



Sahyadri Bahujan Vidya Prasarak Samaj's
**Sahakar Maharshi Bhausaheb Santuji Thorat College of
Arts, Science & Commerce Sangamner**

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**2.6.2 Attainment of Programme outcomes and course outcomes
are evaluated by the institution.**

Programme Outcomes (POs), And Course Outcomes (COs)

(2022-2023)

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S. E.V.P Samaj's
Sahakar Maharshi Bhausaheb Santuji Thorat Arts, Commerce & Science College
, Sangamner

DEPARTMENT OF CHEMISTRY

Program Outcome

Sr. No.	Program	Program Outcomes
1	B.Sc.	Students have working knowledge of the main area of the chemistry
2	M.Sc.	1. Students have an advance knowledge of chemistry 2. Students establish a sound foundation on which further learning in chemistry can build

Program Specific Outcome

Sr.No.	Program	Program Specific Outcomes
1	B.Sc.	1. Students should possess critical thinking and problem solving ability 2. Students should able to perform and understand the measure concepts theoretical principals and experimental finding in experimental chemistry
2	M.Sc.	1. To aquaria the basic told needed to carry out independent chemical research 2. to become proficient in their specialized area of chemistry and successful complete an advance research projects

Course Outcomes : Course Offered

Sr. No.	Course	Semester	Paper Name & Code	Course Outcomes
1	F.Y.B.Sc.	Sem -I	CH- 101: Physical Chemistry	1. Chemical Energetic 1. Students will be able to apply thermodynamic principles to physical and chemical process 2. Calculations of enthalpy, Bond energy, Bond dissociation energy, resonance energy 3. Variation of enthalpy with temperature -Kirchhoff's equation 4. Third law of thermodynamic and its applications 5. Chemical Equilibrium 6. Relation between Free energy and equilibrium and factors affecting on equilibrium constant. 7. Exergonic and endergonic reaction

				8. Gas equilibrium, equilibrium constant and molecular interpretation of equilibrium constant 9. Van't Haff equation and its application 10. Ionic equilibria 11. Concept to ionization process occurred in acids, bases and pH scale 12. Related concepts such as Common ion effect hydrolysis constant, ionic product, solubility product 13. Degree of hydrolysis and pH for different salts , buffer solutions
			CH- 102: Organic Chemistry	1. The students are expected to understand the fundamentals, principles, and recent developments in the subject area. 2. It is expected to inspire and boost interest of the students towards chemistry as themain subject. 3. To familiarize with current and recent developments in Chemistry. 4. To create foundation for research and development in Chemistry.
			CH- 103: Chemistry Practical Course I	1. Importance of chemical safety and Lab safety while performing experiments in laboratory 2. Determination of thermochemical parameters and related concepts 3. Techniques of pH measurements 4. Preparation of buffer solutions 5. Elemental analysis of organic compounds (non instrumental) 6. Chromatographic Techniques for separation of constituents of mixtures.
		Sem – II	CH-201: Inorganic Chemistry	1. Atomic Structure 2. Various theories and principles applied to revel atomic structure 3. Origin of quantum mechanics and its need to understand structure of hydrogen atom 4. Schrodinger equation for hydrogen atom 5. Radial and angular part of hydrogenic wave functions 6. Significance of quantum numbers 7. Shapes of orbitals
			CH- 202: Analytical Chemistry	1. Introduction to Analytical Chemistry 2. Analytical Chemistry –branch of chemistry 3. Perspectives of analytical Chemistry 4. analytical problems 5. Calculations used in Analytical Chemistry 6. Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution 7. Relation between molecular formula and empirical formula

			<p>8. Stoichiometric calculation</p> <p>9. Define term mole, millimole, molar concentration, molar equilibrium concentration and Percent Concentration.</p> <p>10. SI units, distinction between mass and weight</p> <p>11. Units such as parts per million, parts per billion, parts per thousand, solution-dilutant volume ratio, function density and specific gravity of solutions.</p> <p>12 Qualitative Analysis of Organic Compounds Basics of type determination, characteristic tests and classifications, reactions of different functional groups.</p> <p>13. Separation of binary mixtures and analysis</p> <p>14. Elemental analysis -Detection of nitrogen, sulfur, halogen and phosphorous by Lassaigne's test.</p> <p>15. Purification techniques for organic compounds.</p> <p>16. Chromatographic Techniques – Paper and Thin layer Chromatography</p> <p>17. Basics of chromatography and types of chromatography</p> <p>18. Theoretical background for Paper and Thin Layer Chromatography</p> <p>19. pH metry</p> <p>20. pH meter and electrodes for pH measurement</p> <p>21. Measurement of pH</p> <p>22. Working of pH meter</p> <p>23. Applications of pH meter</p>
			<p>CH- 203: Chemistry Practical – II</p> <p>1. Inorganic Estimations using volumetric analysis</p> <p>2. Synthesis of Inorganic compounds</p> <p>3. Analysis of commercial products</p> <p>4. Purification of organic compounds</p> <p>5. Preparations and mechanism of reactions involved</p>
2	S.Y.B.Sc.	SEM – III	<p>CH-301 : Physical and Analytical Chemistry (2 credit, 36 L)</p> <p>1. Define / Explain concept of kinetics, terms used, rate laws, molecularity, order.</p> <p>2. Explain factors affecting rate of reaction.</p> <p>3. Explain / discuss / derive integrated rate laws, characteristics, expression for half-life and examples of zero order, first order, and second order reactions.</p> <p>4. Determination of order of reaction by integrated rate equation method, graphical method, half-life method and differential method.</p> <p>5. Explain / discuss the term energy of activation with the help of energy diagram.</p> <p>6. Explanation for temperature coefficient and effect of temperature on rate constant k.</p> <p>7. Derivation of Arrhenius equation and evaluation of energy of activation graphically.</p> <p>8. Derivations of collision theory and transition state theory of bimolecular reaction and comparison.</p>

			<p>9. Solve / discuss the problem based applying theory and equations. Define / explain adsorption, classification of given processes into physical and chemical adsorption.</p> <p>10. Discuss factors influencing adsorption, its characteristics, differentiates types as physisorption and Chemisorption</p> <p>11. Classification of Adsorption Isotherms, to derive isotherms.</p> <p>12. Explanation of adsorption results in the light of Langmuir adsorption isotherm, Freundlich's adsorption Isotherm and BET theory.</p> <p>13. Apply adsorption process to real life problem.</p> <p>14. Solve / discuss problems using theory.</p> <p>Define, explain and compare meaning of accuracy and precision.</p> <p>15. Apply the methods of expressing the errors in analysis from results.</p> <p>16. Explain / discuss different terms related to errors in quantitative analysis.</p> <p>17. Apply statistical methods to express his / her analytical results in laboratory.</p> <p>18. Solve problems applying equations</p> <p>19. Explain / define different terms in volumetric analysis such as units of concentration, indicator, equivalence point, end point, standard solutions, primary and secondary standards, complexing agent, precipitating agent, oxidizing agent, reducing agent, redox indicators, acid base indicators, metallochrome indicators, etc.</p> <p>20. Perform calculations involved in volumetric analysis.</p> <p>21. Explain why indicator show colour change and pH range of colour change.</p> <p>22. To prepare standard solution and b. perform standardization of solutions.</p> <p>23. To construct acid – base titration curves and performs choice of indicator for particular titration.</p> <p>24. Explain / discuss acid-base titrations, complexometric titration / precipitation titration / redox titration.</p> <p>25. Apply volumetric methods of analysis to real problem in analytical chemistry / industry.</p>
		CH-302 : Inorganic and	<p>1. Define terms related to molecular orbital theory (AO, MO, sigma bond, pi bond, bond order, magnetic property of molecules, etc).</p>

		Organic Chemistry <ol style="list-style-type: none"> 2. Explain and apply LCAO principle for the formation of MO's from AO's. 3. Explain formation of different types of MO's from AO's. 4. Distinguish between atomic and molecular orbitals, bonding, anti-bonding and non-bonding molecular orbitals. 5. Draw and explain MO energy level diagrams for homo and hetero diatomic molecules. Explain bond order and magnetic property of molecule. 6. Explain formation and stability of molecule on the basis of bond order. 7. Apply MOT to explain bonding in diatomic molecules other than explained in syllabus 8. Define different terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect, etc.) 9. Explain Werner's theory of coordination compounds. Differentiate between primary and secondary valency. Correlate coordination number and structure of complex ion. 10. Apply IUPAC nomenclature to coordination compound. 11. Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned. 12. Explain / discuss synthesis of aromatic hydrocarbons. 13. Give the mechanism of reactions involved. 14. Explain /Discuss important reactions of aromatic hydrocarbon. 15. To correlate reagent and reactions. 16. Identify and draw the structures alkyl / aryl halides from their names or from structure name can be assigned. 17. Explain / discuss synthesis of alkyl / aryl halides. 18. Write / discuss the mechanism of Nucleophilic Substitution (SN1, SN2 and SNi) reactions. 19. Explain /Discuss important reactions of alkyl / aryl halides. 20. To correlate reagent and reactions. 21. Give synthesis of expected alkyl / aryl halides. 22. Identify and draw the structures alcohols / phenols from their names or from structure name can be assigned. 23. Able to differentiate between alcohols and phenols 24. Explain / discuss synthesis of alcohols / phenols. 25. Write / discuss the mechanism of various reactions involved. 26. Explain /Discuss important reactions of alcohols / phenols. 27. To correlate reagent and reactions of alcohols / phenols 28. Give synthesis of expected alcohols / phenols
		CH-303 : Chemistry Practical - <ol style="list-style-type: none"> 1. Verify theoretical principles experimentally. 2. Interpret the experimental data on the basis of theoretical principles.

			III	<p>3. Correlate theory to experiments. Understand/verify theoretical principles by experiment observations; explain practical output / data with the help of theory.</p> <p>4. Understand systematic methods of identification of substance by chemical methods.</p> <p>5. Write balanced equation for the chemical reactions performed in the laboratory.</p> <p>6. Perform organic and inorganic synthesis and is able to follow the progress of the chemical reaction by suitable method (colour change, ppt. formation, TLC).</p> <p>7. Set up the apparatus / prepare the solutions - properly for the designed experiments.</p> <p>8. Perform the quantitative chemical analysis of substances explain principles behind it.</p> <p>9. Systematic working skill in laboratory will be imparted in student.</p>
		SEM - IV	CH-401 : Physical and Analytical Chemistry	<p>1 system, degree of freedom, one / two component system, phase rule, etc.</p> <p>2 Explain meaning and Types of equilibrium such as true or static, metastable and unstable equilibrium.</p> <p>3 Discuss meaning of phase, component and degree of freedom.</p> <p>4 Derive of phase rule.</p> <p>5 Explain of one component system with respect to: Description of the curve, Phase rule relationship and typical features for i) Water system ii) Carbon dioxide system iii) Sulphur system</p> <p>Define various terms, laws, differentiate ideal and non-ideal solutions.</p> <p>6 Discuss / explain thermodynamic aspects of Ideal solutions- Gibbs free energy change, Volume change, Enthalpy change and entropy change of mixing of Ideal solution.</p> <p>7 Differentiate between ideal and non-ideal solutions and can apply Raoult's law.</p> <p>8 Interpretation of i) vapour pressure-composition diagram ii) temperature- composition diagram.</p> <p>9 Explain distillation of liquid solutions from temperature - composition diagram.</p> <p>10 Explain / discuss azeotropes, Lever rule, Henry's law and its application.</p> <p>11 Discuss / explain solubility of partially miscible liquids-</p>

			<p>systems with upper critical. Solution temperature, lower critical solution temperature and having both UCST and LCST.</p> <p>12 Explain / discuss concept of distribution of solute amongst pair of immiscible solvents.</p> <p>13 Derive distribution law and its thermodynamic proof. 14□ Apply solvent extraction to separate the components of from mixture interest.</p> <p>15 Solve problem by applying theory.</p> <p>16. Explain / define different terms in conductometry such as electrolytic conductance, resistance, conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, Kohlrausch's law, etc.</p> <p>17 Discuss / explain Kohlrausch's law and its Applications, Conductivity Cell, Conductivity Meter, Whetstone Bridge.</p> <p>18 Explain / discuss conductometric titrations.</p> <p>19 Apply conductometric methods of analysis to real problem in analytical laboratory.</p> <p>20 Solve problems based on theory / equations.</p> <p>21 Correlate different terms with each other and derive equations for their correlati</p> <p>22.Explain / define different terms in Colorimetry such as radiant power, transmittance, absorbance, molar, Lamberts Law, Beer's Law, molar absorptivity</p> <p>23 Discuss / explain / derive Beer's law of absorptivity.</p> <p>24 Explain construction and working of colorimeter.</p> <p>25 Apply colorimetric methods of analysis to real problem in analytical laboratory.</p> <p>26 Solve problems based on theory / equations.</p> <p>27 Correlate different terms with each other and derive equations for their correlations</p> <p>Explain / define different terms in column chromatography such as stationary phase, mobile phase, elution, adsorption, ion exchange resin, adsorbate, etc.</p> <p>28 Explain properties of adsorbents, ion exchange resins, etc.</p> <p>29 Discuss / explain separation of ionic substances using resins.</p>
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			<p>CH-402 : Inorganic and Organic Chemistr y</p>	<ol style="list-style-type: none"> 1. Isomerism in coordination complexes 2. Explain different types of isomerism in coordination complexes. 3. Apply principles of VBT to explain bonding in coordination compound of different geometries. 4. Correlate no of unpaired electrons and orbitals used for bonding. 5. Identify / explain / discuss inner and outer orbital complexes. 6. Explain / discuss limitation of VBT. 7. Explain principle of CFT. 7. Apply crystal field theory to different type of complexes (Td, Oh, Sq, Pl complexes) 8. Explain: i) strong field and weak field ligand approach in Oh complexes ii) Magnetic properties of coordination compounds on the basis of weak and strong ligand field ligand concept. iii) Origin of colour of coordination complex. 9. Calculate field stabilization energy and magnetic moment for various complexes. 10. To identify Td and Sq. Pl complexes on the basis of magnetic properties / unpaired electrons. 11. Explain spectrochemical series, tetragonal distortion / Jahn-Teller effect in Cu(II) Oh complexes only. 12. Identify and draw the structures aldehydes and ketones from their names or from structure name can be assigned. 13. Explain / discuss synthesis of aldehydes and ketones. 14. Write / discuss the mechanism reactions aldehydes and ketones. 15. Explain /Discuss important reactions of aldehydes and ketones. 16. To correlate reagent and reactions of aldehydes and ketones 17. Give synthesis of expected aldehydes and ketones. 18. Perform inter conversion of functional groups. 19. Identify and draw the structures carboxylic acids and their derivatives from their names or from structure name can be assigned. 20. Explain / discuss synthesis of carboxylic acids and their derivatives. 21. Write / discuss the mechanism reactions carboxylic acids and their derivatives. 22. Explain /Discuss important reactions of carboxylic acids and their derivatives. 23. Correlate reagent and reactions of carboxylic acids and

				<p>their derivatives</p> <p>24. Give synthesis of expected carboxylic acids and their derivatives.</p> <p>25. Perform inter conversion of functional groups. 1. Identify and draw the structures amines from their names or from structure name can be assigned.</p> <p>26. Explain / discuss synthesis of carboxylic amines.</p> <p>27. Write / discuss the mechanism reactions carboxylic amines.</p> <p>28. Explain /Discuss important reactions of carboxylic amines.</p> <p>29. To correlate reagent and reactions of carboxylic amines.</p> <p>30. Give synthesis diazonium salt from amines and reactions of diazonium salt.</p> <p>31. Perform inter conversion of functional groups. 1. Draw the structures of different conformations of cyclohexane.</p> <p>32. Define terms such as axial hydrogen, equatorial hydrogen, confirmation, substituted cyclohexane, etc.</p> <p>33. Convert one conformation of cyclohexane to another conformation and should able to identify governing structural changes.</p> <p>34. Explain / discuss stability with respect to potential energy of different conformations of cyclohexane.</p> <p>35. Draw structures of different conformations of methyl / t-butyl monosubstituted cyclohexane (axial, equatorial) and 1, 2 dimethyl cyclohexane.</p> <p>36. Identify cis- and trans-isomers of 1, 2 dimethyl substituted cyclohexane and able to compare their stability.</p>
			CH-403 : Chemistry Practical - IV	<p>1. Verify theoretical principles experimentally</p> <p>2. Interpret the experimental data on the basis of theoretical principles.</p> <p>3. Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory.</p> <p>4. Understand systematic methods of identification of substance by chemical methods.</p> <p>5. Write balanced equation for all the chemical reactions performed in the laboratory.</p> <p>6. Perform organic and inorganic synthesis and able to follow the progress of the chemical reaction.</p> <p>7. Set up the apparatus properly for the designed experiments.</p> <p>8. Perform the quantitative chemical analysis of substances and able to explain principles behind it.</p>
3	T.Y.B.Sc.	SEM - V	CH-501: Physical Chemistr y- I	<p>1. Know historical of development of quantum mechanics in chemistry.</p> <p>2. Understand and explain the differences between classical and quantum mechanics.</p> <p>4. Understand the term additive and constitutive properties.</p> <p>5. Understand the term specific volume, molar volume and</p>

				molar refraction 6. Difference between thermal and photochemical processes. 7. photochemical laws: Grothus - Draper law, Stark-Einstein law, 8. Quantum yield and reasons for high and low quantum yield, 9. factors affecting the quantum yield,
			CH-502: Analytical Chemistry- I	1. Define basic terms in gravimetry Identify important parameters in analytical processes or estimations .Explain different principles involved in the gravimetry, spectrophotometry, 3.parameters in instrumental analysis, qualitative analysis. 4. Perform quantitative calculations depending upon equations student has studied in the theory. Furthermore, student should able to solve problems on the basis of theory. 5. Discuss / Describe procedure for different types analyses included in the syllabus
			CH-503: Physical Chemistry Practical - I	1.To determine the indicator constant of methyl red indicator Titration of a mixture of weak acid and strong acid with strong alkali 2.To determine the velocity constant of hydrolysis of ethyl acetate by NaOH solution by conduct metric method. 3) To determine the normality of citric acid in given fruit by titrating it against standard NaOH solution by conductometric method.
			CH-504: Inorganic Chemistry - I	1. Explain electroneutrality principle and different types of pi bonding. 2. Able to explain Nephelauxetic effect towards covalent bonding. 3. Explain MOT of Octahedral complexes with sigma bonding. 4. Able to explain Charge Transfer Spectra.

			<p>5. Able to compare the different approaches to bonding in Coordination compounds.</p> <p>6. To understand about inert and labile complexes and stability of complexes in aqueous solutions</p> <p>7. Classification of reactions of coordination compounds</p> <p>8. The basic mechanisms of ligand substitution reactions.</p> <p>9. Substitution reactions of square planer complexes.</p> <p>10. Tran's effect and applications of Trans effect</p> <p>11. Stereochemistry of mechanism</p> <p>12. Gain the knowledge of inorganic reaction mechanisms available in the literature to solve chemical problems.</p> <p>13. To know position of d-block elements in periodic table.</p> <p>14. To know the general electronic configuration & electronic configuration of elements.</p> <p>15. To know trends in periodic properties of these elements w.r.t. size of atom and ions, reactivity, catalytic activity, oxidation state, complex formation ability, color, magnetic properties, non-stoichiometry, density, melting point, boiling point.</p> <p>16. The meaning of term f-block elements, Inner transition elements, lanthanides, actinides.</p> <p>17. Electronic configuration of lanthanides and actinides.</p> <p>18. Oxidation states of lanthanides and actinides and common oxidation states.</p> <p>19. Separation lanthanides by modern methods.</p> <p>20. Lanthanide contraction and effects of lanthanide contraction on post-lanthanides.</p> <p>21. Use of lanthanide elements in different industries.</p> <p>22. Transuranic elements. . Preparation methods of transuranic elements. Nuclear fuels and their applications. . Why transuranic elements are called as the synthetic elements?</p> <p>23. IUPAC nomenclature for super heavy elements with atomic no. 100 onwards.</p> <p>24. The meaning of metal & semiconductor.</p> <p>25. The difference between metal, semiconductor and</p>
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			<p>insulator.</p> <p>26. Metallic bond on the basis of band theory.</p> <p>27. The energy band and energy curve.</p> <p>28. Draw $n(E)$ & $N(E)$ curves.</p> <p>29. Explain the electrical conductivity of metals with respect to valence electrons.</p> <p>30. Explain the effect of temperature and impurity on conductivity of metals and semiconductors.</p> <p>31. Intrinsic and extrinsic semiconductor.</p> <p>32. The term valance band and conduction band.</p> <p>33. n and p type of semiconductors. Non-stoichiometry and semi conductivity.</p> <p>34. Insulators on the basis of band theory.</p> <p>35. The difference between Na, Mg, and Al in terms of valence electrons and conductivity.</p> <p>36. Meaning of super conductors and their structure. o. Discovery and applications of superconductors.</p>
		<p>CH-505: Industrial Chemistr y - I</p>	<p>1. Importance of chemical industry,</p> <p>2. Meaning of the terms involved,</p> <p>3. Comparison between batch and continuous process,</p> <p>4. Knowledge of various industrial aspects</p> <p>5 Concept of basic chemicals,</p> <p>6. Their uses and manufacturing process.</p> <p>7. They should also know the physico-chemical principals involved in manufacturing process</p> <p>Sugar Industry: The students are expected to learn</p> <p>8 Importance of sugar industry,</p> <p>9. Manufacture of direct iii. Consumption (plantation white) sugar with flow diagram.</p> <p>10. Cane juice extraction by various methods, Clarification by processes like carbonation, vi. Sulphitation, vii. Phosphatation, etc.</p> <p>11. Concentration of juice by using multiple effect evaporator system,</p> <p>12 Crystallization of sucrose by using vacuum pan.</p> <p>Fermentation Industry- The students are expected to learn</p> <p>i. Importance,</p> <p>ii. Basic requirement of fermentation process,</p> <p>iii. Manufacturing of ethyl alcohol by using molasses and fruit juice</p> <p>iv. Different types of soap products,</p>

				v. Chemistry of soap. 13. Raw materials required for soap manufacture 14. Meaning of the term's Surfactants, Types of surfactants 15. Raw materials for detergents 16. Detergent builders, additives 17. Washing action of soap and detergents 18. Dyes - Students should know about . Dyes: introduction, Dye intermediates, Structural features of a dye; Classification of dyes, Synthesis, Structures, properties and applications of dyes 19. Pigments: Students should know about i. Introduction, ii. Classification and general properties of pigment iii. Production processes of zinc oxide and iron oxide
			CH-506: Inorganic Chemistry Practical - I	1. Gravimetric estimation of various sources Preparation of inorganic complexes and spot tests for metal ions and ligands; 2. Inorganic Qualitative analysis
			CH-507: Organic Chemistry - I	1. Define and classify polynuclear and heteronuclear aromatic hydrocarbons. 2. Write the structure, synthesis of polynuclear and heteronuclear aromatic hydrocarbons. 3. Understand the reactions and mechanisms 4. Explain the reactivity of polynuclear and heteronuclear aromatic hydrocarbons. 5. Describe the synthesis of chemical reactions of polynuclear and heteronuclear aromatic Hydrocarbons. 1. Meaning of active methylene group 6. Reactivity of methylene group, 7. Synthetic applications ethyl acetoacetate and malonic ester 8. To predict product with planning or supply the reagent/s for these reactions 1. What is rearrangement reaction? 9. Different types of intermediate in rearrangement reactions? 10. To write the mechanism of some named rearrangement reactions and their applications 4. Electrocyclic rearrangement with their mechanisms Chapter 1. 1,1 and 1,2 elimination 11. E1, E2 and E1cB mechanism with evidences of these reactions 4 12. Understand stereochemistry by using models and learn reactivity of geometrical isomers 13. Orientation and reactivity in E1 and E2 elimination 14. Hoffmann and Saytzeff's Orientation 15. Effect of factors on the rate elimination reactions
			CH-508:	

			<p>Chemistry of Biomolecules</p> <p>1. Introduction to molecular logic of life. The student will understand of Cell types, Difference between a bacterial cell, Plant cell and animal cell. Biological composition and organization of cell membrane, structure and function of various cell organelles of plant and animal cell. Concepts of biomolecules, Bonds that link monomeric units to form macromolecules</p> <p>2. Carbohydrates: The student will understand the types of carbohydrates and their biochemical significance in living organisms, structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates.</p> <p>3. Lipids: The student needs to know the types of lipids with examples, structure of lipids, properties of lipids</p> <p>4. Amino acids and proteins: The student will understand the structure and types of amino acids. Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain.</p> <p>5. Enzymes: The student know the classes of enzymes with subclasses and examples. Enzyme specificity, Equations of enzyme kinetics K_m and its significance, features of various types of enzyme inhibitions, industrial applications of enzymes.</p> <p>6. Hormones: Basic concepts of Endocrinology. Types of Endocrine glands and their hormones. Biochemical nature of hormones. Mechanism of action of lipophilic and hydrophilic hormones.</p>
		<p>CH-509: Organic Chemistry Practical-</p>	<p>1. Perform the quantitative chemical analysis of binary mixture, explain principles behind it.</p> <p>2. Separate, purify and analyse binary water insoluble mixture.</p> <p>3. Separate, purify and analyse binary water-soluble mixture.</p> <p>4. Understand the techniques involving drying and recrystallization by various method.</p> <p>5. Familiarize the test involving identification of special elements.</p> <p>6. Learn the confirmatory test for various functional groups.</p> <p>1. Systematic working skill in laboratory will be imparted in student.</p> <p>7. Learn the basic principles of green and sustainable chemistry.</p> <p>8. Synthesis of various organic compounds through greener approach.</p> <p>9. Do and understand stoichiometric calculations and relate</p>

				<p>them to green process metrics.</p> <p>10. Learn alternative solvent media and energy sources for chemical processes.</p> <p>11. Learn the preparations of derivative various functional groups aspects of electrical experiments.</p> <p>12. Understand the techniques involving drying and recrystallization by various method</p> <p>13. Expertise the various techniques of preparation and analysis of organic substances</p> <p>14. Understand principle of Thin Layer Chromatographic techniques.</p> <p>15. Understand the purification technique used in organic chemistry.</p>
			CH-510: Skills Enhancin g Course- I	<p>1. The basics of medicinal chemistry, biophysical properties, overview of basic concepts of traditional systems of medicine.</p> <p>2. Over view of the overall process of drug discovery, and the role played by medicinal chemistry in this process.</p> <p>3. Biological activity parameters and importance of stereochemistry of drugs and receptors.</p> <p>4. Knowledge of mechanism of action of drugs belonging to the classes of infectious and non-infectious diseases.</p> <p>5. Enhancement of practical skills in synthesis, purification and analysis.</p>
			CH-511: Skills Enhancin g Course- II	<p>1. Students should understand the significance of cheminformatics in the modern practices of chemical science</p> <p>2. Students should learn the necessity of cheminformatics in chemical science</p> <p>3. Students should learn the basic concepts about these representation methods.</p> <p>4. Students should understand the significance of different representation methods for their specific applications.</p> <p>5. Students should able to identify these representation methods with understanding.</p> <p>6. Students should able to read these representation methods for basic examples.</p> <p>7. Students should learn the basic concepts of referencing</p> <p>8. Students should understand the significance of structural data in the process of referencing</p> <p>9. Students should able to correlate the necessity of input methods and the expected outcomes for the set of chemicals</p>

			<p>10. Students should be able to understand data interpretation using these methods for basic or representative molecules.</p> <p>11. Students should learn the basic idea about how to apply cheminformatics tool for variety of applications.</p> <p>12. Students should understand the significance of database for the specific purpose of application.</p> <p>13. Students should be able to correlate the content of data with the possible applications for the set of chemicals.</p> <p>14. Students should get aware with the principle and the basic operational methods of well-practiced software used in the data interpretation in cheminformatics.</p> <p>15. Students should learn the basic concepts of Machine Learning and Artificial intelligence</p>
		SEM - VI	<p>CH-601 : Physical Chemistry-II</p> <p>1. Electrochemical cells: Explanation of Daniell cell, Conventions to represent electrochemical cells</p> <p>2. Thermodynamic conditions of reversible cell, Explanations of reversible and irreversible electrochemical cell with suitable example,</p> <p>3. EMF of electrochemical cell and its measurement.</p> <p>4. The Weston standard cell</p> <p>5. The primary reference electrode: The standard hydrogen electrode (SHE) with reference to diagram, Construction, representation, working and limitation,</p> <p>6. Secondary reference electrodes: (a) The calomel electrode, (b) The glass electrode (c) The silver-silver chloride electrode. Understanding of these electrodes with reference to diagram, representation, Construction, working</p> <p>7. Distinguish between crystalline and amorphous solids / anisotropic and isotropic solids.</p> <p>8. Explain the term crystallography and laws of crystallography.</p> <p>9. Weiss and Millers Indices, determination of Miller Indices</p> <p>10. Bravais lattices, space groups, seven crystal systems and fourteen Bravais lattices;</p> <p>11. Cubic lattice and types of cubic lattice</p> <p>12. Distance between the planes for 100, 110 and 111 for cubic lattice</p>

			<p>13. Methods of Crystal structure analysis: The Laue method and Bragg's method: Derivation of Bragg's equation,</p> <p>14. Determination of crystal structure of NaCl by Bragg's method,</p> <p>15. X ray analysis of NaCl crystal system and Calculation of d and λ for a crystal system,</p> <p>Radioactivity</p> <p>1. Types and properties of radiations: alpha, beta and gamma</p> <p>2. Detection and Measurement of Radioactivity: Cloud chamber, Ionization Chamber, Geiger-Muller Counter, Scintillation Counter, Film Badges</p>
		<p>CH-602 : Physical Chemistry-III</p>	<p>1 colligative Properties</p> <p>2. Lowering of vapour pressure of solvent in solution,</p> <p>3. Elevation of B.P. of solvent in solution, Landsberger's method,</p> <p>4. freezing point depression, Beckmann's method Osmosis and Osmotic pressure, Berkeley and Hartley method,</p> <p>5. Application of colligative properties to determine molecular weight of nonelectrolyte, abnormal molecular weight,</p> <p>6. Relation between Vant Hoff's factor and degree of dissociation of electrolyte by colligative property,</p> <p>1. Factors affecting on solid state reactions,</p> <p>2. Rate laws for reactions in solid state</p> <p>3. Applying rate laws for solid state reactions</p> <p>4. Results of kinetics studies I. Cohesive Energy of ionic crystals based on coulomb's law and Born Haber Cycle</p> <p>2. Correspondence between energy levels in the atom and energy bands in solid</p> <p>3. Band structure in solids – Na , Ca and diamond</p> <p>4. Conductors and insulators – Its correlation with Extent of energy in energy bands</p> <p>5. phenomena of photoconductivity</p> <p>6. Semiconductors – Role of impurity in transformation of insulator into semiconductor</p> <p>7. Temperature dependant conductivity semiconductors</p> <p>8. Cohesive Energy in metals</p> <p>9. Numericals based on</p> <p>1) cohesive energy</p> <p>2) Classification of polymers</p> <p>3) Chemical bonding & Molecular forces in Polymer</p>

				4) Molecular weight of polymers 5) Practical significance of polymer molecular weights 6) Molecular weight determination
			CH-603 : Physical Chemistr y Practical- II	1.To determine the PKa value 2.To determine the formal redox potential 3.To determine the amount of NaCl in the given solution by potentiometric titration 4.To determine the solubility product and solubility of AgCl potentiometrically using chemical cell. 5.Estimate the amount of Cl-, Br- and I- in given unknown halide mixture by titrating it against standard AgNO3 solution 6.To prepare standard 0.2 M Na2HPO4 and 0.1 M Citric acid solution, hence prepare four different buffer solutions using them 7.pH metry 8.Radioactivity 9.Colligative properties 10.Urbidometry 11.Table work
			CH-604 : Inorganic Chemistr y -II	1. To understand M-C bond and to define organometallic compounds 2. To define organometallic chemistry 3. To understand the multiple bonding due to CO ligand. 4. To know methods of synthesis of binary metal carbonyls. 5. To understand the structure and bonding using valence electron count (18 ele. rule) 6. To understand the catalytic properties of binary metal carbonyls. 7. To understand the uses of organometallic compounds in the homogenous catalysis. 8. Chemistry of ferrocene 9. Understand the phenomenon of catalysis, its basic principles and terminologies. 10. Define and differentiate homogeneous and heterogeneous

				<p>catalysis.</p> <p>11. Give examples and brief account of homogeneous catalysts.</p> <p>12. Understand the essential properties of homogeneous catalysts-Give the catalytic reactions for Wilkinson's Catalysis, hydroformylation reaction, Monsanto acetic acid synthesis, Heck reaction</p> <p>13. Understand the principle of heterogeneous catalyst and development in it.</p> <p>14. Give examples of heterogeneous catalysts.</p> <p>15. Understand the classification and essential properties of heterogeneous catalysts.</p> <p>16. Give the brief account of Hydrogenation of olefins, Zeolites in catalysis, biodiesel synthesis, Automotive Exhaust catalysts</p> <p>17. Understand the catalytic reactions used in industries around.</p> <p>18. Identify the biological role of inorganic ions & compounds.</p> <p>19. Know the abundance of elements in living system and earth crust.</p> <p>20. Give the classification of metals as enzymatic and non-enzymatic.</p> <p>21. Understand the role of metals in non-enzymatic processes.</p> <p>22. Know the metalloproteins of iron.</p> <p>23. Explain the functions of hemoglobin and myoglobin in O₂ transport and storage.</p> <p>24. Understand the toxicity of CN⁻ and CO binding to Hb.</p> <p>25. Draw the structure of Vit.B₁₂ and give its metabolism.</p> <p>26. know thy types of Inorganic polymers</p> <p>27. comparison with organic polymers</p> <p>28. synthesis, structural aspects of Inorganic polymers</p> <p>29. understand the polymers of Si, B, Si and P</p> <p>30. Inorganic polymers and their use.</p> <p>31 Understand Preparation of inorganic solids by various methods,</p>
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				<p>32. Inorganic liquid crystals</p> <p>33. Ionic liquids, their preparations, and their significance w.r.t green chemistry.</p> <p>32. Technological importance of ionic liquids</p>
			<p>CH-605: Inorganic Chemistry -III</p>	<p>1. Student will learn the concept of acid base and their theories.</p> <p>2. They will also come to know different properties of acids and bases.</p> <p>3. Strength of various types acids.</p> <p>4. How acid and base strengths get affected in non-aqueous solvents</p> <p>7. Be able to define Pauling's univalent radius and crystal radius.</p> <p>8. Be able to solve simple problems based on Pauling's univalent radii and crystal radii.</p> <p>9. Know how to draw Born-Haber cycle.</p> <p>10. Be able to solve simple problems based on Born- Haber cycle.</p> <p>11. Know the defects in Ionic solids.</p> <p>12. Be able to differentiate between the defects</p> <p>13. Different Zeolite Framework Types and their classification</p> <p>14. Zeolite synthesis and their structure</p> <p>15. Application of zeolites1. Various methods of nanoparticle synthesis</p> <p>16. Stabilization of Nanoparticles in solution</p> <p>17. Properties and Application of Nanoparticles</p> <p>18. Know about carbon nanotube and its applicationi) To know toxic chemical in the environment.</p> <p>19 To know the impact of toxic chemicals on enzyme.</p> <p>20) To know the biochemical effect of Arsenic, Cd, Pb, Hg.</p> <p>21) To explain biological methylation.</p>
			<p>CH-606: Inorganic Chemistry Practical-II</p>	<p>1 Volumetric Estimations</p> <p>2 Flame Photometry</p> <p>3 Column Chromatography</p> <p>4 Nanomaterial synthesis</p>
			<p>CH-607: Organic Chemistry-II</p>	<p>Organic Spectroscopic Methods in Structure Determination. Students will learn the interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parametersStudents should be able to learn</p> <p>1. The use of models to draw different types of disubstituted</p>

				<p>cyclohexanes in chair form</p> <p>2. The geometrical isomerism in disubstituted cyclohexanes</p> <p>3. The stability, energy calculations and optical activity of these conformers</p> <p>4. The use models and to draw different types of conformational isomers of decalin in chair form</p> <p>5. To know the stability of geometrical isomers of decalin</p>
			CH-608: Organic Chemistr y-III	<p>1.Introduction, Isolation, Classification. Citral- structure determination using chemical and spectral methods,</p> <p>2.Synthesis of Citral by Barbier and Bouveault Synthesis. Introduction, extraction, Purification, Some examples of</p> <p>3.alkaloids and their natural resources. Ephedrine- structure determination using chemical methods.Synthesis of Ephedrine by Nagai.</p>
			CH-609: Organic Chemistr y Practical- II	<p>1. Explain "fingerprint region" of an infrared spectrum can used in the identification of an unknown compound.</p> <p>2. Identify the functional group or groups present in a compound.</p> <p>3. Identify the broad regions of the infrared spectrum in which occur absorptions caused by N-H, C-H, and O-H, C≡C and C≡N, C=O, C=N, and C=C.</p> <p>4. Understand use NMR spectra to determine the structures of compounds.</p> <p>5. Interpret integration of NMR spectra</p> <p>6. Calculate coupling constants from ¹H NMR spectra.</p> <p>7. Interpret elemental analysis technique1. Practical knowledge of handling chemicals.</p> <p>8. Achieve the practical skills required to estimations of glucose and glycine.</p> <p>9. Achieve the practical skills required to Saponification value of oil.</p> <p>10. Determine the molecular weight of given tribasic acids. 1. Apply the principles of extraction</p> <p>11. Understand the equipment for extraction.</p> <p>12. Gain practical hands-on experience of modern Extraction.</p> <p>13. Develop basic design of extractor</p> <p>14. Describe the extraction separation process. 1. Defines the basic parameters in chromatography</p> <p>15. Explain the processes of a chromatography analysis</p> <p>16. Describes the types and materials of column.</p> <p>17. Explains the types of mobile phase and elution.</p> <p>18. Realize the selection of appropriate mobile phase, column and detector</p>
			CH-610: Skill Enhancin g Course- III	<p>1) Understood various components of soil and soil properties and their impact on plant growth.</p> <p>2) Understood the classification of the soil.</p> <p>3) Explores the problems and potentials of soil and decide the most appropriate treatment for land use.</p>

				<p>4) Understood the Reclamation and management of soil physical and chemical constraints.</p> <p>5) Useful in making decisions on nutrient dose, choice of fertilizers and method of application etc. practiced in crop production.</p> <p>6) Got experience on advanced analytical and instrumentation methods in the estimation of soil.</p> <p>7) Understood various Nutrient management concepts and Nutrient use efficiencies of major and micronutrients and enhancement techniques.</p> <p>8) Proper understanding of chemistry of pesticides will be inculcated among the students.</p> <p>9) Imparts knowledge on different pesticides, their nature and, mode of action and their fate in soil so as to monitor their effect on the environment.</p>
			<p>CH-610: Skill Enhancin g Course- IV</p>	<p>1. Define basic terms in solvent extraction, basics of chromatography, HPLC, GC, and AAS and AES. Some important terms are: solvent extraction, aqueous and organic phase, distribution ratio and coefficient, solute remain unextracted, percent extraction, ion association complex, theoretical plate, HETP, retention time, selectivity, resolution, stationary phase, normal and reverse phase, ion exchange, column efficiency, carrier gas, split and spitless injection, packed column, tubular column, atomic absorption and emission spectroscopy, electronic excitation in atoms, nebulization, atomization, reduction of metal ions in flame, absorbance by atoms in flame, flame atomizers, furnace atomizers, interference in AES and FES, HCL, hydride generator, etc.</p> <p>2. Identify important parameters in analytical processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration for particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, wavelength selection in HPLC with spectrophotometric and fluorometric detector, solvent or carrier gas in HPLC and GC, choice method for the sample preparation in atomic spectroscopic methods, choice of filter and HCL in atomic spectroscopic methods, etc.</p> <p>3. Explain different principles involved in the analyses using solvent extraction, basics of instrumental chromatography, HPLC, GC, and atomic spectroscopic techniques.</p> <p>4. Perform quantitative calculations depending upon equations students has studied in the theory. Furthermore, student should able to solve problems on the basis of theory.</p> <p>5. Discuss / Describe procedure for different types analyses included in the syllabus.</p> <p>6. Select particular method of analysis if analyte sample is given to him.</p> <p>7. Differentiate / distinguish / compare among the different</p>

			<p>of basic biochemistry ,to make the students aware about nature ar environment</p> <p>CHO-350: To define the structure foundation of heterocyclic molecules , to analyze the structural diversity , substitution patterns & freq. of nitrogen heterocyclic</p> <p>CHO-351: Spectroscopy For the determination of molecular structure of chemical compound and finding out the structure of new discoed compounds</p> <p>CHD-352: Drug Developments And Discovery Earn a most in drug development at use in person or by distance</p> <p>CHO-353 :Synthetic Method in organic Chemistry : To provide prediction using neutral sequences to sequence models</p> <p>CHO-450 :Advance medicinal chemistry To introduced the students to the basic concept to make students aware of the need of protection</p> <p>CHO-451: Principal and application in drug Designs Machines for pharmaceutical data analysis & support vector dada is incompatible with belief that the average</p> <p>CHO-452 :Green Chemistry , supramolecular , photo chem. & free radical reactions To introduced the student to basic mathematical concept</p> <p>CHD-464 :Green Chemistry , supramolecular , photo chem. & free radical reactions To introduced the student to basic mathematical concept</p> <p>Understanding of the bioinformatics ,study of photochemical reaction occurred in chemicals and free radical reactions study</p>
5	M.Sc Drug Chemistry		<p>1.Ability to asses and interpreter information respond & adopt to changing situations , make complex decisions , solve problems and evaluate action</p> <p>2. To demonstrate awareness & understanding of the skills necessary to leave and work in diverse word</p> <p>3. To demonstrate and awareness and understanding of the ethical standards of their academies discipline and profession</p> <p>4. To perform and understand chemical research</p> <p>CHQ-110 : Fundamental Physical Chemistry</p> <p>1.To provide a course of future study in chemistry and allowed subject in aspects of physical chemistry</p> <p>2.An introduction to contamination of energy and degeneracy</p> <p>3.to provide mathematical skill</p> <p>CHI-130: Molecular Symmetry And Bioinorganic Chemistry</p> <p>1.To develop and understanding of the range and chem.. of</p>

			<p>elements in periodic table and their compound</p> <p>2. to establish and appreciation of the role of inorganic chemistry</p> <p>CHI-150: Basic Organic Chemistry</p> <p>Introducing many of the key concept of organics chemistry through a serve of basic reaction if selected aliphatic and aromatic molecules</p> <p>CHI-190: Laboratory Safety</p> <p>To firm foundation in the and application of current chemical and scientific theory incites include though laboratory safety ,introduce about chemical safety in lab ,</p> <p>To have extensive lab work and knowledge</p> <p>CHP-210 :Fundamental physical chemistry</p> <p>Are skilled in problems solving, critical thinking and analytical reasoning. Are able to identify and solve chemical problems and explore new areas of research.</p> <p>Are able to use modern library searching and retrieval methods to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry</p> <p>CHP-230 :Coordination chemistry & chemistry of P-block elements</p> <p>Understanding the fundamental chemistry of the s ,p, & d – block elements , To apply the general principles of inorganic chem. To a broad range topic , to describe str. & bonding in coordination complex</p> <p>Cho-250: Synthetic organic chemistry & spectroscopy</p> <p>To apply of spectroscopy technique for the determination of molecular structure</p> <p>CHO-290: Basic Biochemistry</p> <p>TO introduce students the concept of fundamental knowledge of basic biochemistry ,to make the students aware about nature ar environment</p> <p>CHD-361: To define the structure foundation of heterocyclic molecules , to analyze the structural diversity , substitution patterns & freq. of nitrogen heterocyclic</p> <p>CHD-362: Spectroscopy</p> <p>For the determination of molecular structure of chemical compound and finding out the structure of new discoed compounds</p> <p>CHD-363: Drug Developments And Discovery</p> <p>Earn a most in drug development at use in person or by distance</p> <p>CHD-461 :Synthetic Method in organic Chemistry :</p> <p>To provide prediction using neutral sequences to sequence models</p> <p>CHD-462 :Advance medicinal chemistry</p> <p>To introduced the students to the basic concept to make students aware of the need of protection</p> <p>CHD-463: Principal and application in drug Designs</p>
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S.B.V.P. Samaj's

Sahakar Maharshi Bhausaheb Santuji Thorat college of Arts, Science and Commerce

Sangamner (422 605) Dist. Ahmednagar

Department of Physics

Course Out comes

Course code and title: PHY-112 Physics Principles and Applications

Learning Outcomes:

1. To understand the general structure of atom, spectrum of hydrogen atom.
2. To understand the atomic excitation and LASER principles.
3. To understand the bonding mechanism and its different types.
4. To demonstrate an understanding of electromagnetic waves and its spectrum.
5. Understand the types and sources of electromagnetic waves and applications.

Course code and title: PHY-122 Electricity and Magnetism

Learning Outcomes

- 1) To understand the concept of the electric force, electric field and electric potential for stationary charges.
- 2) Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law.
- 3) To understand the dielectric phenomenon and effect of electric field on dielectric.
- 4) To Study magnetic field for steady currents using Biot-Savart and Ampere's Circuital laws.

S.B.V.P. Samaj's

**Sahakar Maharshi Bhausaheb Santuji Thorat college of Arts, Science and
Commerce**

Sangamner (422 605) Dist. Ahmednagar

S.Y.B.Sc. (Physics) (Sem-III)

PHY-231: Mathematical Methods in Physics-I

Learning Outcomes:

- ❖ Understand the concept of partial differentiation.
- ❖ Understand the role of partial differential equations in physics.
- ❖ Understand vector algebra useful in mathematics and physics.
- ❖ Understand the concept of singular points of differential equations.

S.Y.B.Sc. (Physics) (Sem-III)

PHY-232(A): Electronics-I

Learning outcomes:

- ❖ Apply different theorems and laws to electrical circuits.
- ❖ Understand the relations in electricity.
- ❖ Understand the parameters, characteristics and working of transistors.
- ❖ Understand the functions of operational amplifiers.
- ❖ Design circuits using transistors and applications of operational amplifiers.
- ❖ Understand the Boolean algebra and logic circuits

S.Y.B.Sc. (Physics) (Sem-III)

PHY-232(B): Instrumentation

Learning outcomes:

- ❖ Understand the concept of measurement
- ❖ Understand the performance of measuring instruments.
- ❖ Design experiments using sensors.

S.B.V.P. Samaj's

Sahakar Maharshi Bhausaheb Santuji Thorat college of Arts, Science and Commerce

Sangamner (422 605) Dist. Ahmednagar

T.Y.B.Sc. (Physics) (Sem-V)

PHY-351: Mathematical Methods in Physics-II

Course Outcomes:

- ✓ Students become able to solve the problems Curvilinear Co-ordinates .
- ✓ Students get ideas of spherical and cylindrical coordinate system.
- ✓ Analyze the Special theory of relativity.

PHY-352: Electrodynamics.

Course Outcomes:

- ✓ Students acquire skills to implement Boundary conditions at the interface of two magnetic media.
- ✓ Students become able to start their own Poynting theorem & Poynting vector.
- ✓ Students get ideas Biot-Savart's law, Ampere's force law

PHY-353: Classical Mechanics

Course Outcomes:

- ✓ To understand and solve the equations / graphical representations of motion .
- ✓ To explain . Elastic and inelastic scattering: Definition and properties.
- ✓ To solve numerical problems related to Differential cross-section, impact Parameter, total cross-section in brief.

PHY-354: Atomic and Molecular Physics

Course Outcomes:-

- ✓ To understand and solve the equations / graphical representations J- J Coupling .
- ✓ To explain . Atomic structure
- ✓ To solve Problems on Zeeman effect.
- ✓ To study the Raman Effect.
- ✓ To Explain LS coupling. Two valance electron system.

PHY-355: Computational Physics

Course Outcomes:

- ✓ Students become able to understand C-program, 'C' Character set, key words,
- ✓ Students get ideas Arrays: 1-D, 2-D
- ✓ To study the Bisection method and Newton-Raphson Method
- ✓ To Explain Concepts of graphics in C

PHY-356 Elective-I (D): Renewable Energy Sources-I

PHY-362: Quantum Mechanics

Course Outcomes:

- ✓ Students get ideas Matter waves - De Broglie hypothesis. Davisson and Germer experiment.
- ✓ To study the Heisenberg's uncertainty principle with Electron diffraction experiment,
- ✓ To Explain Concepts of Different fields of applications of quantum mechanics.

PHY-363: Thermodynamics and Statistical Physics

Course Outcomes:

- ✓ Explain Mean free path, Transport phenomenon
- ✓ Summarize the Maxwell-Boltzmann's statistics, Bose-Einstein Statistics, Fermi-Dirac Statistics, Comparison of the distributions.
- ✓ Understand the operation of many Gaussian probability distributions.

PHY-364: Nuclear Physics

Course Outcomes:

- ✓ Students get ideas Particle Accelerator and Radiation Detectors:
- ✓ To study the Stability of nuclei (N Vs Z Curve) and problems.
- ✓ To Explain Concepts of Successive disintegration and equilibriums and radioisotopes.
- ✓ To Analyze Laws of radioactive decay, half-life, mean life, Specific activity.

PHY-365 (A): Electronics-II

Course Outcomes:

- ✓ Explain Timer IC-555: Block diagram, Astable, monostable multivibrator
- ✓ Summarize the Combinational and Sequential Circuits
- ✓ Understand the operation of many Modulation Index, Upper and Lower Side Band Frequencies in AM

PHY-366 Elective-II (S): Lasers

Course Outcomes:

- ✓ Learn basics of LASER Oscillators.
- ✓ Analyzed of Optical feedback, round trip gain, critical population inversion,
- ✓ Students will learn about laser isotope separation, laser fusion

Dept. of English
Course Outcomes
2021-22

Program code	Program Name	Course Code	Course Name	Year of Introduction	Course Out comes
B.A ENG - 01	FYBA	11011	Compulsory English	2019-20	<p>A) Realization of the beauty and communicative power of English because of exposure to the best examples of prose and poetry in English.</p> <p>B) Inculcation of human values among students and their character development as responsible citizens of the world.</p> <p>C) Gain the ability to appreciate ideas and think critically.</p> <p>D) Enhancement in employability of the students by developing their linguistic competence and communicative skills</p>
		11331	Optional English- I		<p>A) Exposure to the basics of literature and language develops an integrated view about language and literature in students.</p> <p>B) Acquaintance with minor forms of literature in English helps them to appreciate the creative use of language in literature.</p> <p>C) Get knowledge of basics of phonology of English so that they can pronounce better and speak English correctly.</p> <p>D) Enhancement in the job potential of students by improving their language skills.</p>
B.A ENG - 02	SYBA	23332	(DSE-2A) Appreciating Poetry - Discipline Specific Course	2020-21	<p>A) Students can comprehend the development of English poetry from one age to another.</p> <p>B) They get knowledge of the terminology in poetry criticism. (i.e. the terms used in appreciation and critical</p>

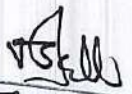


				analysis of poems) C) They will be able to enjoy poetic beauty through literary devices like similes, metaphors, images, alliteration, and other rhetorical devices. D) They can appreciate and critically evaluate a poem.
		23334	(SEC-2A) A Certificate Course in Skill Development Skill Enhancement Course "Mastering Communication Skills"	A) Students become aware of moral values through the stories from the prescribed texts. B) Comprehend the features of speech sounds in English and their respective RP phonetic symbols. C) Know how speech organs work and attain a practical knowledge of the articulation of the English speech sounds. D) Students can utilize phonetic dictionary symbols to continue to improve pronunciation.
		23001	Compulsory English (Core Course-CC)	A) Competence development among students for self learning. B) Development in overall linguistic competence and communicative skills of students. C) Students will be able to apply the basic grammatical rules learnt from the prescribed text.
		23331	(DSE-1A) (Appreciating Drama)-Discipline Specific Course	A) Students are exposed to the origin and growth of drama. B) Students become familiar with the terminology in Drama Criticism. C) Students can analyze and appreciate a play with respect to its plot, character, dialogue, theme, characters, structure, motifs and dramatic techniques.
		23333	SEC-1A (Advanced Study	A) Students become aware of moral values through the stories

			of Eng. Language) Skill Enhancement Course-		from the prescribed texts. B) Comprehend the features of speech sounds in English and their respective RP phonetic symbols. C) Know how speech organs work and attain a practical knowledge of the articulation of the English speech sounds. D) Students can utilize phonetic dictionary symbols to continue to improve pronunciation.
B.A ENG - 03		35001	Compulsory English	2021-22	A) Students are familiarized wit communicative power of Englis B) They become competent use of English in real life situations. C) Students get varied cultural experience through literature. D) Overall personality development is achieved by improving their communicative and soft skills.
		35333	SEC-1C Enhancing Employability Skills		A) Students are able to understand how Indian English Poetry expresses the ethos and culture of India. B) Students gain knowledge of creative uses of language in Indian English Poetry C) Students will be adept in thei knowledge and use of poetic devices, common techniques involved in writing poetry.
		35331	DSE- 1C Appreciating Novel		A) Students gain knowledge of the basics of novel as a literary form. B) Development in the ability ar interest to read literary prose and fiction on their own. C) Development in literary sensibility and sense of cultural diversity. D) Exposure to different culture myths, and histories of various



					nations through fiction. E) Students can analyze and appreciate a novel with respect to its plot, character, dialogue, theme, characters, structure, motifs and narrative techniques.
		35332	DSE-2C Introduction to Literary Criticism		A) Students get knowledge of basics of literary criticism and become aware of the fundamentals, definition, nature, scope and function of literary criticism. B) They get the knowledge of the nature and historical development of criticism. C) They become familiar with the significant critical approaches and terms. D) They are able to interpret literary works in the light of the critical approaches. E) Conduct a close reading of a poem, prose or other genres and develop aptitude for critical analysis.
		35334	SEC-2C Mastering Life Skills & Life Values		A) Students are enabled to understand various Life Skills and Moral, Ethical and professional B) Students are enabled to apply writing skills in application, letters, reports etc.


 Dr. V. S. Kolhe
 Dept. of English

S.B.V.P.Samaj's
**Sahakar Maharshi Bhausaheb Santuji Thorat College of Arts, Science &
Commerce, Sangamner- 422605**

Department of History

• **Course/Program: UG**

Duration: Three Years

Pattern: Choice Based Credit System – FYBA 2019-20, SYBA-2020-21 & TYBA – 2021-22 Pattern
(Old)

Affiliation: Savitribai Phule Pune University, Pune

Course Type: Grantable

• **Course/Program: PG**

Duration: Two Years

Pattern: Choice Based Credit System – MA I June 2019 Pattern & MA II June 2020 Pattern

Affiliation: Savitribai Phule Pune University, Pune

Course Type: Non Grantable

• **PROGRAM OUTCOME (POs)**

PO1	After the completion of BA, history scholars will be able to distinguish between primary and secondary sources and identify and evaluate evidence.
PO2	Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the centuries.
PO3	They will be able to produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past
PO4	The study of history will give them the ability to compare and contrast different processes, modes of thoughts and modes of expression from different historical time periods and in different geographical areas.
PO5	Students will offer multi-causal explanation of major historical developments bases on a contextualized analysis of interrelated political, social, economic, culture and intellectual processes
PO6	Students will be able to write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible argument, logical structure, proper references.
PO7	Students will present orally their research or a summary of another's research in an organized, coherent and compelling fashion.

Department of History

- **Course/Program: UG**

Duration: Three Years

Pattern: Choice Based Credit System – FYBA 2019-20, SYBA-2020-21 & TYBA – 2021-22 Pattern (Old)

Affiliation: Savitribai Phule Pune University, Pune

Course Type: Grantable

- **Course/Program: PG**

Duration: Two Years

Pattern: Choice Based Credit System – MA I June 2019 Pattern & MA II June 2020 Pattern

Affiliation: Savitribai Phule Pune University, Pune

Course Type: Non Grantable

PROGRAM SPECIFIC OUTCOME (PSO)


1. Students will have the ability to apply historical methods to evaluate critically the past and how historians and others have interpreted it.
2. Students will be able to acquire basic historical research skill, including the effective use of libraries, archives and data bases.
3. Students will be able to organize and express their thoughts clearly and coherently both in writing and orally.
4. Students will be able to demonstrate broad knowledge of historical events and periods and their significance
5. Students will be able to recognize how different individuals, groups, organization, societies, cultures, countries and nations have affected history. History gave the students wisdom and foresight for the future.

PROGRAM OUTCOME (PO)

1. After the completion of BA, history scholars will be able to distinguish between primary and secondary sources and identify and evaluate evidence.
2. Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the centuries.
3. They will be able to produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past
4. The study of history will give them the ability to compare and contrast different processes, modes of thoughts and modes of expression from different historical time periods and in different geographical areas.
5. Students will offer multi-causal explanation of major historical developments bases on a contextualized analysis of interrelated political, social, economic, culture and intellectual processes
6. Students will be able to write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible argument, logical structure, proper references.
7. Students will present orally their research or a summary of another's research in an organized, coherent and compelling fashion.

	Part I	<p>during the Modern World.</p> <p>3. It will enhance their perception of the history of the Modern World.</p> <p>4. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World.</p>
5	Semester -IV- History of the Marathas G2 : (1707-1818) - 3 Credit	<p>1. Students will be able to analyze the Marathas policy of expansionism and its consequences.</p> <p>2. They will understand the role played by the Marathas in the 18th century India.</p> <p>3. They will be acquainted with the art of diplomacy in the Deccan region.</p> <p>4. It will help to enrich the knowledge of the administrative skills and profundity of diplomacy.</p>
6	Semester -IV- Medieval India: Mughal Period -Spl. Paper I	<p>1. Draws comparisons between policies of different rulers.</p> <p>2. Understanding Role of Akbar in the consolidation of Mughal rule in India.</p> <p>3. Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age.</p> <p>4. Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)</p>
7	Semester -IV-Spl Paper II Glimpses of the Modern World - Part II	<p>1. It will enable students to develop the overall understanding of the Modern World.</p> <p>2. The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.</p> <p>3. It will enhance their overall perception of the history of the Modern World.</p> <p>4. It will enable students to understand the significance of the strategic political developments in the Modern World.</p>
8	TYBA G3, Sem.-V - Indian National Movement (1885-1947)	<p>1. It will enable students to develop an overall understanding of Modern India.</p> <p>2. It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.</p> <p>3. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India.</p>
9	Spl. 3 - Introduction to Historiography	<p>1. To orient students about how History is studied, written and understood.</p> <p>2. To explain methods and tools of data Collection</p> <p>3. To study the types of Indian Historiography.</p> <p>4. To describe importance of Inter-Disciplinary Research.</p> <p>5. To introduce Students to the basics of Research.</p>
10	Spl. P4 - Maharashtra in the 19th Century	<p>1. Student will develop the ability to analyse sources for 19th century Maharashtra History.</p> <p>2. Student will learn significance of Regional History and Socio- religious reformism foundation of the region.</p> <p>3. It will enhance their perception of 19th Century Maharashtra.</p> <p>4. Appreciate the skills of leadership and the Socio-religious System of the Maharashtra.</p>
	MA 1stSem – 1	
11	History Theory &	The paper is designed to provide adequate conceptual

		the changing nature of Maratha State, to understand and analyze the Maratha Expansionism and its significance in various spheres.
	MA 1stSem – 3	
19	Ancient & Medieval Civilizations of the World	The paper intends to examine Ancient and Medieval civilizations with a view to understand, reinterpret and present them in historical perspective; to enable the student to understand intellectual trends in the modern world; to enable the student to have a better understanding of Indian History in the World context.
20	Debates in Indian History	The course is designed to introduce the student to some of the issues that have been debated by historians and to introduce some perspectives with reference to Indian History.
21	Economic History of Modern India	To acquaint the student with structural and conceptual changes in Indian economy after coming of the British, to make them aware of the exploitative nature of the British rule, to help them understand the process of internalization by Indians of new economic ideas, principles and practices.
22	Maharashtra in the 19 th Century	The purpose of the course is to enable the student to study the history of modern Maharashtra from an analytical perspective; to point out to them the dialectical relationship between continuity and change in Maharashtra; to highlight the ideas, institutions, forces and movements that contributed to the structural changes in Maharashtra; to acquaint the student with various interpretative perspectives; to help them in articulating their own ideas and views leading to orientation for research; to introduce the student to regional history within abroad national framework
	Sem-4	
23	HISTORY OF MODERN INDIA-1857-1971	The purpose of this course is to enable the student to study the history of 'Modern India' from an analytical perspective; to make the student aware of the multi-dimensionality of Modern India; to highlight the ideas, institutions, forces and movements that contributed to the shaping of Indian modernity; to acquaint the student with various interpretative perspectives; to help them in articulating their own ideas and views leading to research orientation.
24	INTELLECTUAL HISTORY OF THE MODERN WEST	The paper is seen as a prerequisite for understanding the concepts that are used in history, both of west Europe and India; to acquaint the student with the intellectual activity that played an important role in shaping events; the transition from medieval to modern times.
25	WORLD AFTER WORLD WAR- II -1945-2000	To acquaint the student with the post-World War II scenario and to enable them to understand contemporary world from the historical perspective.
26	MAHARASHTRA IN THE 20 TH CENTURY	The purpose of the course is to enable the student to study the history of modern Maharashtra with an analytical perspective and to highlight the ideas, institutions, forces and movements in 20th century Maharashtra. It aims to introduce the student to the regional history within a broad national framework.


 Head Department of History
 S.M.B.S. Thorat College, Sangamner


 Principal
 S.M.B.S.T. College, Sangamner

Department of BBA(Business Administration)

Program Outcomes (POs) :

BBA is a professional programme aimed at inculcating managerial and entrepreneurial attitude and skills amongst the learners. This programme is designed to provide basic understanding about Management Education and prepare the students to avail the opportunities available in the Management Profession .It also helps them to become successful business leaders by creating self-employment opportunities. It is basically a development programme for enhancing leadership qualities and encouraging the students to build the required business acumen. The Bachelor of Business Administration (BBA) is a full time three (3) years programme. And it is divided into 6(six) semesters.

PO1	To develop precise understanding about business environment and organizations.
PO2	To develop leadership aptitude among the students in order to work independently and in organized groups.
PO3	To inculcate among the students the qualities of a dynamic manager, capable of taking various decisions and communicating effectively to different groups of people
PO4	To understand and gain knowledge of various financial institutions and agencies.
PO5	To train students in professional skills related to Industry.

Programme Specific Outcomes (PSOs)

PSO1	To understand how modern technology affects businesses and media based communication is working in present context.
PSO2	Effects of new media on business is affecting on interpersonal relations and groups
PSO3	Impart an understanding of the basics of our discipline.
PSO4	Prepare for continued professional development.
PSO5	Develop proficiency in the practice of Managerial Skills.

Course Outcomes (COs):

F. Y. B. B.A Principles of Management Course Code 101 - GC Credit -3

CO1	Basic aspects of management thinking & Develop ability of managerial thinking and cultivates business acumen.
CO2.	To understand different approaches to management thoughts and philosophy & Ability to understand approaches to philosophy of management thinking.
CO3	To understand the importance of functions of management and their roles & Ability to organize various programs and events.
CO4.	To know what are the themes in modern management and changes in the business & To learn about new systems and trends in modern management

F. Y. B. B.A Business Communication Skills Course Code: 102 SC Credit 4

CO1	To understand the basic purpose of communication. & Ability to understand and comprehend the meaning of different forms of communication
CO2.	To understand how to write effective messages and different types of communication, & Ability to write meaningful and concise and effective messages
CO3	To understand how to make effective Business Correspondence & Ability to write precise business letters and understanding about business correspondence
CO4.	To understand how modern technology effects businesses and media based communication is

F. Y. B. B.A Business Accounting Code No. 103 GC Credit – 3

CO1	To understand role and importance of accounting in Business and how accounting concept can be implemented in business.
CO2.	To understand how to record different financial transactions and their financial implications.
CO3	To understand the kind of accounting relationship between customer and bank .
CO4.	Ability to understand growing importance of software and to know how to use software and to write books of accounts

F. Y. B. B.A Business Economics – Micro Course Code: 104 GC Credit – 3

CO1	Role and purpose of economics in society and economic & Ability to think in prudent manner.
CO2.	To understand how the concept of demand and supply works in particular economy.
CO3	To understand role and function of revenue in different economic decision .
CO4.	To understand concept of market and different forces affecting completion of market under different economic circumstances

F. Y. B. B.A Business Mathematics Course Code – 105 GC Credit 3

CO1	To understand how to apply the concept of interest and methods of calculation of interest.
CO2.	Ability to examine concept of discount in different business situations.
CO3	Ability to apply the various concepts in business situations.
CO4.	Ability to develop the skills for data interpretation and inferences.

F. Y. B. B.A Business Demography Code: 106 SC Credit 4

CO1	To Develop Rational understanding of demography, analysis and effects on society
CO2.	To develop understanding regarding growth process and social economic changes
CO3	To understand importance in modern and socio economic statues and to learn about role of literacy in economic development
CO4.	To understand the various determinants of urbanization and migration.

F. Y. B. B.A Business Organizations and Systems Course Code 201 Credit 4

CO1	To understand the purpose of business,
CO2.	To understand the significance of different forms of business organizations their types, function, merits and limitations.
CO3	To know how to search business ideas, how to pre business feasibility report, how to identify ideal business location and deciding optimal size for a new business unit, identification of capital sources for new business unit and basic documentation required for business enterprise
CO4.	To learn about how a retail trade works in business system, different forms of retail trade and their contribution in the economy.

F. Y. B. B.A Principles of Marketing Course code 202 Credit 3

CO1	To understand various tasks performed by marketing managers in different environment
CO2.	To study the types of segmentation To develop write understanding of profile of Indian market
CO3	To have right understanding of marketing mix as they influences as marketing mix.
CO4.	To learn about types of market in developing economy and society.

F. Y. B. B.A Principles of Finance Course code 203 Credit 3

CO1	To understand role and importance in business Ability to understand implication of finance on business
CO2.	To learn about imp features and their applications considering their requirements in business
CO3	To Understand how basic financial structure is designed To know what are the constituents a financially sound business units.
CO4.	To understand new and emerging trends in business finance Ability to understand about current issues related with new trends in business finance

F. Y. B. B.A Basics of Cost Accounting Course code 204 Credit 3

CO1	To understand importance of costing in decision making Ability to understand importance of costing and role of costing.
CO2.	To understand how to prepare a cost statement and analyze implication of elements of cost on total cost Ability to examine different aspects of cost as they influence total cost structure and sales price. Ability to prepare comprehensive cost sheet.
CO3	To understand concept of overhead as it contributes to total cost of a product or service
CO4.	To understand role of contract costing in ascertaining cost of a particular project or activity

F. Y. B. B.A Business Statistics Course code 205 Credit 3

CO1	To understand role and importance of statistics in various business situations
CO2.	To develop skills related with basic statistical technique
CO3	Develop right understanding regarding regression, correlation & interpretation
CO4.	Concept and meaning of Correlation, Types of correlation.
CO5.	Concept and meaning of Index Number, Notations

F. Y. B. B.A Fundamentals of Computers Course code 206 Credit 4

CO1	To understand role and importance of computers in business processes
CO2.	To understand the importance of operating system
CO3	To learn the process for usage of different computer application in business processes.
CO4.	Ability to handle various software and programmes with due cautions and care.

S. Y. B.B.A. Principles of Human Resource Management Course Code- GC - 301 Credits - 3

CO1	To understand the basic concept of HRM and develop knowledge about the various functions .
CO2.	To make the students understand how Job Analysis & Human Resource Planning play an important role in the Organization.
CO3	To cultivate the knowledge about Career Planning, Employee Morale & Job
CO4	To make the students aware about Changing Environment of HRM.

S. Y. B.B.A. Supply Chain Management Course Code: GC - 302 Credits -3

CO1	To understand the functions of Supply Chain Management.
CO2.	To know the process of Work Flow Automation
CO3	To learn the methods of Logistics Planning.
CO4.	To learn the Supply Chain Network Design.

S. Y. B.B.A. Global Competencies and Personality Development Course Code-GC- 303 Credits - 03

CO1	To understand various factors affecting personality development of an individual.
CO2.	To decipher the characteristics of globally competent individual and encourage students to develop that characteristics among themselves

CO3	To introduce the concept of SWOC Analysis and encourage the students for personal Goal setting by providing theoretical as well as practical knowledge.
CO4.	To explain various styles and qualities of leaders and encourage students for effective leadership.
CO5.	To introduce basics of grooming and effective use of body language.

S. Y. B.B.A. Fundamentals of Rural Development SY BBA Course Code: GC - 304 Credit: 3

CO1	To provide sound knowledge about rural development.
CO2.	They should develop problemsolving skills and the ability of working with clients with diverse interests.
CO3	To develop awareness regarding the challenges of Rural Development.
CO4	They should develop problemsolving skills and the ability of working with clients with diverse interests.

S. Y. B.B.A. Discipline Specific Electives (DSE- A- MM) Consumer Behavior& Sales Management SY BBA Course Code- A 305 MM Credits 3+1=4

CO1	To know about determinants of consumer behavior affects the marketing system.
CO2.	To develop the conceptual decision making insights.
CO3	To provide the basic understanding of the processes followed in sales management
CO4	To provide an understanding of the tools and techniques necessary to effectively Manage& Control the sales function - organization - sales individual.

S. Y. B.B.A. Discipline Specific Electives (DSE- A- MM) Retail Management Course Code- DSE A 306 MM Credits 2+2=4

CO1	Retailing aims to develop students' understanding of retail strategy, retail operations management, innovation in retail, and the key issues impacting growth in retail firms
CO2.	To analysis the factors impacting store design and location selection.
CO3	To study store operations, merchandising and customer management.
CO4	To get conversant with the latest tool used in retail industry.

S. Y. B.B.A. Discipline Specific Electives (DSE- B- FM) Corse Title – Management Accounting Course Code- B 305 FM Credit 3+1=4

CO1	To understand the concept and meaning of management accounting. To understand difference between financial accounting, cost accounting and management accounting.
CO2.	To study different methods of analysis.
CO3	To understand the concept of contribution and breakeven point in business and its application while estimating profitability level.
CO4	To understand the concept of contribution and breakeven point in business and its application while estimating profitability level

S.Y. BBA Semester III (CBCS) Pattern 2019 Discipline Specific Electives (DES- B- FM) Course Title – Banking & Finance Course Code- B 306 FM Credits 2+2= 4

CO1	Overview of evolution and banking structure in India
CO2.	Students will understand various functions and activities of banks.
CO3	Knowledge of functioning and powers various Regulatory Authorities in India.
CO4	Use of technology in banking and study of security measures while using E- banking

SY BBA Semester III (CBCS) Pattern 2019 Discipline Specific Electives (DES- C- HRM) Organizational Behaviour (OB) Course Code: DSE- C -305 HRM Credits: 3+1=4

CO1	To understand and explain how and why O.B. study is important to students.
CO2.	To make use of the Theories of Personality by adding new perspective for overall development
CO3	To make use of Theories of Motivation to motivate employees to achieve higher performance in Organization.
CO4	To enable students to understand the relation between Organizational Performance & Conflict.

SY BBA Semester III (CBCS) Pattern 2019 Legal Aspects in Human Resources DSE - C 306 (HRM) Course Code: DSE - C 306 (HRM) Credits: 2+2=4

CO1	To study and explain rights of employees at work place.
CO2.	To understand the basic concepts of Wage & Salary Administration.
CO3	To gain knowledge & Applications of The Payment of Gratuity Act,1972
CO4	To enhance the awareness of the students towards different Acts and its application.

SY BBA Entrepreneurship and Small Business Management- GC-401 Course Code -- 401 Credit

CO1	Learning & understanding the concept of Entrepreneur and process of Entrepreneurship.
CO2.	Environmental Scanning for identification of Business opportunities.
CO3	Creating awareness about financial assistance of various institutions
CO4	Development of interest and positive approach towards entrepreneurship and new startups.

SY BBA : Production and Operation Management- 402 GC Course Code -402 GC Credits - 3

CO1	To understand the different layout and safety considerations used for production mgt.
CO2.	To make the students understand how product developed, planned and controlled in manufacturing.
CO3	To provide knowledge to the students regarding Ergonomics and safety measures.
CO4	To make the students aware about Changing Environment, Production and operation maintenance methods.

SY BBA Decision Making and Risk Management- 403 GC Course Code -- 403 GC Credits -- 3

CO1	To understand the role and scope of Decision making and Risk management in organizations.
CO2.	To understand the importance of Decision making tools and models in business.
CO3	To understand the role of leadership and its allied aspects while making decisions
CO4	To understand the role and importance of organizational values in Decision making and Risk Management

SY BBA International Business Management- 404 GC Course Code -- 404 GC Credits -- 3

CO1	Understand the Role and Scope of International Business.
CO2.	Role of International Business and its importance at National and International
CO3	Understanding terms of trade in the International Market.
CO4	Understand the functions of International Organizations.

SY BBA Advertising and Promotion Management- DSE- 405 A-MM Course Code - 405 A-MM Credits – (3+1)=4

CO1	To understand the basic concept of advertising and social issues, ethics.
CO2.	To provide the knowledge regarding copy creations and media selection.
CO3	To make the student aware about promotion techniques.
CO4	To cultivate the knowledge regarding online advertising and various types.

SY BBA Digital Marketing- DSE 406 A- MM Course Code – 406 A-MM Credit –(2+ 2) = 4

CO1	To develop digital strategy to influence consumer behaviour.
CO2.	To develop the right understanding of the situations as they are influenced under Digital
CO3	To understand the importance of Digital Platforms & its impact upon the performance of the organizations in complex & varied environment.
CO4	To know the optimum use of various social media platforms.

SY BBA Business Taxation- 405- B-FM Course code 405 –B-FM Credits: (3+1) = 4

CO1	Understanding the historical background of Indian Income tax structure.
CO2.	To know the tax compliances of business & Individual person.
CO3	To know & understand the procedure of online ITR filing.
CO4	To acquire the knowledge about important concepts of Income tax act 1961, such as TDS, TCS, Advance tax etc.

SY BBA Financial Services. 406 B- FM Course code: 406 B-FM Credits: 4 = (2+2)

CO1	To study & understand the basic concepts of Indian Financial system.
CO2.	To understand the functioning of primary & secondary market
CO3	To Study & examine various financial services provided by various financial institutions in India
CO4	Basic knowledge of derivatives & Commodity market.

SY BBA Human Resource Management Functions& Practices- DSE 405 C- HRM Course Code: DSE- 405 –C-HRM Credits: (3+1) = 4

CO1	To understand and explain the Concepts of Performance Appraisal, Training and Executive Development.
CO2.	To understand and explain the Concepts of Employee Compensation and other functions of
CO3	To develop an understanding about how Workers Participation is an important aspect in an organization and various forms of WPM.
CO4	To develop an understanding among the students regarding OD Programme and its interventions.

SY BBA Employee Recruitment & Record Management DSE- 406 C- HRM Course Code: DSE-406 C- HRM Credits: 4 = (2+2)

CO1	To understand the Techniques of Manpower Forecasting.
CO2.	To understand detailed Process of Selection in the Organization.
CO3	To gain knowledge & Applications of Employee Record Management in Organization.
CO4	To understand various concepts and steps relating to designing of computer technologies and its applications in various field.

TY BBA Semester V (CBCS) Pattern 2019 Research Methodology Course code GC 501 Credit 3

CO1	To develop an understanding of the right approach of Research Methodology and its role in Business.
CO2.	To develop an understanding of the basic framework of the identification of various sources of information for data collection
CO3	To develop an understanding of various Designs, Tools and Techniques of Research
CO4.	To enable the students in conducting Research work and write Research Paper and Research Project Report.

TY BBA Semester V(CBCS) Pattern 2019 Database Administration and Data Mining Course Code- GC502 Credit – 3

CO1	To understand the concepts of a database management system
CO2.	To understand the concept of transactions
CO3	To understand the relevance of Data Warehousing in businesses.
CO4.	To understand the relevance of Cloud Computing in businesses.

TY BBA Semester V (CBCS) Pattern 2019: Business Ethics Course Code – GC 503 Credits – 3

CO1	Understand the Role and Scope of Business Ethics.
CO2.	Understand the concepts and role of Business and Stakeholder ethics.
CO3	Understand the role of CSR in traditional and Modern Business.
CO4.	Understand the role of Environmental rules and regulations in protecting the environment.

TY BBA Semester V (CBCS) Pattern 2019 Course Title: Management of Corporate Social Responsibility Course Code–GC 504 Credit – 3

CO1	To know about the various models of CSR Importance of CSR activities
CO2.	Understanding of various models and how to apply them.
CO3	Knowing the legal aspect for implementing CSR -Decision-making ability
CO4.	Learning through Case Studies of functionality and impact on the Corporate and Society.

TY BBA Semester V (CBCS) Pattern 2019 Course: Marketing Environment Analysis and Strategies Course Code- DSE A 505 MM Credit – (3 + 1) = 4

CO1	The unit introduces the forces shaping the marketing environment, required to analyze the Business position in the market.
CO2.	The unit aims to help understand the Business Analysis process.
CO3	The module reveals the relevance of Marketing Research for finalizing the marketing strategies.
CO4.	The module focuses on the marketing strategies in the various business domains

TY BBA Semester V(CBCS) Pattern 2019 Course: Legal Aspects in Marketing Management Course Code- DSEA 506 MM Credit – 2+4 =6

CO1	To understand the legal aspect of Marketing Management
CO2.	To study price-related laws and consumer rights for surcharge payment
CO3	To study Terms and conditions in CRM
CO4.	To make students aware of different acts and laws and their application in real time

T.Y. BBA Semester V (CBCS) Pattern 2019 Course Title – Analysis of Financial Statements Course Code- DSE B 505 FM Credit- 3+1 = 4

CO1	To develop, critical & analytical skills for understanding the application of various tools of analysis of financial statements
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CO2.	To develop analytical and interpreting skills for evaluating the financial position of business corporations by calculating and comparing various ratios
CO3	To understand the cash management of any business corporations by preparing cash flow statement.
CO4.	To understand the arrangement of funds for day-to-day business operations by preparing a fund flow statement

T.Y. BBA Course Title – Legal Aspects of Finance & Security Laws Course Code- DSE B 506 FM Credit- 2+4=6

CO1	To understand the fundamentals of legal aspects of Finance.
CO2.	To explore the legal procedure of IPO listing & Delisting.
CO3	To study & understand the basics of the Companies Act 2013
CO4.	To study & understand the basics of Goods & Service Tax.

TY BBA Semester V (CBCS) Pattern 2019 Cross-Cultural HR & Industrial Relations Course code DSE C 505 HRM Credit 3+1= 4

CO1	To discuss the impact of cross-cultural communication on international business.
CO2.	To make students aware of Cross-cultural Differences and Managerial Implications.
CO3	To provide an understanding of the relation between Ethical Codes & I.R
CO4.	To inculcate the knowledge among students about authorities under The Industrial Disputes Act, 1947.

TY BBA –Semester V (CBCS) Pattern 2019 Cases in Human Resource Management + Project Viva Course code DSE C 506 HRM Credit - 2+4 = 6

CO1	To make student know the gist of the Case Study and the way of attempt or solution. Explain steps in solving case studies
CO2.	Analyze the broad fundamental components of HRM.
CO3	To make students know about recent happening in important concepts of Human Resource.
CO4.	Design critical thinking by making judgments related to problems in case studies of H.R

TY BBA – Essentials of E-Commerce Course Code- GC 601 Credit – 3

CO1	To understand the concept and role of E-Commerce business with context to India.
CO2.	To understand the concept of digital currencies.
CO3	To understand various tools and techniques used in ECommerce.
CO4.	To understand the concept of cyber warfare and crimes that took place in cyberspace.

TY BBA – Management Information System Course code GC 602 Credit 3

CO1	To understand the basic concept of Information Technology and Management Information Technology.
CO2.	To make students understand the models of Decision Making and their application Decision-Making Process.
CO3	To inculcate knowledge of the different System Development Model.
CO4.	To find out the relation between Enterprise Model System and E-Business.

TY BBA – Business Project Management Course Code- GC 603 Credits – 3

CO1	To understand the role & importance of Management in Business Projects.
CO2.	To develop conceptual clarity in Planning & Implementation of Business Projects.

CO3	To understand the relevance of a technique-based project management system in the success of business projects.
CO4.	To develop a mindset of calculation-based business projects to minimize the chances of its failure.

TY BBA – Management of Innovations and Sustainability Course Code GC 604 Credits – 3

CO1	Introduction to a management approach to Innovation
CO2.	To Identify the factors organizations have to manage to achieve success in Innovation
CO3	Gain insight into the fundamental drivers creating opportunities for entrepreneurs and new ventures in the sustainability innovation arena.
CO4.	A better understanding of several aspects of sustainable development

TY BBA – International Brand Management Course Code-DSE A 605 MM Credit – 3 + 1 = 4

CO1	The module aims to familiarize the students with the key conceptual foundations of developing and managing a strong brand.
CO2.	The module introduces the process of creating a brand.
CO3	The module reviews the methods of measuring and interpreting brand performance.
CO4.	The module focuses on the stewardship and management of brands over time, geographic areas, and market segments.

TY BBA – Cases in Marketing Management + Project Course Code- DSE A 606 MM Credit - 2+4 = 6

CO1	To make student know the gist of the case study and way of attempt or solution
CO2.	To develop the ability about getting acquainted with the theory and its application in a real-life

TY BBA – Financial Management Course Code-DSE B 605 FM Credits –3+1=4

CO1	To understand various sources of finance for raising capital /funds required for the business. By studying various sources of finance analytical & reasoning skills will be developed.
CO2.	To understand the proportion of borrowed capital & owned capital, considering their cost of capital. It helps to develop calculative & mathematical skills
CO3	To understand the process of undercapitalization & overcapitalization. It helps to develop professional & problem-solving skills.
CO4.	To understand the process of evaluation of mutually exclusive proposals. It helps to evaluate different investment proposals through experiential learning.

TY BBA – Cases in Finance +Project Course Code- DSE B 606 FM Credit- 2+4=6


CO1	To study & understand the practical applications of Capital Budgeting.
CO2.	To understand the concept & importance of Working Capital Management.
CO3	To study & understand the basics of ROCE, ROI & Cost of Capital.
CO4.	To study & understand implications of selected core areas of finance under study.

TY BBA – Global Human Resource Management Course code DSE C 605 HRM Credit 3+1=4

CO1	To introduce the students to the study and the practice of Global HRM.
CO2.	To provide information about Global Workforce Management functions
CO3	To make students aware of barriers in Global Training & Development, Global Compensation and Global Performance Management
CO4.	To provide sound knowledge about strategic HRM and Ethics related challenges for the HR functions in multinational enterprises.

TY BBA – Recent Trends & HR Accounting + Project Course Code DSE C 606 HRM Credit 6

CO1	To understand the basic concept of Employee Engagement.
CO2.	To discuss the uses of Human Resource Information Systems in organizations
CO3	To study the methods of Human Resource Valuation.


HEAD
 Department of BBA
 S.M.B S T College, Sangamner

S.B.V.P. samaj's
Sahakar Maharshi Bhausaheb Santuji Thorat College of Arts , Science and Commerce
Sangamner , (422605) , Dist :-Ahmadnagar.

Department of BBA(CA)

Program Outcomes (POs):

B.B.A[Computer application] is a systematically designed three year course that prepares the student for a career in Software/IT Industry. The syllabus of B.B.A[Computer application] subject along with that of the three allied subjects (Computer, Programming and Management) forms the required basics for pursuing higher studies in Computer Application and Management. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry. The syllabus of computer Application subject along with all Computer Programming like C,C++,Data Str. Android, Java, Python, AngularJS, Node JS, Mongo DB etc . forms the required basics for pursuing higher studies in Computer Application. The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

PO1	To develop problem solving abilities using a computer.
PO2	To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
PO3	To imbibe quality software development practices. To create awareness about process and product standards.
PO4	To prepare necessary knowledge base for research and development in Computer Application
PO5	To train students in professional skills related to Software Industry. To develop interdisciplinary approach among the students
PSO5	To bring the spirit of entrepreneur To provide thorough understanding of nature, scope and application of computer and computer languages

Program Specific Outcomes

After the completion of the course, a student is able

- To pursue further studies to get specialization in Computer Science and Applications, Economics, Mathematics, business administration
- To pursue the career in corporate sector can opt for MBA.
- To Work in the IT sector as programmer, system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.
- To work in public sector undertakings and Government organizations.
- For teaching in Schools and Colleges.

PSO1	Apply fundamental principles and methods of Computer to a wider range of applications.
PSO2	Design, correctly implement and document solutions to significant Computational problems.
PSO3	Impart an understanding of the basics of four discipline.
PSO4	Prepare for continued professional development.
PSO5	Develop proficiency in the practice of computing.
PSO6	To prepare graduates who will have a successful professional career in software industry, government, academia, research, and other areas
PSO7	To prepare broadly educated, ethical and responsible citizens.

Course Objectives and Outcomes

F.Y B.B.A. (C.A.) Semester I

F.Y B.B.A.(C.A.) CA-101 Business Communication

CO1	To provide an overview of Prerequisites to Business Communication
CO2.	To provide an outline to effective Organizational Communication.
CO3	To underline the nuances of Business communication
CO4.	Impart the correct practices of the strategies of Effective Business writing.
CO5.	Identify key principles in business communication.

F.Y B.B.A.(C.A.) CA-102 Principles of Management

CO1	able to have clear understanding of managerial functions like planning
CO2.	To understand the planning process in the organization
CO3	To learn the application of the principles in an organization
CO4.	Demonstrate the ability to directing, leadership and communicate effectively
CO5.	To analysis isolate issues and formulate best control methods.

F.Y B.B.A.(C.A.) CA-103 C Language

CO1	Explain about the basic concepts of program development statements and its syntax.
CO2.	Explain the various types of arrays and its structure.
CO3	Discuss about the various types of Functions and String handling mechanisms.
CO4.	Explain the Concepts of structures and Unions.
CO5.	Illustrate the various operations performed on different types of files.

F.Y B.B.A.(C.A.) CA-104 Database Management System

CO1	Describe the fundamental of File processing and database processing system.
CO2.	Explain the various data model and its application.
CO3	Explain the various normal forms and its role in DBMS.
CO4.	Explain the fundamental concepts of SQL programs.
CO5.	Describe the concepts of Database, Writing queries

F.Y B.B.A.(C.A.) CA-105 Statistics

CO1	Learn about Sampling Methods
CO2.	Familiar with Measures of Central Tendency and Measures of Dispersion Range.
CO3	Design and conduct experiments, as well as to analyze and interpret data.
CO4.	Evaluate the probabilities and conditional probabilities
CO5.	Evaluate expectations and conditional expectations of random variables.

F.Y B.B.A. (C.A.) CA-106 Computer Laboratory Based on 103 & 104

CO1	Explanation of design and algorithmic solution for a given problem.
CO2.	Construction of flowchart for the computer programs.
CO3	Explain the program using Control Statements
CO4.	Explain the program using Arrays and Functions.
CO5.	Explain the program using file handling with structure.

F.Y B.B.A. (C.A.) CA-107 Add-On (PPA)

CO1	Analyze the asymptotic performance of algorithms.
CO2.	Construction of flowchart for the computer programs.
CO3	Write rigorous correctness proofs for algorithms.
CO4.	Demonstrate a familiarity with major algorithms and data structures
CO5.	Apply important algorithmic design paradigms and methods of analysis.

F.Y B.B.A. (C.A.) Semester II

F.Y B.B.A. (C.A.) CA-201 Organization Behavior & Human Resource Management

CO1	To develop the understanding of the concept of human resource management and to
CO2.	To develop necessary skill set for application of various HR issues
CO3	To analyse the strategic issues and strategies required to select and develop manpower
CO4.	To integrate the knowledge of HR concepts to take correct business decisions.

F.Y B.B.A. (C.A.) CA-202 Financial Accounting

CO1	define bookkeeping and accounting
CO2.	Explain general purposes and functions of accounting
CO3	explain the differences between management and financial accounting
CO4.	describe the main elements of financial accounting information – assets, liabilities,
CO5.	identify the main financial statements and their purposes.

F.Y B.B.A. (C.A.) CA-203 Business Mathematics

CO1	Know the basic idea of Permutations and Combinations, and Probability Concepts.
CO2.	Familiar with Determinant and Matrices.
CO3	Formulate Limit, Continuity and Differentiability
CO4.	Calculate the number of samples needed to construct confidence levels mean and

F.Y B.B.A. (C.A.) CA-204 Relational database Management System

CO1	To study fundamental concepts of RDBMS (PL/Pgsql)
CO2.	To study database management operations
CO3	To study data security and its importance
CO4.	To study client server architecture
CO5.	To study Function Procedure, Trigger, Cursor

F.Y B.B.A. (C.A.) CA-205 Web Technology HTML-JS-CSS

CO1	Students will be familiar with client server architecture and able to develop a web
CO2.	Students will gain the skills and project based experience needed for entry into web
CO3	Resolves written HTML codes
CO4.	Runs the page he/she has designed using HTML codes
CO5.	Designs site and page via Microsoft Expression Web 4 programme

F.Y B.B.A. (C.A.) CA-206 Computer Laboratory Based on 204 & 205

CO1	Writing Procedures functions triggers on system
CO2.	Construction of various Procedures in system
CO3	Write rigorous correctness programs
CO4.	Demonstrate a familiarity with major applications and data structures
CO5.	Apply important algorithmic design paradigms and methods on System programs

F.Y B.B.A. (C.A.) CA-207 Add-On (Advance C)

CO1	Use the 'C' language constructs in the right way
CO2.	Design, develop and test programs written in 'C'
CO3	Use different data types in a computer program
CO4.	Design programs involving decision structures, loops and functions

S.Y B.B.A. (C.A.) Semester III

S.Y B.B.A. (C.A.) CA-301 Digital Marketing

CO1	Analyse the confluence of marketing, operations, and human resources in real-time
CO2.	Demonstrate cognitive knowledge of the skills required in conducting online research and
CO3	identifying, assessing and selecting digital market opportunities.

S.Y B.B.A. (C.A.) CA-302 Data Structure using C

CO1	Implementation of different data structures efficiently
CO2.	Usage of well-organized data structure to handle large amount of data
CO3	Usage of appropriate data structures for problem solving
CO4.	Design programs involving decision structures, loops and functions

S.Y B.B.A. (C.A.) CA-303 Software Engineering

CO1	Explain the fundamental knowledge in science, mathematics, fundamentals of Computer application, software engineering and multidisciplinary engineering to begin in practice as a software engineer.
CO2.	Explain to design a system, component, or process to meet desired needs within Realistic constraints such as economic, environmental, social, political, manufacturability, sustainability, ethical, health and safety.
CO3	Describe the techniques, skills, and modern engineering tools necessary for engineering practice.
CO4.	Explain the early careers will be capable of team and organizational leadership in computing project settings, and have a broad understanding of ethical application of computing-based solutions to societal and organizational problems.

S.Y B.B.A. (C.A.) CA-304 Angular JS

CO1	Utilizing AngularJS formats adequately.
CO2.	Questioning and adjusting information in various databases
CO3	Quickly making perplexing structures
CO4.	Understanding two-way (proportional) information authoritative

S.Y B.B.A. (C.A.) CA-304 PHP

CO1	Write PHP scripts to handle HTML forms
CO2.	Write regular expressions including modifiers, operators, and metacharacters
CO3	Create PHP programs that use various PHP library functions, and that
CO4.	Construct PHP scripts to create dynamic web content.

S.Y B.B.A. (C.A.) CA-305 Big Data

CO1	Access and Process Data on Distributed File System
CO2.	Students will demonstrate proficiency with statistical analysis of data
CO3	Students will develop the ability to build and assess data-based models
CO4.	Students will execute statistical analyses with professional statistical software

S.Y B.B.A. (C.A.) CA-305 Block Chain

CO1	Understand how blockchain systems (mainly Bitcoin and Ethereum) work,
CO2.	To securely interact with them
CO3	Design, build, and deploy smart contracts and distributed applications
CO4.	Integrate ideas from blockchain technology into their own projects.

S.Y B.B.A. (C.A.) CA-306 Computer Laboratory Based on 302, 304 and 305

CO1	Implementation of different data structures efficiently
CO2.	Usage of well-organized data structures to handle large amount of data
CO3	Usage of appropriate data structures for problem solving
CO4	Creating Block and blockchain applications
CO5	Create and Run Angular and PHP Applications

S.Y B.B.A. (C.A.) Semester IV

S.Y B.B.A. (C.A.) CA-401 NETWORKING

C01	Explain the local, metropolitan and wide area network using the Standard OSI Reference model.
C02.	Discussion of various networking technologies.
C03	Explain the concepts of protocols, network interfaces and design of performance issues in local area networks and wide area networks.
C04.	Describe about wireless networking concepts, contemporary issues in networking technologies, network tools and network programming.
C05.	Explain the analysis of different types of protocols and the comparison of Number of data link, network and transport layer protocols.

S.Y B.B.A. (C.A.) CA-402 Object Oriented Concepts Through CPP

C01	Explain about the basic concepts of program development statements and its syntax.
C02.	Explain the various types of arrays and data structure.
C03	Discuss about the various types of Functions and String handling mechanisms.
C04	Explain the Concepts of structures and Unions.

S.Y B.B.A. (C.A.) CA-403 Operating System

C01	Describe the basic components of an operating system and their role in implementations for general purpose, real-time and embedded applications.
C02.	Define the concept of processes, threads, asynchronous signals and competitive system resource allocation.
C03	Explain what multi-tasking is and outline standard scheduling algorithms for Multi-tasking.
C04.	Discuss mutual exclusion principles and their use in concurrent programming including semaphore construction and resource allocation.
C05.	Expose the details of major operating system concepts, overview of system memory management and the implementation of file systems.

S.Y B.B.A. (C.A.) CA-404 NODE JS

C01	Understand the core flow control
C02.	Understand the core flow control patterns in Node.js and know when it is
C03	Create and manipulate buffers efficiently.
C04.	Create Node Applications

S.Y B.B.A. (C.A.) CA-404 Advance PHP

C01	Implement Simple PHP programs to solve simple problems
C02.	Prepare detailed statement of problem for the selected mini project
C03	Identify suitable process model for the same.

S.Y B.B.A. (C.A.) CA-405 Project

C01	An ability to apply knowledge of mathematics, computer science and management in
C02.	An ability to enhance not only comprehensive understanding of the theory but its application
C03	Capability to assist in the creation of an effective Project plan
C04.	Learn developing methodology of software project
C05	Develop Software Requirement Specification for the project.
C06	Identify scenarios and develop UML Use case

S.Y B.B.A. (C.A.) CA-406 Computer Laboratory Based on 402,404

C01	Implement Simple PHP/CPP programs to solve simple problems
C02.	Prepare detailed statement of problem for the selected mini project
C03	Identify suitable process model for the same.

T.Y.B.B.A.(C.A.) Semester-V

Course Code: CA-501 Subject Name: Cyber Security

Course Objectives:

- To understand the fundamentals of cyber security.
- To understand various categories of Cybercrime, Cyber-attacks on mobile, tools and techniques used in Cybercrime and case studies.
- To have an overview of the Cyber laws and concepts of Cyber forensics.

Course Outcome:-

- Have a good understanding of Cyber Security and the Tools.
- Identify the different types of Cyber Crimes.
- Have a good understanding of Cyber laws
- To develop Cyber forensics awareness.
- Identify attacks, security policies and credit card frauds in mobile and Wireless Computing Era.

Course Code: CA-502 Subject: Object Oriented Software Engineering

Course Objectives:

- To understand the fundamentals of object modeling
- To understand and differentiate Unified Process from other approaches.
- To design with static UML diagrams.
- To design with the UML dynamic and implementation diagrams.
- To improve the software design with design patterns.
- To test the software against its requirements specification.

Course Outcome:-

- Students will be able to give Design Specifications for Project.
- Students will acquire Knowledge in Basic Modeling.
- Students will acquire Project Management Skills.

Course Code: CA-503 Subject: Core Java

Course Objectives:

- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/o classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications.

Course Code: CA-504 Subject: Python

Course Objectives:

1. To learn and understand Python programming basics and paradigm.
2. To learn and understand python looping, control statements and string manipulations.
3. Students should be made familiar with the concepts of GUI controls and designing GUI applications.
4. To learn and know the concepts of file handling, exception handling.

Course Outcomes: On completion of the course, student will be able

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.

Course Code: CA-504 Subject: MongoDB

Course Objectives:

- Understand importance of NoSQL Databases.
- Learn various MongoDB commands and MongoDB design goals.
- Design basic and general-purpose database using MongoDB.

Course Outcomes:

- Learned to work with MongoDB shell and MongoDB tools.
 - Able to do Schema design, Data modelling and all sorts of CRUD Operations.
 - Learned to optimize query performance.
- Become capable to analyze the data stored in MongoDB.

Course Code: CA-507 Subject: Internet of Things (IOT)

Course Objectives:

- To understand Technical aspects of Internet of things.
- To describe smart objects and IoT Architecture.
- To study and compare different Application protocols of IoT.
- To understand IoT platform using Arduino Uno.

Course Outcomes:

- Students will be able
- To explain key technologies, smart objects, IoT Architecture and security in Internet of Things.
- To illustrate the role of IoT protocols for efficient network communication.
- To understand IoT platform such as Arduino Uno.

T.Y.B.B.A. (C.A.) Semester VI

Course Code: CA-601 Subject: Recent Trend in IT

Course Objectives

- To introduce upcoming trends in Information technology.
- To study Eco friendly software development concepts.
- To provide a strong foundation of fundamental concepts in Artificial Intelligence.
- To evaluate the performance of various data mining tasks.
- To understand Data analytics using Spark Programming.

Course Outcomes

- On completion of the course, student will be able
- To discuss the basic concepts AI.
- To apply basic, intermediate and advanced techniques to mine the data
- To provide an overview of the concept of Spark programming

Course Code: CA-602 Subject: Software Testing

Course Objectives

- To provide learner with knowledge in Software Testing techniques.
- To understand how testing methods can be used as an effective tool in providing quality assurance for software.
- To provide skills to design test case plan for testing software.

Course Outcomes

- Students will be introduced to testing tools.
- Students will acquire Knowledge of Basic SQA.
- Students will be able to design basic Test Cases.

Course Code: CA-603 Subject: Advanced Java

Course Objectives

- 1. To know the concept of Java Programming
- 2. To understand how to use programming in day to day applications.

Course Outcomes

- Students will know the concepts of JDBC Programming.
- Students will know the concepts of Multithreading and Socket Programming.
- Students will know the concepts of Spring and Hibernate.
- Students will develop the project by using JSP and JDBC.
- Students will develop applications in Spring and hibernate.

Course Code: CA-604 Subject: Android Programming

Objective:

- To understand the Android Operating System and develop applications using Google's Android open- source platform.
- To understand the issues relating to Wireless applications.

Course Outcomes

- Student will be able to write simple GUI applications, use built-in widgets and components,

- work with the database to store data locally, and much more.
- Demonstrate their understanding of the fundamentals of Android operating systems Demonstrate their skills of using Android software development tools

Course Code: CA-604 Subject: VB.Net Programming

Course Objectives:

- To learn Microsoft framework architecture.
- Understand development of windows application.
- To learn data access mechanism.
- Create and consume libraries.
- Create a web application.
- To develop the website and application.

Course Outcome:

- Use the features of Dot Net Framework along with the features of VB, C# and ASP
- Design and develop window based and web based .NET applications.
- Design and develop a Website.
- Design and Implement database connectivity using ADO.NET for VB, C# and ASP.

Course Code: CA-607 Subject: Soft Skill

Course Objectives:

- It helps participants to communicate effectively and to carry themselves confidently.
- They also learn how to identify and overcome the barriers in interpersonal relationships.
- To improve oral and written communication, teamwork, leadership, problem-solving and decision-making skills, to gain best results.

Course Outcome:

- Understand the significance and essence of a wide range of soft skills
- Learn how to apply soft skills in a wide range of routine social and professional settings.
- Learn how to employ soft skills to improve interpersonal relationships.
- Learn how to employ soft skills to enhance employability and ensure workplace and career success.



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