B.Tech in Electronics & Communication Engineering

School of Technology

Pandit Deendayal Petroleum University

Electronics and Communication Engineering

The B.Tech. Program in Electronics and Communication Engineering (ECE) at School of Technology focuses on developing a suitable academic environment for a broad understanding of the key principles in the electronics, computers and telecommunications. Students undertake courses in Basic Sciences, Engineering Sciences and Mathematics along with core subjects of ECE. The program involves researching, designing, developing and testing of electronic equipment used in various systems. ECE engineers can also conceptualize & oversee the manufacturing of communications and broadcast systems.

The B.Tech. Program in ECE emphasizes on Industry-linked Project-based Learning as a basis wherein students integrate their learning by executing mini-projects of relevance to the industry. This project-based learning through hands on training provides students a strong foundation in the fundamentals of electronics and communications engineering through courses such as Analog & Digital Communications, Digital Logic & Circuits, Coding & Information Theory, etc.

The program thus provides mastery over advanced topics in Embedded Systems, Wireless Broadband Communications, Digital Signal Processing, VLSI Design, Embedded Systems, 5G, Internet of Things, Image Processing, Computer Vision, Machine Learning, Wireless Communications and Information Processing & Analytics to enable students straddle the overlapping fields of Electronics, Communications and Computer Science.

Program Features

- Incorporates developments in industries and promotes research attitude, employability readiness, and entrepreneurial spirit among students
- Hands-on experience through state-of-art laboratories and skill development for problem solving, software development and testing
- Flexibility to choose courses to pursue individual goals
- One to one interaction with faculty in coursework and projects
- Strong linkages with industries to provide excellent opportunities for internships & final placements
- Full time project in industry during final semester to experience work culture of industry
- Excellent academic ambience and vibrant campus life
- On-campus Innovation & Incubation Center to support the students to be innovator and entrepreneur.

Career Prospectus for ECE Engineer

The opportunities are galore for ECE engineers as they are employed in variety of sectors such as Indian Telephone Industries, Civil Aviation, Development Centers in various States, Defense, NPL, A.I.R, Posts and Telegraph Department, Railways, Bharat Electronics Limited, D.R.D.O, Telecommunication, Software Engineering/IT, Power sector, Hardware Manufacturing, Home Appliance and VLSI design, Television Industry and Research & Development.

Some of the career avenues available to ECE graduates:

- Analog and Digital Design Engineer
- Control Systems Engineer
- Instrumentation Engineer
- Systems & Communications Engineer
- Embedded Firmware and Hardware Engineer
- Antenna engineer
- Network Communications Systems Engineer
- RF Wireless Systems Engineer
- Data Analyst
- Software engineer
- Cybersecurity Engineer - Embedded Systems
- Design and Development Engineer, electrical and electronic systems

Labs for ECE

Name of Laboratory	Scope of Laboratory
Solid State Lab	Experiments on semiconductor materials and device characterization. These include 4-probe resistivity measurement, Hall Effect, Band gap measurement, and BJT/MOSFET characteristic measurement
Embedded Systems Lab/ Microprocessor & Microcontroller Lab	Programming, simulation and testing on 8085/89C51/PIC/ARM/FPGA processor-based circuits and their interfaces. Program various devices using KIEL, XIILINX, MPLAB software for multidisciplinary projects
Digital Signal Processing Lab	Various signal processing techniques/algorithms can be designed and tested in this laboratory. MATLAB software is being used for software implementation for the algorithms.
Communication Lab	Students can design and implement modulation schemes used in analog and digital communication systems. They can also design and fabricate antennas for transmission of relevant signals.
VLSI Lab	Various aspects of integrated circuit, VLSI design and CAD algorithms for energy efficient high-performance microprocessors; power analysis and optimization for CMOS circuits; low power embedded systems design; VLSI design for multimedia; high-speed network and wireless applications

RF, Microwave and Antenna Lab	Students learn to simulate and design RF and Microwave circuits, then fabricate, measure, and evaluate their prototype using modern laboratory instruments
IoT Lab	▪ Direct integration between the physical world and computer-based systems, helping to connect people, processes and devices. Design and development of IoT enabled technologies which are cost effective and socially relevant. ▪ Test bench, connectivity devices, industrial sensors, RFID antennae and handheld machines, RFID tags and digital controllers. ▪ Simulation, design and development include Operational Technology (OT) component, Information Technology (IT) component, security and visualization.
Research & Development Lab	Active research problems are being explored in this laboratory with the help of PhD students. Current areas of research include biomedical signal processing, antenna design for 5G communication.