



National University of Sciences and Technology

Course Description

Course Title	Course Code	Credit Hours
Molecular Nanotechnology	CHE-816	3 – 0

TEXT BOOK:

- 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

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, nanosensors, nanochips, and nanorobots, learners will gain a deep understanding of the 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 OUTLINES

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

ASSESSMENTS

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester Exam	40-50%