Curriculum

The Engineering Physics curriculum has 240 credits which include the credits of humanities and basic sciences, core physics and allied engineering. The Engineering Physics program provides a balanced curriculum emphasizing 1) physics and engineering principles with design, 2) diverse hands-on experiences to prepare the Engineering Physics graduate for the demands of laboratory and 3) strong communication and team working skills through various seminars and live-projects. The Engineering Physics core covers nearly all the basic areas of physics with a special emphasis on the applications of principles of Physics.

- Classical Mechanics
- Quantum Mechanics
- Computational Methods
- Condensed Matter Physics
- Atomic & Molecular Physics
- BioPhysics
- Solid State Physics
- Photonics
- LASER Physics

The curriculum is designed to offer majors in Electronics and Communication Technology and hence a good number of electronics and communication courses at advanced level have been incorporated.

- Digital Electronics
- Signals & Systems
- Microprocessors & Interfacing
- Electromagnetic, Antennas and Propagation
- Semiconductor Devices
- Instrumentation and Control
- Communication Systems
- Fibre Optics and Advanced Optical Communication
- Microwave Engineering
- VLSI & FPGA Design Synthesis
- Mobile and Satellite Communication
The programme is redesigned in such a way that a student can tailor the programme to suit individual interests by selecting from a list of courses i.e. the electives offered by the department. While students are free to choose the electives, we encourage them to select one of the following preconfigured 'concentrations': NanoScience and Technology, Photonics, Robotics and Intelligent Systems; and Nuclear Engineering so that they can have a sort of dual specialization in terms of Majors and Minors.

MINORS (Electives)

1. Nano Science & Technology
   - Material Science: Materials For Engineering Applications
   - Nano Material Growth Techniques and Their Applications
   - Selected Topics in Nano Science and Technology
   - Materials Growth/ Characterization Lab

2. Photonics
   - Photonics
   - Quantum Electronics/Integrated Optics
   - Selected Topics in Photonics
   - Photonics Lab

3. Robotics & Intelligent Systems
   - Introduction to Automation and Motion Control
   - Mechatronic System Modeling
   - Selected Topics in Robotics and Intelligent Systems
   - Robotics Lab

4. Nuclear Engineering
   - Principles of Nuclear Engineering
   - Materials science for Nuclear Engineering Applications
   - Selected Topics in Nuclear Engineering
   - Nuclear Applications Lab

The Engineering Physics curriculum is modeled to give a degree in B.Tech. (Engineering Physics) with Major Specialization in Electronics and Communication Technology and Minor Specialization in any one of the four i.e. NanoScience and Technology, Photonics, Robotics and Intelligent Systems and Nuclear Engineering
**Where does Engineering Physics lead to?**

In India, Engineering Physics graduates can get employed in the telecommunications, photonics, optoelectronic and electronics, nanotechnology industry, etc. Central research institutes and leading national labs (DRDO, CSIR, ISRO), high technology institutes, firms and the resource industries find these graduates indispensable in their scientific human resource power. Besides they would be a much sought after resource in the R&D labs of cutting edge technology firms let alone the software industry.

New technologies are emerging rapidly in the areas of VLSI, Holography, Optical Data Storage, Optical Communication, Photonics, Quantum and Nano Electronic Devices, Nanotechnology, MEMS, Spintronics, MRAM, Magnetic Data storage, Optical Computing, Quantum Optics, Fiber Optics, Information Technology, Super lattices, Lasers and their application in Plasma Processing, MHD, Fusion Devices, Neural Networks, Space science & Engineering, Environment Technologies and Biomedical applications. Many of these specified areas have been well received by the industry and a strong urge is being felt for manpower specifically trained in such broad based areas to take-up new design concepts and production. These areas also offer excellent opportunities to entrepreneurs who can apply innovative concepts to future developments.

In the global job market also Engineering Physics graduates have promising opportunities. For instance, in US about half of the Engineering Physics graduates take positions in high-technology industries, at starting salaries at the top end of the salary scale for engineers. The other half of the graduates continue on to either graduate school or to professional programs in engineering, law, and business administration.