

## Guía docente

### 32094 - PHOTOLAB - Laboratorio de Fotónica

Última modificación: 13/05/2015

**Unidad responsable:** Escuela Técnica Superior de Ingeniería de Telecomunicación de Barcelona  
**Unidad que imparte:** 731 - OO - Departamento de Óptica y Optometría.

**Titulación:** DOCTORADO EN FOTÓNICA (Plan 2007). (Asignatura optativa).  
DOCTORADO EN INGENIERÍA ÓPTICA (Plan 2007). (Asignatura optativa).  
MÁSTER UNIVERSITARIO EN FOTÓNICA (Plan 2009). (Asignatura optativa).  
MÁSTER UNIVERSITARIO ERASMUS MUNDUS EN INGENIERÍA FOTÓNICA, NANOFOTÓNICA Y BIOFOTÓNICA (Plan 2010). (Asignatura optativa).

**Curso:** 2015      **Créditos ECTS:** 5.0      **Idiomas:** Inglés

#### PROFESORADO

**Profesorado responsable:** CRINA MARIA COJOCARU

**Otros:** J. Trull, E. Perez, J. Lázaro, J. Prat (UPC)  
G. Orriols, F. Pi, J. Campos (UAB)  
I. Juvells, S. Vallmitjana (UB)

#### METODOLOGÍAS DOCENTES

Presencial Teaching + activities

#### OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

"Photonics laboratory" aims to provide the students with an experimental overview over different phenomena and aspects of PHOTONICS that are theoretically studied in the different core and semi-core subjects. The course consists of 5 laboratory works of 8 hours, organized in weekly packets and devoted to different topics of basic and applied photonics. We offer a list of 13 topics. Each student will have to choose five laboratory works from this list, taking into account her/his preferences and availability of laboratories. Each topic will be covered in two lab sessions of 4 hours. Guidelines for each subject are available in ATENEA, aiming to provide the student with a broad overview on main sides of the topic: a phenomenological study, description and interpretation of a variety of phenomena that the student is supposed to observe in the lab, consolidation of basic theoretical concepts, manipulation of different experimental apparatus, definition of experimental objectives, etc. After the finalization of the work a written report has to be submitted.

#### CONTENIDOS

Interference and coherence (1)

(CAST) Interference and coherence (2)

(CAST) Diffraction. Talbot effect

(CAST) Polarization and polarizing materials



(CAST) 5. Light-matter interaction phenomena

(CAST) Active and nonlinear optical media: lasers and second harmonic generation

(CAST) Optical instruments

(CAST) Photoemitters and photodetectors. Optical sensing for control and distance measurements.

(CAST) Optical Image Processing

(CAST) Optical fibers: hands-on and characterization

(CAST) Optical fiber transmission: network and devices

(CAST) Optical fiber communication systems (Erbium Doped Fiber Amplifiers)

(CAST) Hands on image sensors

## SISTEMA DE CALIFICACIÓN

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- Evaluation of the 5 reports corresponding to the laboratory works done by the student (60%)
- Evaluation of individual student activity in the laboratory and previous preparation of the guidelines (40%).

## NORMAS PARA LA REALIZACIÓN DE LAS PRUEBAS.

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The usual in University teaching

## BIBLIOGRAFÍA

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### Básica:

- Laboratory guidelines with the specific bibliography inside.