

INDIAN INSTITUTE OF TECHNOLOGY, MANDI



PLACEMENT BROCHURE 2021-22

**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 abroad 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



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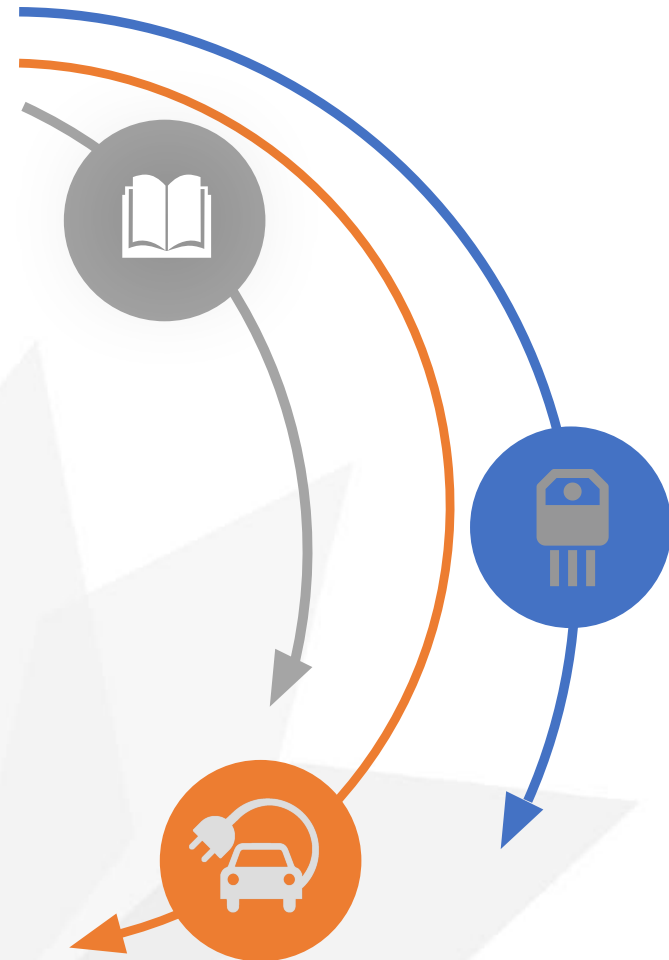
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About the course

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.



15

Number of students in
the year 2021-22

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 CONVERTER PRACTICUM ON ANALYSIS AND DESIGN OF POWER ELECTRONICS CONVERTERS
- ❑ MODELLING & ANALYSIS OF ELECTRICAL MACHINES
- ❑ LINEAR DYNAMICAL SYSTEMS
- ❑ TECHNICAL COMMUNICATION

SEMESTER 2

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

ELECTIVES

- ❑ SPECIAL MACHINES
- ❑ E-MOBILITY, ELECTRIC AND HYBRID VEHICLES
- ❑ NONLINEAR ANALYSIS AND CONTROL OF POWER ELECTRONICS CONVERTERS
- ❑ SMART GRID
- ❑ POWER SEMICONDUCTOR DEVICES
- ❑ HIGH VOLTAGE ENGINEERING
- ❑ WIDE BAND GAP DEVICES
- ❑ SOLAR PHOTOVOLTAIC ENERGY SYSTEMS

LAB INFRASTRUCTURE & FACILITIES



MICROGRID LAB



ADVANCED POWER LAB



**ELECTRICAL MACHINES
LAB**



**HARDWARE TEST SETUP
I**

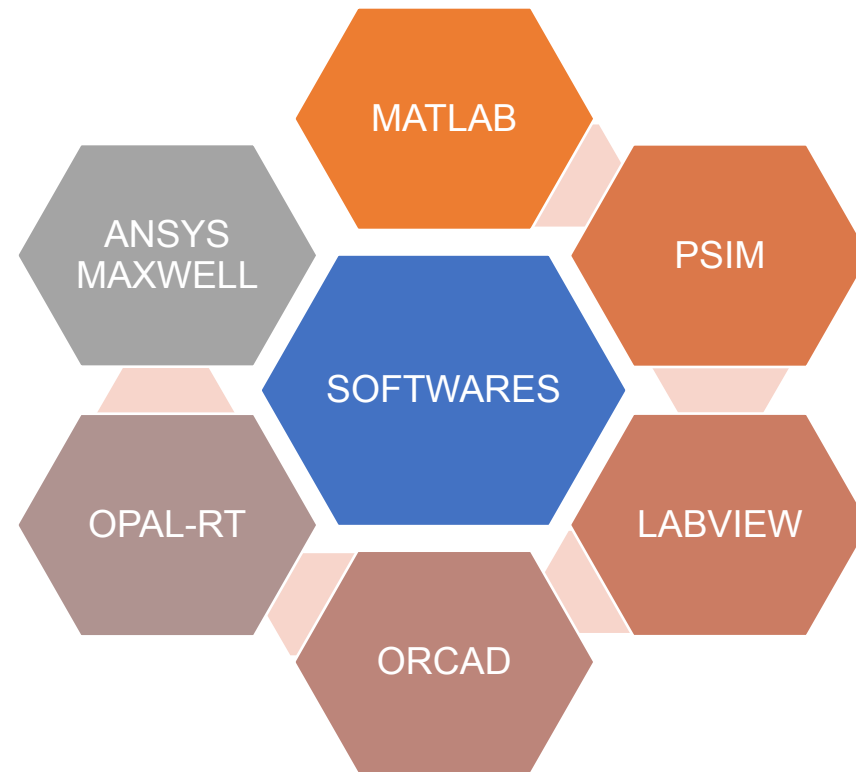


**HARDWARE TEST SETUP
II**

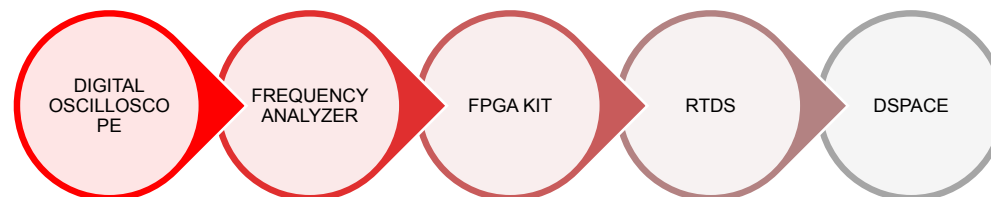
LAB INFRASTRUCTURE & FACILITIES

LAB FACILITIES

- ❑ POWER ELECTRONICS LAB
- ❑ ANALOG AND DIGITAL LAB
- ❑ ELECTRICAL MACHINE LAB
- ❑ CONTROL SYSTEM LAB
- ❑ DC MICROGRID LAB
- ❑ RENEWABLE ENERGY LAB
- ❑ SPECIAL ELECTRICAL MACHINES LAB
- ❑ DFIG LAB
- ❑ EMBEDDED SYSTEMS LAB



HARDWARE EQUIPMENT



RESEARCH AREAS

- ❑ GAN-BASED HIGH-FREQUENCY DC-DC CONVERTERS
 - ❑ POWER ELECTRONICS & GRID INTEGRATION OF RENEWABLE ENERGIES
 - ❑ POWER SYSTEM OPERATION, CONTROL AND ANALYSIS
 - ❑ DOUBLY FED INDUCTION GENERATOR ELECTRICAL MACHINES, ELECTRIC DRIVES
 - ❑ DC POWER GENERATION FROM ROTATING ELECTRIC MACHINES
 - ❑ ELECTRIC VEHICLES: POWER CONVERTERS AND CONTROL
 - ❑ APPLICATION OF WIDE BANDGAP DEVICES (SIC, GAN) IN POWER ELECTRONICS
 - ❑ USE OF RENEWABLE ENERGY SOURCES FOR CHARGING OF ELECTRIC VEHICLES
- ❑ BIFURCATION ANALYSIS OF DIGITALLY CONTROLLED DC-DC CONVERTERS
 - ❑ DYNAMIC WIRELESS POWER TRANSFER IN ELECTRIC VEHICLE APPLICATIONS
 - ❑ SWITCHED MODE POWER CONVERTERS
 - ❑ EFFICIENT POWER ELECTRONIC INTERFACES FOR RENEWABLE ENERGY APPLICATIONS
 - ❑ HYBRID ENERGY STORAGE APPLICATIONS IN FUTURE MICROGRIDS
 - ❑ FAULT DIAGNOSIS AND FAULT-TOLERANT CONTROL
 - ❑ PARAMETER ESTIMATION OF ELECTRICAL MACHINES
 - ❑ WIDE AREA MEASUREMENT SYSTEM

PAST RECRUITERS



CONTACT US



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