

Faculty Development Program On Recent Trends in CMOS and Beyond CMOS Devices

Under the banner of
Electronics and ICT academy, NIT Patna

03rd - 07th December, 2018



Patrons

Prof. P.K. Jain
Director, NIT, Patna

Coordinator (NIT Patna)

Dr. Sangeeta Singh

Co-Coordinator/ Local coordinator (NIT Patna)

Dr. Bharat Gupta

Sponsored by

Meity and Govt. of India

Organized by

Department of Electronics and Communication
Engineering,

National Institute of Technology, Patna-800005

About NIT Patna

National Institute of Technology Patna is the 18th National Institute of Technology created by the Ministry of H.R.D. Government of India after rechristening the erstwhile Bihar College of Engineering Patna on 28.01.2004. NIT Patna marked its humble beginning in 1886 with the establishment of pleaders survey training school which was subsequently promoted to Bihar College of Engineering Patna in 1924. This made this institute the 6th oldest Engineering Institute of India. The Institute is situated on the south bank of holy river Ganges behind Gandhi Ghat (where the ash of father of the Nation, Mahatma Gandhi was offered in the river Ganges). The campus has a picturesque river view with historic building presenting a spectacle of architecture delight and natural beauty. The Institute imparts high level education training, research and development in science, engineering technology and humanities along with high quality education and values at UG, PG and Ph.D. level. At present the Institute offers courses in six major technical disciplines viz. Architecture, Civil Engineering, Computer Science & Engg., Electrical Engg., Electronics & Communication Engg. And Mechanical Engg. It also consists of well-established departments of Physics, Chemistry, Mathematics and Humanities and Social Sciences.

Electronics and ICT Academy

Ministry of Electronics and Information Technology, Government of India has instituted seven Electronics and Information & Communications Technology (ICT) Academies of which, the academy of NIT Patna is one. The Academy at NIT Patna aims to design and organize basic as well as specialized training programs in niche areas of electronics and ICT for the development of required knowledge base, skills and tools to equip the teaching community with better knowledge and understanding.

Overview

Now the semiconductor devices research has already entered in the Beyond CMOS era due to fundamental limitations in the performance enhancement using scaling, hence alternative approaches are needed to achieve required performance enhancement for electronic devices. As a result there is a need to explore these aspects of beyond CMOS devices, their materials, their circuit applications and designing challenges. This program would focus on the basic concept of Nano-electronics device

fabrication technology, basic processes involved, CMOS Process device physics, basic MOSFET Physics, advanced devices physics, their circuit designing approaches. Along with the theory session hands on session will also be conducted.

Objective and Scope

- Primary objective of this program is to provide an exposure of recent trends in beyond CMOS devices and their circuit applications.
- During this program our focus will be on developing the state-of-the-art in basic CMOS devices fabrication, physics, and practical designing challenges through interaction with experts from academic CFTI institutions such as IITs/NITs/IIITs including host institution.
- This program can serve as an excellent platform to get the concepts of both basics and recent advances in VLSI beyond CMOS devices and Micro-nano Technologies to the teaching and research community associated with the Departments of Electronics, Electrical and Computer Science etc.
- It will help participates to understand trends in beyond CMOS technologies and better identify and understand open problems and challenges.

Finally, it will provide a unique opportunity to identify and to discuss potential collaborations among young researchers and faculty. One of the key features of this course is that, along with discussing the advanced research topics and cutting edge technologies, it will encompass fundamental aspects of semiconductor device fabrications techniques.

Course Content

- Introduction of VLSI & Micro-Nano Technology.
- Materials to Devices migration
- Recent Research Trends in Field of VLSI & Micro-nano Technologies
- Device fabrication process flow.
- Semiconductor Fabrication Facilities and its scope in India.
- EDA tools Hands-on.
- 3D Device Simulation using EDA Tools

Outcomes

- By the end of the program, the participants should be able to understand the basics as well as recent research opportunities in CMOS and Beyond CMOS devices.
- They will be able to simulate the some basic devices, using both virtual fabrication process flow as well as the device and circuit designing aspect.

Who Can Participate

Industry personals, Faculty members of UGC/AICTE recognized Universities and Engineering colleges all over India, Research scholars, M. Tech. students, However there are very limited number of seats for Ph.D. /PG/UG students; priority will be given to the faculty members and Ph.D. students.

Resource Persons

Dr. Jawar Singh, IIT Patna
Dr. Niraj Kumar Jaiswal, IIITDM Jabalpur
Dr. Kamal Kishore Jha, IIIT Vadodara
Mr. Amit Cadre Design Systems, EDA & TCAD Technology
Dr. Bharat Gupta, NIT Patna
Dr. Sangeeta Singh, NIT Patna

Registration Fee

- Faculty Member: Rs 1000/-
- Ph.D/PG Students : Rs 500/-
- Industry Personnel: Rs 3000/-

Registration fee includes Registration kit, Tea, Snacks, Lunch and a Course Completion Certificate. **Certificate will be given by Electronics & ICT Academy NIT Patna.**

Registration Process

1. Scanned copy of the filled application form duly endorsed by the forwarding authority and the demand draft are to be mailed at (sangeeta.singh@nitp.ac.in). No travelling Allowance will be paid by the Academy. The demand draft as applicable, should be drawn in favour of "Director, NIT Patna" payable at Patna.
2. Registration fee can also be paid by the online mode, the account details for this purpose is
Account Name: NIT Patna

Account No.: 50380476798

IFSC Code: ALLA0212286

3. Selection will be made purely on First-Come-First- Serve basis (Subject to fulfilling the eligibility criteria).
4. Maximum fifty (50) participants will be accommodated in the STC.
5. The brochure and the registration form may be downloaded from the Institute website www.nitp.ac.in.

The registration fee can also be deposited in cash.

Last date of submission of application: 28th November, 2018.

Address for Correspondence

Enquiry should be addressed to:

Dr. Sangeeta Singh
Assistant Professor
Dept. of ECE Engineering, NIT Patna
Mob. No.: 09479646111
Email: sangeeta.singh@nitp.ac.in

Venue

Microelectronics and VLSI Lab, 2nd Floor, ECE Department, NIT Patna.

Advisory Committee

Prof. **P.K. Jain**, Director, NIT, Patna
Dr. Gayadhar Pradhan, HOD (ECE), NIT Patna.

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(03rd - 07th December, 2018)

REGISTRATION FORM

1. Name (block letter):
- (a) Gender Male Female
- (b) Category Gen OBC SC ST
2. Designation
3. Organization:
4. Highest Academic Qualification:

5. Experience (in years):

(a) Teaching: (b) Industrial.....

6. Address for communication:

Pin code: Ph. No.:

Fax No.:

E-mail:

7. Mode of Payment Through DD

Through NEFT CASH

8. DD No./NEFT Trn Ref no. :

Date: Bank Name:.....

Amount:

9. Endorsement from the forwarding authority:

Name:

Designation:.....

Seal:

DECLARATION

I do hereby agree to abide by the rules and regulations of the FDP.

Place: Date:.....

.....
Signature of the applicant