

We are very pleased to announce the sixth workshop in our series of ISTE-IITB workshops, sponsored by MHRD, Govt. of India, under the National Mission on Education through ICT (NMEICT.) The NMEICT, together with the "**National Centre for Photovoltaic Research and Education,**" (NCPRE, www.ncpre.iitb.ac.in) supported by Ministry of New and Renewable Energy (MNRE,) are organizing a 10-day ISTE workshop on "**Solar Photovoltaics: Fundamentals, Technologies and Applications,**" from 12th to 22nd December 2011.

This workshop is part of the initiative taken by IIT Bombay under the NMEICT, to work with Engineering Colleges in the country to enhance the teaching skills of our faculty colleagues in core Engineering and Science Subjects. Under this project called "Empowerment of Students and Teachers through Synchronous and Asynchronous Instruction," IIT Bombay conducts two-week ISTE workshops at various remote centers across the country, during the vacation periods in summer and winter. These workshops are conducted in distance mode, through the AVIEW software using internet, for live transmission.

The proposed workshop on Solar PV will be useful towards meeting the goals of the "**Jawaharlal Nehru National Solar Mission**" (JNNSM), one of the most important technological-cum-societal initiatives announced by the government of India in recent years. It has the potential of simultaneously increasing the awareness and use of clean energy, creating job opportunities, transforming life in rural areas, and also kick-starting a major new industry segment. The success of JNNSM requires availability of a large number of trained teachers, engineers and scientists in the solar energy area. It has been estimated that about 1,00,000 are required in this area over the next decade, of which 25,000 to 30,000 will be engineers and scientists. This presents an enormous challenge. The biggest challenge will be to train enough number of teachers in critical areas like photovoltaics technology, who would in turn teach hundreds of students at their colleges.

The 10-day ISTE workshop on "**Solar Photovoltaics: Fundamentals, Technologies and Applications,**" from 12th to 22nd December 2011, will be conducted simultaneously at 33 "remote centers" scattered across the country (click **here** to see the list), in the distance mode. The 33 remote centers will

each have about 30-40 participants. The workshop will include the delivery of live two-way lectures from IIT Bombay, and locally organized tutorial and laboratory sessions. The course will be networked to the remote centers via the internet, using a specially developed software called 'AVIEW.'

Teaching Faculty

Prof. B. G. Fernandes, Department of Electrical Engineering, IIT Bombay
<http://www.ee.iitb.ac.in/wiki/faculty/bgf>

Prof. Chetan Singh Solanki, Department of Energy Science and Engineering, IIT Bombay
<http://www.ese.iitb.ac.in/~chetan/index.htm>

Course Content

Part 1: Solar PV Fundamentals and Technologies.

Introduction to semiconductor Physics, theory of P-N junction, operation of P-N junction as solar cells, parameters of solar cells, design of solar cells, solar cell materials and technologies, fabrication of crystalline Si solar cells, solar PV modules, PV module output as function of temperature and solar radiation.

Part 2: Applications of Solar PV Technologies.

Introduction to power electronics devices, off-grid and grid-connected PV systems, components of solar PV systems, charge controller, DC-DC converter, DC-AC inverter, maximum power point tracking, energy storage options for solar PV systems, availability of solar radiation at a given location, design of off-grid PV systems, design of grid-connected PV systems, Life cycle cost analysis.

Duration and Venue

The duration of the workshop is 2 weeks (10 working days). It will begin at **09:00 am** on Monday, **12th Dec, 2011**, and end at **17:30 pm** on Thursday, **22nd Dec, 2011**. Additional contributions from participants are required to be made within the following two weeks.

The venues for the workshop will be 33 Remote centers.

Who Should Attend

Solar and Renewable energy is attracting attention not only in the research, industry and policy domain, but also in academic institutions. Many institutions have taken the initiative to start courses in renewable energy. This workshop will benefit faculty members across various academic institutions that are running courses related to renewable energy and solar energy, and who are also doing research. It will also be very beneficial to those institutions that are planning to start courses in renewable energy and solar energy area. Faculty members from electrical, electronics, mechanical, physics department can join this workshop. The course will be taught at the introductory level. However, it will be useful for the participants to have some prior knowledge of semiconductor physics and electronics.

Note

It is mandatory that the participant should submit a scanned copy of a letter from the principal/HOD of his/her institute mentioning that he/she is an employee of the institute and has been permitted to attend the workshop. The letter should be on the letterhead of the institute and should bear the signature and stamp of the head of the institute. It should be addressed to Project Manager, Project Ekalavya under NMEICT, IIT Bombay.

Submission of Permission Letter

We will activate a link on this website on 1st November 2011 for the interested participants to submit the letter. Final selection of the participants for the workshop will depend upon the submission of this letter. The link will be open till 25th November 2011.

Please note that this workshop is conducted by the eOutreach project of IIT Bombay, under **the National Mission on Education through ICT**. Live recording of the course and other created contents would be released under Open Source through a portal. The recorded CD/DVD of the course lectures will be available for distribution at cost, to any individual or institution. All participants are required to sign an undertaking certificate for such release of

contents contributed by them during and after the workshop. The recognition and citation will naturally be made for all contributors.

Course Fee

Since the workshop is funded by the National Mission on Education through ICT (MHRD, Government of India), there is no course fee for participation.

Accommodation & other support

Remote centers are being funded to provide tea/lunch on each day of the workshop, and for accommodation, wherever available*, for limited number of outstation participants. **Travel expenses up to Rs.1000 will be reimbursed against proof of actual expenditure.**

* Accommodation is not guaranteed.

How to Apply

Those wishing to attend this workshop should enroll online at this website:
<http://ekalavya.it.iitb.ac.in/eOutreachHome.do>

Enrollment will be strictly online, and no other applications will be entertained.

The online form contains a list of remote centers. From this list, please select a center close to your institute, where you would wish to attend the workshop. Last date for enrollment and for submission of permission letter is **25th November 2011**. A list of selected participants will be put up on this website on **28th November, 2011**. The selected participants will also be informed by email.

LAST DATE FOR ONLINE ENROLLMENT

AND SUBMISSION OF PERMISSION LETTER: 25th NOVEMBER 2011.

For queries, contact

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