

National Institute of Technology Raipur

Department: Electronics and Communication Engineering
Specialization: VLSI Design & Embedded System



Welcome!

Department of Electronics and Communication Engineering, NIT Raipur, offers Undergraduate programme (BTech) and postgraduate programme (MTech) in VLSI Design & Embedded System (VLSID & ES). From the very inception, this department has established itself as an efficient, self-reliant, and quality conscious entity with the sole aim of producing the most energetic, enthusiastic, and professionally competent Electronic Engineers with ability to take up the challenges posed to them. This department has an intake of 114 students in undergraduate course and 24 students for its post graduate courses.

The department also offers Ph.D. program in all relevant areas including Communication, Signal & Image processing, Devices & VLSI, Microwave & Antenna etc.

About the Programme

The Master of Technology in VLSID & ES started in 2017. The programme is aimed at imparting technical skills and value-based education to students, to enable them to face the modern demands of the industry. It not only teaches the fundamental principles and design skills in ICs, systems and signal processing but also exposes the students to developments in VLSI Design for pursuing research and formulating solutions to current societal issues.

Programme Educational Objectives

Under the M.Tech programme, the objectives aim to produce qualified Electronic Engineering Post-graduates who will:

1. Identify and apply appropriate Electronic Design Automation (EDA) to solve real world problems in VLSI and Embedded Systems domain to create innovative products and systems.
2. Design VLSI systems, which are economically feasible and socially relevant for promoting sustainable semiconductor and electronics eco-system.
3. To exhibit professional competence and leadership qualities with harmonious blend of ethics leading to an integrated personality development.

Programme Outcomes

1. Advanced knowledge of VLSI design: Students will acquire a deep understanding of VLSI design principles, methodologies, and tools.
2. Ability to design and optimize complex systems: Students will be able to design, analyze, and optimize complex VLSI circuits and embedded systems.
3. Knowledge of emerging technologies: Students will be exposed to emerging trends and technologies in VLSI design and embedded systems.
4. Effective communication and teamwork: Students will possess good communication skills and the ability to work effectively in multidisciplinary teams.
5. Awareness of ethical and societal implications: Students will gain an understanding of the ethical, social, and legal aspects related to VLSI design and embedded systems.
6. Research and problem-solving skills: They will be capable of analyzing technical challenges, proposing innovative solutions, and conducting research in the field of VLSI design and embedded systems.



M.Tech VLSI Design & Embedded System labs are equipped with Cadence (Virtuoso & Layout XL), XUP Vertex Trainer Kit, Spartan Kit, Visual TCAD Tool, Silvaco TCAD Tool, Vivado ML Enterprises Simulator, and COMSOL Multiphysics. Our research spans from materials and device structures to circuits and design systems. The research works include design of analog and digital VLSI circuits, Power devices, Sensors, MEMS based devices, Optoelectronic devices, MOS based devices etc.

Facilities & Laboratories

Faculty Members

Name	Area of Specialization
Dr. G. P S. C Mishra	Digital and Analog CMOS VLSI System Design, Nanoelectronics Devices, Optoelectronics.
Dr. Chitrakant Sahu	VLSI and Microelectronic: Classical CMOS Devices and Sensors.
Dr. Alok Naugarhiya	Microelectronics and VLSI Design.
Dr. Deboraj Muchahary	Semiconductor Devices, Solar cell, Photodetector.
Dr. Asishis Kumar	MEMS and Nanoelectronic Materials for Sensors and Actuators, Microelectronic Fabrication.
Dr. Kaushal K. Nigam	VLSI Devices and Circuits, FETs Based Biosensor, Strain Analysis and Ferroelectrics Based FETs.

Links for Scheme, Syllabi and Ordinance

Institute & Department

<http://www.nitr.ac.in/index.php>

<http://www.nitr.ac.in/aboutelectronics.php>

Admission

<http://nitr.ac.in/admission.php>

M. Tech. Ordinance

http://nitr.ac.in/ordinances_MTech.php

M. Tech. Scheme and Syllabus

<http://nitr.ac.in/syllabus.php>

