MSE 854 Characterization of Materials

CHs: **3**

Pre-requisites: **Nil**

Course Objectives:

- The student should be equipped with in depth knowledge about the working principles of different characterization techniques.

Course Contents:

- Structural Characterization, X Ray diffraction patterns,
- Quantitative and Qualitative analysis and Atomic Force Microscopy.
- Energy dispersive and wavelength dispersive analysis, thermal analysis,
- Differential Calorimetry, Thermal Gravimetric analysis,
- Molecular spectroscopy techniques, IR Spectroscopy, Gamma Ray Spectroscopy,
- Raman Spectroscopy, Nuclear Magnetic Resonance, Auger Spectroscopy,

Course Outcomes:

- The student should be able to use different characterization techniques for research applications such as determination of crystal structure of as synthesized inorganic materials using XRD or understanding the fractograph of a turbine blade etc.

Recommended Text/Reference Books:

- Fundamentals of Molecular Spectroscopy (Banwell&McCash)
- Characterization in Silicon Processing (Yale E Strausser)
- Characterization of Organic Thin Films (Abraham Ulman)
- Applied Laser Spectroscopy (David L Andrews)