DEPARTMENT OF ELECTRICAL ENGINEERING

Indian Institute Of Technology, Kanpur

PLACEMENT BROCHURE

2024-25

VISIT US

https://www.iitk.ac.in/ee/

WELCOME MESSAGE FROM THE HOD

Dear Recruiters,

It is with great excitement that I extend a warm welcome to you on behalf of the Department of Electrical Engineering at the IndianInstitute of Technology Kanpur. As the Head of the Department, I am honored to introduce you to our exceptional bright students who represent the pinnacle of academic excellence, innovation, and industry readiness.

The Electrical Engineering Department holds a legacy that spans over six decades, marking its inception as one of the pioneering departments when the institute took its first steps in 1960. Today, it stands as a beacon of excellence, with facilities such as the Advanced Centre for Electronic Systems (ACES), Western Lab (WL), Western Lab Extension (WLE), and Engineering Science Building 2(ESB2) , all testament to our commitment to cutting-edge research and development. The department encompasses a broad range of disciplines, including traditional fields like Power Engineering, Control Systems, Signal Processing, Microelectronics, and VLSI, as well as modern areas such as Artificial Intelligence, Machine Learning, Neuromorphic Computing, Hardware Security, and Future Wireless Communication Networks like 5G, 6G, and mmWave. Throughout the selection process, you will observe that our students have excelled and are skilled in many of these technological areas.

We have ensured a strong connection between academia and industry through various research projects and by involving students in their progress. Through strategic partnerships with industry leaders, we offer our students unparalleled opportunities for hands-on experience with real-world projects. These collaborations provide numerous internship opportunities, giving our students a competitive edge in the job market. This is reflected in ourplacement records, which are a testament to the exceptional caliber of our graduates. Our students are highly sought after by top companies globally, thanks to their solid technical foundation, strong analytical abilities, and readiness to contribute meaningfully from day one.

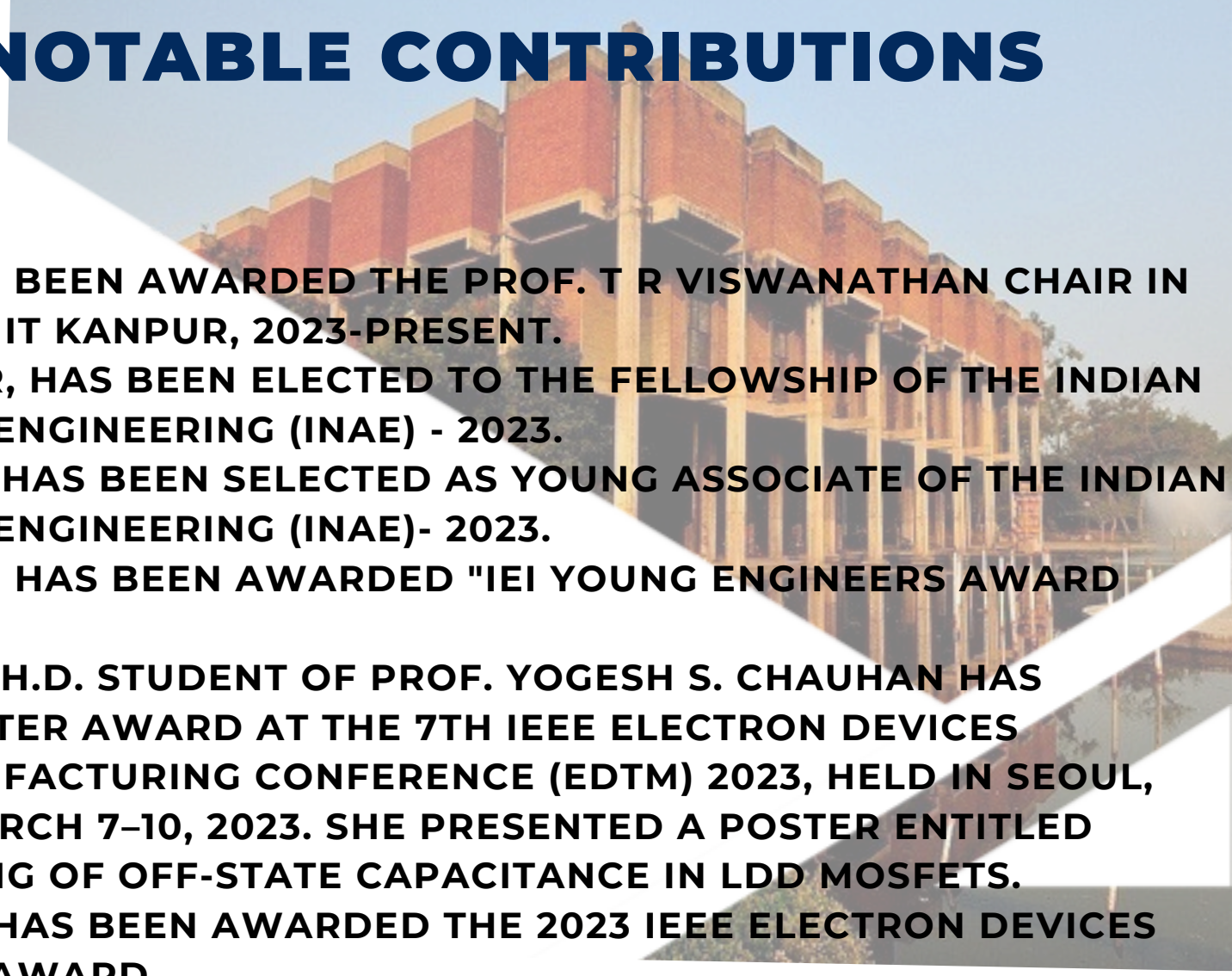
I am proud to share that our department ranks first in research and innovation as per recent NIRF rankings 2023. Our commitment to pioneering research and technological advancement ensures that our students are not just participants but leaders in the field of electrical engineering.

With great enthusiasm, I would like to invite you to discover the exceptional potential and unmatched talent of our electrical engineering students. They are innovators, critical thinkers, and future leaders who are prepared to make substantial contributions to your esteemed organizations. We are enthusiastic about establishing strong, and mutually beneficial relationships with your esteemed organizations.

Best wishes,
Yogesh Singh Chauhan

Prof. Yogesh Singh Chauhan
Head EE
head_ee@iitk.ac.in
Phone: 0512-259-7244

RECENT NOTABLE CONTRIBUTIONS



- PROF. ALOKE DUTTA HAS BEEN AWARDED THE PROF. T R VISWANATHAN CHAIR IN TEACHING EXCELLENCE, IIT KANPUR, 2023-PRESENT.
- PROF. M. JALEEL AKHTAR, HAS BEEN ELECTED TO THE FELLOWSHIP OF THE INDIAN NATIONAL ACADEMY OF ENGINEERING (INAE) - 2023.
- PROF. SHUBHAM SAHAY, HAS BEEN SELECTED AS YOUNG ASSOCIATE OF THE INDIAN NATIONAL ACADEMY OF ENGINEERING (INAE)- 2023.
- PROF. TUSHAR SUNDHAN HAS BEEN AWARDED "IEI YOUNG ENGINEERS AWARD 2023-24"..
- MS. AYUSHI SHARMA, A PH.D. STUDENT OF PROF. YOGESH S. CHAUHAN HAS RECEIVED THE BEST POSTER AWARD AT THE 7TH IEEE ELECTRON DEVICES TECHNOLOGY AND MANUFACTURING CONFERENCE (EDTM) 2023, HELD IN SEOUL, SOUTH KOREA, FROM MARCH 7–10, 2023. SHE PRESENTED A POSTER ENTITLED "ANALYSIS AND MODELING OF OFF-STATE CAPACITANCE IN LDD MOSFETS.
- PROF. SHUBHAM SAHAY HAS BEEN AWARDED THE 2023 IEEE ELECTRON DEVICES SOCIETY EARLY CAREER AWARD.
- PROF. YOGESH SINGH CHAHAN AND HIS GROUP HAS PUBLISHED ONE OF THEIR PIONEERING WORKS IN NATURE COMMUNICATIONS.
- PROF. ROHIT BUDHIRAJA HAS BEEN APPOINTED A VICE CHAIRMAN OF THE "6G USE CASE AND REVENUE STREAM" IN THE BHARAT 6G ALLIANCE.

Research Area

Microelectronics & VLSI

- Analog, RF and Mixed-Signal integrated circuit design.
- Compact modeling of semiconductor devices, Device physics and modeling, multi-scale device modeling.
- IC fabrication technology and device characterization.
- Growth and characterization of semiconductor thin films, Semiconductor Device Design and Fabrication.

Signal Processign Comm. & Networks

- WIRELESS TECHNOLOGIES FOR 5G+/6G CELLULAR SYSTEM.
- OTFS RADAR, JOINT RADAR COMMUNICATION, INTEGRATED SENSING COMMUNICATION.
- COMPLEX VALUED NEURAL NETWORK FOR COMUPTER VISION.
- REALIZING LARGE-SCALE SWARMS, TRAJECTORY OPTIMIZATION ALGORITHMS, PATH PLANNING FOR UAVs.
- Satelite based remote sensing of atmosphere

Photonics

- High-speed waveguide photodiodes and Integrated photonic devices.
- Optic Communications, Nonlinear Fiber Optics, Optical Fiber Modeling.
- Nanophotonics, Quantum optics, Quantum dot based devices, Plasmonics.

Power Engineering

- High voltage engineering, insulation and nanodielectrics.
- Power electronics, Power management circuits, Power quality, Utility interfaces for renewable sources such as solar PV and wind, Reliability of converters, GaN and SiC based converters, and Circuits for integrating sources and storage in Microgrids.
- Power system dynamics and stability,Optimal operation and planning.

RF & Microwave

- Microwave material processing, Microwave imaging and non-destructive testing.
- Micro & Millimeter wave circuits and techniques, Lasers, nanophotonics, nanoplasmonics. Antennas,Printed Antennas,
- MIMO Antennas, Radio Frequency Identification (RFID),
- Computational Electromagnetics. Meta-Materials, Microwave and Antennas.

Control & Automation

- Intelligent Systems and Control: Adaptive Critic based Optimal Control, Direct and Indirect Adaptive control using Learning Framework.
- Practical applications of Control Systems theory.
- Linear and Nonlinear systems, Adaptive Control, Time-delay systems.

Courses Offered in IIT Kanpur EE - Department

MICROELECTRONICS AND VLSI

- EE610A ANALOG/DIGITAL VLSI CIRCUITS
- EE619A VLSI SYSTEM DESIGN
- EE614A SOLID STATE DEVICES
- EE618A INTEGRATED CIRCUIT FABRICATION TECHNOLOGY
- EE698A HIGH FREQUENCY ANALOG CIRCUIT DESIGN
- EE698I MIXED-SIGNAL INTEGRATED CIRCUIT DESIGN
- EE698P MEMORY TECHNOLOGY AND NEUROMORPHIC COMPUTING
- EE698W ANALOG CIRCUITS FOR SIGNAL PROCESSING
- EE698G CIRCUITS FOR PHASE AND FREQUENCY SYNTHESIS
- EE615A SOLAR PHOTOVOLTAIC TECHNOLOGIES
- E616A SEMICONDUCTOR DEVICE MODELING
- EE698F RF MICROELECTRONICS
- EE681A COMPACT MODELLINGS
- EE698T CHARGE AND HEAT TRANSPORT IN SEMICONDUCTORS
- EE683 QUANTUM AND WAVE PHENOMENA
- EE685 SEMICONDUCTOR OPTICAL COMMUNICATION DEVICES
- EE645 MONOLITHIC MICROWAVE ICS
- EE706A QUANTUM PHYSICS OF SEMICONDUCTORS
- EE798I NANOPHOTONICS
- EE658 FUZZY SET , LOGIC & SYSTEMS AND APPLICATIONS.

PHOTONICS

- EE 612 FIBER OPTIC SYSTEMS
- EE 629 DIGITAL SWITCHING
- EE644A OPTICAL COMMUNICATION
- EE698E QUANTUM AND WAVE PHENOMENA
- EE798I NANOPHOTONICS
- EE 646 PHOTONIC NETWORKS AND SWITCHING.

RF & MICROWAVE

- EE 640 COMPUTATIONAL ELECTROMAGNETIC
- EE 641 ADVANCED ENGINEERING ELECTRO MAGNETICS
- EE 642 ANTENNA ANALYSIS & SYNTHESIS
- EE643 SMART ANTENNAS FOR MOBILE COMMUNICATIONS
- EE 645 MONOLITHIC MICROWAVE ICS
- EE 647 MICROWAVE MEASUREMENTS AND DESIGN
- EE 648 MICROWAVE CIRCUITS
- EE 649 THE FINITE ELEMENT METHOD FOR ELECTRIC AND MAGNETIC FIELDS

Courses Offered in IIT Kanpur EE - Department

POWER ENGINEERING

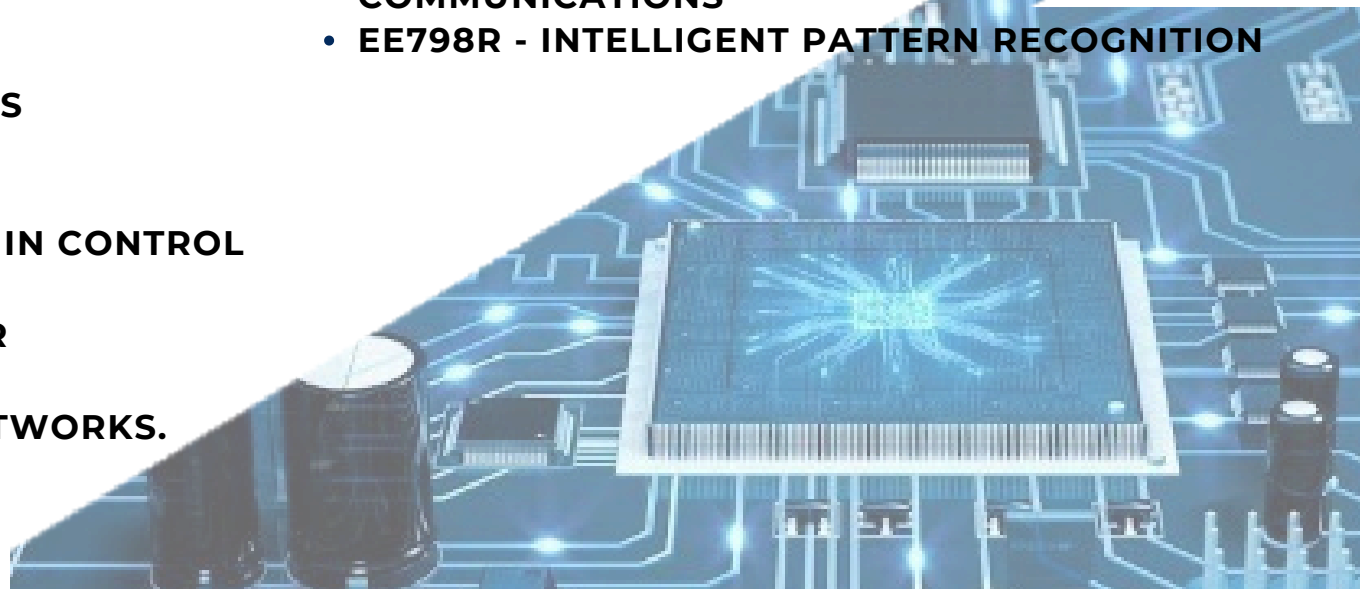
- EE662 CONTROL TECHNIQUES IN POWER ELECTRONICS.
- EE664 FUNDAMENTALS OF ELECTRIC DRIVES.
- EE665 ADVANCED ELECTRIC DRIVES.
- EE666 special Topics in Power Electronics
- EE698 Smart Grid technology
- EE698E Power converters for EV Charging
- EE798M High power converters
- EE649 FEM method for electric and magnetic field
- E660 BASICS OF POWER ELECTRONICS CONVERTERS.

CONTROL & AUTOMATION

- EE 650 BASICS OF MODERN CONTROL SYSTEMS
- EE 651 NONLINEAR SYSTEMS
- EE 652 LINEAR STOCHASTIC DYNAMICAL SYSTEMS
- EE 653 DIGITAL CONTROL
- EE 654 ROBUST CONTROL SYSTEMS
- EE 655 OPTIMAL CONTROL
- EE 656 CONTROL SYSTEM DESIGN
- EE 637 MATHEMATICAL METHODS IN CONTROL SYSTEMS
- EE 666 SPECIAL TOPICS IN POWER ELECTRONICS
- EE 678 NEURAL SYSTEMS AND NETWORKS.

SIGNAL PROCESSING COMMUNICATION & NETWORKS

- EE602 - STATISTICAL SIGNAL PROCESSING
- EE604 - IMAGE PROCESSING
- EE605 - INTRODUCTION TO SIGNAL ANALYSIS
- EE621 - REPRESENTATION AND ANALYSIS OF RANDOM SIGNALS
- EE623 - DETECTION AND ESTIMATION THEORY
- EE627 - SPEECH SIGNAL PROCESSING
- EE656 - ARTIFICIAL INTELLIGENCE MACHINE LEARNING DEEP LEARNING & ITS APPLICATIONS
- EE667 - INFORMATION THEORY
- EE670 - WIRELESS COMMUNICATIONS
- EE675 - INTRODUCTION TO REINFORCEMENT LEARNING
- EE677 - MIMO WIRELESS COMMUNICATIONS
- EE698K - PROGRAMMING FOR SIGNAL PROCESSING
- EE798L - MACHINE LEARNING FOR WIRELESS COMMUNICATIONS
- EE798R - INTELLIGENT PATTERN RECOGNITION



INFRASTRUCTURES: LABS & FACILITIES

MICROELECTRONICS AND VLSI

- Semiconductor Device Fabrication Lab.
- VLSI - EDA Lab.
- Organic Electronics Processing and Characterization Lab.
- Nano Lab

SIGNAL PROCESSING COMM. AND NETWORKS

- Computer Vision Lab.
- Mobile Communications Lab.
- Multimedia Wireless Networks Lab.
- Multimodal Information Processing Systems Lab.
- INTElligent NeTworks Lab.
- Wireless Communications Coding and Cognitive Radio Lab.
- Perception & Intelligence Lab.
- Signal Processing in Networks Lab.
- Wireless Sensor Networks Lab.
- Brihaspati Lab.

CONTROL AND AUTOMATION

- Networked Control Systems Lab.
- Intelligent Systems Lab.
- Intelligent Informatics and Automation Lab.

PHOTONICS

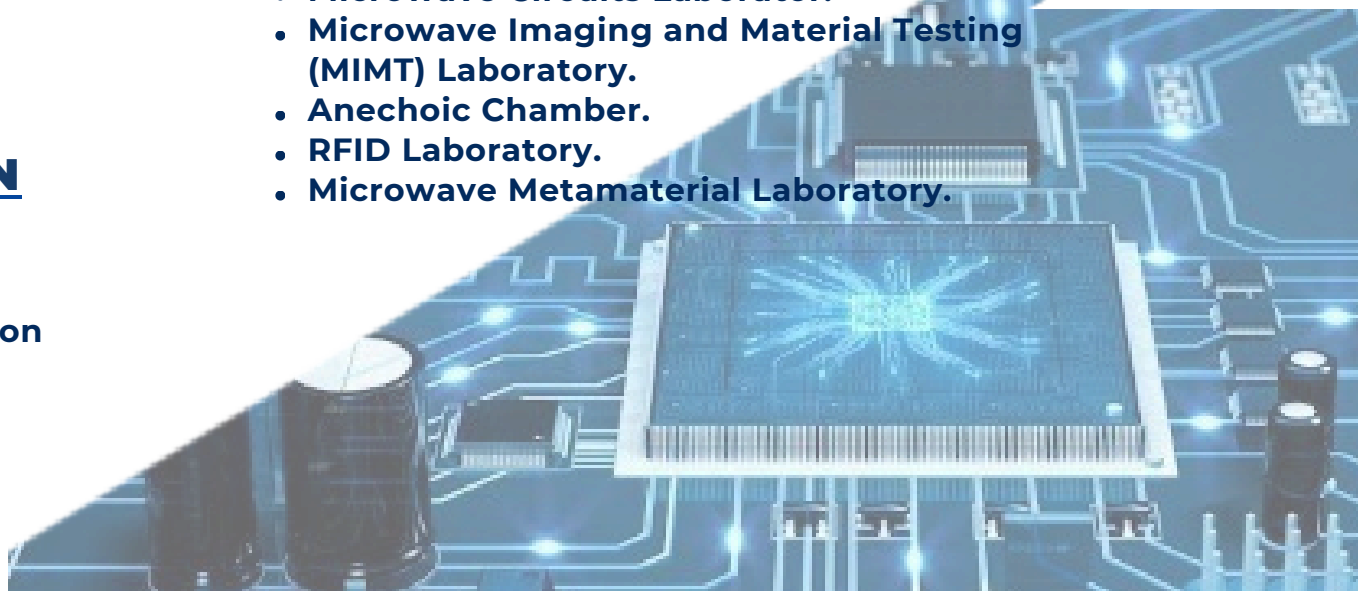
- Fiber and Quantum Optics Lab.
- Optoelectronics and Nanofabrication Lab.
- Quantum Photonics Lab.
- Tomographic Imaging Lab .

POWER ENGINEERING

- High Voltage Lab NaMPET Lab.
- Networked Control Systems Lab.
- Power Management Lab.
- Power System Simulation and Research Lab.
- Static Controller Lab.
- NaMPET Lab.
- Power Electronics for Renewable Integration (PERI) Lab

RF & MICROWAVE

- Microwave Circuits Laborator.
- Microwave Imaging and Material Testing (MIMT) Laboratory.
- Anechoic Chamber.
- RFID Laboratory.
- Microwave Metamaterial Laboratory.



Cutting Edge Tools

cadence

COMSOL MULTIPHYSICS®

SYNOPSYS®

HSPICE®

IC-CAP
2021 Update 1.0
Python 3

Python Libraries

SciPy

VIVADO
QuickTake
Getting started with Vivado High-Level Synthesis
XILINX

LTspice®

SILVACO

python

MICROCHIP

CST Studio Suite 2020

SIMULIA

3DEXPERIENCE

DASSAULT SYSTEMES | The 3DEXPERIENCE Company

Mentor®
A Siemens Business

OPTILUX GENERATOR

MATLAB

Spyder

OUR PAST RECRUITERS!!

AND MANY MORE ...

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