

Course Title	:	Bionanotechnology			
Course Code	:	PHY-601	Course Type	:	Core 1
Contact Hours	:	L- 40 T- 0 P- 0	Credit	:	4
Program/Semester	:	BTech/BDes/MTech/Mdes/PhD(NS)/ UG(6 semester onwards), PG (anysemester)			
Pre-requisites	:	NONE			
Evaluation Scheme	:	Quiz1-15%, Mid-Sem- 30%, Quiz2-15%, End-Sem- 40%,.			

Course Details:

Module1:

Concepts of nanotechnology and biotechnology, transition from biotechnology to bionanotechnology, introduction of bionanomechanics, the legacy of evolution, structures and functions of biopolymers.

(10H)

Module2:

DNA based nanostructures, metallic nanowires and DNA electronics including DNA computers, design and development of DNA based nanomaterials, physics based knowledge/physical principles governing DNA based nanotechnology. **(10H)**

Module3:

Protein based nanostructures, engineered nanopores, DNA-protein hybrid structures, nanomedicine.**(10H)**

Module4:

Polymer nano containers, bionanomaterials, nano-particle biomaterial hybrid systems, experimental and theoretical methods in bionanotechnology **(10H)**

References:

1. Nanobiotechnology, edited by CM Niemeyer and C.A. Mirkin, Edition-1, copyright © 2004 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, ISBN-978-81-265-3840-9.
2. Bionanotechnology, edited by David S. Goodsell, Edition-1, copyright © 2004, Wiley-Liss, Inc. Hoboken, New Jersey, USA, ISBN-978-81-265-3836-2.
3. Nanobiotechnology and Nanobiosciences, edited by Claudio Nicolini, Edition-1, copyright © 2009, Stanford publishing Pvt. Ltd, Singapore, ISBN 978-98-142-4138-0.
4. Bionanotechnology, Maheshwar Sharon & Madhuri Sharon, Edition-1, copyright © 2012, CRC Press, Taylor & Francis groups, ISBN-978-14-398-5214-9.