

CHE-816 Molecular Nanotechnology

Credit Hours: 3

Pre-requisites: Nil

Course Objectives

This course provides a comprehensive introduction to the fundamental concepts and applications of nanotechnology. Students will explore the unique properties of nanomaterials and delve into supramolecular chemistry and self-assembly processes that are pivotal in creating nanostructures. Through the study of characterization techniques, smart materials, Nano-sensors, nanochips, and nanorobots, learners will gain a deep understanding of cutting-edge advancements in the field. Additionally, the course will address critical safety concerns associated with nanomaterials, ensuring students are well-equipped to handle these materials responsibly in their future careers.

Course Contents

- Introduction to the role of nanotechnology
- Properties of nanomaterials
- Supra molecular chemistry
- Self-assembly materials
- Characterization of Nanoparticles
- Smart materials and Nano-sensors
- Self-replication and Nanorobots
- Nanochips
- Safety concerns of nanomaterials

Recommended Reading (including Textbooks and Reference books)

- Introduction to nano: Basics to nanoscience and nanotechnology. Sengupta, Amretashis Sarkar, Chandan Kumar. 2015.
- Nanotechnology: Principles and Practices. Kulkarni, Sulabha K., 2014 (latest Edition).

REFERENCE BOOK

Supramolecular Chemistry: From Concepts to Applications (De Gruyter Textbook) 2nd Edition. 2020