



# BIRLA INSTITUTE OF TECHNOLOGY, MESRA

[www.bitmesra.ac.in](http://www.bitmesra.ac.in)



*Department of*  
**ELECTRONICS & COMMUNICATION ENGINEERING**



## Programmes Offered :

### *Undergraduate Programmes*

- B.Tech. in Electronics & Communication Engineering (4 year)

### *Post-Graduate Programmes*

M. Tech. in Electronics & Communication-2-year (4-semester) in 3 specializations

- a) Instrumentation & Control Engineering
- b) Microwave
- c) Wireless Communication

### *Doctoral Programmes*

- Ph.D.



The Department of Electronics and Communication Engineering is one of the largest departments of the institute having largest student and faculty strength. Due to its modern infrastructure and exposure given to the students, it is one of the elite departments in India. The students are exposed to some of the specialized software tools such as Cadence design tools, IE3D, Microwave Office, Sonnet, Fidelity, Beampro, SystemView and NS-2 etc apart from various other software tools like LABView and MATLAB.

The department has devoted and qualified expert team of faculty members, who are continuously, involved in various research activities. The department is recipient of UGC assistance of 52.5 Lacs in the form of “Departmental Research Support” under the “Special Assistance Programme (SAP II)” of UGC. Several R & D projects are also being taken up by the faculty members of the department from various agencies like UGC, DST, AICTE, ISRO etc. The Department has several well-equipped laboratories such as Fibre Optics Communication Lab, Microprocessor Lab, Advanced Communication Lab, Microwave Lab, VLSI Design Lab, Intelligent Instrumentation Lab, Antenna Lab, Circuit Simulation Lab, Wireless Networking Lab & DSP Lab, where students are given rigorous practical sessions.





## LABORATORIES

The Department has modern laboratories and support facilities in all major areas of Electronics and Communication. These include:

- Analog and Digital Communication
- Digital Electronics and Integrated Circuits
- Circuit Simulation, Microprocessor
- Fiber Optics Communication
- Instrumentation
- VLSI Design
- Wireless Networking, Microwave
- Advanced Communication
- Antenna Design
- Microwave Integrated Circuit (MIC).

## OTHER MAJOR FACILITIES

Department also has an Advanced Instrumentation Lab which includes Data Acquisition Cards (DAC) from National Instruments and Lab View software for real time calibration and measurement experiments. This lab also has acquired a new PLC of Mitsubishi make.

An International Center for Wireless and Mobile Communication has been incorporated to the Department of Electronics & Communication Engineering, BIT Mesra, under ASIA-LINK programme.

The students are exposed to virtual laboratory simulation packages like MultiSim, CommSim, Ultiboard, MATLAB, LABView, Mds spice, Fidelity, NS-2, Cadence Design Tools, Active HDL and Synplify as well as to hardware assembly and testing practices.

The Fiber Optic Laboratory is well-equipped with Optical to Electrical Converters, Electrical to Optical converters, He-Ne Laser Source, Argon-ion Laser Source, Tunable Laser Source, Optical Spectrum Analyzer, Optical Time Domain Reflectometer, LED and LD Sources, Monochromator, various types of Photo-Detectors, Couplers, Multiplexers, CCD camera, BSO crystal, Vibration Isolation Table, Newport Kit, Falcon Kits and various types of fibers.



## Publications :

- S. Pal, S. Mohapatra, W. -H. Ki and A. Islam, "Soft-Error Aware Read-Decoupled SRAM with Multi-node Recovery for Aerospace Applications," IEEE Transactions on Circuits and Systems II: Express Briefs, vol. xx, no. xx, pp. xxxx-xxxx, Apr. 2021.
- Pawan Kumar Sahu, Sparsh Koushik, Shashank Kumar Dubey and Aminul Islam, "Radiation Tolerant Memory Cell for Aerospace applications," published year July 2020.
- Divya Sri Dodla, Sayonee Mohapatra, Yashasvi Vijayvargiya, Shashank Kumar Dubey, Vikash Kumar, and Aminul Islam, "Design of Robust Ratioed CMOS SR Latch," published year Sep 2020.
- Abhinit Saurabh, Amresh Kumar, Shashank Kumar Dubey, and Aminul Islam, "A Technique to Design Robust Single-Stage Operational Amplifier," published year Sep 2020.
- Chandramauleshwar Roy, Aminul Islam, "Design of differential TG based 8T SRAM cell for ultralow-power applications" Microsystem Technologies-Micro-and Nanosystems-Information Storage and Processing Systems, vol. 26, no. 10, pp.

## Research Areas :

- Substrate Integrated Waveguide, Metamaterials, Fractals, EBG/PBG, EMI & EMC, Surface Acoustic Wave, RF Circuit Design, Microwave and Millimetre wave planar components for Multiband, Wideband and Narrowband applications, RFID, RF MEMS, Microwave to Terahertz Imaging, Through wall Radar, Ground Penetrating Radar, Breast Cancer Detection, Computational Electromagnetics
- Signal Propagation and Fading, Channel Modelling for 5G, Software Radio Networks, Cognitive radio Networks, Massive MIMO systems, Wireless Sensor networks, Cooperative Communication, Cryptography, Information Coding, Fiber Optic Sensors & Communication, Optical Wireless Communication
- Biomedical Signal Processing, Brain Machine Interface, Speech Signal Processing, Image Signal Processing, Audio and Video Signal Processing, Automation, Signal Processing for 5G, Statistical Signal Processing
- Analog VLSI, Digital VLSI, Memory Design, Microelectronics Devices, Nano electronics Devices, Embedded System Design, RF-VLSI: LNA, Mixer, VCO etc.

ECESOC is a technical club which thrives to groom students with profound technical exposure and formed with a view to promote various technical activities among the students. The aim of the club is to make the student technically sound in the field of electronics by making them learn and understand the fundamental concepts of the field of Electronics.

The major events organized by ECESOC are as follows:

## PROJECT PROGRAMMES

**Teach and Compete:** A step forward to reach out students and also teach them over online platform. The topics to be taught were wisely chosen by the Seniors , so that viewers could learn and understand the basics, not only the topics were inter-related but also were very technical, so that the enthusiasts could explore new paths to learn , understand and teach to the students.

The society also organizes various online quizzes with prizes for the best performers.

It also releases online content on various subjects based on trending topics which are informative and useful.

## WORKSHOPS

- **Open CV Workshop** (in collaboration with Innovian Technologies and Technex'20 from IIT BHU, Varanasi).
- **Gateway To Analog.** The objective of the workshop was to give an overview of the basics of subject electronics, the use of technology in our day-to-day lives and make the fresh batch comfortable with the subject.
- **Gateway To Digital.** The workshop was aimed to explain how Digital Electronics can be utilised in microprocessor design with assistance of Arduino and other practical projects
- **Career in Electronics.** In this workshop, juniors were guided by seniors to prefer the right route so that this quagmire of learning electronics feels like a cakewalk with a little planning and guidance. Presented every trace of telling about the route of electronics that ECE students would negotiate within upcoming semesters.
- **Analog Circuit Design.**
- **How to pursue Career in Electronics.**



### ▶ **SMART HEALTH MONITOR PROTOTYPE**

The main objective of the thesis was to design a low cost, low power, miniaturized, smart health monitor prototype to address the problems in curd due to improper primary health care and underdeveloped in rural areas of ambulatory care which can be used by the patient 24 hours a day with cloud storage option for the data to be analyzed remotely.

### ▶ **DESIGN OF DATA GLOVE**

The data glove can help specially challenged people to communicate easily. It recognizes static Indian sign language as well as dynamic gestures used in daily life and converts it to speech form.

### ▶ **DETECTION OF PARKINSON'S DISEASE USING SPEECH SIGNALS AND MACHINE LEARNING**

They have used speech processing algorithms extracting features like jitter, Shimmer, NHR and HNR along with MFCC coefficients. The voice samples were collected from BIT faculty above 40 years of age, consisting of sustained phonations of 'a' and 'o'. The features were extracted from these voice samples and then were used to make a database which trained the model built using support vector machines. This model was then utilized to predict any voice sample as Parkinson diseased or healthy.

The students have in them a varied sense of understanding in the current methods and operating procedures by the help of subsequent internships during summer and winter breaks. In order to facilitate the students with new advancements the department also ensures industrial visits over the period of semester so that students are convinced by practical means of theoretical sorts. These are some of the places wherein our students have worked as interns:

### **Industries:**

- Paytm
- Cognizant
- CCL
- Fastenal
- Mentor Graphics
- Ab inBev
- NXP
- Logic Fruit Technologies
- Infineon
- Flipkart
- Verzeo
- Cropin
- DRL
- Infoedge

### **Institutes:**

- Illinois Institute of Technology, Chicago
- Indian Institute of Technology, Bombay
- Indian Institute of Technology, Ropar
- Indian Institute of Technology, Hyderabad
- Indian Institute of Technology, Indore

- OYO
- Walmart Labs
- Steradian Semiconductors
- Times Internet
- Publicis Sapient
- Niyo Solutions
- PhableCare
- ZS Associates
- Samsung
- Amazon
- ODA Classes
- NTPC
- Axis Bank
- TATA
- Hindalco

- Indian Institute of Management, Lucknow
- ICTS, Bangalore
- ISI, Calcutta





Deloitte.



paytm



ORACLE



STERADIANSEMI



FASTENAL

@WalmartLabs



infoedge

CGI

accenture



SYNOPSYS



Axxela



Few of our proud  
RECRUITERS





**Thank You**

*for your Time & Attention !*

---

**Contact Us :**

[placement@bitmesra.ac.in](mailto:placement@bitmesra.ac.in)