32094 - PHOTOLAB - Photonics Laboratory

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 731 - OO - Department of Optics and Optometry
Academic year: 2015
Degree: MASTER’S DEGREE IN PHOTONICS (Syllabus 2009). (Teaching unit Optional)
ERASMUS MUNDUS MASTER’S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND BIOPHOTONICS (Syllabus 2010). (Teaching unit Optional)
DOCTORAL DEGREE IN OPTICAL ENGINEERING (Syllabus 2007). (Teaching unit Optional)
DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: English

Teaching staff

Coordinator: CRINA MARIA COJOCARU
Others: J. Trull, E. Perez, J. Lázaro, J. Prat (UPC)
G. Orriols, F. Pi, J. Campos (UAB)
I. Juvells, S. Vallmitjana (UB)

Teaching methodology

Presencial teaching + activities

Learning objectives of the subject

"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.
## Content

### Interference and coherence (1)

Degree competences to which the content contributes:

### Interference and coherence (2)

Degree competences to which the content contributes:

### Diffraction. Talbot effect

Degree competences to which the content contributes:

### Polarization and polarizing materials

Degree competences to which the content contributes:

### Light-matter interaction phenomena

Degree competences to which the content contributes:

### Active and nonlinear optical media: lasers and second harmonic generation

Degree competences to which the content contributes:

### Optical instruments

Degree competences to which the content contributes:

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

Degree competences to which the content contributes:

### Optical Image Processing

Degree competences to which the content contributes:
### Optical fibers: hands-on and characterization

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

### Optical fiber transmission: network and devices

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

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

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

### Hands on image sensors

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

### Qualification system

- 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%).

### Regulations for carrying out activities

The usual in university teaching

### Bibliography

**Basic:**

Laboratory guidelines with the specific bibliography inside.