

**ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

No. Acd./ 4816 /UG-15

Dated: June 17 , 2019

NOTIFICATION

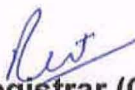
Subject: Amendment in eligibility criteria for admission in M.Tech. (AHES) and Introduction of new Open Elective Course (OEC) IAH-303 (78.17)

The Senate in its 78th meeting held on 10.04.2019 considered and approved the following proposal of Department of Hydro and Renewable Energy:

(a) Addition of "Instrumentation Engineering" as eligibility criteria for the admission in M. Tech. (AHES).

(b) Introduction of a new Open Elective Course (OEC) for B. Tech. students (IAH-303 :Solar Photovoltaic Technology and Applications)

The approved course at (b) is attached as **Appendix-N**.


Asstt. Registrar (Curriculum)

Encl: as above

Copy to(through e-mail):-

1. Head, Department of Hydro and Renewable Energy
2. All faculty
3. All Head of Departments/Centres
4. Dean of Academic Affairs
5. Associate Deans of Academic Affairs (Admission/Curriculum/Evaluation)
6. Asstt. Registrar (Meetings)
7. Joint Registrar (Academics)
8. Asstt. Registrar (Admission)
9. Chairman Senate & Director
10. Channel I/ Academic webpage of iitr.ac.in

Name of the Department/Centre: **HYDRO AND RENEWABLE ENERGY**

1. Subject Code: **IAH-303** Course Title: **Solar Photovoltaic Technology and Applications**
2. Contact Hours: **L: 3 T: 0 P: 0**
3. Examination Duration (Hrs.): **Theory: 3 Practical: 0**
4. Relative Weightage: **CWS: 20-35 PRS: 0 MTE: 20-30 ETE: 40-50 PRE: 0**
5. Credits: **3** 6. Semester: **Both** 7. Subject Area: **OEC**
8. Pre-requisite: **Nil**
9. Objective: To acquaint the UG students with various aspects of solar PV technology and, its applications.

10. Details of Course:

S. No.	Contents	Contact Hours
1.	Introduction to photovoltaic technology; Scenario and status of solar photovoltaic technology in India and the World; Solar energy mission, policies and financing.	6
2.	Solar radiation – basic concepts, assessment and variability; Photovoltaic meteorology	7
3.	Fundamentals of semiconductors; Structure and working of solar cells; Characteristics and electrical models of solar cells.	7
4.	Overview of solar cell technologies: Silicon solar cell and Thin-film solar cell: Amorphous silicon, Thin polycrystalline silicon, Copper indium, Cadmium telluride.	5
5.	Components of solar PV system: photovoltaic generator; battery; power conditioning and control; Characteristics of solar modules and solar PV systems.	5
6.	Types of photovoltaic systems: grid-connected systems, stand-alone systems, hybrid systems.	6
7.	Design of stand-alone PV plants and grid-connected PV plants: phase, frequency matching and voltage conditioning, power transfer, operation of grid interaction inverter; protection, Operation and maintenance of Solar PV systems.	6
TOTAL		42

11. Suggested Books:

S. No.	Name of Authors/Books/ Publisher	Year of Publication
1.	Mertens, K., "Photovoltaics: Fundamentals, technology and practice", 1 st edition, Wiley	2014
2.	Solanki, C. S., "Solar photovoltaics: Fundamentals, technologies and applications", 3 rd edition, PHI Learning	2016
3.	Boxwell, M., "Solar Electricity Handbook – 2019 Edition", Greenstream Publishing	2019
4.	Waltz, C., "Photovoltaics: Engineering and Technology for Solar Power", Syrawood Publishing House	2017
5.	Kalogirou, S.A., "Solar Energy Engineering: Processes and Systems", Academic Press	2013
6.	Reddy, P. J., "Science and technology of photovoltaics", 2nd edition, CRC Press	2012

12. Suggested web references for policies: www.mnre.gov.in; websites of state renewable energy development authorities of various states of India



11 JUN 2019