

1.	Title of the Course	Applications of Spectroscopy in Inorganic and Organic Chemistry
2.	Course Number	CY6103
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Chemistry
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To introduce the basic principles of NMR, IR, UV-Vis spectroscopy and mass spectrometry. Hence, to use these spectroscopic methods for organic and inorganic structure elucidation.	
12.	Course Content: NMR Spectroscopy: ¹ H, ¹³ C, ¹⁹ F and ³¹ P nuclei, chemical shifts, spin-spin coupling, first order patterns, second order effects, stereochemical assignments, selective decoupling, FT technique, NOE effects, dynamics by VT NMR; Mass Spectrometry: ionization techniques, isotope abundance, molecular ions, fragmentation and rearrangement of ions, high resolution MS, soft ionization methods; Electronic Spectroscopy: chromophoric groups, conjugated and aromatic systems, Cotton effects, octant rule, axial halo-keto rule, characteristic absorption of organic and inorganic compounds; Infrared Spectroscopy: characteristic group frequencies of organic and inorganic molecules; Introduction to EPR and Mossbauer spectroscopy; Identification of organic and inorganic compounds using spectral data;	
13.	Text book(s): 1. Drago R S, <i>Physical Methods for Chemists</i> , W. B. Saunders (1992). 2. Kemp W, <i>Organic Spectroscopy</i> , Red Globe Press (2019).	
14.	Reference(s): 1. Abragam A and Bleaney B, <i>Electron Paramagnetic Resonance of Transition Ions</i> , Oxford University Press (2012). 2. Jolly W L, <i>The synthesis and characterization of inorganic compounds</i> , Prentice-Hall (1970). 3. Nasipuri D, <i>Stereochemistry of Organic Compounds, Principles and Applications</i> , New Age International (2011).	