

INDIAN INSTITUTE OF TECHNOLOGY, MANDI

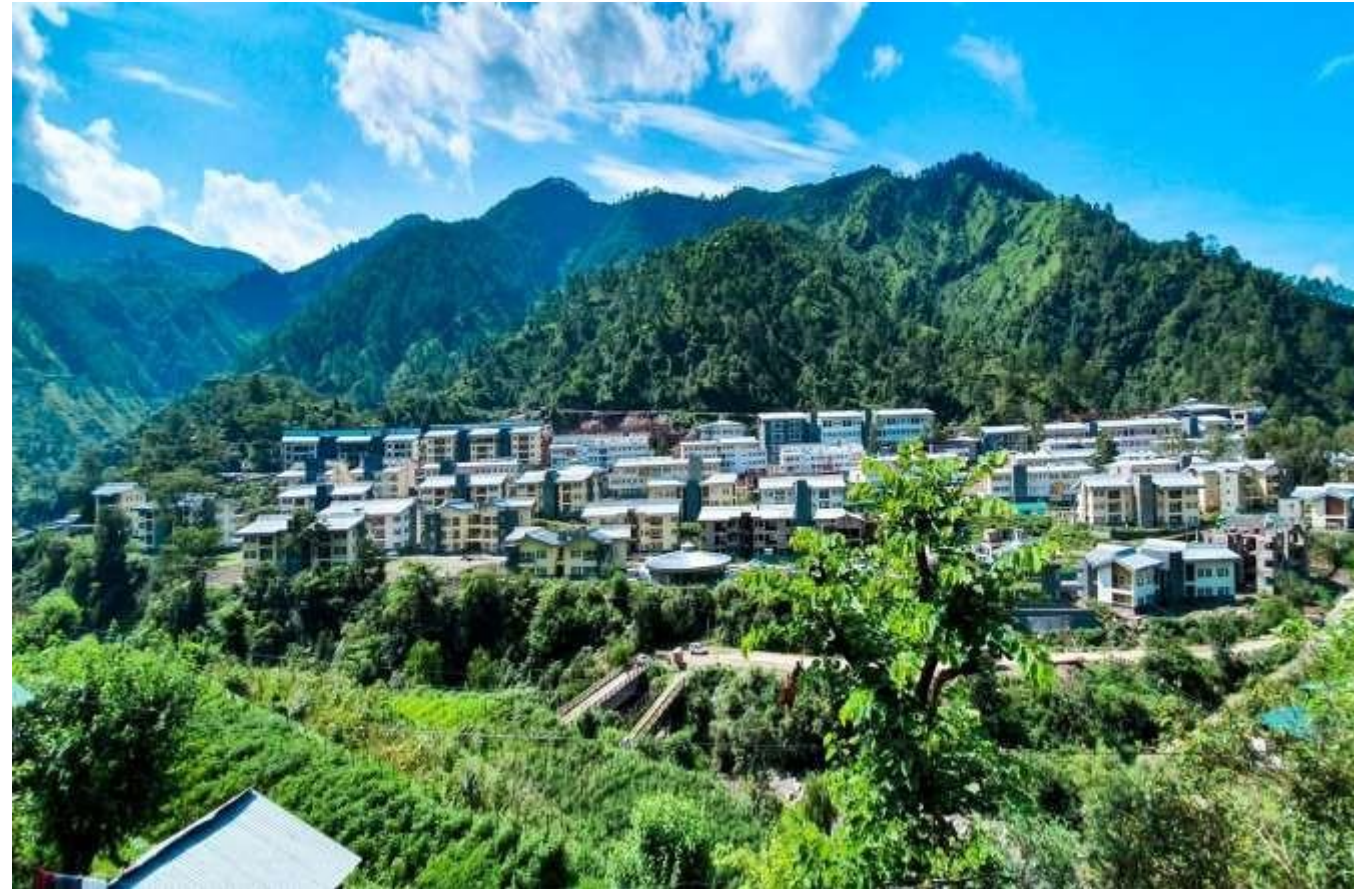


**PLACEMENT BROCHURE
2023-24**

**POWER ELECTRONICS AND DRIVES
(M.TECH)**

About us:

The MTech. in Power Electronics and Drives is being offered in the SCEE. This program at IIT Mandi is designed to train students for state-of-the-art practices in area of Power Electronics and Drives and to generate new knowledge by engaging in cutting-edge research to serve as a valuable resource for industry and society. The program structure is planned in an application-oriented manner through specialized core-courses with a significant hands-on practicum component, research and development (R&D) oriented advanced-level courses and project work.



VISION

To be at the forefront of Domain expertise, Research and Engineering Education in the field of power electronics and Drives thereby making develop confidence of students for Research and Development activities and for positioning in national companies and in broad in order that they will be of immediate use to nation and mankind.

MISSION

To make the students conceptually strong starting from circuit and system level understanding, modelling control, design, numerical simulations, and finally experimental implementation and also aware of the state-of-the-art technology and expose the students to real-world industry-oriented applications and problems in the field of power electronics.

ASSOCIATED FACULTIES

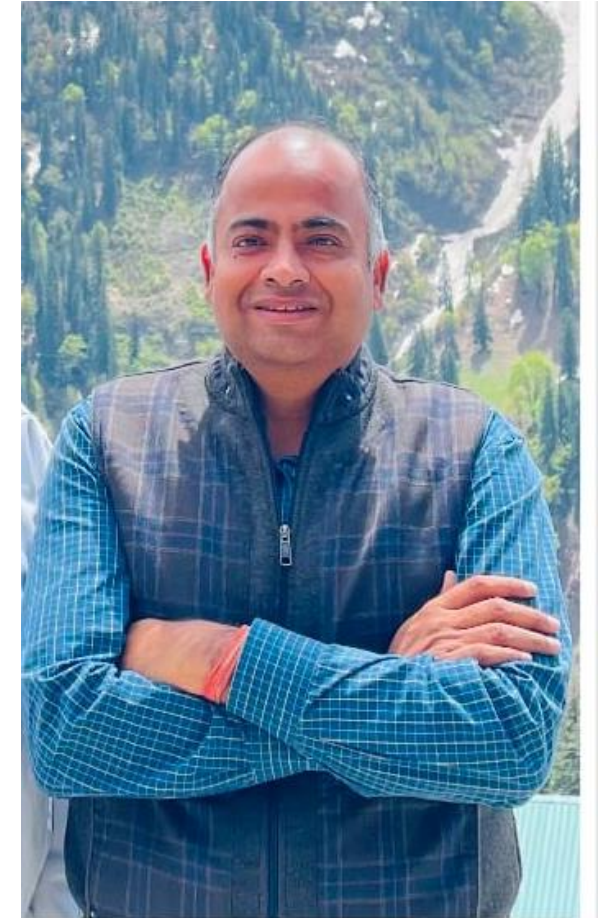
FACULTY ADVISOR

Dr. BHARAT SINGH RAJPUT

Professor

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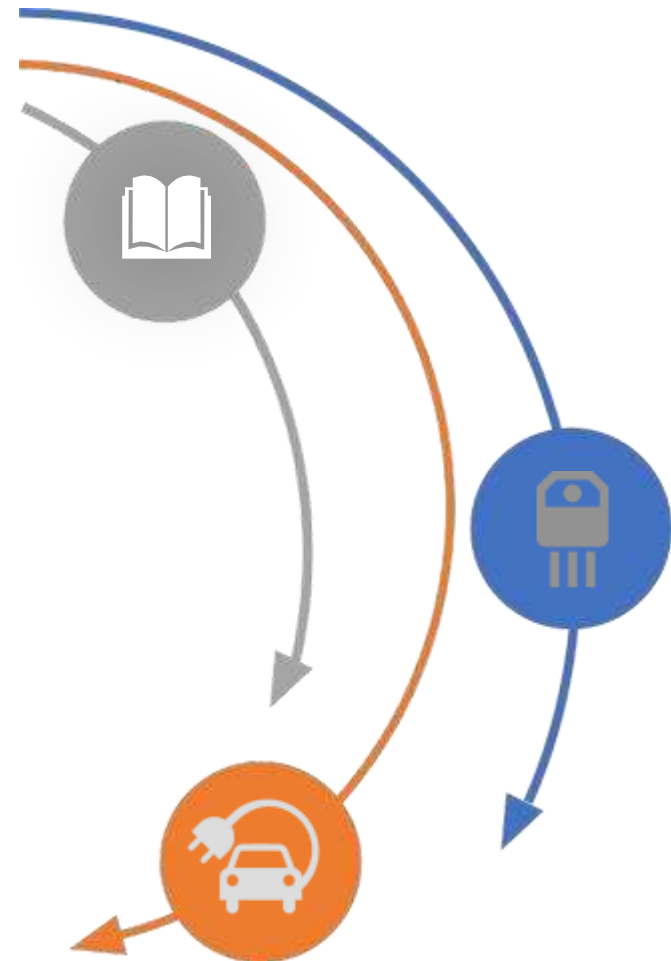
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About the course

Salient features of the program:

- ❖ In the first semester, the focus will be on Electrical Engineering Core courses which are pre-requisites for more advanced and specialized courses. The core courses are mandatory.
- ❖ Laboratory core courses are designed so as to go hand-in-hand with theory core courses and to bring in a deeper insight into the concepts learned in the classroom. Laboratory experiments are designed in consultation with industrial partners to bring state-of-art practices to the curriculum.
- ❖ Advanced and specialized courses are offered to make the students aware of the state-of-the-art in the technology, such that they are exposed to the real-world problems and ultimately able enough to tackle them with technology solutions.
- ❖ Core knowledge of Integrated Digital and Analog design.



16

Number of students in
the year 2022-23

6

Number of faculty for
the core courses

72

Total number of
credits

31

Number of credits for
Post graduate project

ACADEMIC CURRICULUM

SEMESTER 1

- ❑ FUNDAMENTAL OF ELECTRICAL DRIVES
- ❑ PRACTICUM ON ELECTRICAL DRIVES
- ❑ ANALYSIS AND DESIGN OF POWER ELECTRONIC CONVERTERS
- ❑ PRACTICUM ON ANALYSIS AND DESIGN OF POWER ELECTRONIC CONVERTERS
- ❑ MODELLING & ANALYSIS OF ELECTRICAL MACHINES
- ❑ LINEAR DYNAMICAL SYSTEMS
- ❑ SWITCHED MODE POWER CONVERSION
- ❑ TECHNICAL COMMUNICATION

SEMESTER 2

- ❑ ADVANCED ELECTRICAL DRIVES
- ❑ PRACTICUM ON ADVANCED ELECTRICAL DRIVES
- ❑ PRACTICUM ON DIGITAL CONTROL OF POWER ELECTRONICS AND DRIVES

ELECTIVES

- ❑ SPECIAL ELECTRICAL MACHINES
- ❑ NONLINEAR ANALYSIS AND CONTROL OF POWER ELECTRONICS CONVERTERS
- ❑ HIGH VOLTAGE ENGINEERING
- ❑ DEEP LEARNING
- ❑ POWER SYSTEM PROTECTION
- ❑ EMBEDDED SYSTEM

LAB INFRASTRUCTURE & FACILITIES



Electric Vehicles and Reliability Research Lab



Power electronics Lab



Electrical Machines Lab



Advanced Power System Lab



Advanced Electric Drives Lab



Digital Control Lab



Special Electrical Machines Lab

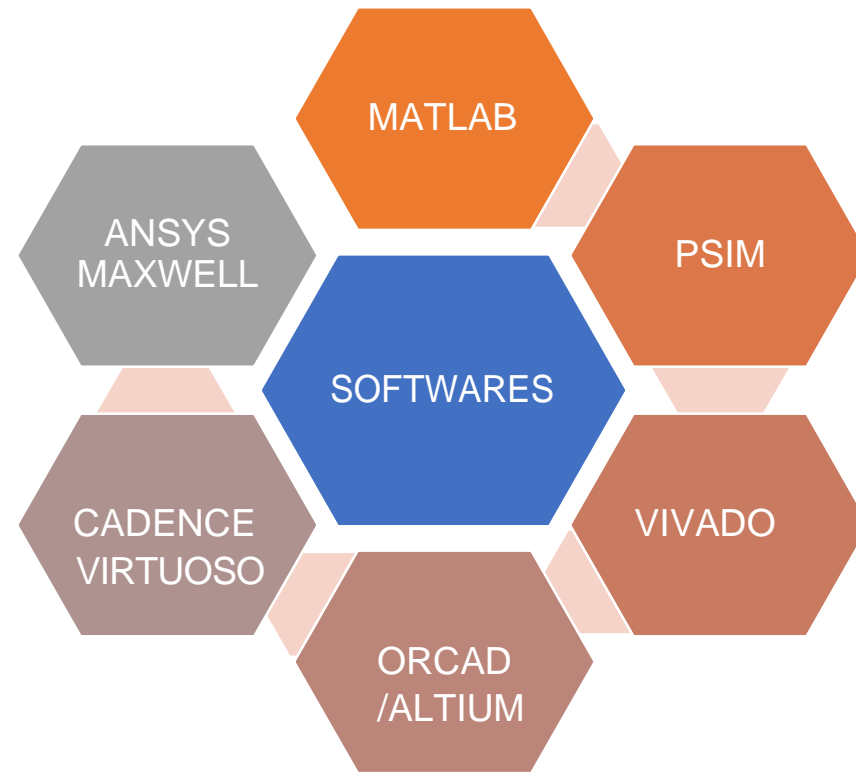


Microgrid Lab

LAB INFRASTRUCTURE & FACILITIES

LAB FACILITIES

- ❑ POWER ELECTRONICS LAB
- ❑ ADVANCE ELECTRIC DRIVES LAB
- ❑ ELECTRICAL MACHINE LAB
- ❑ CONTROL SYSTEM LAB
- ❑ DC MICROGRID LAB
- ❑ ELECTRIC VEHICLES AND RELIABILITY RESEARCH LAB
- ❑ SPECIALELECTRICAL MACHINES LAB
- ❑ ADVANCED POWER SYSTEMS LAB



HARDWARE EQUIPMENT



RESEARCH AREAS

- ❑ USB POWER DELIVERY THROUGH ACTIVE CLAMP FLYBACK TOPOLOGY AND USING GaN SWITCHES
- ❑ GaN-BASED HIGH-FREQUENCY DC-DC CONVERTERS
- ❑ FAULT ANALYSIS OF INVERTER BASED RESOURCES
- ❑ ELECTRIC VEHICLES: BATTERY MANAGEMENT SYSTEM, TRACTION CONVERTERS AND TORQUE CONTROL
- ❑ APPLICATION OF WIDE BANDGAP DEVICES (SiC, GaN) IN POWER ELECTRONICS
- ❑ DTC OF SWITCHED RELUCTANCE MOTOR
- ❑ FPGA BASED MOTOR AND CONVERTER CONTROL
- ❑ HYBRID WIRELESS POWER TRANSFER IN ELECTRIC VEHICLE APPLICATIONS
- ❑ POWER ELECTRONICS & GRID INTEGRATION OF RENEWABLE ENERGIES
- ❑ SWITCHED MODE POWER CONVERTERS
- ❑ FAULT DIAGNOSIS AND FAULT-TOLERANT CONTROL
- ❑ RELIABILITY ANALYSIS OF THE POWER ELECTRONICS CONVERTER
- ❑ RENEWABLE ENERGY SOURCE INTEGRATION FOR EV CHARGING STATION

PAST RECRUITERS



CONTACT US



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