p>1.Learner will analyse the basic concepts of business economics like opportunity cost principle, incremental and marginal concepts.</p> <p>2.Learner will be able to understand the concepts of demand and supply and their analysis in business operations.</p> <p>3.Learner will analyse and interpret the operations of markets under varying competitive conditions.</p> <p>4.Learner will develop a pricing practices that prevails under different competitive market conditions.</p>
		Foundation Course-I	<p>1. Creates understanding of multi-lingual, multi-religious, multi-cultural nature & political nature of Indian society.</p> <p>2.Creates understanding of the Indian Constitution & the disparity in Indian society</p>





S.I.C.E. Society's

Degree College of Arts, Science & Commerce, Ambarnath

(W.) JambhulPhata, Chikhloli, Ambarnath (W)-421505

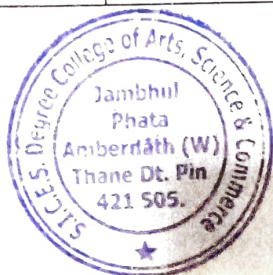
(Affiliated to University of Mumbai)

BA (BACHELOR OF ARTS)

Program Specific Outcomes

1. The Students acquire knowledge in the field of social sciences, Literature and humanities which make them sensitive and sensible enough.
2. The programme also empowers the graduates to appear for various competitive examination or choose the post graduate programme of their choice.
3. Program enables the students to acquire the knowledge with human values forming the base to deal with various problems in life with courage and humanity.
4. It helps the student to become responsible citizen

NAME OF PROGRAM	COURSE - SEMESTER	PAPER NAME/ SUBJECT NAME	COURSE OUTCOMES
(BA: BACHELOR OF ARTS) HISTORY	Semester I	History I	Subject provides to: <ul style="list-style-type: none">• The student will understand how the British Power established itself in India• The student will understand the contribution of the Moderates, Extremists and Revolutionaries in the struggle for independence.• They will also understand the important movement and Acts



			passed during the period from 1857 to 1947.
		Sociology I	Subject provides to: <ul style="list-style-type: none"> • To understand the total context of emergence of sociology • To introduce basic sociological concepts, Subject matter and perspectives to sociology. • To Familiarize the student with the new avenues in sociology. • Will be able to analysis of the relationship among the social institutions.
		Hindi I	Subject provides to: <ul style="list-style-type: none"> • To develop Hindi reading Linguistic comprehension of student. • To understand the basic form of story and poetry. • They get information about well-known writer like Munshi Premchand. • To learn the basic grammar of Hindi like Sangya, Sarvanaam etc.
	Semester II	History I	Subject provides to: <ul style="list-style-type: none"> • Understand the changes and reformist in Education, Economic and Social. • Study the role and importance's of women in National Movement. • Study the how British are drain the Indian wealth to England.
		Sociology I	Subject provides to: <ul style="list-style-type: none"> • Understand the process and significances of socialization. • To prepare the student for professional roles of correctional agents in agencies of criminal justices' administration. • Understanding the concept of Leisure Tourism and to learn How



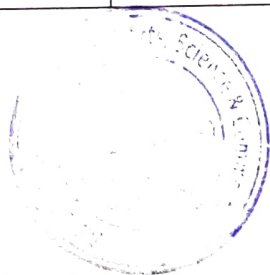
			<p>tourism has create job especially for rural youths.</p> <ul style="list-style-type: none"> • To create awareness among the students about environment and how protect.
		Hindi I	<p>Subject provides to:</p> <ul style="list-style-type: none"> • To Familiarizing the basic writing in Hindi. • Understand the Nationalistic Values through the study of Hindi Story and Poem. • Get acquainted with the social-political contexts of various Hindi writers • Acquire skills of drafting letter in Hindi.
BA English Literature	FYBA-I & II	Communication Skills in English	<ul style="list-style-type: none"> • To enhance the learners' communication skills by giving adequate exposure in reading, writing, listening and speaking skills and the related sub-skills • To help the learners recognize and operate in various styles and registers in English • To impart better writing skills by sensitizing the learners to the dynamics of effective writing • 4) To build up the learners' confidence in oral and interpersonal communication by reinforcing the basics of pronunciation
	FYBA-I & II	Introduction to Literature.	<ul style="list-style-type: none"> • To show proficiency with the specialized vocabulary, historical context, and breadth of the field of literary studies. • 2) To understand a wide range of critical perspectives on literature;



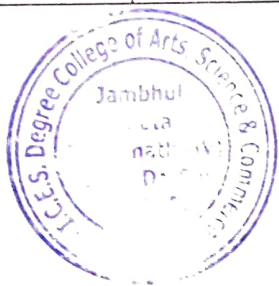
			<ul style="list-style-type: none"> • 3) To demonstrate an ability to synthesize ideas from primary and/or secondary sources. • 4) To evaluate the aesthetic and didactic aspects of a text; • 5) To develop and express your own interpretation of individual pieces of literature, both through in-class discussion and through written interpretations
BA HISTORY	SYBA	History III	<p>Subject provides to:</p> <ul style="list-style-type: none"> • To learn the archaeological and literary sources available for ancient Indian history • Understand Social and Religious life of Indus Valley Civilization. • Understand the reason of decline of Indus Valley Civilization. • The student will understand how Jainism and Buddhism are rise in India after 6th century B.C
		Sociology II	<p>Subject provides to:</p> <ul style="list-style-type: none"> • To familiarize the students to major perspectives and works of some Indian Sociologists. • To familiarize the students with research tradition in Indian Sociology. • To Acquaint student with the Emerging Issues in Indian Society.
		Sociology III	<p>Subject provides to:</p> <ul style="list-style-type: none"> • Understand the contemporary issues in Indian society. • Understand the importance of population studies for policy and development. • To familiarize the students to



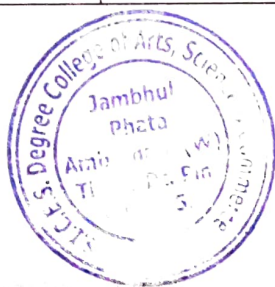
			<p>different social issues and problems.</p> <ul style="list-style-type: none"> • To acquaint the students to the changing nature of social problems in India. • To acquaint the students with recent trends in criminology, changing profile of crime and criminals.
	Semester IV	History II	<p>Subject provides to:</p> <ul style="list-style-type: none"> • To understand the inter war period. How the Kemal pasha and Reza Shah are modernizing their country on Western Ideology. • To understand the how the Dictatorships are rise in Europe especially Italy and Germany. • To understand the how the World War II has Strat. • To understand the efforts foe peace in world by UNO. • Understanding the nationalist movement in Asia
		History III	<ul style="list-style-type: none"> • Understand the dynasties rose and downfall in ancient India. • To understand the Classical Age of Gupta period. • Understanding rise of Rajput kingdom in Northern India. • Understand the how Indian culture are spread in South East Asian Country.
		Sociology II	<ul style="list-style-type: none"> • To introduce various theoretical perspectives in Indian Society that have shaped the concept of development. • To help student to gain an insight into emerging issues and contemporary debates within the development discourse.
		Sociology III	<ul style="list-style-type: none"> • To introduce student to the relevant and varied possibilities for future



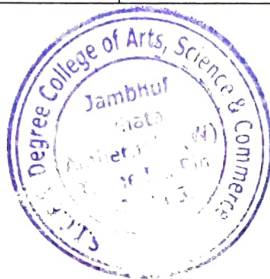
			<p>studies in sociology.</p> <ul style="list-style-type: none"> • To aware the student about the new vibrant fields in sociology • Understanding of struggle and survival in today's competitive scenario.
BA English Literature	SYBA-III & IV	Paper- II Indian Literature	<ul style="list-style-type: none"> • To introduce learners to the uniqueness of Indian Literature in English • 2. To acquaint learners to the pluralistic dimensions of Indian Literature in English • 3. To help them understand the different genres of Indian Literature in English • To familiarise learners with different perspectives of approaching this literature • 5. To make learners aware of prominent Indian Writers in English
	SYBA-III & IV	Paper-III American Literature	<ul style="list-style-type: none"> • To acquaint the learners of literature with the various genres and literary terms of twentieth century American Literature • To sensitize them to the themes and styles of American Literature 3. • 3) To introduce them to the socio-cultural milieu of twentieth century America through literary texts • To enhance their understanding of American, African American and Multicultural sensibilities by introducing them to the literary works representing them. • 5. To facilitate cross-cultural



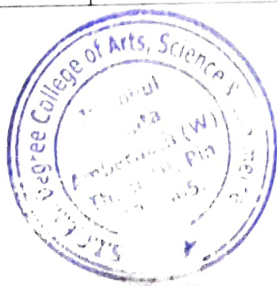
			<p>perspectives and discussions on American Literature</p>
BA HISTORY		History V History of Modern Maharashtra (1818CE-1960CE)	<ul style="list-style-type: none"> • Student will learn the history of Maharashtra from the end of peshwa rule to the establishment of separate state called Maharashtra. • Understand the socio, religious and economic development during 19th and 20th century in Maharashtra. • To understand the movement that led to the formation of Maharashtra.
		History VI- Introduction to Archaeology	<ul style="list-style-type: none"> • To understand the basic of archaeology as a practical science. • To encourage the student to choose archaeology as a profession. • The student is learning how the archaeology are help to reconstructed history with the help coins, monuments and epigraphy.
		History VII- History of Maratha (1630CE-1707CE)	<ul style="list-style-type: none"> • Understanding of reginal history of Maharashtra. • To familiarize with the literary sources of the history of Maratha. • To understand the forces leading to the establishment of Maratha power under Chhatrapati Shivaji Maharaj. • To understand the relationship between Marathas and the Mughals.
		History VIII- History of Contemporary World (1945CE-2000CE)	<ul style="list-style-type: none"> • To understand the major events of post-world war II period. • Understand the significances of these events. • Students will able to analyse the present events with the past. • Understanding the concept of cold war with special reference with Asian Countries.
		History IX- Introduction to Heritage Tourism	<ul style="list-style-type: none"> • To develop an understanding of Heritage Tourism Among students. • To develop conscios about their rich heritage in India.



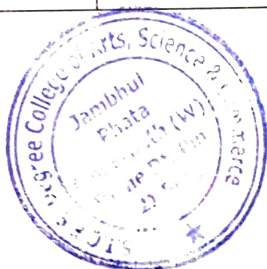
			<ul style="list-style-type: none"> • Understand the different upcoming branches of Tourism. • Students will be able to find out career options after studying this Heritage Tourism.
	Semester VI	History IV History of Medieval India (1526CE-1707CE)	<ul style="list-style-type: none"> • To understand the history of India how the Mughal rule are the emergence in India. • Understand the religious tolerance under Mughal Period. • Nationalism develops among the students by studying rise of Maratha power.
		History V History of Contemporary India (1947CE-2000CE)	<ul style="list-style-type: none"> • To understand How the Indian government are making the Indian Constitution and the Integration and Reorganization of Indian States. • Understanding the political development in India after Independence. • Understanding the socio-economic changes and progress in sciences and technology in India.
		History VI Introduction to Museology and Archival Science	<ul style="list-style-type: none"> • To understand the Museology as an allied branch of history. • Awareness about career as librarian after passing graduation. They are entitled to admissions to B. Lib, M. Lib and NET/SET. • Understand the student why the archival science is important for history. • The course encourage the student to visit modern Archives sites and use internet and digital libraries as modern tool of usage.
		History VII- History of Maratha (1707CE-1818CE)	<ul style="list-style-type: none"> • Understand the processes that led to the expansion of the Maratha power in the 18th century. • Understand the forces that led to the fall of the Maratha power and how the European are rise their political



			<ul style="list-style-type: none"> power over Maharashtra. Understanding the Administration of Peshwa.
		History VIII History of Asia (1945CE-2000CE)	<ul style="list-style-type: none"> Student demonstrated knowledge of political history of Asia. Understand the how to cope up with the challenges of globalization. Student gained knowledge about multi-casual explanations about development and deferment movement in Asia. Understand the foreign policy of U.S.A and U.S.S.R. To understand the how the Japan was reconstructed by USA after the end of WWII.
		History IX Heritage Tourism in Maharashtra	<ul style="list-style-type: none"> Understanding the culture Heritage of Maharashtra. To learn the various resources for studying for Heritage Tourism in Maharashtra. Students are acquainting with the relevance and scope of Heritage Tourism.
BA English Literature	TYBA-V & VI	Paper-IV 16th to 18th Century English Literature	<ul style="list-style-type: none"> To understand the distinctive features of English literature of the 16th, 17th and 18th centuries. To comprehend how background influences shaped the writer's thinking. To recognize and appreciate the literary masters who dominated the scene. 4) To grasp the different writing styles that each age adopted.
	TYBA-V & VI	Paper-V Literary Criticism	<ul style="list-style-type: none"> use some important critical terms become aware the nature and



			<p>function of literature and criticism</p> <ul style="list-style-type: none"> • To impart the technique of close reading of literary texts • To understand the various literary theories and critical approaches • 5) To be familiar with the tenets of practical Criticism.
	TYBA-V & VI	GRAMMAR AND THE ART OF WRITING	<ul style="list-style-type: none"> • Gain a basic understanding of phonetics, morphology and word transformation • Have improved speaking skills. • Have developed adequate knowledge of the rules of grammar, grammatical analysis and sentence transformation • 4. Write effectively in various domains.
	TYBA-V & VI	19 th Century English Literature	<ul style="list-style-type: none"> • To view literary works in their dynamic interface with the background. • To understand the literature of the 19th century as a complex outcome of artistic, intellectual and socio-political cross-currents • To appreciate poetry as mirroring private personality, protest and subsequently, public concerns. • To view the development of the Victorian Novel as informed by Victorian morality as well as by larger democratic processes. • 5. To contextualize the impulses



			<p>behind the significant emergence of women writing in the 19th century</p>
	TYBA-V & VI	20th Century British Literature	<ul style="list-style-type: none"> • Students will be equipped with comprehensive understanding of literary genres, trends and movements in 20th Century British Literature; thereby, enabling them to understand the valuable co-relation between the sociocultural, economical and historical contexts; behind the literary production. • 2) Students will acquire the discipline to become reflective and imaginative thinkers through a close, critical and analytical reading of the prescribed texts.
	TYBA-V & VI	Drama and Theatre	<ul style="list-style-type: none"> • Analyse the social and artistic movements that have shaped theatre and drama. • Apply discipline-specific skills to the creation of drama. • Analyse the difference between the concepts of drama and theatre. • 4) Demonstrate knowledge of the history of drama and theatre as a literature and performing art.

