

M.Sc. Chemistry

Course Outcome

Semester 1

Course	Outcomes After Completion of these courses students should be able to;
CH1C01 ORGANOMETALLICS AND NUCLEAR CHEMISTRY	CO-1. apply and analyse the methods of synthesis and the mechanism of selected catalytic organic reactions from the structure bonding aspects. CO-2. Understand reactivity of simple organometallic compounds, the functions of transition metal ions in biological systems and the applications of radioactive isotopes in various fields
CH1C02 STRUCTURAL AND MOLECULAR ORGANIC CHEMISTRY	Co-1. apply the fundamental concepts and mechanisms of organic CO-2. To understand photochemical reactions, stereochemistry and conformational analysis of organic compounds
CH1C03 QUANTUM CHEMISTRY AND GROUP THEORY	CO-1. understand fundamental ideas, mathematical concepts, applications of Group theory and quantum mechanics to molecular systems. CO-2. able to categorize common molecules into various point groups and apply the great orthogonality theorem CO-3. Understand to derive the character tables of various point groups.
CH1C04 CLASSICAL AND STATISTICAL THERMODYNAMICS	CO-1. able to apply principles and laws of equilibrium thermodynamics to multicomponent systems, CO-2. Understand to calculate thermodynamic properties of ideal Gases and real gases using the principles and techniques of statistical thermodynamics. CO-3. familiarize with the properties and theories of gases.

Semester 2

Course	Outcomes After Completion of these courses students should be able to;
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CH2C05 COORDINATION CHEMISTRY	CO-1.acquire a foundation of chemistry of sufficient breadth and depth of co-ordination compounds CO-2.enable them to understand and apply their knowledge
CH2C06 ORGANIC REACTION MECHANISM	CO-1.understand the involvement of reactive intermediates, their structure and reactivity through various organic reactions, the orbital interactions (Woodward Hoffmann rules) in concerted reactions CO-2. Apply knowledge for solving problems.
CH2C07 CHEMICAL BONDING AND COMPUTATIONAL CHEMISTRY	CO-1.able to apply, analyze and evaluate group theoretical concepts in spectroscopy, Co-2.extent the ideas of quantum mechanics from one electron system to many electron systems and various theories of chemical bonding.
CH2C08 MOLECULAR SPECTROSCOPY	CO-1. Understand basic principles and theory of microwave, NMR, IR, Raman, UV-Vis spectroscopy.

Semester 1 &2 Practicals

CH2P01 : Inorganic chemistry Practical-1	CO-1.To be able to identify and separate less familiar ions such as Tl, W, Se, Mo, Ce, Th, Ti, Zr, V, U etc. CO-2.To be able to estimate colorimetrically ions such as Fe, Cu, Ni, Mn, Cr etc.
CH2P02 : Organic chemistry Practical-1	CO-1.To learn the separation and purification of an organic mixture by chemical/solvent separation methods. CO-2.To gain the knowledge to draw the structure of compounds using Chemdraw software
CH2P03 Physical chemistry Practical-1	CO-1.To verify the some important principles in physical chemistry and to determine various physical properties CO-2.To learn to carry out some simple computational chemistry calculations

Semester 3

Course	Outcomes After Completion of these courses students should be able to;
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CH3C09 STRUCTURAL INORGANIC CHEMISTRY	CO-1. able to apply the principles of qualitative and quantitative analytical techniques in inorganic chemistry for identification of ions and preparation and characterization of inorganic complexes CO-2. acquire basic information about the imperfections of solids, electrical and magnetic properties of solids and properties of inorganic chains , rings, cages and clusters. CO-3. awareness about organometallic polymers and magnetic nanoparticles.
CH3C10 ORGANIC SYNTHESSES	CO-1. understand the various organic reactions and reagents as tools for the synthesis of organic compounds. CO-2. learn the principles of protecting group chemistry and retrosynthetic approach towards organic synthesis.
CH3C11 CHEMICAL KINETICS, SURFACE CHEMISTRY AND PHOTOCHEMISTRY	CO-1. recognise the fundamental theories of reaction rates, mechanism of chain reactions, CO-2. Understand different types of surfaces, application of various isotherms in surface catalysed reactions, CO-3. Know symmetries of different crystal point groups and types and examples of liquid crystals
CH3C12 SPECTROSCOPIC METHODS IN CHEMISTRY	CO-1. able to apply the different spectroscopic methods Co-2. Ability to Solve problems based on it, spectral data for explaining important organic reactions and functional transformations.

Semester 4

Course	Outcomes After Completion of these courses students should be able to;
CH4E01 ADVANCED INORGANIC CHEMISTRY	Co-1. analyse and apply group theoretical principles in hybridisation technique of molecules, in complexes for explaining well known theories. CO-2. To have a knowledge about the preparation and characteristics of nanomaterials, metal organic frameworks and types of supramolecules

CH4E02 ADVANCED ORGANIC CHEMISTRY	<p>CO-1. analyse and interpret molecular recognition and supramolecular chemistry, Co-2. study the basic principles of green chemistry, the method of biosynthesis and biomimetic synthesis, Co-3. learn the importance of drug design and different categories of polymers .</p> <p>CO-4. understand the basic principles of research and how to write a scientific report</p>
CH4E03 ADVANCED PHYSICAL CHEMISTRY	<p>CO-1. To get an overview about the structure and properties of solid crystals and liquid crystals</p> <p>CO-2. To know the characterisation of crystals using X-Ray diffraction .</p> <p>CO-3. To learn the important aspects of gaseous state and electrochemistry .</p> <p>CO-4. To study the principle, instrumentation and applications of diffraction method, fluorescence spectroscopy, atomic spectroscopy and electroanalytical techniques.</p>

Semester 3 &4 Practicals

CH4P04 Inorganic chemistry practical-2	<p>CO-1. Enable the students to estimate the binary mixtures of metallic ions by volumetric and gravimetric methods .</p> <p>CO-2. To acquire the skill to analyse some common alloys and ores.</p>
CH4P05 Organic chemistry practical-2	<p>CO-1. To gain the skill to prepare organic compounds using greener protocols</p> <p>CO-2. Enable the students to prepare organic compounds via two step synthetic sequences</p> <p>CO-3. To know about enzyme/coenzyme catalysed reactions</p>
CH4P06 Physical chemistry practical-2	<p>CO-1. Enable the students to determine the various physical properties using simple instrumental methods like polarimetry, refractometry etc.</p>