

TEQIP –III, Sponsored 5-Days Online Workshop  
On

**“Emerging CMOS Technologies and Beyond:  
Trends and Challenges”  
26<sup>th</sup> to 30<sup>th</sup> November, 2020**

Organized by  
**Department of Electronics & Communication Engineering  
MNIT Jaipur**



**Emerging CMOS Technologies and Beyond : Trends and Challenges**

**Patron**

**Prof. Udaykumar R Yaragatti**  
Director, MNIT Jaipur

**Advisor**

**Prof. Vijay Janyani**  
Head, ECE Department, MNIT Jaipur

**Convener**

**Dr. Chitrakant Sahu**  
Assistant Professor, ECE Department  
M: +91-9549655371  
E-mail- [chitrakant.ece@mnit.ac.in](mailto:chitrakant.ece@mnit.ac.in)  
MNIT Jaipur

**Coordinators**

**Dr. Rajesh Saha**  
Assistant Professor, ECE Department  
M: +91 9549651401  
Email- [rajesh.ece@mnit.ac.in](mailto:rajesh.ece@mnit.ac.in)  
MNIT Jaipur

**Dr. Bharat Choudhary**

Assistant Professor, ECE Department  
M: +91-9718001567  
E-mail- [bharat.ece@mnit.ac.in](mailto:bharat.ece@mnit.ac.in)  
MNIT Jaipur

**Student Coordinator**

**Shreyas Tiwari, Project Fellow**  
M: +918765423817

**Important Date**

**Last date of registration:**  
25-11-2020, 2:00 PM

Link to the registration form  
<https://forms.gle/IANugC4GjXdqdiDB6>

**Registration Charges:**

- Rs. 118/- for MNIT Jaipur student
- Rs. 236/- for outside MNIT students
- Rs. 590/- for Faculty

**Online Payment Details:**

A/c Name: The Registrar MNIT, Jaipur (TEQIP Phase-III)  
Bank Name: State Bank of India (SBI)  
Current A/c No.: 36875887782  
IFSC Code: SBIN0015921  
Branch Name: MNIT Campus, Jaipur  
OR

**PAYTM to 8765423817 (Shreyas Tiwari)**

**Eligibility/Target Audience**

- Faculties/PhD Scholars/UG/PG Students of AICTE affiliated institutes.
- Applications will be accepted on **First cum first serve basis**.
- Certificates will be issued to the participants only after attending the complete course.

Five days online workshop (e-workshop) from 26<sup>th</sup>-30<sup>th</sup> November, 2020 is being organised by **Department of Electronics and Communication engineering, Malaviya National Institute of Technology Jaipur**. MNIT Jaipur is ranked 35<sup>th</sup> in NIRF 2020 among Top Engineering Institutions in India. This workshop will provide an opportunity to learn recent trends and challenges in the area of CMOS Technologies and its beyond from eminent experts from IITs/NITs/Industry. The participants will have an exposure to the state-of-the-art in CMOS IC Design, Layout Design, Spice Model and challenges in advanced semiconductor devices for various applications. This workshop will provide discussion/presentation on future research directions in the field of CMOS technologies and beyond. The participants will also learn new IC simulation Tools e.g. EDA/ TCAD tools from academic/industry experts.

**Topics to be covered:**

**Module 1.** CMOS Scaling trends, Moore's Law, CMOS fabrication challenges, Logical Effort Method of Digital CMOS IC Design, EDA Tool Demonstration for IC Design.

**Module 2.** Layout design and challenges, Stick diagrams, Design rules and layout: Lambda-based Design, Demonstration of Layout design using EDA Tool, Parasitic Extraction, Delay and Power Estimation.

**Module3.** Modelling of MOS Transistor using SPICE, Small Signal Analysis, Short Channel Effects and its Remedies. Demonstration of Digital IC Design Flow using Cadence PDK.

**Module 4.** Emerging devices beyond CMOS: Partially and fully depleted SOI MOSFETs, High-k MOS devices, Strained technology, FinFETs and Multi gate MOSFETs, 3D Transistors, Demonstration of TCAD Tools.

**Module 5.** Trends and Challenges in Nanoscale technologies: Si-Nanowire MOSFETs, JL and DL MOSFETs, Tunnel FET. Simulation and Analysis of Emerging low power devices using TCAD Tools.

**About the Department of ECE:** The department of Electronics and Communication Engineering started functioning in 1984. The department offers four-year courses leading to the Bachelor's Degree and also offer four Post Graduate Programs. It offers Ph.D. programs in various specializations like Artificial Intelligence, Device modelling, MEMS devices, optoelectronics, Antenna, RF-microwave, Wireless Networks, Image Processing, etc. The Department is equipped with state-of-the-art labs to support the UG, PG and Research Programs.

**Venue/Mode:** The e-workshop will be organized in online **Platform**. The joining link and minute to minute time table will be shared one day before the workshop.

**Timing of the e-workshop:**

(2 PM-5 PM) – for Working Day (26<sup>th</sup> & 27<sup>th</sup> November)  
(10 AM-12 PM) and (2 PM-5 PM) – for Non-Working Day (28<sup>th</sup> -30<sup>th</sup> November)

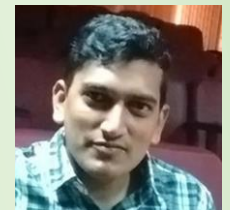
**Speakers**



**Prof. Brajesh Kumar Kaushik**  
Professor, IIT Roorkee



**Dr. Brinda Bhowmick**  
Associate Professor, NIT Silchar



**Dr. Sunil Pandey**  
Analog Design Engineer, Intel Corporation



**Dr. Shubhankar Majumdar**  
Assistant Professor, NIT Meghalaya



**Dr. Chitrakant Sahu**  
Assistant Professor, MNIT Jaipur



**Dr. Rajesh Saha**  
Assistant Professor, MNIT Jaipur



**Dr. Bharat Choudhary**  
Assistant Professor, MNIT Jaipur