



## Course guides

### 230361 - SCD - Solar Cells for Dummies

Last modified: 29/04/2020

**Unit in charge:** Barcelona School of Telecommunications Engineering  
**Teaching unit:** 710 - EEL - Department of Electronic Engineering.

**Degree:** MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Optional subject).  
MASTER'S DEGREE IN ELECTRONIC ENGINEERING (Syllabus 2013). (Optional subject).

**Academic year:** 2020    **ECTS Credits:** 2.5    **Languages:** English

#### LECTURER

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**Coordinating lecturer:** Joaquim Puigdollers

**Others:** Joaquim Puigdollers

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**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.

#### TEACHING METHODOLOGY

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#### LEARNING OBJECTIVES OF THE SUBJECT

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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

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Type	Hours	Percentage
Hours large group	20,0	32.00
Self study	42,5	68.00

**Total learning time:** 62.5 h



## CONTENTS

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### The use of selective contacts in solar cells

**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.

**Full-or-part-time:** 20h 30m

Laboratory classes: 8h 30m

Guided activities: 1h

Self study : 11h

## GRADING SYSTEM

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## BIBLIOGRAPHY

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**Basic:**

- Wurfel, P.; Wurfel, U. Physics of solar cells : from basic principles to advanced concepts [on line]. 3rd ed. Weinheim: Wiley-VCH, 2016 [ Consultation : 02/04/2020]. Available on : <https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=4557230>. ISBN 9783527413096.
- Nelson, J. The Physics of solar cells. Imperial College Press, 2003. ISBN 1860943497.