



National University of Sciences and Technology

Course Description

Course Title	Course Code	Credit Hours
Nano and Micro Drug Delivery Systems	BMS-844	3 – 0

TEXT BOOK:

- Fundamentals of drug delivery: Heither Benson, 2021 (latest edition).

REFERENCE BOOK

- Nanopharmaceuticals. Expectations and Realities of Multifunctional Drug Delivery Systems. Ranjita Shegokar, 1st Edition 2020 (latest edition).

COURSE OBJECTIVES:

New era regards the optimal pharmacological response of drugs by their assigned biofate, spatial separation and controlled temporal release. These characteristics are offered by drug delivery systems which are developed for the blockbuster drugs or therapeutic molecules according to their sensitivity, their target sites and desired route of administration. However, success is dependent on the stability, cellular interaction and internalization mechanisms of these systems. Therefore, development of these drug delivery systems (DDS) is highly challenging and extremely complicated. This course is an aiming to cover the development, characterization and evaluation of nano-drug delivery systems.

COURSE OUTLINES

- Therapeutic agents and their pharmacological properties
- NDDS for Small-Molecule Drugs
- NDDS for Macromolecules (Proteins and RNA)
- Formulation of NPDDS for Gene Delivery
- NPDDS for Cancer Treatment
- Protein-Based NPDDS
- Nanosystems for Dermal and Transdermal Drug delivery
- NPDDS for the Treatment of Diabetes
- In Vitro Evaluation of NDDS
- In Vitro Characterization of Nanoparticle Cellular Interaction
- Solid nanoparticles
- Characterization of Nanomaterials
- Characterization techniques

ASSESSMENTS

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