Course guides
320031 - FOAE - Photonics. Optics Applied to Engineering

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 748 - FIS - Department of Physics.

Degree:
BACHELOR’S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR’S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2020  ECTS Credits: 6.0  Languages: English

LECTURER

Coordinating lecturer: Ramon Herrero
Others: Josep Trull, Ramon Herrero, Juanjo Fernandez, Carme Hervada, Jordi Sellarès, Maria Carme Torrent

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:
1. SELF-DIRECTED LEARNING. Detecting gaps in one’s knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
3. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
4. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
5. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
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<tr>
<td>Hours large group</td>
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<td>20.00</td>
</tr>
<tr>
<td>Hours medium group</td>
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<td>10.00</td>
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<tr>
<td>Type</td>
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<td>Percentage</td>
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<tr>
<td>---------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Hours small group</td>
<td>15,0</td>
<td>10.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h

## CONTENTS

**(ENG) Título contenido 1: Naturaleza y propagación de la luz**

**Full-or-part-time:** 14h  
Theory classes: 4h  
Practical classes: 2h  
Self study: 8h

**(ENG) Título contenido 2: Óptica geométrica e instrumentos ópticos**

**Full-or-part-time:** 14h  
Theory classes: 4h  
Practical classes: 2h  
Self study: 8h

**(ENG) Título contenido 3: Interferencias**

**Full-or-part-time:** 13h 30m  
Theory classes: 4h  
Practical classes: 1h 30m  
Self study: 8h

**(ENG) Título contenido 4: Difracción**

**Full-or-part-time:** 12h 30m  
Theory classes: 3h  
Practical classes: 1h 30m  
Self study: 8h

**(ENG) Título contenido 5: Polarizadores i medios anisótropos**

**Full-or-part-time:** 13h  
Theory classes: 3h  
Practical classes: 2h  
Self study: 8h

**(ENG) Título contenido 6: Fuente convencionales de luz**

**Full-or-part-time:** 5h 30m  
Theory classes: 1h  
Practical classes: 0h 30m  
Self study: 4h
### (ENG) Título contenido 7: Láser

**Full-or-part-time:** 13h 30m  
Theory classes: 4h  
Practical classes: 1h 30m  
Self study: 8h

### (ENG) Título contenido 8: Tecnología láser

**Full-or-part-time:** 9h  
Theory classes: 2h  
Practical classes: 1h  
Self study: 6h

### (ENG) Título contenido 9: Fotodetectores

**Full-or-part-time:** 3h 30m  
Theory classes: 1h  
Practical classes: 0h 30m  
Self study: 2h

### (ENG) Título contenido 10: Radiometría, fotometría y colorimetría

**Full-or-part-time:** 3h 30m  
Theory classes: 1h  
Practical classes: 0h 30m  
Self study: 2h

### (ENG) Título contenido 11: Optoelectrónica y fibras ópticas

**Full-or-part-time:** 11h  
Theory classes: 3h  
Practical classes: 2h  
Self study: 6h

### ACTIVITIES

#### (ENG) ACTIVIDAD 1: LABORATORIO

**Full-or-part-time:** 15h  
Laboratory classes: 15h

#### (ENG) ACTIVIDAD 2: TRABAJO DE PROFUNDIZACIÓN

**Full-or-part-time:** 16h  
Self study: 16h
(ENG) ACTIVIDAD 3: PRUEBA PARCIAL

Full-or-part-time: 3h
Theory classes: 3h

(ENG) ACTIVIDAD 4: EXAMEN FINAL

Full-or-part-time: 3h
Theory classes: 3h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

Complementary: