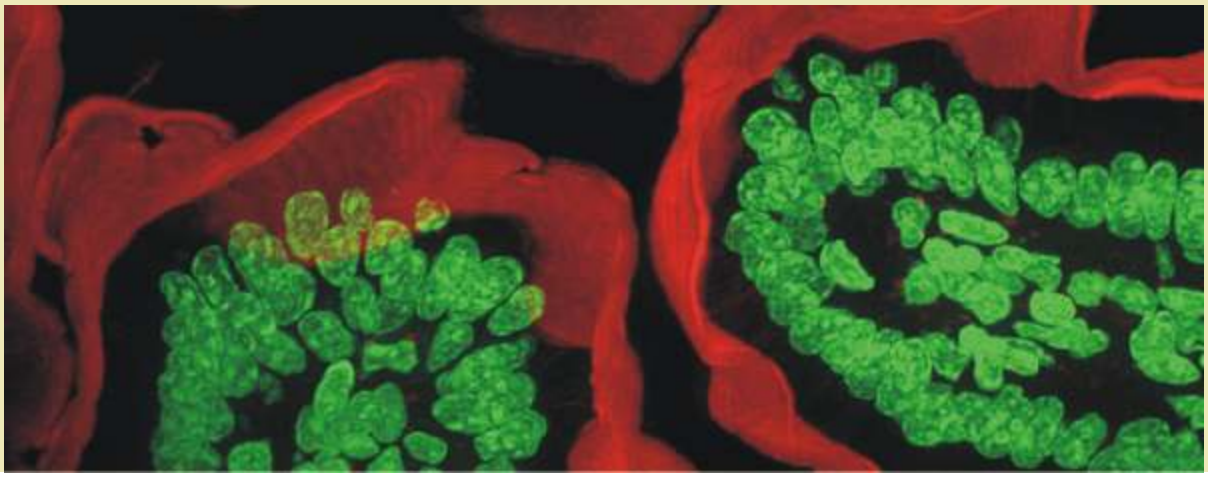
Advanced Postgraduate Program in Nanobiotechnology (APGP-NB)

An Autonomous Full-Time Residential Postgraduate Program (24 months)

"I had been impressed by the fact that biological systems were based on molecular machines and that we were learning to design and build these sorts of things."

- K Eric Drexler



Nano-biotechnology is that specialized area of Nanotechnology, which uses the tools and processes of Nano and Micro Fabrication to build devices and structures to understand and study biological systems. Bio-Nanotechnology focuses on atomic and molecular level manipulation and manufacturing of biological molecules for specific applications which is often used interchangeably with Nano-biotechnology. The convergence of Nanotechnology and Biotechnology opens the possibility for a wide variety of biological research topics and medical uses at the molecular and cellular level. The application of Nanotechnology in Biotechnology will provide information with unprecedented precision and sensitivity. It will not only provide much deeper understanding of bios stems but also lead to the development of new revolutionary modalities of bi-molecular manufacturing, early diagnostics, medical treatment and disease prevention beyond the cellular level to that of DNA and individual proteins-the building blocks of the life process. The long-term goal of Nano-biotechnology is to contribute to overall human development and improvise on fictional revolutionary concepts to reality.

Considering this, the Advanced Postgraduate Program has a strong research focus on exploring the possibilities of different aspects of convergence of two technologies while trading a thin margin between Nano-biotechnology and Bio-Nanotechnology.

ELIGIBILITY

Graduates / Postgraduates with a Bachelors Degree in Engineering / Technology in Electrical / Electronics / Biotechnology / Communication / Instrumentation / Chemical / Polymer / Computer Science / IT or MSc Physics / Chemistry / Zoology / Botany / Bioinformatics / Microbiology / Biotechnology / Biochemistry / Electronics / Computer Science or equivalent (with minimum 55 percent marks or equivalent grades)

FOCUS AREAS

- Bionanomaterials
- Nanobioelectronics
- Lab-On-Chip
- Bioimaging

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COURSE STRUCTURE

	CODE	COURSE NAME	CREDITS*
BRIDGE	NE001	Introduction to Nanotechnology	
	NE002	Bio-Inspired Nanotechnology	
	NE003	Fundamentals of Photonics	
	NB004	Fundamentals of Biotechnology	
COMMON	COM001	Life Skills Development – I	2
	COM002	Life Skills Development - II	2
FOUNDATION	NB501	Physics for Nanobiotechnology	3
	NB502	Elemental Nanobiotechnology and Bionanotechnology	3
	NB503	Self-Assembly Nanostructures	3
	NB504	Bio-Engineering	3
	NB505	Bio-Computing	3
	NE506	Nanodevice Fabrication and Processing	3
	NST507	Computational Techniques for Nanotechnology	1
CORE	NB601	Bionanomaterials	3
	NB602	Bioimaging	3
	NB603	Bioelectronics	3
	NB604	Characterization of Nanbiomaterials	3
	NST605	Ethical Issues and Nanotechnology	3
ADVANCED	NB701	Microfluidics	3
	NB702	Protein and Genome Engineering	3
	NB703	Applied Nanobioelectronics	3
	NB704	Lab-On-Chip	3
	NB705	Nanobiotech Lab	3
ELECTIVES	NB821	Nuerobioelectronics	3
(Choose any one)	NB822	Nanomedicine	3
	NB702	Modeling of Nanobiodevices	3
PROJECT / THESIS	NB901	Seminar / Mini Project - I	1
	NB902	Research Methodology / Mini Project - II	2
	NB903	Project / Thesis	32

**1 Credit Hr = 16 Class Hrs / 32 Lab Hrs in a semester*