PHOTOVOLTAIC TECHNOLOGY AND INNOVATION CENTRE (PoTIC)
and
NATIONAL CENTRE FOR PHOTOVOLTAIC RESEARCH AND EDUCATION

Continuing Education Program 3-Day Short-Term Course on

"Theory and Technology of Silicon Solar Cells"

In the context of incentives for manufacturing of solar cells and modules in India, a large workforce with the knowledge of the technology is needed in the country. This course aim to impart the necessary knowledge in a short span of time. The course will cover the theory of solar cells, design of silicon solar cells, fabrication technology, characterisation of solar cells and materials, and future directions. The course will benefit practicing engineers, engineers and students who aspire to work in this industry, and educators who are planning to train such students.

Course Contents:

- Introduction to the physics of semiconductor devices (band diagram, optical absorption, generation-recombination, transport, pn-junction diode characteristics)
- Theory of silicon solar cells (characteristics of silicon solar cell, design of silicon solar cells - optical design, junctions, passivation, impact of these parameters on solar cell characteristics, IV measurements, quantum efficiency measurements)
- Production of silicon wafers starting with sand
- TOPCon and HJT solar cell technologies
- Simulation of solar cell using PC1D: a practical session
- Loss analysis of solar cells: a practical session
- Luminescence imaging, Light Beam Induced Current (LBIC), dark lock-in thermography characterization of Si wafer & solar cells for process, device development and diagnostics
- An introduction to thin film and tandem solar cells

Hands on sessions: The course would include hands on sessions on simulation of solar cells and loss analysis of solar cells. The participants should bring a laptop running Windows OS. There would be visits to NCPRE silicon solar cell fabrication and characterization facilities. You may also get an opportunity to visit our module characterization and fabrication facilities if there is a specific interest.

Course Coordinator: Prof. Anil Kottantharayil, Department of Electrical Engineering,
and Professor in-charge of the Photovoltaic Technology and Innovation Centre (PoTIC)
and co-Principal Investigator of NCPRE, IIT Bombay

Date: February 6 - 8, 2026

Venue: IIT Bombay, Mumbai

The course fee per participant in INR are as follows:

PARTICIPANT CATEGORY	FEES
Overseas / Foreign National**	84960/-
Private Sector Industry	28320/-
Govt./Public Sector/Academia	17700/-
Student (Full time)	8850/-

* Fee is inclusive of 18% GST. The fee includes course material, lunch and refreshments.
**The fee for participants from SAARC countries is the same as that for Indian participants, as listed in the last three rows of the above table.

Limited accommodation is available on the IIT Campus, including hostels for students and a guesthouse for others, at rates determined by the hostel and guesthouse administrations. If you would like to avail accommodation on campus, please get in touch with Mrs. Ashwini Bangera at the details given below.

Contact for more information:

Mrs. Ashwini Bangera
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