

COURSE CURRICULUM FRAMEWORK UNDER AUTONOMY

Program: M.Sc Organic Chemistry

Department: Chemistry

Semester I		
Course code	Course Title	Credits
	Title of Course List of Titles of units of the Course	
PSCHE101	Physical Chemistry-I Chemical Thermodynamics-I Quantum Chemistry-I Chemical Dynamics-I Electrochemistry	4
PSCHE102	Inorganic Chemistry-I Chemical Bonding Molecular Symmetry and Group Theory Environmental Chemistry Characterisation of Coordination compounds	4
PSCHE103	Organic Chemistry-I Physical Organic Chemistry Nucleophilic substitution reactions and Aromaticity Stereochemistry of Organic Compounds Oxidation and Reduction	4
PSCHE104	Analytical Chemistry-I Language of Analytical Chemistry Calculations based on Chemical Principles Optical Methods X-ray spectroscopy	4
PSCHEPR101	Physical Chemistry Practical-I	2
PSCHEPR102	Inorganic Chemistry Practical-I	2
PSCHEPR103	Organic Chemistry Practical-I	2
PSCHEPR104	Analytical Chemistry Practical-I	2

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Semester II		
Course code	Course Title	Credits
	Title of Course List of Titles of units of the Course	
PSCHE201	Physical Chemistry-II Chemical Thermodynamics II Quantum Chemistry II Chemical Kinetics & Molecular Reaction Dynamics Solid State Chemistry & Phase Equilibria	4
PSCHE202	Inorganic Chemistry-II Inorganic Reaction Mechanism Organometallic Chemistry of Transition Metals Introduction to Nanomaterials & Nanotechnology	4
PSCHE203	Organic Chemistry-II Enols and Enolates Name Reactions & Rearrangements Molecular Orbital Theory & Photochemistry Organic Spectroscopy	4
PSCHE204	Analytical Chemistry-II Chromatography Thermal Methods, Hyphenation & Automation in Chemical Analysis Surface Analytical Techniques Electroanalytical Methods	4
PSCHEPR201	Physical Chemistry Practical-II	2
PSCHEPR202	Inorganic Chemistry Practical-II	2
PSCHEPR203	Organic Chemistry Practical-II	2
PSCHEPR204	Analytical Chemistry Practical-II	2

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Semester III		
Course code	Course Title	Credits
	Title of Course List of Titles of units of the Course	
PSCHE3301	Theoretical Organic Chemistry I Unit 1: Organic Reaction Mechanism Unit 2: Pericyclic Reactions Unit 3: Stereochemistry-I Unit 4: Organic Photochemistry & Electrochemistry	4
PSCHE3302	Synthetic Organic Chemistry I Unit 1: Name reactions Unit 2: Radicals in organic synthesis Unit 3: Metals & non-metals in synthetic organic chemistry Unit 4: Transition metals in Organic Synthesis:	4
PSCHE3303	Natural Products & Heterocyclic Chemistry Unit 1: Bioorganic Chemistry, Unit 2: Natural Products Unit 3: Heterocyclic Chemistry- I Unit 4: Heterocyclic Chemistry- II	4
PSCHE3304	Medicinal Chemistry, Biogenesis & Green Unit 1: Drug discovery, design & development Unit 2: Drug discovery, design, development & synthesis Unit 3: Biogenesis & biosynthesis of natural products Unit 4: Green Chemistry	4
PSCHEP3301	Separation of organic mixture Separation of binary mixture using physical and chemical methods.	2
PSCHEP3302	Characterisation of organic compounds Characterization of both components with the help of chemical analysis and confirmation of the structure with the help of derivative preparation	2
PSCHEP3303	Research Methodology Unit 1: Research Methodology and Methods of scientific research and writing scientific papers Unit 2: Teaching Aptitude Unit 3: Communication Unit 4: Mathematical Reasoning and Aptitude Unit 5: Data Interpretation	2
PSCHEP3304	Literature Review Literature survey, review writing and presentation	2

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Semester IV		
Course code	Course Title	Credits
	Title of Course List of Titles of units of the Course	
PSCHE3401	Theoretical Organic Chemistry-II Unit1: Physical Organic Chemistry Unit2: Supramolecular Chemistry Unit3: Stereochemistry-II Unit4: Dynamic Stereochemistry & Asymmetric Synthesis	4
PSCHE3402	Synthetic Organic Chemistry-II Unit1: Retrosynthetic Analysis & designing of synthesis Unit2: Enamines, Ylides & α -C-H functionalization Unit3: C-H activation and functionalization Unit4: Special Techniques in Organic Synthesis	4
PSCHE3403	Photochemistry and Advanced Spectroscopy Unit1: Photochemistry & Photocatalysis Unit2: Applications of Fluorescence Phenomena Unit3: Advanced Spectroscopic Techniques-I Unit4: Advanced Spectroscopic Techniques II:	4
PSCHE3404	Materials, Devices and Computational Chemistry Unit1: Energy Conversion and Storage Devices Unit2: Organic Electronic & Photonic Materials Unit3: Intellectual Property Rights Unit4: Chemoinformatics	4
PSCHEP3401	Organic synthesis One step organic synthesis	2
PSCHEP3402	Purification techniques Column chromatography, Steam Distillation, Vacuum Distillation.	2
PSCHEP3403	Spectral Interpretation Interpretation of uv/IR/NMR/Mass/XRD spectra and its analysis.	2
PSCHEP3404	Research Project Short term research project culminating in a dissertation and presentation of the work done.	2