AICTE Sponsored Short Term Course On Modeling and Simulation of Advanced Semiconductor Devices

July 17-22, 2017

Organized by Department of Electronics Engineering, IIT(BHU), Varanasi-221005

Quality Improvement Program Center Indian Institute of Technology (BHU) Varanasi – 221005, (U.P.)

Phone: 0542 - 2369434 Email: coordinator.qip@iitbhu.ac.in

About the Course
The physics based modeling of the electrical and optical characteristics of various semiconductor devices is an important area of research for the growth and development of semiconductor science and technology. While analytical modeling gives the physical inside of the device characteristics, TCAD simulation can provide the first hand information of various advanced semiconductor devices without going through complex mathematical modeling and practical fabrication and experimentation. The basic objective of this short term course is to introduce various modeling and simulation techniques used for the performance characterization of advanced semiconductor devices including nanoscale field effect transistors (FETs), flexible transistors, nanoelectronic and optoelectronic devices to the young faculty members and research scholars of various technical colleges and universities. While the major emphasis will be given on the modeling and simulation aspects of the advanced nanoscaled CMOS transistors, the modeling and simulation aspects of high performance organic semiconductor based transistors and semiconductor optoelectronic devices will also be discussed in this course. The participants will also be introduced to the use of different industry standard TCAD software (e.g. Silvaco-ATLAS, Synopsis-TCAD and Cogenda-Visual TCAD) for simulating various 2D and 3D semiconductor devices. In addition, various characterization techniques for device analysis will be covered. The course will include both the expert lectures and practical sessions.

Course Content
The tentative list of topics to be covered in this course are:

- Fundamentals of various Field Effect Transistors (FETs)
- Scaling of CMOS Devices: Issues and Challenges
- Advanced MOS Transistors: Tunnel-FETs (TFETs), Fin-FETs, Junctionless FETs, Ferroelectric-TFETs etc.
- Compact Device Modeling Techniques
- Flexible Electronics: Organic Field Effect Transistors
- Optoelectronic Devices: Source and Detectors
- Introduction to TCAD Device Simulators
- Hands-on training sessions on TCAD Device Simulators: Silvaco (ATLAS), Visual TCAD (Cogenda), and Synopsys (Sentaurus) TCAD

Course Coordinator

Prof. Satyabrata Jit
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List of Short Term Courses during 2017-18

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<td>Chemical Engineering &amp; Tech.</td>
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<td>16</td>
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Application Form for
QIP SHORT TERM COURSE
on
Modeling and Simulation of Advanced
Semiconductor Devices
July 17-22, 2017

1. Name (block letters):

2. Designation & pay scale:

3. Organization:

4. Address for communication with pin code:
   Mobile No.: E-mail:

5. Highest Academic Qualification:

6. Specialization:

7. Experience (in years):
   (a) Teaching: (b) Industrial:

8. Amount of TA for to-and-fro III AC railway fare (only for the AICTE approved college teachers):

9. Whether Accommodation (to be provided strictly on sharing basis) is required:

   Please register me for the course on “Modeling and Simulation of Advanced Semiconductor Devices” to be held at IIT (BHU) Varanasi during July 17-22, 2017.

   Place:

   Date: Signature of the applicant

SPONSORSHIP

Prof./Dr./Mr./Ms./Mrs./_______________________ is an employee of our AICTE approved institute and his/her application is hereby sponsored. The applicant will be permitted to attend the short-term course on Modeling and Simulation of Advanced Semiconductor Devices at IIT (BHU) Varanasi during July 17-22, 2017 of the Short Term Course, if selected.

Date: Signature of Sponsoring Authority
Designation: (Official Seal)

Refundable Security Deposit Details:
*DD No.: Date:
Bank: Amount: ₹ 2000/-

Signature of the Applicant

*DD should be drawn in favor of the Registrar, IIT(BHU), Varanasi-221005 payable at the SBI, IT Branch (Code:11445), BHU, Varanasi.

Participation Certificate
Certificate of participation will be issued to all the participants only after completion of the course.

Important Dates
Last date for receiving application: June 25, 2017
Confirmation of Participation: June 27, 2017

Contact Details
Prof. Satyabrata Jit
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ABOUT THE DEPARTMENT

Department of Electronics Engineering came into existence as an offshoot of Electrical Engineering Department in the year 1971 (when Banaras Engineering College, College of Mining and Metallurgy and College of Technology had been amalgamated to form the Institute of Technology in its present form). The intake every year of the Department is 79 in the B.Tech. level and 47 in the M.Tech. level. Besides teaching students of our own discipline (Electronics Engineering), we also offer the basic courses in Electronics Engineering to almost all the Departments of the Institute, we also teach advanced-level courses to the students of Electrical Engineering and Computer Engineering Departments. We have a training and placement section in the Institute through which most of our students are professionally placed in various jobs.

Our current priority areas of specialization are (i) Communication Systems Engineering (ii) Digital Techniques & Instrumentation (iii) Microwave Engineering and (iv) Microelectronics. We are also running a doctoral program in these thrust areas. A mention may be made about the external Ph.D. Registration Scheme of the Institute under which at a time there would be on an average 4-5 Scientists of National Laboratories registered for their Ph.D. degree.

HOW TO REACH

Varanasi Railway Station is well connected to almost all parts of the India. The Lal Bahadur Shastri International Airport, Babatpur, Varanasi is also well connected via Air to Delhi, Mumbai, Kolkata, Hyderabad, and Bengaluru. There are frequent flight services from New Delhi. The Institute is located in the extreme south of the Varanasi city and about 7 km away from Varanasi Railway Station and 30 km from the Babatpur (Varanasi) airport. Pre-paid Taxis and Auto-Ricksaw can be hired from the airport and rail way stations.