Department of Electronics Engineering

The Department of Electronics and Communication Engineering (ECE) at **MIT Mumbai** equips students with a strong foundation in electronics, communication systems, embedded technologies, and digital innovation. With a focus on industry readiness, entrepreneurship, and multidisciplinary learning, the department prepares students for success across core engineering fields and emerging technology domains.

Hands-On Learning and Lab Training

Students of MIT begin with breadboard circuit design and testing, using tools like Cathode Ray Oscilloscopes (CRO), simulation software, and industry-relevant platforms such as MATLAB, Proteus, and Xilinx. Every semester includes a mandatory project, ensuring application of theoretical knowledge to real-world challenges.

At MIT, Specialized Areas of Study

- VLSI Design and Chip-Level Engineering
- Embedded Systems & Internet of Things (IoT)
- Communication Systems and Signal Processing
- Robotics and Automation
- Power Electronics and PCB Design

Active Clubs and Professional Bodies

At MIT, Students will be able to become members of vibrant technical communities such as:

- IEEE Student Chapter
- ISTE Student Chapter
- ISF (IETE Students' Forum)
- VLSI Design Club
- Robotics and IoT Club
- Automation and Control Club

Beyond the Curriculum and Personalized Mentoring

- Advanced topics taught beyond syllabus
- Mentorship for academically weaker students
- Workshops, training programs, and certification courses
- Regular guest lectures by industry experts

Industry-Standard Training & Placement Readiness

MIT Mumbai provides industry-standard training that significantly enhances placement prospects.

- Hands-on skills in Embedded C, IoT, AI/ML, VLSI, PCB fabrication, Robotics & Automation.
- Industrial internships and collaboration with R&D labs
- Communication, soft skills, and aptitude training
- Interview preparation and resume building workshops

Career Opportunities in Electric Vehicles, Robotics, and Automotive Industry

The knowledge and skills gained in Electronics Engineering are directly applicable to fast- growing, high-demand sectors like Electric Vehicles (EVs), Robotics, and Automotive Engineering.

1. Electric Vehicles (EVs)

Electronics plays a crucial role in EV systems:

- Power electronics and motor control for EV propulsion systems
- Battery Management Systems (BMS) and embedded control units
- Sensor integration and IoT-based telematics
- Design of charging stations and control circuits

Graduates can work with companies like Tata Motors EV Division, Ather Energy, Ola Electric, Bosch, Continental Automotive, and EV startups.


2. Robotics and Automation

Electronics students learn the core of robotics:

- Microcontrollers, sensors, and actuators
- Real-time embedded systems and control theory
- Signal processing and AI integration
- Applications in manufacturing, healthcare, defense, and smart homes

Key employers include ABB, Fanuc, Tata Elxsi, L&T Robotics, Grey Orange, Addverb Technologies, and R&D labs like DRDO.
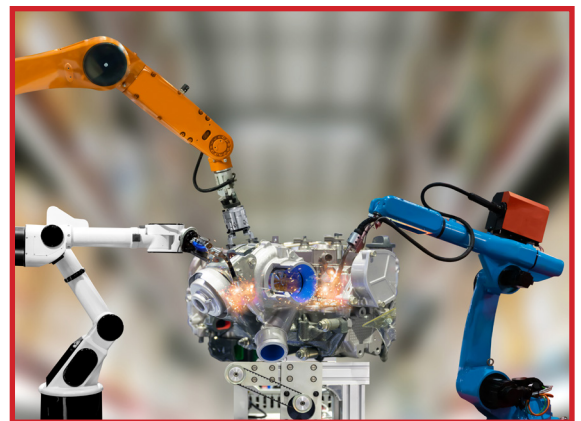
3. Automotive Electronics

Modern vehicles rely heavily on electronic systems:

- Advanced Driver-Assistance Systems (ADAS)
- Infotainment systems, ECU programming, and diagnostics
- CAN communication, IoT connectivity, and safety systems

Electronics graduates are recruited by Bosch, Continental, Mahindra Electric, TVS, Hyundai Mobis, Valeo, and many Tier-1 suppliers.

With interdisciplinary exposure in electronics, communication, embedded systems, and automation, Electronics Engineers are uniquely positioned to lead in these technology-driven industries.

Top Core Recruiters

- Intel, Qualcomm, Texas Instruments (Semiconductors)
- Bosch, Tata Elxsi, L&T Technology Services (Embedded Systems & Automotive)
- Nokia, Ericsson, Tejas Networks (Telecommunications)
- ABB, Siemens, Honeywell (Automation)
- Ather Energy, Ola Electric, Mahindra Electric (EV Industry)

Entrepreneurship and Innovation

- Startup incubation, tinkering labs, and patent support
- Opportunities to develop products in IoT, robotics, home automation, and EV-related tech
- Mentorship from alumni entrepreneurs and industry leaders

Best Practices in the Department

- Outcome-based education and CO-linked assessments
- Industry-aligned labs and skill development
- Peer learning and structured mentoring
- Faculty-led research guidance and paper publishing
- Strong alumni and industry collaboration

Through a dynamic curriculum, hands-on learning, and real-world exposure, the Electronicsand Communication Engineering Department at MIT Mumbai prepares students for a future in cutting-edge industries like electric vehicles, robotics, smart automation, VLSI Design and more.

At MIT, Students will be offered projects on Advanced Research Areas in Electronics Engineering such as:

1. Embedded Systems & IoT (Internet of Things)

- Designing smart devices and connected systems for automation, healthcare, smart cities, and industrial applications.
- Research in low-power microcontrollers, real-time operating systems, sensor integration, and wireless communication protocols.

2. Wireless Communication & 5G/6G Technologies

- Development of next-generation wireless networks with higher speeds, lower latency, and massive device connectivity.
- Research on MIMO systems, millimetre waves, beam forming, cognitive radio, and network security.

3. Signal Processing & Machine Learning

- Advanced algorithms for audio, video, biomedical signal processing, and sensor data analytics.
- Integration of AI/ML techniques for pattern recognition, anomaly detection, and predictive analytics.

4. Power Electronics & Renewable Energy Systems

- Efficient power conversion, smart grids, energy storage, and electric vehicle powertrains.
- Research on wide-bandgap semiconductors (SiC, GaN), inverter topologies, and energy harvesting.

5. Biomedical Electronics

- Development of medical devices, wearable health monitors, and implantable electronics.
- Research on biosensors, neural interfaces, and signal processing for diagnostics and therapy.

6. Nanotechnology & Nanoelectronics

- Designing electronic devices at the nanoscale for improved performance and new functionalities.
- Research on quantum dots, carbon nanotubes, graphene-based devices, and molecular electronics.

7. Robotics & Automation

- Electronics design for control systems, sensors, actuators, and embedded intelligence in robots.
- Research on autonomous navigation, human-robot interaction, and industrial automation.

8. Quantum Electronics & Photonics

- Study of electronic devices that exploit quantum mechanical effects.
- Research on quantum computing, quantum communication, photonic circuits, and lasers.