



AICTE Sponsored Short Term Course
On

“Nanoelectronics Devices and Circuits”

-- January 04-09, 2021--

Department of Electronics Engineering and
School of Materials Science and Technology



Course Coordinator(s)

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About the Course

Indian Institute of Technology, (Banaras Hindu University) is organizing a course on “Nanoelectronics Devices and Circuits” from 04.01.2021 to 09.01.2021. The course is open to teachers from AICTE recognized management and engineering colleges. The online application through google form link can be done latest by 31.12.2020. The candidate will be informed of his selection in advance.

The main focus of the course is making the participants get familiarized with the recent advancements in nano-scale devices and circuits. This course has following major objectives/benefits

1. To introduce participants to emerging devices, modeling and simulation methodologies and applications in the area of nanoelectronics.
2. To discuss design, operation and modeling of nano-scale devices.
3. A discrete view of spintronic and optoelectronic devices for the post-cmos era.
4. A hands-on demonstration of modeling and simulation of nanowire, multigate, spintronic devices using advanced SPICE and TCAD simulators.
5. A demonstration of the design-technology co-optimization flow, which connects novel materials to the circuits performance including the front-end of the line device, and back-end of the line parasitics.

Course Content

- Introduction to Nano-scale MOS modeling
- Nanowire, Multigate (MuG), and tunneling based MOS devices
- Optoelectronic devices
- Thin film devices
- Spintronic devices and non-volatile logic
- Basic illustrations of SPICE with examples
- Design and modeling using SPICE

- Basic Illustration of TCAD with examples
- TCAD Simulation of advanced nanoscale devices (Diode, MOSFET, 2D FinFET)
- Modeling and simulation of advanced optoelectronic devices
- Spintronic device simulation using OOMMF

Important Dates

Last date for receiving applications: Dec 31, 2020

Intimation to selected applicants: Jan 2, 2021

Commencement of the course: Jan 04, 2021

Google form for registration:

https://docs.google.com/forms/d/e/1FAIpQLScabUqFVirgPkQX8VB79WkoDXtBwjJNK4CAI3k-2YX5aSX6PA/viewform?usp=sf_link

The course is free of charge.

Contact Details

Address for sending application & contact

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General Information

The STC will be conducted in the online mode through suitable platform which will be intimated later on.

Course material (if any) and lab sessions will also be delivered online. The participants are requested to arrange laptops and strong internet connection for content delivery and lab/lecture sessions.

Academicians/experts in the concerned field from **IITs/Industry(R&D)** will be invited to deliver lectures in the programme. Speakers from other renowned institutions are also expected to deliver as part of the course.

The schedule of the course will be announced at later stage and intimated to registered candidates. The e-certificates will be provided based on performance and attendance.

About IIT(BHU)

The Indian Institute of Technology (Banaras Hindu University), Varanasi is situated in the magnificent campus of Banaras Hindu University at the southern end of the ancient city of Varanasi on the banks of the holy river Ganga. Engineering Education in Banaras Hindu University commenced in 1919 with the establishment of Banaras Engineering College (BENCO). The Institution has also pioneered engineering education by being the First in the country to start degree courses in Mining, Metallurgy, Ceramic Engineering and Pharmaceutics with the establishment of the College of Mining and Metallurgy and the College of Technology in the year 1923 and 1932 respectively. In 1969 these three colleges were amalgamated to form the Institute of Technology. The Institute of Technology, Banaras Hindu University (IT-BHU), has been converted into Indian Institute of Technology (Banaras Hindu University), Varanasi by the Government of India on 29th June, 2012. The institute aspires to be a harbinger of modern interdisciplinary technological advancement in the country and at a forefront of imparting quality education by use of innovative

pedagogy culminating traditional with contemporary methods.

About Varanasi

Varanasi, also known as Kashi or Benares or Banaras, is one of world's oldest living cities. It is regarded as the religious capital of India. The city is located on the left bank of the holy river Ganga (Ganges), and is one of the seven sacred pilgrimage cities for Hindus. To be in Varanasi is an experience

in itself. The majestic ghats on the banks of Ganga, morning sunrise, visit to famous temples and evening Ganga Aarati are some of the special attractions. Varanasi is also renowned for its rich tradition of music, arts, crafts and education. For more details, visit <http://varanasi.nic.in/>.