230555 - QO - Quantum Optics

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 1022 - UAB - (ANG) pendent
Academic year: 2015
Degree: ERASMUS MUNDUS MASTER’S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND BIOPHOTONICS (Syllabus 2010). (Teaching unit Optional) MASTER'S DEGREE IN PHOTONICS (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 3 Teaching languages: English

Teaching staff
Coordinator: Verònica Ahufinger, UAB.
Others: Jordi Mompart, UAB.

Opening hours
Timetable: veronica.ahufinger@uab.cat
jordi.mompart@uab.cat

Degree competences to which the subject contributes

Transversal:
2. ENTREPRENEURSHIP AND INNOVATION: Being aware of and understanding how companies are organised and the principles that govern their activity, and being able to understand employment regulations and the relationships between planning, industrial and commercial strategies, quality and profit.
3. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.
4. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.
5. 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

This course will provide a wide-ranging introduction to the field of quantum optics, developing in detail the semiclassical and quantum approaches to light-matter interaction.

BIBLIOGRAPHY
230555 - QO - Quantum Optics

· On line

Daniel A. Steck, Quantum and Atom Optics (2007)
Oregon Center for Optics and Department of Physics. Oregon University
http://atomoptics.uoregon.edu/~dsteck/teaching/quantum-optics/quantum-optics-notes.pdf

· Basic


· Advanced


Study load

<table>
<thead>
<tr>
<th>Study load</th>
<th>Total learning time: 75h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group:</td>
<td>22h 30m</td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>0h</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>2h 15m</td>
</tr>
<tr>
<td>Self study:</td>
<td>50h 15m</td>
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Content

1.- Semiclassical theory of atom-field interaction

**Degree competences to which the content contributes:**

**Description:**

2.- Quantum theory of atom-field interaction

**Degree competences to which the content contributes:**

**Description:**

Qualification system

Attendance to be evaluated: >80% of the lecture time

- Oral exam (70%)
- Homework assessments (30%)

Bibliography