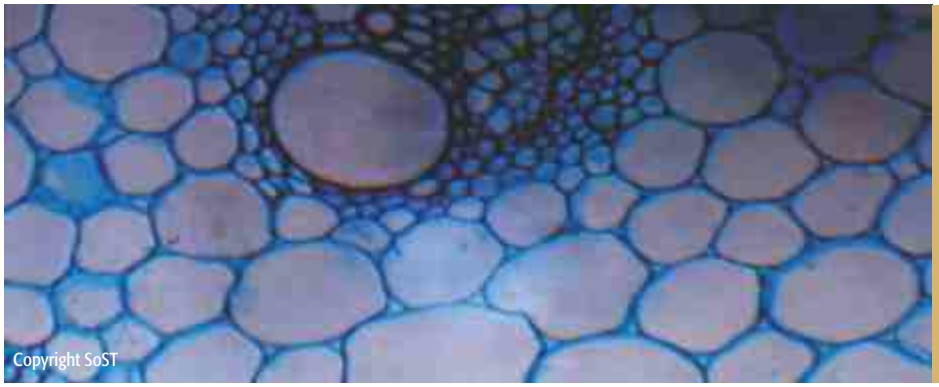
I²IT -IGNOU CENTRE OF EXCELLENCE FOR ADVANCED EDUCATION AND RESEARCH

# M.Tech. IN ADVANCED INFORMATION TECHNOLOGY WITH SPECIALIZATION IN NANOBIOTECHNOLOGY (MTECHNB)

2 years, full-time and residential




## FOCUS AREAS

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

"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

Nanobiotechnology is a 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. Bionanotechnology focuses on Atomic and Molecular level manipulation and manufacturing of biological molecules for specific applications is often used interchangeably with Nanobiotechnology. 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, which will not only provide much deeper understanding of Bio-systems but also lead to the development of new revolutionary modalities of Bimolecular 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 Nanobiotechnology is to contribute to overall human development and improvise on fictional revolutionary concepts to reality. Considering this, the program has a strong research focus on exploring the possibilities of different aspects of convergence of two technologies while treading the thin margin between Nanobiotechnology and Bionanotechnology.

## 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% marks or equivalent grades)

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## COURSE STRUCTURE

| SEMESTER | CODE | COURSE NAME | CREDITS |
|---|---|---|---|
| SEMESTER I | | | |
| | MINI-001 | Engineering Sciences I | 6 |
| | MINI-008 | Introduction to Nanoscience and Nanotechnology | 6 |
| | MINI-009 | Nanophysics | 6 |
| | MINI-101 | Nanochemistry | 6 |
| | MINI-011 | Nanobiology | 6 |
| | MINI-012 | Nanomaterials Synthesize and Characterization | 6 |
| | MNNI-025 | Seminar | 4 |
| | MIN-001 | Life Skill Development I | 6 |
| | | **Total** | **46** |
| SEMESTER II | | | |
| | MINI-006 | Engineering Sciences II | 6 |
| | MINNI-026 | Nanobiotechnology | 6 |
| | MINI-013 | Nanosensors | 6 |
| | MINNI-027 | Biomolecular Engineering | 6 |
| | MINNI-028 | Bio-Microsystems | 6 |
| | MINI-007 | Research Methodology | 6 |
| | MIN-002 | Life Skill Development II | 6 |
| | | **Total** | **42** |
| SEMESTER III | | | |
| | MNNP-003 | Project Phase I | 36 |
| SEMESTER IV | | | |
| | MNNP-004 | Project Phase II | 48 |
| **Total Credits** | | | **172** |

Delivery of an elective will be subject to availability of domain expert / faculty as well as minimum number of students for that particular elective