



Bhiwapur Mahavidyalaya
Department of Chemistry
Academic session-2026-2027

M.Sc. Chemistry
Course Outcome

Sr. No.	Subject	Paper	Course Outcome
SEMESTER-III			
1	CHEMISTRY	(DSC) PGCH3T08: Spectroscopy-I	At the end of the course, student will be able to: 1. Understand the symmetry properties of molecules. 2. Interpret the structure of simple organic molecules using mass spectrometry. 3. Correlate the presence of functional groups with IR frequencies. 4. Apply the IR and Raman spectroscopy to simple molecules.
		(DSC) PGCH3T09: Advanced Organic Chemistry-I	At the end of the course students would be able to: 1. Identify a pericyclic reaction and categorize it as a cycloaddition, a group transfer reaction, a sigmatropic rearrangement, or an electrocyclic reaction. 2. Apply frontier molecular orbital (FMO) theory to rationalize selectivity and reactivity aspects of pericyclic reactions. 3. Understand the reaction mechanism of various common reagents employed in organic synthesis. 4. Understand the reactivity of sulphur, silicon and phosphorous elements. 5. Apply pericyclic reactions for the synthesis of complex organic molecules.
		(DSC) PGCH3T10: Advanced Inorganic Chemistry	At the end of the course students would be able to: 1. Understand the crystal structures of simple inorganic molecules. 2. Understand the industrial applications of catalysis. 3. Apply the mechanism of metallo-enzyme actions in various life processes. 4. Apply simple methods of synthesis and characterization to nanomaterials.
		(DSE) PGCH3T11: Elective (b)	At the end of the course students would be able to: 1. Learn the important aspects of steroids and terpenoids. 2. Understand the biosynthesis of natural products.

		Organic chemistry special-I	3. Analyze the enzyme reactions involved in various life processes. 4. Illustrate the structure elucidation of unknown naturally occurring organic compound. 5. Apply the knowledge of organic reactions for the total synthesis of useful natural products.
		(DSE) PGCH3P06: Elective (b) Organic Chemistry Special Practical	At the end of the course students would be able to: 1. Understand the types of reactions involved in organic synthesis. 2. Realize the various functional groups which are commonly present in simple organic molecules. 3. Develop skills to understand the reactions of different functional groups by the hands-on experience. 4. Characterize the synthesized compounds using IR spectroscopy 5. Draw the structures using Chem-Draw
		(RP) PGCH3P07: Research Project (RP)	The objective of research project is to train the student in identifying the problem of research, develop the hypothesis, design the experiments/surveys to test the hypothesis, collect and analyse the data and draw conclusions from it. In addition, the aim is also to prepare the student to present the data in various forms such as project report, presentation in conferences and seminars and research paper. Research project is also aimed to prepare the student for doctoral research after the completion of the programme. The student will have to carry out a research-based project work in the third and fourth semester. The project work may be carried out in the parent department or any other institute in collaboration with the parent institute. For this, the student will be attached to any of the national/regional/private research institute/organization for the duration of the third semester. If the student is working in the organisation other than the parent department, then it will be the responsibility of the student to attend the classes and other departmental activities in order to be eligible to appear for the examination. The student will be allotted the supervisor in the third semester; after which the student will finalize the topic of the project work in consultation with the supervisor. The research project of the student will be evaluated on the basis of the project report submitted by him/her and the power point presentation made by him/her in the presence of internal and external examiner during the examination.

SEMESTER-IV

		(DSC) PGCH 4T12: Spectroscopy-II	At the end of the course, student will be able to: 1. Interpret the structures of simple molecules using physical methods of analysis
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			2. Understand and interpret the NMR data 3. Analyze X ray diffraction data 4. Develop the skills of analytical ability 5. Execute out the combined application of spectral method
		(DSC) 4T13: Advanced Organic Chemistry II	At the end of the course, student will be able to: 1. Recognize the chemical reactions of carbonyl compounds and alkenes under photochemical conditions. 2. Understand the stereochemistry of complex organic molecules. 3. Apply the knowledge of enolate chemistry in modern organic synthesis. 4. Demonstrate the applications of stereochemistry of common organic reactions. 5. Analyze the philosophy of synthesis of small molecules.
		(DSC) PGCH 4T14: Advanced Physical Chemistry	At the end of the course, student will be able to: 1. Understand the types and behavior of solids based on their structure. 2. Estimate various dependent parameters of under different influences. 3. Understand solid state reactions and synthesis process. 4. Understanding nano chemistry. 5. Identification of crystals and their analysis.
		(DSE) PGCH4T15: Elective (b) Organic Chemistry Special-II	the end of the course students would be able to 1. Understand the reactivity of organometallic compounds 2. Demonstrate the applications of organometallic reagents in C-C bond formation 3. Understands the reactivity of heterocyclic compounds in various reaction conditions 4. Understand the electrophilic, nucleophilic reactions and synthesis of various heterocycles 5. Justify the need of protecting groups in organic synthesis
		(RP) PGCH4P08: Major Research Project	The objective of research project is to train the student in identifying the problem of research, develop the hypothesis, design the experiments/surveys to test the hypothesis, collect and analyse the data and draw conclusions from it. In addition, the aim is also to prepare the student to present the data in various forms such as project report, presentation in conferences and seminars and research paper. Research project is also aimed to prepare the student for doctoral research after the completion of the programme. The student will have to carry out a research-based project work in the third and fourth semester. The project work may be carried out in the parent department or any other institute in collaboration with the parent institute. For this, the student will be attached to any of the national/regional/private research institute/organization for

		the duration of the fourth semester. If the student is working in the organisation other than the parent department, then it will be the responsibility of the student to attend the classes and other departmental activities in order to be eligible to appear for the examination. The student will be allotted the supervisor in the third semester; after which the student will finalize the topic of the project work in consultation with the supervisor. The research project of the student will be evaluated on the basis of the project report submitted by him/her and the power point presentation made by him/her in the presence of internal and external examiner during the examination.
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