GSFC UNIVERSITY
EDUCATION RE-ENVISIONED

B.TECH.
ELECTRONICS & COMMUNICATION ENGINEERING (ECE)

Designing the Future of Electronics and Semiconductor Technologies

Specialization

Information & Communication Technology (ICT)
VLSI Design & Technology

About the Department

GSFC University was established in December 2014 as a Corporate Social Responsibility (CSR) initiative of Gujarat State Fertilizers and Chemicals Ltd. (GSFC) under the GSFC Education Society and the Gujarat Private Universities Act, 2009. The University is committed to developing future-ready and employable graduates through industry-oriented education and experiential learning.

The Department of Electronics and Communication Engineering (ECE) focuses on building strong foundations in electronics, communication systems, semiconductor technologies, and intelligent hardware systems. The program integrates theoretical knowledge with practical exposure through advanced laboratories, project-based learning, and industry interaction.

With Gujarat emerging as a major semiconductor and electronics manufacturing hub, the department prepares students to contribute to chip design, communication technologies, embedded systems, robotics, and drone technologies, addressing the growing demand for skilled professionals in the semiconductor and electronics ecosystem.

India Semiconductor Mission & Gujarat Semiconductor Ecosystem

The India Semiconductor Mission (ISM) aims to strengthen India's semiconductor design and manufacturing capabilities by promoting chip fabrication, packaging, and electronics innovation. Gujarat is emerging as a key semiconductor hub with major developments including: • Dholera Special Investment Region (SIR) – semiconductor manufacturing ecosystem • Micron Technology ATMP Facility – Sanand • Tata Electronics Semiconductor Fabrication Facility – Dholera • CG Semi OSAT Facility – Sanand These developments create excellent career opportunities for ECE graduates in semiconductor technologies, VLSI design, and embedded systems.

Program Highlights

- **Industry-Integrated Learning:** Industrial internships after every semester to provide real-world exposure.
- **Hands-on Training:** Advanced laboratories supporting electronics design, embedded systems, and communication technologies.
- **Research & Innovation:** Opportunities to work on projects in IoT, robotics, AI hardware systems, and semiconductor technologies
- **Industry Interaction:** Expert lectures, industrial visits, and collaborative projects with industry partners.
- **Capstone Projects:** Final-year industry-driven projects addressing real-world engineering challenges.

Program Objectives

- Graduates of the B.Tech in Electronics and Communication Engineering (ECE) program at GSFC University will be able to:
- Develop strong foundations in electronics, communication systems, and semiconductor technologies, aligned with the objectives of the India Semiconductor Mission (ISM).
- Acquire knowledge and practical skills in VLSI design, embedded systems, and communication technologies to contribute to the rapidly growing semiconductor and electronics ecosystem in Gujarat.
- Apply engineering principles to design, analyze, and optimize electronic systems, chip architectures, and intelligent hardware platforms for modern technology-driven industries.
- Engage in industry-integrated learning through internships, laboratory work, and collaborative projects, preparing students for careers in semiconductor manufacturing, chip design, and electronics innovation.
- Develop the ability to work on emerging technologies such as IoT systems, robotics, drone technologies, and AI-enabled hardware, supporting next-generation communication and smart systems.
- Foster lifelong learning, professional ethics, and innovation-driven thinking, enabling graduates to contribute effectively to the evolving global electronics and semiconductor industry.

Academic Infrastructure Cutting-Edge Laboratories

- Design IoT Lab (DST Funded)
- Supercomputer Lab (PARAM Shavak DL-GPU) (DST Funded)
- Digital Electronics & Microprocessor Lab
- Electrical and Electronics Lab
- Robotics &Automation Lab
- Advance Drone Lab
- Operating Systems Lab
- Programming Lab

These laboratories provide students with hands-on experience in electronics design, embedded programming, and autonomous systems development.

Core Learning Areas

Electronics Engineering

- Electronic Devices and Circuits
- Analog Electronics
- Digital System Design
- Microprocessors and Microcontrollers

VLSI Design (VLSI Specialization)

- Low Power VLSI Design
- EDA Tools and Verification
- Analog Mixed Signal IC Design
- ASIC Design
- System on Chip (SoC) Design

Emerging Technologies

- Embedded Systems
- Internet of Things (IoT)
- Robotics Systems
- Drone and Unmanned Aerial
- Vehicle (UAV) Technologies
- AI Hardware Systems
- Cyber-Physical Systems

Communication Systems (ICT Specialization)

- Digital Signal Processing
- Communication Systems
- Wireless Sensor Networks
- Next Generation Wireless Technologies (5G/6G)

Career Opportunities

ECE graduates from GSFC University can pursue careers across multiple sectors:

Communication and Embedded Systems

- ✔ Embedded Systems Engineer
- ✔ Communication Systems Engineer
- ✔ IoT Systems Developer

Emerging Technology Fields

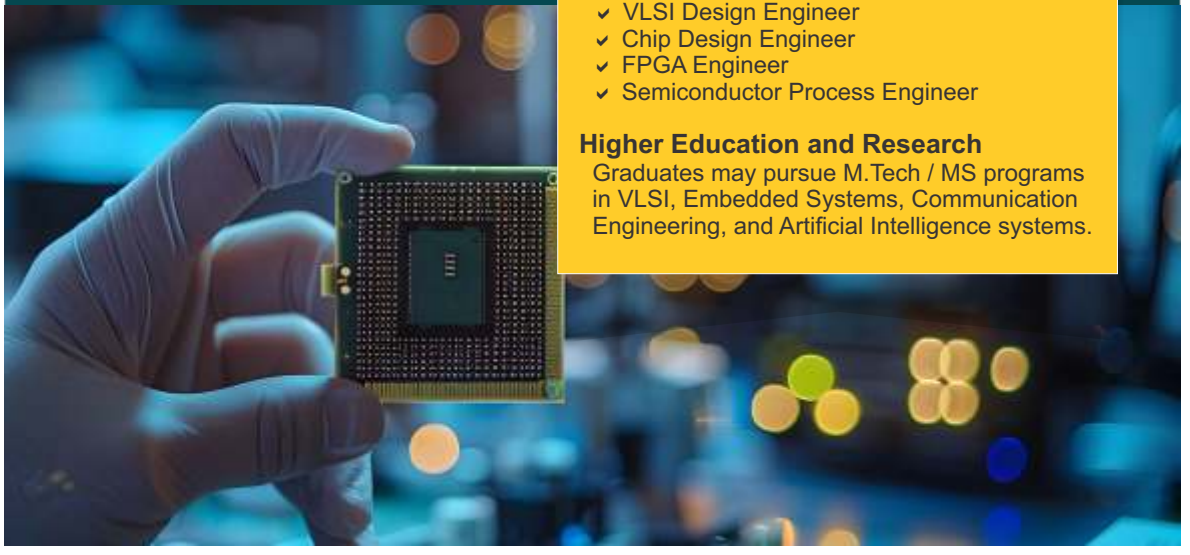
- ✔ Robotics Engineer
- ✔ Drone Systems Engineer
- ✔ AI Hardware Engineer

Core Electronics and Semiconductor Industry

- ✔ VLSI Design Engineer
- ✔ Chip Design Engineer
- ✔ FPGA Engineer
- ✔ Semiconductor Process Engineer

Higher Education and Research

Graduates may pursue M.Tech / MS programs in VLSI, Embedded Systems, Communication Engineering, and Artificial Intelligence systems.



Why Choose ECE at GSFC University?

- Industry-oriented curriculum
- Exposure to semiconductor and chip designing technologies
- Hands-on electronics and embedded systems training
- Industrial internships after every semester
- Industry interaction through expert lectures and collaborative projects
- Strong foundation in ICT and VLSI design

Faculty Development & Research

Faculty members actively contribute to research publications, industry collaborations, and funded projects. Continuous professional development and industry interaction ensure that teaching and research remain aligned with emerging technological advancements.