

PEBT5301 **NANOBIOTECHNOLOGY** (3-0-0)

Module-I

Introduction to Nanosciences and Nanotechnologies. Exploration of biology and biological systems, biology at the nano-interface. Cell nano structure interaction.

Module-II

Structural and functional principles of nanobiotechnology. Protein and DNA based nanostructures. Microbial synthesis of nanoparticles, magnetosomes, bacteriorhodopsin. Micro- and nano -fabrication; Micromachining: MEMS NEMS; BioMEMS; Scanning probe techniques (SPM). Molecular nanotechnology. Carbon nanotubes, nanoparticles and nanowires. Polymeric nanocontainers for drug delivery.

Module-III

Microfabricated devices to study directed cell migration, drug and gene delivery, Nano-particles and imaging applications, Nanoanalysis and nanobiosensors; Lab-on-a-chip devices and their potential in nanobiotechnology.

Text Book:

1. Niemeyer C M and Mirkin C A, Nanobiotechnology: Concepts, Applications and Perspectives, Wiley VCH, 2004
2. Chattopadhyaya KK and Banerjee AN, Nanoscience and Nanotechnology, PHI learning Pvt. Ltd.