

Mapping of the courses to Employability



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. ANALYTICAL CHEMISTRY

Program Code: RJSPGCHEA

(CBCS 2020-2021)

Mapping of the courses to Employability**Mapping of the courses to Employability / Entrepreneurship / Skill Development****Name of the Program M.Sc ANALYTICAL 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, 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	

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			<p>2.Organometallic chemistry of transition metals</p> <p>3.Environmental chemistry</p> <p>4.Bio-inorganic chemistry</p> <p>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.</p>
		RJSPGCHE203	<p>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.</p>
		RJSPGCHE204	<p>1. Chromatography</p> <p>2. X-ray spectroscopy, Mass spectrometry. Radioanalytical Methods</p> <p>3. Surface Analytical Techniques, Atomic Spectroscopy.</p> <p>4. Electroanalytical Methods, Ion selective potentiometry and Polarography.</p> <p>Electrogravimetry, Coulometry.</p> <p>Students learn various analytical techniques and their applications in different fields.</p>
M.Sc.	Chemistry	RJSPGCHEA301	<p>Quality In Analytical Chemistry & Chromatographic Techniques</p> <p>Employability in quality control sectors in industries and to handle instruments involving chromatography.</p>
Sem III		RJSPGCHEA302	<p>Spectral Methods & Electroanalytical Methods</p> <p>Skills on electroanalytical techniques like potentiometry, voltammetry, amperometry and coulometry</p>
		RJSPGCHEA303	<p>Bioanalytical chemistry, Immunological Methods & Food</p>

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			Analysis. Employability in food industries.
		RJSPGCHEA304	Pharmaceutical Analysis, Forensic Science & Cosmetic Analysis Employability in fields related to pharmaceuticals and in Forensic labs.
M.Sc. Sem IV	Chemistry	RJSPGCHEA401	Separation Science & Green Chemistry Employability in fields involving separation techniques.
		RJSPGCHEA402	Spectral Methods, Radiochemical and Thermal Methods, Hyphenated Techniques employability in fields involving various analytical techniques based on thermal and radiochemical analysis
		RJSPGCHEA403	1) Effluent Treatment, 2) Solid Waste Management, 3) Plastics and Polymers, 4) Metallurgy Employability in fields related to waste treatment plants, polymer and metal industries.
		RJSPGCHEA404	1. Introduction to Intellectual Property. 2. Trade Secrets 3. Introduction to Chem informatics 4. Applications Students acquire knowledge on intellectual properties and Chem-informatics.
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 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.

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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	RJSPGCHEPRA301	Experiments involving photometry, conductometry and pH metry Employability in the field of design and use of spectroscopic methods for qualitative and quantitative analysis.
		RJSPGCHEPRA302	Experiments involving estimation of drugs by non-aqueous titration, Estimation of cholesterol and Uric acid in the given sample of blood serum, fluoride in a tooth paste. Employability in pharmaceutical industries and analytical laboratories.
		RJSPGCHEPRA303	Experiments involving estimation of caffeine, vitamin C, analysis of lactose, iodine value of oil. Employability in Analytical laboratories and pharmaceutical industries.
		RJSPGCHEPRA304	Experiments involving analysis of Pyrolusite, Magnalium, Bauxite. Analysis of water sample skills in analysing samples of different alloys like Brass, Bronze, Coin alloy etc and Employability in fields of ore/alloy testing industries.
M.Sc. Sem IV	Chemistry	RJSPGCHEPRA401	Experiments involving potentiometry, flame photometry, Spectrophotometry & complexometry.

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	Skills to handle the instruments and to perform experiments using these techniques.
RJSPGCHEPRA402	Analysis of drugs by non-aqueous titration: Glycine, Sodium Benzoate, Analysis of detergents, Estimation of Ca in Ca-pantothenate/calcium lactate tablets & Canned food. Employability in industries related to detergents and pharmaceuticals.
RJSPGCHEPRA403	Estimation of: Calcium, Iron and phosphorous in milk, Glucose, SAP value of oil. employability in fields involving analysis of the milk, oil & water.
RJSPGCHEPRA404	Project