

PROGRAM STRUCTURE

Silicon Nanostructures & Carbon Nanotubes based Nanoelectronics

Module 1: Semiconductor Nanostructures & Nanomaterials

- Semiconductor Nanostructures & Nanomaterials: Introduction
- Importance of Semiconductor Nanomaterials in Electronic Industry
- Various Silicon Nanostructures
 1. Silicon Nanowires
 2. Silicon Quantum Dots
 3. Silicon Nanotubes
 4. Hybrid Silicon-Carbon Nanotubes
 5. Silicon Carbide Nanotubes

Module 2 : Carbon Nanotubes Nanoelectronics

- Carbon Nanotubes : Introduction
- Synthesis of Carbon Nanotubes
- Properties of Carbon Nanotubes
- Specific Applications in Electronics
 1. Carbon Nanotube based Field Emission Devices
 2. Carbon Nanotube Transistors
 3. Single Electron Transistor
 4. Ballistic Carbon Nanotube Field Effect Transistor with Palladium Contact
 5. Overview of Carbon Nanotube Field Effect Transistor Technology

Module 3 : Notable Achievements in Nanoelectronics

- Single-Molecule Electronics: Molecular electronics, Molecular logic gate, Molecular wires
- Solid State Nanoelectronics: Nanocircuitry, Nanolithography, Nanosensors
- Silicon Nanotechnology : CMOS Nanotechnology, Ballistic Properties, Memory
- Nano Emissive Display Devices
- Quantum Dots
- Nano Chips
- Nano Electro Mechanical System (NEMS)

