

230361 - SCD - Solar Cells for Dummies

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
 Teaching unit: 710 - EEL - Department of Electronic Engineering
 Academic year: 2017
 Degree: MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional)
 MASTER'S DEGREE IN ELECTRONIC ENGINEERING (Syllabus 2013). (Teaching unit Optional)
 ECTS credits: 2,5 Teaching languages: English

Teaching staff

Coordinator: Joaquim Puigdollers
 Others: Joaquim Puigdollers

Degree competences to which the subject contributes

Specific:

- CEE12. Ability to use semiconductor devices taking into account their physical characteristics and limitations.
- CEE24. Ability to identify and evaluate innovative ideas and products in the area of electronic technology.

Transversal:

- CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Learning objectives of the subject

At the end of the course the student will understand the principles of operation of any kind of solar cell. Solar cells based on organic semiconductors and perovskites materials will be described with more detail.

Study load

Total learning time: 62h 30m	Hours large group:	20h	32.00%
	Self study:	42h 30m	68.00%

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Content

The use of selective contacts in solar cells

Learning time: 20h 30m

Laboratory classes: 8h 30m

Guided activities: 1h

Self study : 11h

Description:

- 1: Solar Cell: absorber + selective contacts
- 2: Photocurrent from the perspective of the transmission
- 3: First example: Excitonic devices (Organic solar Cells and OLEDs)
- 4: Second example: Perovskite solar cells
- 5: Technology. Including a visit to Clean Room facilities

Specific objectives:

To introduce students to the technology of photovoltaic devices. Understand the principles of operation of solar cells.

Bibliography

Basic:

Nelson, J. The Physics of solar cells. Imperial College Press, 2003. ISBN 1860943497.

Wurfel, P.; Wurfel. U. Physics of solar cells : from basic principles to advanced concepts [on line]. 3rd ed. Weinheim: Wiley-VCH, 2016 [Consultation: 14/02/2017]. Available on:
<<http://site.ebrary.com.recursos.biblioteca.upc.edu/lib/upcatalunya/detail.action?docID=11223486>>. ISBN 9783527413096.