

# PLACEMENT BROCHURE

DEPARTMENT OF ELECTRONICS AND  
TELECOMMUNICATION ENGINEERING

INDIAN INSTITUTE  
OF ENGINEERING  
SCIENCE AND  
TECHNOLOGY,  
SHIBPUR

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# 1

## From The Desk Of HOD



Department of Electronics & Telecommunication Engineering of IEST, Shibpur (Formerly B. E. College) had started its journey in July 1965 under the leadership of Late Prof. Dr. S. S. Baral. The first batch of Electronics and Telecommunication engineers graduated from the department in 1971. The Master's program was launched in 1972 and the first batch of Post Graduates passed out in 1974.

The Department so far offered Bachelor of Engineering (B.E.) course in Electronics & Telecommunication Engineering for duration of 4 years (8 Semesters). From the year 2014 onward the Department has started offering 5 years (10 Semesters) dual degree B.Tech. + M.Tech. program. Department also offers Ph.D. program in Electronics and Telecommunication Engineering in various fields, like Microwaves and Antennas; Microelectronics, Devices and VLSI; Communication and Signal processing.

Over the last 50 years the department has not only produced the eminent scientists, technologists, academics of national and international repute, but also have deployed considerable effort in the last couple of years towards setting up new undergraduate and postgraduate laboratories and augmenting the facilities in the existing laboratories. With the help of the developed facilities, high end equipments in the laboratory and expertise of the faculty members the department is now in a position to carry out any type of research or industrial project.

**Prof (Dr.) Monojit Mitra**  
**HOD of Dept. of Electronics and Telecommunication Engineering**  
**Indian Institute of Engineering Science and Technology, Shibpur**



# 2

## About Us

The Department of Electronics and Telecommunication Engineering started its journey in July 1965 after its nucleation from the Department of Physics & Telecommunication from the erstwhile Bengal Engineering College.

We aspire to become one of the Leading Departments of this Country with International Repute in the broad domain of Electrical Sciences and Technology through the development of Professional Attitude, Analytical and Innovative Mind-sets, and Operational Expertise in the field of Electronics and Tele-Communication Engineering.

The department does a commendable performance in research and development works.

To Educate the Students about the State-of-the-art Knowledge and Skill in the domain of Electronics and Tele-Communication Engineering to make them appropriate for Developing Professional Expertise for rendering service to the industries and other emerging technological sectors and Competent Engineers and Researchers in the global academic environment

No. of Faculties – 14

No. of Undergraduates – 192

No. of MTech Students – 22

No. of PhD students – 29

# 3

## Academic Programs



### Bachelor of Technology

It is a 4-year program comprising of 8 semesters. The program includes a deep study of a number of engineering sciences to which students are introduced at the core curriculum level relevant to the contemporary industries.

### BTech - MTech Dual Degree

It is a five-year program comprising of ten semesters. Both the degrees are awarded at the end of five years. It has been designed for students to do M. Tech. with just one year of extra effort and contribute to research efforts.

### Masters of Technology

It is a 2-year program comprising of rigorous coursework followed by a full year of research. Courses often include advanced level group projects and/or individual research project.

### PhD.

It is the highest degree awarded by the department and is for students who are interested in research careers. Its focus, unlike regular degrees, is not learning existing knowledge but creating new knowledge.





# 4

## Courses Offered

### Major Postgraduate Courses With Specialization

**P.G.**

- Microwave Communication

- Radar Signal Processing and Imaging
- Antenna Engineering for Modern Communication
- Advanced Microwave Circuits Systems and Measurements
- Electromagnetic Metamaterials
- RF-IC and RF-MEMS
- Microwave Application
- VLSI Logic Design
- Microwave Devices and Circuits

**P.G.**

- Communication Engineering and Signal Processing

- Telecommunication Switching System
- Radar Signal Processing and Imaging
- Optical Communication and Networking
- Digital Image Processing and Computer Vision
- Wireless Communication

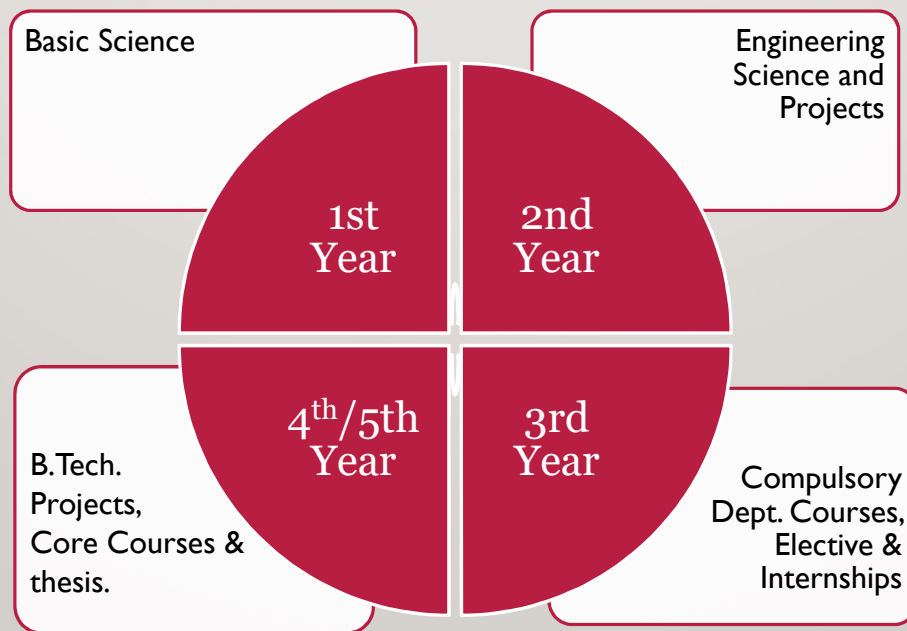
**P.G.**

- Digital System and Instrumentation

- Fault Diagnosis in Digital Systems
- Switching Theory and VLSI Design
- Active Networks
- Digital Processing and Control of System
- Advanced Digital Communication
- Active Network Analysis and Synthesis
- Integrated Circuit Technology
- Discrete Structure
- Architecture for Microprocessor and Microcomputer
- Digital Image Processing and Computer Vision

## Major Undergraduate Courses:

- Network Theory
- Analog and Digital Electronics
- Electronic Devices
- Signals and Systems
- Principles of Analog & Digital Communications
- Microelectronics
- Electromagnetic Theory & Transmission Lines
- Integrated Circuits and Systems
- Wave Propagation and Antenna Engineering
- Microprocessors and Microcontrollers
- Wireless and Mobile Communication
- Computer Organization and Architecture
- Computer Switching and Networking
- Digital Signal Processing
- Digital Image Processing and Computer Vision
- Optoelectronics/ Audio Video Signal Processing
- VLSI and CAD
- Satellite Communication/Active network Synthesis
- Microwave
- Electronic Instrumentation and Measurements



- Open Electives In 7<sup>th</sup> Semester
  - Introduction to Electronic Communication Systems
  - Microwave Integrated Circuits
  - Active Network Analysis and Synthesis
- Open Electives in 5<sup>th</sup> Semester
  - Elements of Control Systems
  - Database Management Techniques
  - Business English
  - Practical Optimization Techniques
  - Information and Fuzzy Systems

# 5

## Research Areas

### Microelectronics, Devices and VLSI

- **Biosensors**
- **MEMS**-based pressure and conductivity sensor
- **Nanostructured** semiconducting metal oxides for sensor application
  - **Chemical** sensors
- **MEMS**-based gas sensors and its CMOS integration
  - **VLSI** design and testing
- **VLSI** based signal processing
  - **VLSI** Architectures for Communication and Biomedical Engineering

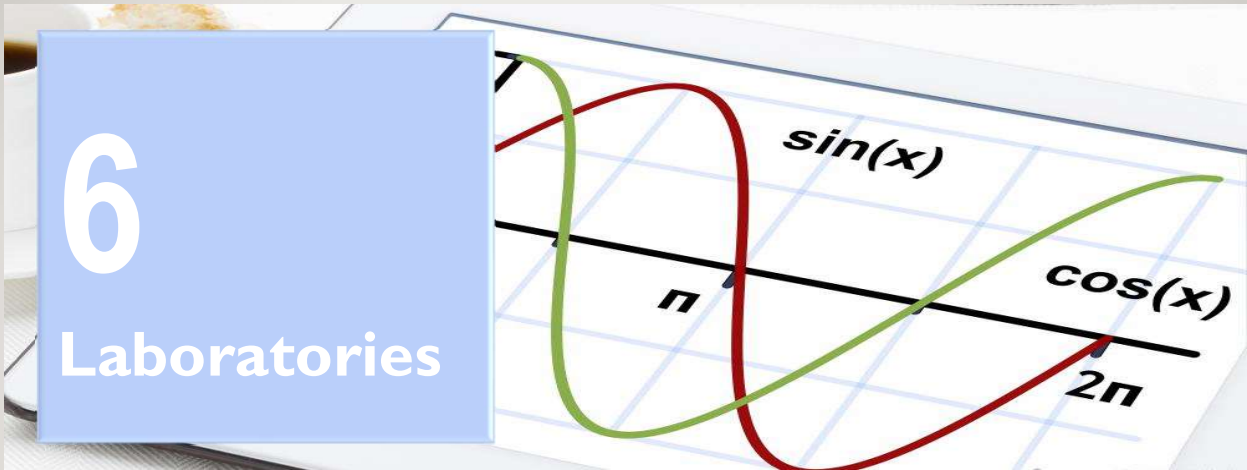
### Communication and Signal Processing

- **Wireless** Ad-hoc and sensor networks
- **Cognitive** Radio networks
- **Hardware** efficient FIR filter design
  - **Space-time** coding for wireless communication
    - **DSP** algorithms
- **Design** of CDMA spreading codes
  - **Medical** imaging
- **Sensor** signal processing
  - **CORDIC** based DSP architectures

### Microwave and Antenna

- **Planar** circuit and antenna
- **Microwave** avalanche devices
  - **IMPATT** amplifiers and oscillators
  - **Meta-materials** and its applications
  - **Phased** array antenna
- **Electromagnetic** band-gap materials
- **Surface** integrated waveguides (SIW)
- **RFID** and its applications





IMPACT Lab



Communication Lab



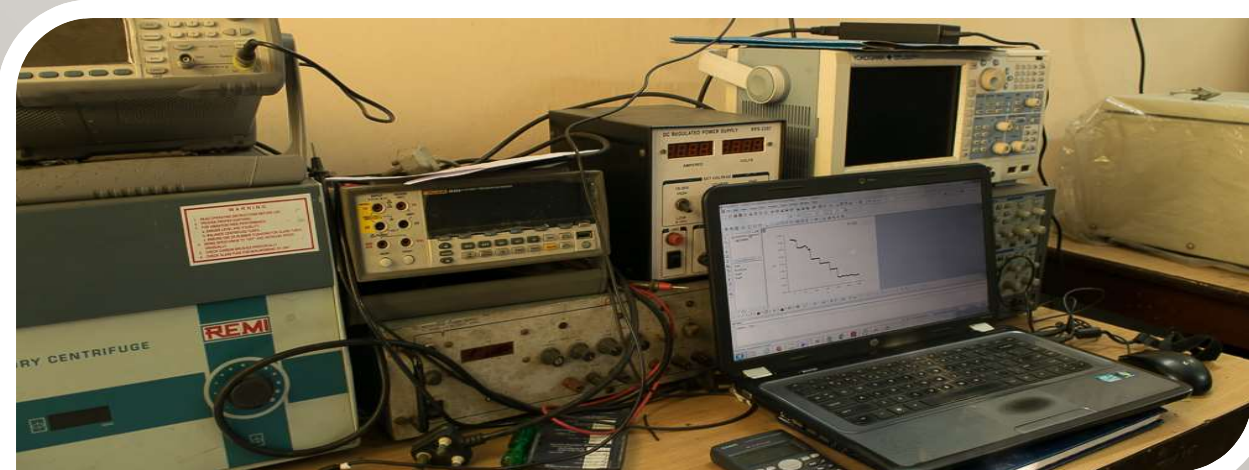
## Electronic Devices Lab



## Microwaves Lab



## Semiconductor Device/Sensor Characterisation Lab





# 7

## Schools and Centers of Excellence at IEST Shibpur

### School of VLSI Technology

The School was established in July 2006 starting with a flagship course of M-Tech (VLSI Design) with an intake 12 students. There was a special initiative from Ministry of IT, Govt. of India with a Special Manpower Development Project (Phase II) for necessary help to establish School. The need to integrate to efforts of scientists and engineers working with different fields of microelectronics and semiconductors devices has been the primary motivation for the creation of this school. The research and education at the school of VLSI Technology is closely associated with industry and several other primary academic Institutions of repute with an aim to foster cutting-edge research and establish the School and one of the Save e pronounced leader in the field of VLSI and Microelectronics.





## Major Postgraduate Courses:

- Semiconductor Physics & Devices
- VLSI Circuits & Systems
- VLSI Testing
- Low Power Design Techniques
- Mixed signal Circuit Design
- RF IC Design
- Emerging Technologies
- SOC and Memory Design and Test
- Quantum Computation and Circuits
- Advanced System Architecture
- Soft Computing
- Computer Networking
- VLSI Physical Design
- Analog IC Design
- VLSI Technology
- Synthesis and Verification Techniques
- VLSI and CAD
- Satellite Communication/Active network Synthesis
- Microwave
- Advanced Mathematics
- Discrete Structure & Graph Algorithm
- Digital Signal Processing

## School of Mechatronics & Robotics

The beginning of this century is marked as interdisciplinary age which has not only revolutionized Indian and global industrial market but also has put an impact in engineering education system. Bengal Engineering & Science University, Shibpur responded timely by introducing a new specialized engineering degree course in mechatronics under the School of Mechatronics & Robotics.

School of Mechatronics and Robotics is the outcome of the precious collaboration between IEST(Formerly BESUS) and CSIR New Delhi through its constituent institutes:

Central Electronics Engineering Research Institute (CEERI) Pilani  
Central Scientific Instrument Organization (CSIO) Chandigarh  
Central Mechanical Engineering Research Institute (CMERI) Durgapur.

## Major Postgraduate Courses:

- Mechatronics system design
- Smart materials, sensors and Actuators
- Advanced control systems
- Microprocessors , Microcontrollers and embedded system design
- Mems technology
- Robotics
- Digital signal processing and Applications
- Instrumentation and industrial Control

## Centre of Excellence in Green Energy and Sensor Systems

The Centre of Excellence for Green Energy and Sensor Systems (CEGESS) has started functioning as a seat of multi-disciplinary research and education in the year 2009. The need to integrate the efforts of scientists and engineers working with different aspects of green energy and sensors has been the primary motivation for creation of this center. This center on Green Energy and Sensor Systems is perhaps the first of its kind in the country to promote research and manpower development in both the areas in an integrated fashion. This is intended to impart a comprehensive overview of two closely related modern technologies largely based on semiconductor technology and electronics. We emphasize at providing a holistic approach in research to create new knowledge and lay the foundations for new technologies.

Interests and activities in the center include solar cell design, fabrication and characterization with a special focus on Nano materials , solar photovoltaic systems design and development , solar energy storage system , smart microgrid , sensor design ,fabrication and characterization using novel materials and methods for agricultural, environmental , automobile and healthcare applications (including quantum dot based biosensors) and development of SMART sensor system.

The center has been recognized as the West Bengal Renewable Energy Development Agency (WBREDA ) Centre of Excellence for cooperative R&D and manpower training in the field of solar energy by the Department of Power, Govt. of West Bengal.



# 8

## Sponsored Projects

- Nanostructured Immunosensor Array for Rapid, Portable and Sensitive Food Toxin Detection
- Efficacy of silicon microchannel Cytosensor platform for electrical profiling of multiple mammalian cells
- Integrated Sensor System for Elderly Health Monitoring
- Development of Metal-Insulator Metal based Volatile Organic Compound Sensor for Monitoring of Ripeness of Orange
- Current mode FPAA Design
- Studies on Retro-directive-Array For Space Applications
- CMOSVLSI Design
- Design and Development Of Substrate Integrated Wave-guide (SIW) based RF circuits and components Using Meta- materials in Ku-band Application
- Design and Development of Compact and Wideband Microstrip Filters Using Electromagnetic Bandgap Technology





09

Our  
Recruiters

CGI  
SYNOPSYS®  
HSBC 



# 10

## Placement Office

### Training and Placement Officer :

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