Hindi Vidya Prachar Samiti's

Ramniranjan Jhunjhunwala College

Of Arts, Science & Commerce

(Autonomous College)

Affiliated to
UNIVERSITY OF MUMBAI

Mapping of the courses to Employability

Program: M.Sc. ORGANIC CHEMISTRY

Program Code: RJSPGCHEO

(CBCS 2020-2021)

Mapping of the courses to Employability

Mapping of the courses to Employability / Entrepreneurship / Skill Development

Name of the Program: M.Sc. ORGANIC CHEMISTRY

Class	Course Name	Course Code	Topics focusing on Employability / Entrepreneurship / Skill development	Employability / Entrepreneurship / Skill development
M.Sc. Sem-I	Chemistry	RJSPGCHE101	1. Thermodynamics-I 2. Quantum Chemistry 3. Chemical Dynamics-I 4. Electrochemistry, Employability in the field of electrochemistry	
		RJSPGCHE102	1.Chemical Bonding 2.Molecular Symmetry and Group Theory 3.Materials Chemistry and Nanomaterials 4.Characterisation of Coordination compounds Students study the nature of various bonds, the solid molecular structures, their symmetry and characterization. They also study about nano materials.	
		RJSPGCHE103	Physical Organic Chemistry, Nucleophilic substitution reactions and Aromaticity ,Aromaticity, Stereochemistry, Oxidation and Reduction Students can understand the importance of chirality concepts, reagents used and the mechanism in organic reactions.	
		RJSPGCHE104	1. Language of Analytical Chemistry, Quality in Analytical Chemistry 2. Calculations based on Chemical Principles. 3. Optical Methods, Spectroscopy 4. Thermal Methods Students learn to handle analytical instruments. Employability as chemist in analytical instrumental laboratories	
M.Sc. Sem-II	Chemistry	RJSPGCHE201	1. Chemical Thermodynamics II 2. Quantum Chemistry II 3. Chemical Kinetics & Molecular Reaction Dynamics 4. Solid State Chemistry and Phase Equilibria	
		RJSPGCHE202	1.Inorganic reaction mechanism	

Mapping of the courses to Employability

			2.Organometallic chemistry of transition metals 3.Environmental chemistry 4.Bio-inorganic chemistry Students learn ligand substitution reactions, their rates, applications of organometallic compounds, role of metal ions in biological systems and radiation hazards and other environmental issues.
		RJSPGCHE203	Alkylation of Nucleophilic Carbon Intermediates, Reaction of carbon nucleophiles with carbonyl groups, Reactions and Rearrangements, introduction to Molecular Orbital Theory for Organic Chemistry and Spectroscopy. Students understand molecular orbital theory of organic molecules, nucleophilic substitution reactions and rearrangement in organic reactions, application of Spectroscopy to solve different problems.
		RJSPGCHE204	1. Chromatography 2. X-ray spectroscopy, Mass spectrometry. Radioanalytical Methods 3. Surface Analytical Techniques, Atomic Spectroscopy. 4. Electroanalytical Methods, Ion selective potentiometry and Polarography. Electrogravimetry, Coulometry. Students learn various analytical techniques and their applications in different fields.
M.Sc. Sem III	Chemistry	RJSPGCHEO301	Organic reaction mechanisms, Pericyclic reactions, Stereochemistry-I and Photochemistry. Skills To predict organic reactions with appropriate stereochemistry and radiochemistry & to Understand concerted reactions, the conformational analysis of ring compounds & photochemistry.
		RJSPGCHEO302	Name reactions, Radicals in organic synthesis, Enamines, Ylides and α-C-H functionalization and Metals / Non-metals in organic synthesis

Mapping of the courses to Employability

			Skills To explore the importance of radicals in organic synthesis with relevant application and applications of enamines and yields in organic synthesis. and radiochemistry of metals and non-metals in synthetic organic chemistry.
		RJSPGCHEO303	Natural products& Advanced spectroscopic techniques Student learn to recognize the structures and functions of biomolecules, applications of carbohydrates, natural pigments, insect pheromones, alkaloids & spectroscopy. Skills to handle spectroscopic instruments.
		RJSPGCHEO304	Drug discovery and green chemistry. Employability in pharma industries.
M.Sc. Sem IV	Chemistry	RJSPGCHEO401	Physical organic chemistry, Supramolecular chemistry, Stereochemistry- II and Asymmetric synthesis Skill to understand the aspects of stereochemistry of organic molecules.
		RJSPGCHEO402	Designing Organic Synthesis with Transition and rare earth metals in organic synthesis. Employability in the field of organic synthesis and in research applications.
		RJSPGCHEO403	Natural products-and Heterocyclic compounds. Students learn about organic biomolecules like steroids & structure elucidation and biological importance of Vitamins and antibiotics &synthesis of hetero monocyclic compounds.
		RJSPGCHEO404	Introduction to Intellectual Property, Trade Secrets, IP Infringement issue and enforcement, Introduction to Chem informatics and Applications.
M.Sc. Sem I	Chemistry	RJSPGCHEPR101	Learning of advanced concepts and skill development (Determination of solubility products, potentiometry & conductometry).
		RJSPGCHEPR102	Ores and alloys and Instrumental analysis, Students learn to handle instruments like potentiometer and to perform redox titrations. They also

Mapping of the courses to Employability

			learn to analyse the various metal contents in a given ore/alloy sample.
		RJSPGCHEPR103	Organic Preparations, understanding of synthesis, effect of reaction parameters including stoichiometry, and safety aspects including MSDS . Purification of product ,melting point.
		RJSPGCHEPR104	Students learn to carry out assay by Volhard's method. Statistical method. to determine the ion exchange capacity, to carry out quantitative complexometric titrations.
M.Sc. Sem II	Chemistry	RJSPGCHEPR201	Learning of advanced concepts, skill development and employability (Catalysis, CMC determination, phase diagrams & plots of atomic orbitals)
		RJSPGCHEPR202	Inorganic preparation of metal complexes (Synthesis and characterisation & Instrumentation. Students learn to synthesis and characterize metal complexes and learn to handle potentiometer and conductometer.
		RJSPGCHEPR203	Separation of Binary mixture using micro-scale technique. Students Understand the chemical separation techniques of organic binary mixtures & develop the skill in purification techniques.
		RJSPGCHEPR204	Students learn to handle instruments like Potentiometer, colorimeter, spectrophotometer and flame photometer
M.Sc. Sem III	Chemistry	RJSPGCHEPRO301	Separation of a solid ternary mixture using micro-scale technique
		RJSPGCHEPRO302	Estimation of drugs
		RJSPGCHEPRO303	Organic preparations
		RJSPGCHEPRO304	Interpretation of spectral data of organic compounds
M.Sc. Sem IV	Chemistry	RJSPGCHEPRO401	Separation of a solid-liquid / liquid-liquid ternary mixture using micro-scale technique.
		RJSPGCHEPRO402	Extraction / Estimation of natural products.
		RJSPGCHEPRO403	Techniques of purification and green methods of synthesis
		RJSPGCHEPRO404	Project evaluation