



Bhiwapur Mahavidyalaya
Department of Chemistry
Academic session-2026-2027

M.Sc. Chemistry
Course Outcome

Sr. No.	Subject	Paper	Course Outcomes (COs)
Semester-I			
1	CHEMISTRY	(DSC) PGCH1T1: (Physical Chemistry)	At the end of the course students will be able to: 1. Understand, analyze and exercise the principles of classical thermodynamics in various applications. 2. Understand and execute the quantum mechanical problems and their applications. 3. Understand the concept of adsorption and its application in surface chemistry. 4. Analyze and understand the characterization techniques for polymer. 5. Understand the principles of chemical kinetics and their applications in chemical dynamics.
		(DSC) PGCH1T2: (Organic Chemistry)	At the end of the course students will be able to: 1. Implement rules of aromaticity to organic molecules 2. Sketch organic molecules in different projection formula and assign its configuration. 3. Apply their understanding about the organic reactions of industrial significance with respect to the chemo-selectivity, regioselectivity and enantioselectivity. 4. Analyze the product distribution and the stereochemistry of various organic products. 5. Evaluate the relationship between structure and reactivity.
		(DSE) PGCH1T3: Elective (d) (Analytical Separation Techniques)	At the end of the course students will be able to 1. Understand various separation technique based on sample and target analyte. 2. Elaborate the working principles of various separation techniques. 3. Apply logic behind working and applicability of each technique. 4. Identify most suitable separation tool resolution of mixtures. 5. Develop separation methods for multicomponent analysis.

			6. Evaluate efficiency of separation of mixture based on analysis parameters.
		(RM) PGCH1T4: (Research Methodology)	At the end of the course, student will be able to: 1. Understand what research is and what is not. 2. Raise awareness of crucial aspect of the nature of Knowledge and the value of scientific method. 3. Introduce the concept at the heart of every research project – the research problem - and to discuss what a researchable problem is. 4. Evaluate literature, form a variety of sources, pertinent to the research objectives. 5. identify and justify the basic components of the research framework, relevant to the tackled research problem. 6. Explain and justify how researchers will collect research data. 7. Discuss how to cite sources, and justify this choice. 8. put forward a credible research proposal, and 9. warn the common mistakes in the field of research methodology
		(DSC) PGCH1L1: Practical-I (Physical Chemistry)	At the end of the course students would be able to: 1) Understand the basic principle involved in physical chemistry. 2) Evaluate various physical parameters 3) Interpret the experimental results. 4) Calculation involved in interpreting results
		(DSC) PGCH1L2: Practical-II (Organic Chemistry)	At the end of the course students would be able to: 1) Handling of the hazardous chemicals by safely 2) Predict and analysis of the major and minor products of a variety of organic reactions 3) Monitoring of the chemical reactions. 4) Calculation of yield, percentage yield of the chemical reactions 5) Understand the concept of Qualitative analysis

SEMESTER-II

		(DSC) PGCH2T5: Inorganic Chemistry	At the end of the course students would be able to: 1. predict the nature of bond and its properties through various electronic structural methods; bonding models 2. design new coordination compounds based on a fundamental understanding of their electronic properties 3. develop the possible catalytic pathways leading to desired products 4. apply the principles of transition metal coordination complexes to derive reaction mechanisms.
		(DSC)	At the end of the course students will be able to- 1. Select a specific analytical technique based on sample and target analyte.

		PGCH2T6: Analytical Chemistry	2. Develop analytical ability and critical thinking in selection of statistics and their use in making interpretation meaningful and productive. 3. Explain the logic behind working of indicator used in each type of titration 4. Elaborate interaction of radiation with matter and its application in chemical analysis. 5. Develop spectral methods of analysis for desired analytes. 6. Apply electroanalytical techniques based on conductance and emf measurements.
		(DSE) PGCH2T7: Elective (e) (Polymer Chemistry)	At the end of the course students will be able to: 1. Understand the basic terminology of polymer chemistry 2. Apply the spectral techniques for the characterization of polymers 3. Analyse the various physical properties of polymers 4. Applications of polymers in daily life, engineering and biomedical field 5. Formulate the processing of polymers
		(OJT) PGCH2L3: Practical-III On Job Training/Field Project	1. Training in external research laboratory/ National Institute/ industry/ company based on chemical synthesis or analysis. This program can be carried out with one External Mentor from the sponsoring institute and Internal Mentor from the Department of chemistry. The student has to undergo training of 120 hrs during M.Sc. Sem-II program. The work carried out has to be submitted to the Head of the Department in the form of Project Report duly signed by the External Mentor and Internal Mentor. Continuous Internal Evaluation (CIE: 50 marks) will be assigned jointly by the two mentors while Semester End Examination (SEE: 50 marks) will be based on presentation of the work and viva by External Examiner appointed by the Head of the Department. 2. A field-based project can be assigned by the Internal Mentor from the Department only. However, such project will be based on field activity that will lead to skill enhancement. It may include field sampling and analysis of the sampled materials in Department Laboratory. The work carried out has to be submitted to the Head of the Department in the form of Project Report duly signed by the Internal Mentor. Continuous Internal Evaluation (CIE: 50 marks) will be assigned by the Internal Mentor while Semester End Examination (SEE; 50 marks) will be based on presentation of the work and viva by External Examiner appointed by the Head of the Department.

		(DSC) PGCH2L4: Practical-IV (Inorganic Chemistry)	At the end of the course, student will be able to: 1) Prepare the exact solutions for quantitative analysis. 2) Apply the knowledge of quantitative analysis for the determination of metals from ores/alloys. 3) synthesize Inorganic complexes and also find their purity. 4) Understand Ion-exchange chromatography for separation of metal ions. 5) understand the principle and working of different instruments like colourimeter, conductometer, spectrophotometer, etc.
		(DSC) PGCH2L5: Practical-V (Analytical Chemistry)	At the end of the course, student will be able to: 1. Carry out calibration of glassware available in the laboratory. 2. Analyze the data obtained through experiments using statistical analysis parameters. 3. Estimate quantitatively analyte present in different samples using classical and instrumental methods of analysis. 4. Design experiments based on classical and instrumental techniques. 5. Understand the principles involved in visual and instrumental volumetric techniques. 6. Formulate experiments based on optical and electroanalytical techniques.