

भारतीय
प्रौद्योगिकी
संस्थान
काशी हिन्दू विश्वविद्यालय



INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY



Information Brochure (2019-2020)



M.Tech. Programme *in* Microelectronics



About Us:

The inception of this specialization was closely associated with the Centre for Research in Microelectronics (CRME) established by the Ministry of Human Resource Development (MHRD), Govt. of India in 1983. The main aim of this Centre is to carry out teaching and research in the area of modeling, simulation, design, fabrication and characterization of advanced microelectronic, nanoelectronic and optoelectronic devices and circuits for electronic, gas sensing, bio-sensing, photodetection and solar cell applications. In addition to the regular Ph.D. program under this specialization, the department also offers a separate specialization in the Microelectronics Engineering at M.Tech. level. A number of B.Tech. students also take advanced undergraduate projects on the fabrication and characterization of thick film and thin film devices for various electronic, optoelectronic and sensing applications.



Prof. Satyabrata Jit (Ph.D IIT BHU, Varanasi)

Professor, Department of Electronics Engineering

Areas of Interest:

MOS based thin-film device, Colloidal quantum dots based photodetectors, Signal processing and Communication Systems.



Prof. V.N Mishra (Ph. D IIT Roorkee)

Professor, Department of Electronics Engineering

Areas of Interest:

Microelectronics, Microsensor, VLSI Design



Prof. P. Chakrabarti (Ph.D. IIT BHU, Varanasi)

Professor, Department of Electronics Engineering

Areas of Interest:

High-speed semiconductor devices, Optoelectronic devices, Photonics



Dr. R. Dwivedi (Ph.D. IIT BHU, Varanasi)

Institute Associate Professor, Department of Electronics Engineering

Areas of Interest:

Microelectronics, Photovoltaic Cell, VLSI Design

CURRICULUM:

The Learning Curve

The main objective of Microelectronics branch is to educate young engineers & to conduct research in the emerging field of modeling, simulation, design, fabrication and characterization of advanced microelectronic, nanoelectronic and optoelectronic devices and circuits for electronic, gas sensing, bio-sensing, photodetection and solar cell applications. Our specialization is mainly active in following disciplines:

1. Solid State Devices
2. IC/ Hybrid-IC Technology
3. LSI/VLSI Design
4. Reliability Engineering
5. Digital Design with VHDL/Verilog HDL
6. Fault Tolerant Digital System Design
7. Microwave Solid State Devices
8. Heterojunction Devices & Technology
9. Microprocessor Engineering & Applications





Without **data**
you're just
another person
with an **opinion**

W. Edward
Deming

Lab Facilities: Being Practical

1. Microelectronics Lab (CRME):

This lab is used for the fabrication and characterization of microelectronic and nanoelectronic devices for electronic, gas sensing and optoelectronic applications. The list of facilities available in this lab is given below:

- E-beam Coating System, Thermal Deposition Unit (HHV): Used for thin film coating/ deposition under vacuum
- Semiconductor Parameter Analyser (Keysight, B1500A): Used for I-V and C-V Measurement.
- Solar Simulator from PET: Used for solar device characterisation.

2. Virtual Device Fabrication & Simulation Lab:

This is designed to facilitate the UG and PG students for Technology Computer-Aided Design (TCAD) software based virtual fabrication, simulation and characterization for various advanced semiconductor devices. The lab is equipped with the following facilities:

- Silvaco ATLASTM
- Synopsys TM TCAD
- CogendaTM Visual TCAD
- Cadence EDA Tools
- Mentor EDA Tools

“Quality is never an accident.
It is always the **result**
of intelligent effort.”

-John Ruskin



Major Achievements: Projects:

- **Prof. P. Chakrabarti**, currently on deputation as Director of IEST, West Bengal has been awarded as the prestigious MRSI Distinguished Lectureship Award for the year 2019-2020 at the 30th AGM of the Society held at IISc Bangalore on February 13, 2019.
 - **Mr. Chandan Kumar** (Ph.D. student of Prof. S. Jit) has received the prestigious DST- CEFIPRA Fellowship-2018 instituted by Indo French Centre for the Promotion of Advanced Research IFCPAR/CEFIPRA)
 - **Prof. S. Jit** has been appointed as the Editor-In-Chief of the journal of Material Science Research India (UGC Approved Journal)
 - **Prof. S. Jit** has received the BOYSCAST Fellowship from DST to work at the Max-Born-Institute, Division C, Berlin during Sept. 22 to Dec. 25, 2012.
 - **Prof. S. Jit** has received the Postdoctoral Research Fellowship, Georgia State University, Atlanta, USA.
- Analytical Drain Current Model of Stacked Oxide SiO₂/HfO₂ Cylindrical Gate Tunnel FETs.
 - High-Performance Photodetector Based on Organic-Inorganic Perovskite CH₃NH₃PbI₃/ZnO Heterostructure
 - Three-Dimensional TCAD Simulation of PQT-12 Based Organic Thin Film Transistor
 - Design and Analysis of Low Leakage SRAM cell using 45nm Technology
 - Fabrication and characterization of gridded gate Pt/SiO₂ MOS Sensors for Hydrogen and Hydrogen containing gases.

Message from Prof. Incharge:

It gives me immense pleasure to extend you a most cordial invitation to participate in the Campus Recruitment Programme of the Indian Institute of Technology (BHU), Varanasi. With an increasing thrust being placed on Institute-Industry Interaction, it is my sincere belief that your esteemed organization and IIT (BHU) Varanasi will stand to gain immensely from this symbiotic relationship.

Our Institute holds the pride of place being pioneer in the field of engineering and technical education in this country and has a glorious heritage. We have been continuously ranked amongst the elite by all peers and stakeholders. Our constant pursuit of excellence has made our institute a focal point in technical education for students and faculty members alike. Admissions to the institute take place through the reputed Joint Entrance Examination (JEE) and Graduate Aptitude Test in Engineering (GATE).

At this institute, we take utmost care to groom our students according to the needs of the industry. We seek to open frontiers of knowledge and reveal new horizons of change to broaden mindset and to create positive attitude in our students. Our students receive industrial exposure by their frequent industrial visits. Besides, our undergraduate students undergo an eight-week training during summer vacation in reputed industries/institutions/organizations (in India as well as abroad) as part of their academic requirements.

We would be most delighted to host you for campus recruitment and beyond.
I am looking forward to a mutually beneficial relationship,



Professor Anil Kumar Agrawal
Training & Placement Officer, IIT (BHU) Varanasi

Past Recruiters:



Placement Team:

Dr. Anil Kumar Agrawal

Professor In-charge

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