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: 2019
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

<table>
<thead>
<tr>
<th>Total learning time: 62h 30m</th>
<th>Hours large group: 20h</th>
<th>32.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study: 42h 30m</td>
<td></td>
<td>68.00%</td>
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</table>
**Content**

<table>
<thead>
<tr>
<th>The use of selective contacts in solar cells</th>
<th>Learning time: 20h 30m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 8h 30m</td>
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<tr>
<td></td>
<td>Guided activities: 1h</td>
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<td>Self study: 11h</td>
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**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.

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**Bibliography**

**Basic:**