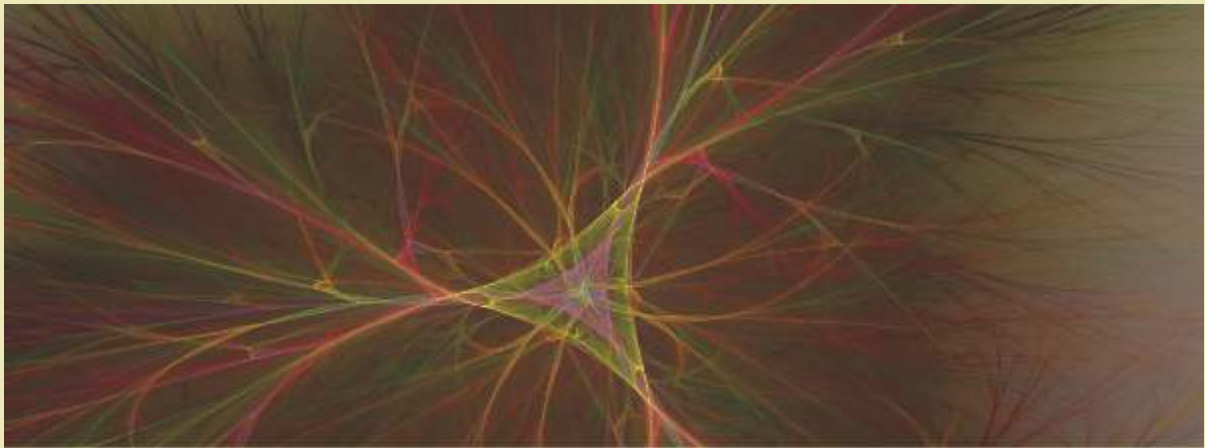


# Advanced Postgraduate Program in in Nano, Bio, Info, Cogno (NBIC) Convergence Technology (APGP-NCT)

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

"We stand at the threshold of a new renaissance in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the most complex system yet discovered the human brain. Unification of science based on unity in nature and its holistic investigation will lead to technological convergence and a more efficient societal structure for reaching human goals."

- Dr Michail C Roco, Head National Nanotechnology Initiative, US



The present time in history of Science and Technology provides tremendous human growth opportunities through synergetic convergence of Nanotechnology, Biotechnology, Information Technology and technologies evolving from Cognitive Sciences (NBIC). The convergence of diverse technologies is based on the human ability to understand and manipulate matter at nanoscale. This stimulated integration of technologies at nanoscale has aided the convergence of other technologies and sciences for the first time in human evolution. These unprecedented advances are the interfaces between previously separate fields of sciences and technologies and the transforming tools of NBIC Technologies. NBIC tools provide new found capability to understand natural world, human society and scientific research as closely coupled complex and hierarchy system from cosmos to atoms. The creative application of NBIC Technologies to solve great human needs will take us to a higher level of technology platform, which will make it possible for all the people of world to achieve prosperity together without depleting the natural resources to a point where human civilization in itself is a question mark.

This Advanced Postgraduate Program has been designed to explore through research of the different dimensions of NBIC Convergence Technologies and innovate in immature areas like Individual Sensory and Cognitive Capabilities, Brain-to-Brain Interaction, ameliorating the physical and cognitive decline that is common to the aging mind, Nuerobioelectronics, Complex Hierarchical Nanocomputers and Futuristic Nanobio Systems.

## ELIGIBILITY

Graduates with a Bachelors / Masters Degree in Engineering or MSc in Biology / Chemistry / Botany / Mathematics / Computer Science / Computer Applications / Agriculture / Electronics / Bioinformatics / Biotechnology / Psychology (with minimum 55 percent marks or equivalent grades)

## FOCUS AREAS

- ▶ IT, BT, NT, CT
- ▶ Human Cognitive Science
- ▶ NBIC Convergence Technology
- ▶ NBIC Applications

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## COURSE STRUCTURE

	CODE	COURSE NAME	CREDITS*
<b>BRIDGE</b>	NST001	Physics	
	NST002	Chemistry	
	NST003	Biology	
	NST004	Mathematics	
	NST005	Electronics	
<b>COMMON</b>	COM001	Life Skills Development – I	2
	COM002	Life Skills Development – II	2
<b>FOUNDATION</b>	NCT501	Introduction to Nanotechnology	3
	NCT502	Introduction to Biotechnology	3
	NCT503	Introduction to Information Technology	3
	NCT504	Introduction to Cognitive Science	3
	ISR504	Introduction to Artificial Intelligence	3
	NCT505	Introduction to Computational Techniques for NBIC	3
	NCT506	Seminar	1
<b>CORE</b>	NCT601	Nanobiotechnology	3
	NCT602	Brain Computer Interface	3
	NCT603	Bio-computing	3
	NCT604	Issues of Convergence	3
	NCT605	Cognitive Systems	3
<b>ADVANCED</b>	NCT701	NBIC Technology	3
	NCT702	NBIC Technology Applications	3
	NCT703	Lab-on-Chip	3
	NCT704	NBIC Ethics & Issues	3
	NCT705	NBIC Lab	2
<b>ELECTIVES</b> (Choose any one)	NCT821	NBIC in Healthcare	3
	NCT822	NBIC in Energy	3
	NCT823	NBIC in Defense	3
<b>PROJECT / THESIS</b>	NCT901	Mini Project - I	1
	NCT902	Research Methodology / Mini Project - II	2
	NCT903	Project / Thesis	32

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