

## 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 ELECTRONIC ENGINEERING (Syllabus 2013). (Teaching unit Optional) MASTER'S DEGREE IN TELECOMMUNICATIONS 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:  
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