Curriculum Plan

(Even Semester 2025-26)

Teacher Name: **Dr. Rajesh Kumar Meena**

Course: B.Sc. (H) Chemistry, Sem VII

Paper Name: Advanced Inorganic & Organic Spectroscopy, Quantum Chemistry and Molecular Symmetry (DSC-I)

S.No.	Contents	Allocation of Lectures	Month wise schedule to be followed	Assignments/ Presentations etc
1.	**Unit-1. Spectroscopy for Inorganic Materials** ATR-IR, and Solid state or multinuclear NMR Spectroscopy of inorganic materials	3rd Lect.	1st week of August -3rd week of August	-Syllabus Overview -Reference Books -Problem solving
2.	Basics and applications of IR spectra in inorganic materials, total internal reflectance of inorganic materials, diffuse reflectance spectroscopy (DRS), Kubelka-Munk equation.	3 Lect.	4th week of August- 3rd week of September	-Problem solving - Home Register Overview
3.	1H, 13C NMR spectra of metal complexes, dipolar and contact shifts. Basics of Magic angle spinning NMR spectroscopy (MAS NMR).Example of solid-state NMR with 10B, 11B, 17O, 19F, 27Al, 29Si, 31Pnuclei.(10 Lectures)	4 Lect.	4th week of September – 2nd week of October	- Related Problems - Assignment - Home Register Overview - Student's difficulties
4.	**Unit–2:Basics of Mass Spectrometry** Mass spectrometry: Experimental arrangements, Ion sources, Mass analysers and detectors, Data analysis, Molecular ions, Fragmentation	2 Lect.	4th week of October - 1st week of November	- Revision session prior to home - Student's difficulties
5.	Ion reactions, combined mass spectrometry methods, Tandem mass spectrometry (MS/MS), Chromatography-coupled mass spectrometry.(05 Lectures)	2 Lect.	2nd week of November - 3rd week of November	- Revision session prior to home - Student's difficulties