

DEPARTMENT OF CHEMISTRY

Program Specific Outcome

- Be able to describe the fundamental scientific principles in the subfields of chemistry (analytical, inorganic, organic and physical), and apply these principles to problems.
- Be able to explain, integrate and apply relevant knowledge to problems that emerge from the broader interdisciplinary subfields (life, environmental and materials sciences).
- Students are able to design, carry out, record and analyze the results of chemical experiments.
- Students are able to use modern instrumentation and classical techniques, to design experiments, and to properly record the results of their experiment.
- Are skilled in problems solving, critical thinking and analytical reasoning.
- Are able to identify and solve chemical problems and explore new areas of research.
- Knows the proper procedures and regulations for safe handling and use of chemicals and can follow the proper procedures and regulations for safe handling when using chemicals.
- Understand the ethical, historic, philosophical, and environmental dimensions of problems and issues facing chemists.
- Will demonstrate chemistry proficiency in all four disciplines of chemistry: analytical, inorganic, organic, and physical.



Course outcome of Chemistry Department

Class	Course	Outcome
F.Y.B.Sc.	CH: 101 Physical and Inorganic Chemistry -I	<ol style="list-style-type: none"> 1. Understand the electrolytic conductance. 2. To study the periodic table atoms, molecules, and their characteristics 3. study the mathematics preparation in chemistry and geographical representation of equations
	CH: 102 Organic and Inorganic Chemistry-I	<ol style="list-style-type: none"> 1. To study the introduction, general properties and applications of organic compounds. 2. Introduction, nomenclature and preparation of alkanes, alkenes and alkynes. 3. Understand the strong and weak acids and bases, degree of dissociation, 4. Buffer solution preparation
	CH: 201 Physical and Inorganic Chemistry-II	<ol style="list-style-type: none"> 1. To study the kinetic theory of ideal gases, kinetic gas equation, Avogadro's principle, Graham's law, Van der Waals constant 2. Occurrence of metals and metallurgy process. 3. Study the limitations of thermodynamics.
	CH: 202 Organic and Inorganic Chemistry-II	<ol style="list-style-type: none"> 1. Understand the structure and occurrence of aldehydes and ketones. 2. Carboxylic acids and their derivatives. 3. Study the volumetric analysis and preparation of solutions 4. Chemical bonds and their structure
S.Y.B.Sc.	CH-231 Part I - Physical Chemistry	<ol style="list-style-type: none"> 1. Understand the thermodynamics, free energy their relation and equation 2. Introduction types and factors affecting solubility.
	CH-241 Part I - Physical Chemistry	<ol style="list-style-type: none"> 1. Colligative properties, solute solvent, boiling point concept 2. Introduction to electrochemistry, electromotive force
	CH-231 Part-II Inorganic Chemistry	<ol style="list-style-type: none"> 1. Chemistry of Transition Elements. 2. Elements of first, second & third transition series. 3. General characteristics of d-block elements. 4. General Properties of Metals. Conductivity, Luster,

T.Y.B.Sc.		Malleability & cohesive force 5. The Metallurgy of Alluminium
	CH-241 Part-II Inorganic Chemistry	1. Chemistry of Lanthanoids and Actinoids Elements. 2. Molecular Orbital Theory (MOT)
	CH-232 Part-I Organic Chemistry	1. Types of stereoisomerism. 2. Introduction , Classification, preparation of amines 3. Nomenclature, carbon-metal bond in organometallic compounds.
	CH-242 Part-I Organic Chemistry	1. Chemistry of Heterocyclic Compounds. 2. Synthetic Reagents preparations 3. Elimination reactions types and mechanism
	CH-232 Part-II Analytical Chemistry	1. , importance of Analytical Chemistry, types of analysis 2. Classification of volumetric methods of analysis
	CH-242 Part-II Analytical Chemistry	1. Introduction, advantages of gravimetric analysis, 2. Introduction, advantages and disadvantages of chromatography.
	CH 351: Physical chemistry	1. Understand spontaneous and non spontaneous processes. 2. learn the importance of salt bridge in electrochemical cell. 3. Study the concept electrochemical cell and determination of potential of cell 4. Understand the laws of photochemistry (Grothus Draper Law and Stark Einstein law) 5. Understand the concept quantum yield and fluoresce and phosphorescence from Jablonski diagram. 6. Learn the various devices to measure the radiation from radioactive sample.
	CH-352: Inorganic chemistry	1. Learn the basic concept of the co-ordination compound, and identify the types of given ligand, chelates. 2. Understand the different physical method for the

		<p>study of complexes and assumptions, drawbacks and isomerism in Werner's theory.</p> <p>3. Effective atomic number (EAN) and how to calculate EAN for any given complexes.</p> <p>4. Understand the modern theories of metal-ligand bond related to valence bond theory. C38</p> <p>5. Understand the basic concept about CFT e. Spin magnetic moment, crystal field stabilization energy related to weak and strong field, limitation of theory.</p> <p>6. Understand the modern theories of metal-ligand bond related to Molecular orbital theory, and difference between B.T., C.F.T. and M.O.T.</p>
	CH-353: Organic chemistry	<p>1. Students can understand Polarity picture of carbonyl group and nucleophilic addition reaction to it.</p> <p>2. Introduction concept of aromaticity electrophilic and nucleophilic aromatic substitution reaction.</p> <p>3. Molecular rearrangement involving migration to C, N and Oxygen.</p> <p>4 Drawing the resonating structures.</p> <p>5. Understand Nuclophic substitution reactions.</p>
	CH-354: Analytical Chemistry SEM V	<p>1. Understand procedure of extraction of metal ions using Solvent Extraction process.</p> <p>2. Learn the applications of Size Exclusion Chromatography for the separation of analytes based on their size and shapes.</p> <p>3. Understand the working of Gas Chromatographic unit and apply the knowledge to separate volatile compounds in sample.</p> <p>4. Understand Principle, choice of column materials for HPLC and its application.</p> <p>5. Understand Principles of Electrophoresis and choice of techniques of electrophoresis for various applications</p>
	CH-355: Industrial chemistry	<p>1. Understand general concept of Industrial chemistry.</p> <p>2. Understand manufacturing of sugarcane.</p> <p>3. understand general idea of differ physical methods used in manufacturing.</p> <p>4. Understand manufacturing of Beer and spirit.</p> <p>5. understand the aspects of small scale industry.</p>
	CH 356: B Environmental	<p>1. Understand the concept about atmosphere and different layer and composition</p>

chemistry

2. Understand the concept. awareness about air pollution and organic inorganic pollutants
3. Understand the concept, water pollution and domestic sewage waste water, industrial pollution agriculture pesticide water pollution.
4. Understand the different methods of water treatment, water effluents and sewage water.
5. Understand the green house gases and global warming.

