Guia docent
32094 - PHOTOLAB - Laboratori de Fotònica

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Unitat responsable: Escola Tècnica Superior d'Enginyeria de Telecomunicació de Barcelona
Unitat que imparteix: 731 - OO - Departament d'Òptica i Optometria.

Titulació:
- DOCTORAT EN FOTÒNICA (Pla 2007). (Assignatura optativa).
- DOCTORAT EN ENGINYERIA ÒPTICA (Pla 2007). (Assignatura optativa).
- MÀSTER UNIVERSITARI ERASMUS MUNDUS EN ENGINYERIA FOTÒNICA, NANOFOTÒNICA I BIOFOTÒNICA (Pla 2010). (Assignatura optativa).

Curs: 2015
Crèdits ECTS: 5.0
Idiomes: Anglès

PROFESSORAT

Professorat responsable: CRINA MARIA COJOCARU

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

METODOLOGIES DOCENTS

Presencial Teaching + activities

OBJECTIUS D'APRENENTATGE DE L'ASSIGNATURA

"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 suppose 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.

CONTINGUTS

Interference and coherence (1)

Interference and coherence (2)

Diffraction. Talbot effect

Polarization and polarizing materials
Light-matter interaction phenomena

Active and nonlinear optical media: lasers and second harmonic generation

Optical instruments

Photoemitters and photodetectors. Optical sensing for control and distance measurements.

Optical Image Processing

Optical fibers: hands-on and characterization

Optical fiber transmission: network and devices

Optical fiber communication systems (Erbium Doped Fiber Amplifiers)

Hands on image sensors

SISTEMA DE QUALIFICACIÓ

- 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%).

NORMES PER A LA REALITZACIÓ DE LES PROVES.

The usual in University teaching

BIBLIOGRAFIA

Bàsica:
- Laboratory guidelines with the specific bibliography inside.