

PROGRAM /COURSE OUTCOME
(Department of Chemistry)

Programme: MSc Chemistry

Outcome of the Program: Through lectures, laboratory work, exercises, project work, and its independent master's thesis, students will gain knowledge about relevant working methods for research, industry, administration, and education.

Program Specific outcome: To give need based education in chemistry of the highest quality at the post graduate level. Provide an intellectually stimulating environment to develop skills and enthusiasms of students to the best of their potential. Through lectures, laboratory work, exercises, project work students will gain knowledge about relevant working methods for research, industry, administration and education.

Course outcome

CH 50 01 01 ORGANOMET ALLICS AND NUCLEAR CHEMISTRY	The learners should be able to apply and analyse the methods of synthesis and the mechanism of selected catalytic organic reactions from the structure-bonding aspects and reactivity of simple organometallic compounds, the functions of transition metal ions in biological systems and the applications of radioactive isotopes in various fields
CH 50 01 02 STRUCTURAL AND MOLECULAR ORGANIC CHEMISTRY	To learn and apply the fundamental concepts and mechanisms of organic and photochemical reactions, stereochemistry and conformational analysis of organic compounds
CH 50 01 03 QUANTUM CHEMISTRY AND GROUP THEORY	Revise and update the fundamental ideas, mathematical concepts, applications of Group theory and quantum mechanics to molecular systems. The learners should be able to categorise common molecules into various point groups and apply the great orthogonality theorem to derive the character tables of various point groups.
CH 50 01 04 THERMODY NAMICS, KINETIC THEORY AND	The learners should be able to apply principles and laws of equilibrium thermodynamics to multicomponent systems, to calculate thermodynamic properties of ideal gases and real gases using the principles and techniques of statistical thermodynamics. They should be familiar with the properties and theories of

gases.

STATISTICAL
THERMODYN
AMICS

CH 50 02
01COORDINA
TION
CHEMISTRY

The student shall acquire a foundation of chemistry of sufficient breadth and depth of co-ordination compounds which enable them to understand and apply their knowledge

CH 50 02 02
ORGANIC
REACTION
MECHANISMS

To learn and understand the involvement of reactive intermediates, their structure and reactivity through various organic reactions, the orbital interactions (Woodward Hoffmann rules) in concerted reactions and apply knowledge for solving problems.

CH 50 02 03
CHEMICAL
BONDING
AND
COMPUTATIO
NAL
CHEMISTRY

The learners should be able to apply, analyze and evaluate group theoretical concepts in spectroscopy, extent the ideas of quantum mechanics from one electron system to many electron systems and various theories of chemical bonding.

CH 50 02 04
MOLECULAR
SPECTROSCO
PY

To learn basic principles and theory of microwave, NMR, IR, Raman, UVVisspectroscopy.

CH 50 02 05
INORGANIC
CHEMISTRY
PRACTICAL-1

The learners should be 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

CH 50 02 06
ORGANIC

The learners should be able to apply class room learning separation and purification of organic compounds and binary mixtures. They should be able to use the computational tools to draw the reaction schemes and spectral data to various

CHEMISTRY PRACTICAL-1	organic reactions
CH 50 02 07 PHYSICAL CHEMISTRY PRACTICAL-1	The learners should be able to apply the conceptual understanding acquired from the theory classes
CH 50 03 01 STRUCTURAL INORGANIC CHEMISTRY	The students must acquire basic information about the imperfections of solids, electrical and magnetic properties of solids and properties of inorganic chains, rings, cages and clusters. They should have an awareness about organometallic polymers and magnetic nanoparticles.
CH 50 03 02 ORGANIC SYNTHESES	To understand the various organic reactions and reagents as tools for the synthesis of organic compounds. To learn the principles of protecting group chemistry and retrosynthetic approach towards organic synthesis.
CH 01 03 03 CHEMICAL KINETICS, SURFACE CHEMISTRY AND CRYSTALLOG RAPHY	To recognise the fundamental theories of reaction rates, mechanism of chain reactions, different types of surfaces, application of various isotherms in surface catalysed reactions, symmetries of different crystal point groups and types and examples of liquid crystals
CH 50 03 04 SPECTROSCO PIC METHODS IN CHEMISTRY	The learners should be able to apply the different spectroscopic methods to solve problems based on it, spectral data for explaining important organic reactions and functional transformations.
CH 80 04 01 ADVANCED INORGANIC CHEMISTRY	To analyse and apply group theoretical principles in hybridisation technique of molecules, in complexes for explaining well known theories. To have a knowledge about the preparation and characteristics of nanomaterials, metal organic frameworks and types of supramolecules
CH 80 04 02 ADVANCED	To analyse and interpret molecular recognition and supramolecular chemistry, to study

ORGANIC
CHEMISTRY

the basic principles of green chemistry, the method of biosynthesis and biomimetic synthesis, to learn the importance of drug design and different categories of polymers. To

understand the basic principles of research and how to write a scientific report

CH 80 04 03
ADVANCED
PHYSICAL
CHEMISTRY

To know the excited states involved in a photochemical reaction, to analyse and apply diffraction methods and atomic spectroscopic techniques. The students should be able to apply theories in electrochemistry to analyse the kinetics of electrode reactions.

CH 01 04 05
INORGANIC
CHEMISTRY
PRACTICAL-2

They must be able to apply theoretical learning to separate simple binary mixtures of metallic ions in solution, analysis of alloys and application of paper chromatography to separate a mixture of three cations

CH 01 04 06
ORGANIC
CHEMISTRY
PRACTICAL-2

They should be able to apply classroom learning for the preparation of organic compounds by two step synthetic sequences. They should also be capable of applying green alternative methods of synthesis

CH 01 04 07
PHYSICAL
CHEMISTRY
PRACTICAL 2

Analyse and apply the theoretical principles of various branches of physical chemistry whereby class room learning can be transformed to laboratory practice

CH 01 0404
Project