

A. II. Course outcomes for all the courses offered by the department**Name of the course: M.Sc Chemistry (Analytical Chemistry)**

SI. No.	Course	Name of the course	Course code	Course Objectives
1	MSc (Part-I) Semester I	Physical Chemistry	PSCH 101	To understand the concept of Thermodynamics, Quantum Chemistry, Chemical Dynamics, and Electrochemistry.
		Inorganic Chemistry	PSCH 102	The students learn about Chemical Bonding, Molecular Symmetry and Group Theory, Solid state Chemistry and Nanomaterials and Materials Chemistry and Nanomaterials.
		Organic Chemistry	PSCH 103	The students learn about Thermodynamic and kinetic requirements and mechanism of a reaction, acid base reaction, Nucleophilic substitution reactions and Aromaticity, Stereochemistry, and oxidation and reduction.
		Analytical Chemistry	PSCH 104	The students learn about language and quality of analytical chemistry, lab safety, preparation of solutions numerically, optical and thermal methods etc.
		Physical Chemistry practical	PSCHP 101	The students will be skilled in handling the different types of instruments practically. e.g. to find out pka values, activity coefficient, solubility product etc.
		Inorganic Chemistry practical	PSCHP 102	The students learn to analyze the ores and alloys samples and handle different type of instruments.
		Organic Chemistry practical	PSCHP 103	The students learn to setup one step reactions and short preparation of organic compounds and check purity byTLC.
		Analytical Chemistry practical	PSCHP 104	The students learn to prepare resin column, NaCL in saline by Volhard's method.
2	MSc (Part-I) Semester II	Physical Chemistry	PSCH 201	The students learn about Chemical Thermodynamics (Real gases), Quantum Chemistry, Chemical Kinetics and Molecular Reaction Dynamics, Solid State Chemistry and Phase Equilibria etc.
		Inorganic Chemistry	PSCH 202	The students learn about Inorganic Reaction Mechanism, Organometallic Chemistry of Transition metals, Environmental Chemistry and Bioinorganic Chemistry.
		Organic Chemistry	PSCH 203	The students learn about different types of reaction mechanism and rearrangements, Introduction to Molecular Orbital Theory for Organic Chemistry, NMR spectroscopy and Mass spectrometry, NMR spectroscopy and Mass spectrometry etc.

		Analytical Chemistry	PSCH 204	The students learn about different types of Chromatography, spectroscopy, Surface Analytical Techniques, Electroanalytical Methods.
		Physical Chemistry practical	PSCHP 201	The students learn practically about phase diagram, polar plot of atomic orbitals and handling different types of instruments.
		Inorganic Chemistry practical	PSCHP 202	The students learn to prepare the different type of complex and handling of the instruments.
		Organic Chemistry practical	PSCHP 203	The students learn practically Separation of Binary mixture using micro-scale technique and identification.
		Analytical Chemistry practical	PSCHP 204	The students will be skilled in handling the different types of instruments practically. e.g. purity of washing soda pH metry, conductometer, potentiometer etc.
3	MSc (Part-II) Semester III	Quality in Analytical Chemistry	PSCHA301	Sampling in chemical and pharmaceutical industries, to learn about maintenance and calibration of instruments, to study about different type of chromatographic techniques
		Advance Instrumental Techniques	PSCHA302	To learn about principle and instrumentation of different type of spectroscopy and voltametry techniques, Advanced Electroanalytical Techniques, ESR, Miscellaneous Techniques etc.
		Bioanalytical Chemistry and Food Analysis	PSCHA303	To study about detection of abnormal levels of glucose, creatinine, uric acid in blood, protein, ketone bodies, Immunological Methods, Human Nutrition, Food Analysis, Food packaging
		Environmental and Certain Industrially Important Matrials	PSCHAEC-I 304	To study the types of environmental pollution and certain industrially materials.
		Quality in Analytical Chemistry Practical	PSCHA3P1	The students will be skilled in handling the different types of instruments
		Advance Instrumental Techniques Practical	PSCHA3P2	The students will be able to understand about the drug analysis, cholesterol in blood serum,uses of toothpaste etc.
		Bioanalytical Chemistry and Food Analysis Practical	PSCHA3P3	The students will be learning and analyzing daily uses materials like sugar in honey, lactose in milk, vit. C in lemon, alcoholic beverages etc.
		Environmental and Certain Industrially Important Matrials Practical	PSCHA3P4	The students are leaning to analyze water sample and ore samples.
4	MSc (Part-II) Semester IV	Quality in Analytical Chemistry	PSCHA401	The students are leaning the solvent extraction techniques, Extraction of herbal materials, Principle and concepts of green chemistry, Techniques of Electrophoresis etc.

	Advance Instrumental Techniques	PSCHA402	The students will be able to get clear idea in different type of spectroscopy and learnig application of instruments in industrial puepose.
	Selected Topics in Analytical Chemistry	PSCHA403	The students are leaning the Effluent Treatment of water, Solid Waste Management, analysis of plastic and polymers, and analyzing different types of ores, alloys etc.
	Research Methodology	PSCHAOC-II 404	The students will be able to understand about methods of scientific research and writing Scientific papers, chemical safety & ethical handling of Chemicals.
	Quality in Analytical Chemistry Practical	PSCHA4P1	The students will be skilled in handling the different types of instruments.
	Advance Instrumental Techniques Practical	PSCHA4P1	The students will be able to analyze the drug, detergent and canned food etc.
	Selected Topics in Analytical Chemistry Practical	PSCHA4P1	The students will be learning and analyzing daily uses materials like calcium, irom and phosphorous in milk, aldehyde in lemon grass oil, water analysis etc.
	Project Evaluation	PSCHA4P1	Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

A. Program outcome and Program specific outcome offered by the Department

Name of the Programme specialization

: M.Sc. Chemistry

Program	Program outcomes	Program specific outcomes
Post graduate M.Sc Chemistry	<ol style="list-style-type: none"> 1. Knowledge of the concepts through theoretical understanding of the principles of chemistry. Topics like thermodynamics, kinetics, stereochemistry, quantum, symmetry from analytical, organic, inorganic and physical chemistry. 2. Basic understanding in the major area(s) of research and acquire basic tools needed to carry out minor research projects. 3. The abilty to implement chemistry in an integral activity of social, economic and environmental problems. 4. Skills in problem solving, critical 	<ol style="list-style-type: none"> 1. Aptitude and skills necessary to pursue research as a career. 2. Skills necessary to be employed in the various sectors like chemical, pharmaceutical, food and materials industries. 3. Competency to clear competitive examination

	thinking and analytical reasoning in designing problems in research 5. Knowledge of for safe handling of chemicals in research and applied chemical laboratory	
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A1. Program outcome and Program specific outcome offered by the Department

Name of the Programme specialization : M.Sc. Physics

Program	Program outcomes	Program specific outcomes
Post Graduate M.Sc Physics	<ul style="list-style-type: none"> • Lay emphasis on the courses that constitutes its core components • Being base of modern technology, give adequate hands on experience in applied fields 	<ul style="list-style-type: none"> • Understanding the basic concepts of physics particularly concepts in classical mechanics, quantum mechanics, statistical mechanics and electricity and magnetism to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical and mathematical reasoning. • Learn to carry out experiments in basic as well as certain advanced areas of physics such as nuclear physics, condensed matter physics, nanoscience, lasers and electronics. • Understand the basic concepts of certain sub fields such as nuclear and high energy physics, atomic and molecular physics, solid state physics, plasma physics, astrophysics, general theory of relativity, nonlinear dynamics and complex system. • Gain hands on experience to work in applied fields of

		microprocessors & microcomputers.
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