Summer Training Program on
Smart Electronics System Design
(Under TEQIP- III)
(May 20- June 28, 2019)

Objective of the Program

The Department of Electronics & Communication Engineering in collaboration with Department of Physics is organizing the Summer Training Program on "Smart Electronics System Design" at MNIT Jaipur, Rajatshan from May 20 to June 28, 2019.

This summer training program is aimed to explore new device structures to select a viable process and device development pathways using TCAD (technology computer-aided design) simulations. During this program, special lectures and hands-on sessions on 3D simulations and data analysis of semiconductor devices will be delivered.

In addition, this workshop will cover the CAD simulations for smart system design, where basics of IoT design, FPGA implementation, Hands on Lab sessions for IoT based applications. Further, Pattern Recognition and Optimization methods using MATLAB and its applications will also be delivered.

This STP program will be useful for UG, PG, Ph.D. students and faculties who are working in this area. In addition, the experts' talk from industry CAD will also be delivered to the participants.

About MNIT Jaipur

The institute, established in 1963 as Malaviya Regional Engineering College, Jaipur, was conferred the status of National Institute of Technology on June 26, 2002. Fully funded by Ministry of Human Resource Development (MHRD), Government of India, this is ranked 52nd among all engineering institutions across India for NIRF-2019 ranking. Extending into an area of over 317 acres of lush greenery, the institute campus is imaginatively laid-out with a picturesque landscape. It presents a spectacle of harmony in modern architecture, and natural beauty, which enthralls and inspires everybody who visits the campus.

Program Modules

Module 1: Design and Development of Semiconductor Devices
Device Physics (fundamental physics of Semiconductors, characteristics, energy band diagram and charge carriers in semiconductors, PN junction, circuit models, design perspectives, IV characteristics, Bipolar junction transistor,) Non-conventional CMOS Devices, Metal-Oxide-Semiconductor Field-effect transistors (MOSFETs), Compound semiconductor field-defect transistors (MESFET), Solar cell, characteristics, construction and working, IV characteristics, maximum power calculation, fill factor, efficiency, organic solar cell, perovskite solar cell, smart sensors.
Modeling of device, important highlights of simulator, Radiation damage effects, Applications.

Module 2: Modelling and Simulation of Electronic Circuit and System
MOSFET Scaling and design challenges, CMOS Inverter, Circuit Simulation using SPICE, Digital and Analog Circuit Design techniques, Optimization of Digital Circuit power & delay, Two stage OPAMP Design

Module 3: CAD for Smart System Design
Basics of IoT Design, IoT for smart systems, Smart healthcare, Smart City, Digital Design Flow, FPGA implementation flow, Hardware Debugging, VLSI system design issues, RTL implementation using VHDL/Verilog, HDL Training, Hands on Lab session for IoT based applications, HDL, FPGA mapping of digital design

Module 4: Pattern Recognition and Optimization
• Introduction to Pattern Recognition, Machine Learning & optimization. Description and MATLAB implementation of classification (SVM, KNN etc.) and Regression Methods, PSO, GA etc., Optimization methods, Application of ML and optimization in system design

Organizing Committee

Patron
Prof. Uday Kumar R Yaragatti
Director, MNIT Jaipur

Advisor (s)
Prof. D. Boolchandani
Head, Department of Electronics and Communication Engineering

Dr. Srinivasa Rao Nelamarri
Head, Department of Physics

Convener
Dr. Kavita Lalwani (Department of Physics)

Coordinator (s)
Dr. Chitrakant Sahu (ECE): chitrakant.ece@mnit.ac
Dr. Amit Joshi (ECE): amjoshi.ece@mnit.ac.in
Dr. Rahul Kumar Singhal (ECE): rahul.ece@mnit.ac.in
Dr. Kavita Lalwani (Physics): kavita.phy@mnit.ac.in

Registration

Register by clicking: **http://bit.ly/2Kgw5nw** and submit the form.
Registration fee: INR 10,000/-
Mode Of Payment:
▪ Demand Draft: Demand draft (DD) payable at Jaipur, in name of :
▪ The Registrar MNIT, Jaipur (TEQIP Phase-III)
▪ *NEFT/IMPS:* The Registrar MNIT, Jaipur (TEQIP Phase- III)
Account No. 36875887782 IFSC CODE: SBIN0015921 (SBI, MNIT)
Limited seats are available and selection would be on first come first serve basis. Last date of registration is May 5, 2019.

Note: Registration fee do not include hostel accommodation.