Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCYD519	Characterization Techniques for Inorganic Chemists	3	0	0	3

Course Objective

- The course intended to provide: basic understanding about various techniques such as, infrared spectroscopy, electronic spectroscopy, EPR spectroscopy, voltammetric techniques, CD, ORD and Mossbauer Spectroscopy

Learning Outcomes

At the end of the course the student will be able to-

- Develop understand the principle involved in various techniques used by inorganic chemists
- Interpret data such as IR, UV-visible, EPR, Cyclic voltammogram, CD, ORD and Mossbauer Spectra

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Interpretation of UV-visible and IR spectra of inorganic and organometallic compounds, case studies. Characterization methods for paramagnetic compounds:	10L	Able to understand the basic aspects of the spectral techniques such as IR, NMR, EPR and electronic spectroscopy Able to interpret analytical data of IR, and electronic spectra of coordination and organometallic compounds
2	EPR: Fundamental principles of continuous wave EPR (CW-EPR), X, Q and W band modes, case studies-interpretation, ENDOR. HYSCORE, methods for simulation, specific examples.	10L	Able to develop better understanding of the basic aspects of EPR Able to interpret EPR spectra Able to simulate EPR
3	Solution studies: Cyclic voltammetry, basic principles and applications, interpretation of redox peaks, case studies. Circular Dichorism (CD) and optical rotatory dispersion (ORD): Principles and application in inorganic and organometallic compounds.	12L	Develop better understanding of the cyclic voltammetry. Interpret cyclic voltammogram Understand principles of CD and ORD and interpret spectra
4	Mossbauer Spectroscopy: Introduction and basic principles, selected examples, interpretation of data.	10L	Develop understanding of Mossbauer spectroscopy Able to read and interpret Mossbauer spectra
TOTAL		**42**	

Text Books:

1. Infrared and Raman spectra of Inorganic and coordination compounds: Part A & B, Kazuo Nakamoto, Wiley, 2009
2. Electron Paramagnetic Resonance: Elementary Theory and Practical Applications, John A. Weil, James R. Bolton, 2nd Edition, Wiley, 2007.
3. Physical Methods for Chemists, R. S. Drago, 2nd Edition, Saunders (W.B.) Co Ltd, 1992.

Reference Books:

1. Applications of Physical Methods to Inorganic and Bioinorganic Chemistry by Robert A. Scott, Charles M. Lukehart, 2007, Wiley –Blackwell.