ELECTRICAL ENGINEERING DEPARTMENT
IIT KANPUR

INTRODUCTION

The Electrical Engineering Department is currently the largest multidisciplinary department at IIT Kanpur. It covers practically all sub-disciplines under Electrical Engineering, Electronics and Communications. The department offers B.Tech., M.Tech. and Ph.D. Programs in Electrical Engineering. It also conducts a two semester specialized PG Diploma Program (DIIT) in Video Communication Systems for Doordarshan Engineers. The Department is well supported in infrastructure and research resources through the Institute as well as through various sponsoring agencies and some industries.

FACULTIES

Electrical Department of IIT Kanpur is graced by the presence of with highly qualified and experienced faculties. All the faculties have been qualified from the most esteemed universities of the world and have published a numerous numbers of books and research publications. The research excellence of our faculties has been acknowledged and awarded by numerous distinguished awards. IIT Kanpur possesses the privilege of producing the largest number of research publications in Electrical Engineering in India.

STRENGTH

Electrical Engineering Department consists of around 100 Undergraduate and PG students who will complete their respective programmes in the year 2012.

DETAILS OF DEPARTMENTS

INFORMATION SYSTEMS

Information Systems is a conglomeration of Signal Processing, Communications & Networking. It offers courses related to the following areas:

Signal Processing:-

- Image and Video Signal Processing
- Statistical Signal Processing
- Speech Signal Processing
- Digital Signal Processor Architecture

Communications:-

- Communication Systems
- Wireless Communications
- Optical Communications

Networking:-

- Computer Networks
- Wireless Sensor Networks

MICROELECTRONICS AND VLSI

The main research areas of the group are

- VLSI circuits
- Mixed-signal design
- CAD tools and algorithms
- Digital design
- Low - Power design techniques
- Device modeling
- Device physics
- Organic electronics

MICROWAVE AND PHOTONICS

This group consists of three major parts:

- Advanced Engineering Electromagnetics
- Microwave Measurements and Design
- Monolithic and Microwave
- IC Design

POWER AND CONTROL

Research activities of this group are multidimensional including

- Power Electronics
- Drives
- Image Processing
- Robotics
- Power System
- High voltage areas

COURSES OFFERED

DEPARTMENTAL COURSES

- Communication Systems*
- Principles of Communication
- Microelectronics -I
- Microelectronics -II *
- Digital Electronics and
- Microprocessor Technology
- Digital Signal Processing*
- Electromagnetic Theory*
- Power Systems
- Power Electronics
- Control System Analysis
- Signals, Systems and Networks
- Electrical Engineering Lab -I
- Electrical Engineering Lab -II*

* marked courses are covered in sixth semester

ENGINEERING SCIENCE COURSES

- Introduction to Electrical Engineering
- Data Structure and Algorithms/ Thermodynamics/ Nature and Properties of Materials
- Statistics and probability

BASIC COURSES

- Mathematics –I, II & III
- Physics -I & II
- Chemistry
- Introduction to Electronics
- Fundamentals of Computing
- Fundamentals of Manufacturing
- Engineering Drawing

FUTURE PROSPECTS

Major Areas of Research

- Signal processing, Communications & Networks
- Power & Control
- Microelectronics, VLSI and Display Technology
- RF, Microwaves and Photonics

Important Ongoing Projects

- Prediction of Satellite Image using Fuzzy Rule based Gaussian Regression: An Aid to Detect and Forecast the Tropical Cyclones Early
- Colour Segmentation Using Improved Mountain Clustering Technique
- MRI Brain Image Segmentation for Spotting Tumours Using Improved Mountain Clustering Approach
- Health Monitoring and Fault Diagnosis of Air Compressors and Motors component under the head Passive
- and Active RFID and Location Technology Research. Spatiotemporal Data Based Fuzzy Video Model for Future Image Frame Generation
- Optical Device Characterization and Fibre Optics Virtual Lab,
- Protection Devices for Urban and Rural Exchanges
- Decoy state method for frequency-coded QKD
- Health Monitoring and Fault Diagnosis of Air Compressors and Motors component under the head Passive and Active RFID and Location Technology Research
- Performance Issues of Smart Card Based Online Health Care Automation System