



SOLAR PHOTOVOLTAICS : PRINCIPLES, TECHNOLOGIES & MATERIALS

PROF. ASHISH GARG

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IIT Kanpur

TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION : 8 weeks (24 Jan' 22 - 18 Mar' 22)

EXAM DATE : 27 Mar 2022

PRE-REQUISITES : Basic physics knowledge

INDUSTRIES APPLICABLE TO : Most companies related to solar photovoltaics

COURSE OUTLINE :

This course is an introductory course on solar photovoltaics materials and devices covering fundamentals of operation of solar cells, physics of semiconducting materials, P-N junction device characteristics in dark and light. We will also discuss various solar photovoltaic technologies and their status with a brief discussion of the fabrication aspects of the devices. The course will also discuss the materials and technologies issues as well as device measurement techniques.

ABOUT INSTRUCTOR :

Prof. Ashish Garg is Professor of Materials Science and Engineering at IIT Kanpur. Details of his research and teaching can be accessed on home.iitk.ac.in/~ashishg/

COURSE PLAN :

Week 1: Introduction and Solar radiation fundamentals

Week 2: Basic physics of semiconductors

Week 3: Carrier transport, generation and recombination in semiconductors

Week 4: Semiconductor junctions

Week 5: Essential characteristics of solar photovoltaic devices

Week 6: First Generation Solar Cells

Week 7: Second Generation Solar Cells

Week 8: Third Generation Solar Cells