Course Relevance:

One of the main benefits of Microelectronics is the ability to create devices that are smaller, faster, and more energy-efficient than traditional electronic devices. Microelectronic advances have enabled the development of low-cost, low-power miniature sensing devices equipped with a microprocessor, memory, radio, and battery. These devices can now combine sensing, computing, and wireless communication functions into miniature smart sensor nodes. It is necessary for Electronics engineers, students, and researchers to understand the fundamentals of these emerging microelectronics technologies to be employed in future systems. The aim of the course is to introduce the evolution of Microelectronics and to provide an overview of related enabling technologies. This course would cover fundamentals of Electronics Design, Essential Circuits for System Design, Tools for Modeling and Analyzing the performance of systems at the Device/Circuit Level, and chipless RFID tags for wireless applications.

Course Objectives:

- To provide the overview of Microelectronics Technologies and Systems.
- To introduce the essential tools for VLSI system design.
- To provide the overview of essential circuits for microelectronics system design.
- To provide practical hands-on lab exercises using CAD Tool for simulation of Electronics device and circuit.
- To familiar with various design challenges of Microelectronics at Device, circuit and system level.

Expert Speakers for Key Topics:

Industry Expert

Dr. Abhishek Upadhyay, R&D Engineer, X-FAB Dresden GmbH & Co. KG

-Compact Modelling, Parameter Extraction, and Measurement of Low-Power MOS Devices

Dr. Mamidi Nagaraju, Technical Manager, Entuple Technologies, Bangalore

-Semi-custom ASIC Verification Flow using Cadence EDA Tools

Mr. Amit Saini, Director, Cadre Design Systems, Delhi -Device and Circuit Simulation using TCAD Tool

Academic Expert

Dr. Shivendra Kumar Pandey, NIT Silchar -Emerging Non-volatile Memory Devices for Next Gen. Computing Systems Dr. Ankur Beohar, VIT Bhopal - Advance MOS Devices, Circuits and System Design Dr. Sunanda Ambulkar, NIT Puducherry -RFIC Design and Challenges for 5G and Beyond Dr. Deepika Gupta, IIIT NAYA Raipur -VLSI Design Techniques Dr. Ashok Kumar, NIT Srinagar -Current Mode Circuits Dr. Bal Chand Nagar, NIT Patna -FPGA Based System Design Dr. Atin Mukherjee, NIT Rourkela -Verifications of VLSI Circuits Dr. Santanu Sarkar, NIT Rourkela -ADC/DAC Dr. Sougata Kumar Kar, NIT Rourkela -Sensor Interfacing Circuit for Biomedical Application Dr. Santos Kumar Das, NIT Rourkela -Embedded IoT Systems Dr. Santanu Kumar Behera, NIT Rourkela -RFID Tag Dr. Sumit Kale, Delhi Technological University -Reconfigurable Silicon Nanowire Schottky Barrier Transistor for Biosensing Application





Five-days Short-Term Course

on

Advanced Microelectronics Technologies and Systems (AMTS-2023)

Online Mode

06th - 10th November 2023



Coordinators: Dr. Arjun Singh Yadav Dr. Sumit Saha Dr. Pankaj Kumar Sharma

Department of Electronics and Communication Engineering, National Institute of Technology Rourkela Rourkela-769008, Odisha, India

Technically Co-sponsored by:





About National Institute of Technology (NIT) Rourkela

National Institute of Technology (NIT), Rourkela was founded as Regional Engineering College, Rourkela in 1961. It is a prestigious institute with a reputation for excellence at both undergraduate and postgraduate levels, fostering the spirit of national integration among the students, a close interaction with industry and a strong emphasis on research, both basic and applied. The city of Rourkela is a bustling industrial city, cosmopolitan by nature and is well connected to all parts of the country by road and rail. The nearest airports are Ranchi, Kolkata and Bhubaneswar, which are well connected by trains. Please visit<u>https://www.nitrkl.ac.in/</u> to know more about NIT Rourkela.

About Department of Electronics and Communication Engineering

The department was established with the vision to become a nationally acclaimed department of higher learning that will serve as a source of knowledge and expertise for the society. The department offers various UG and PG programmes with the mission to advance and spread knowledge in the areas of electronics, communication, instrumentation, signal processing and VLSI leading to creation of wealth and welfare of humanity. The department also offers M. Tech in VLSI Design & Embedded Systems and Ph. D. for regular as well as sponsored candidates. The faculties of EC department are handling several externally funded research projects. Please visit <u>https://website.nitrkl.ac.in/EC/</u> to know more about the Department of ECE.

Important Dates:	
Registration Deadline	01 st November 2023
Confirmation to Participants by email	03 rd November 2023
Commencement of Course	06 th November 2023 (Online through MS Teams)

Target Participants:

The short-term course of immense interest for UG/PG students, research scholars/professionals, staff/faculty members and industry professionals working in the area of core electronics domain. The student participants from Electronics and Communication Engineering, Electrical Engineering and Computer Science and Engineering branches will be benefitted with this course.

Coordinators:

Dr. Arjun Singh Yadav Assistant Professor Department of ECE, NIT Rourkela Email: yadavas@nitrkl.ac.in Mobile no.: +91-9713871191

Dr. Sumit Saha Assistant Professor Department of ECE, NIT Rourkela Email: sahas@nitrkl.ac.in Mobile No.: +91-9955160232

Dr. Pankaj Kumar Sharma Assistant Professor Department of ECE, NIT Rourkela Email: sharmap@nitrkl.ac.in Mobile no.: +91-6398053220

Registration Details:

The registration fee (non-refundable) for various participants for attending the short-term course is given below:

Registration Type	Fees
Student	INR 500/-
Faculty Members	INR 1,000/-
Scientist from R&D Organization/Industry Person	INR 1,500/-

The students of NIT Rourkela are exempted from the payment of registration fee.

Bank Account Details for Paying Registration Fee:

The registration fee is to be deposited in the following bank account:

Account Name	CONTINUING EDUCATION NIT ROURKELA
Account No.	10138951784
Bank	State Bank of India
Branch	NIT Campus Rourkela (02109)
IFS Code	SBIN0002109

Registration Form:

To complete online registration, the participants need to fill the following google form: *Short URL*

https://shorturl.at/adqEI



Registration Form

E-certificates will be provided to the registered participants upon successfully completing the course.

Contact and Queries: Please send your queries directly to the course coordinators.