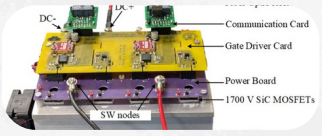
National Centre for Photovoltaic Research and Education (NCPRE),
IIT Bombay

Training Program on

"Advanced Power Electronics for Solar PV Integration"

COURSE OVERVIEW

As solar energy adoption accelerates, advanced power electronics are key to unlocking high-efficiency, reliable, and grid-compliant PV systems. This intensive three-day course offers a deep dive into modern inverter architectures and semiconductor technologies crucial for solar PV integration. Participants will learn about single-stage and multi-stage inverter topologies, modulation schemes, wide bandgap devices (SiC/GaN), energy buffering techniques, and advanced control strategies for grid-tied systems. The course features a rich blend of lectures and hands-on sessions—including LTSpice simulations, real-time hardware demos, and DSP-based inverter control—designed to bridge theory with practical application. Ideal for graduate students, R&D engineers, and professionals in the renewable energy sector, this program will equip attendees with the technical know-how and practical skills to design and analyze next-generation PV power conversion systems.



Course Fee:
Students: Rs. 4500 + 18% GST
Academia & Govt. Organizations: Rs. 9000 + 18% GST
Industry: Rs. 12000 + 18% GST

Please Note: The fee includes the lunch and the refreshments.

COURSE CONTENTS:

- Review of PV power electronic systems
- Advanced inverter circuits: non-isolated
- Advanced power semiconductor devices
- Advanced inverter circuits: isolated
- Gate-driver design for WBG devices
- Advanced inverter circuits: single-phase energy buffering
- Advanced magnetics for power electronics
- Grid integration and future outlook

Join Us:
July 17-19,2025

Venue: IIT Bombay
Mode: In-person

Secure your spot before:

Registration: June 30, 2025
Fee payment: June 30, 2025

Hands-on Demo Sessions:

LAB DEMO

Lab demo of SiC and GaN DPT switching waveforms, switching loss measurements, role of gate resistance, probe deskewing

LTSPICE DEMONSTRATIONS

Boost converter, two-level inverters, switching loss, estimation, impact of parasitic elements

INTRODUCTION TO DIGITAL CONTROL

Implementation with T1 C2000 DSP and CCS, single- phase/three-phase inverter operation

WHO MAY BENEFIT?

- Graduate Students
- College Teachers
- early-career industry professionals

NO.OF PARTICIPANTS

Maximum 40

Accommodation: Limited accommodation is available at an additional cost. Hostel accommodation for students and Institute guest house for Faculty/Govt.Officials/Industry professional will be available on first come first basis.

Instructors

Prof. B. G. Fernandes, Course Coordinator

Prof. Shiladri Chakraborty, Course Coordinator

Prof. Sandeep Anand

Prof. Kishore Chatterjee

Prof. Anil Kulkarni

GET IN TOUCH

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