

Nanobiotechnology - Web course

COURSE OUTLINE

One of major applications of nanoscience is in biotechnology field. Since nanotechnology attracts students from various disciplines, a single course which starts by sensitizing students from a varied background about the biological/biotechnological basics and culminates into modern day applications of nanoscience in biotechnology field will be highly useful. This course will act as a bridge between students from non-biology course at all levels.

COURSE DETAIL

S.No	Topic	No. of Hours
1	Basics of biology - cell, organelles and nucleic acids as genetic material.	04
2	Biomacromolecules - Carbohydrates, lipids, proteins and Nucleic acids.	04
3	Nanomaterial in biotechnology - nanoparticles, quantum dots, nanotubes and nanowires etc.	02
4	Development of nanobiotechnology - timelines and progress, overview.	02
5	Biosensors ; different classes -	04



NP-TEL

NPTEL

<http://nptel.ac.in>

Nanotechnology

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	molecular recognition elements, transducing elements.	
6	Applications of molecular recognition elements in nanosensing of different analytes	02
7	Application of various transducing elements as part of nanobiosensors.	02
8	Miniaturized devices in nanobiotechnology - types and applications, lab on a chip concept.	04
9	Biological nanoparticles production - plants and microbial.	04
10	Nanobiotechnological applications in health and disease - infectious and chronic.	06
11	Nanobiotechnological applications in Environment and food - detection and mitigation.	06
	Total	40

References:

1. Nanobiotechnology: Concepts, Applications and Perspectives (2004), Christof M.Niemeyer (Editor), Chad A. Mirkin (Editor), Wiley VCH.
2. Nanobiotechnology - II more concepts and applications. (2007) - Chad A Mirkin and Christof M. Niemeyer (Eds), Wiley VCH.
3. Nanotechnology in Biology and Medicine: Methods, Devices, and Applications.