Course guides
32090 - INTEPH - Integrated Photonics

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 10041 - UB-FQ - (ANG) pendent.
Degree: DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Optional subject).
MASTER'S DEGREE IN PHOTONICS (Syllabus 2009). (Optional subject).
ERASMUS MUNDUS MASTER'S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND
BIOPHOTONICS (Syllabus 2010). (Optional subject).

Academic year: 2015    ECTS Credits: 2.5    Languages: English

LECTURER
Coordinating lecturer: Blas Garrido
Others: Sergi Hernández

TEACHING METHODOLOGY
The usual in University teaching

LEARNING OBJECTIVES OF THE SUBJECT
The objective of this course is to give in depth knowledge of devices that are basic components of integrated photonic integrated systems, including passive devices, active devices and photonic crystals. The fabrication processes, technology steps and designing tools will be described in detail. Emphasis in state of the art materials (Si or IIIV compounds) will be made in the descriptions of photonics devices.

CONTENTS

(ENG) Passive integrated photonic components

(ENG) Waveguides (rib, strip-loaded, slot) and gratings

(ENG) Bends and Y-junctions

(ENG) Add/drop micro-rings

(ENG) Tapers, MMIs, MZI

(ENG) Design of passive components using FIMMWAVE®
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<th>ENG</th>
<th>Active integrated photonic components</th>
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<td>ENG</td>
<td>Light sources: lasers and LEDs</td>
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<td>ENG</td>
<td>Optical amplifiers: waveguides and SOA</td>
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<td>Detectors for visible and infrared ranges</td>
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<td>Polarization splitters and rotators</td>
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<td>Devices with photonic crystals</td>
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<td>Integrated silicon micro and nanophotonics technology</td>
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<td>Technological platforms for photonic integrated circuits (PIC)</td>
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<td>ENG</td>
<td>Basic technology steps (deposition, lithography, etching)</td>
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<td>Silicon on Insulator (SOI) technology</td>
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<td>Photonic system on a chip</td>
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**GRADING SYSTEM**

- Minimum attendance: 80% of the lecture time.
- Examination: The students prepare a presentation on a subject of the lecture. The presentation consists in a written part and in a 20 minutes presentation.
EXAMINATION RULES.

The usual in University teaching

BIBLIOGRAPHY

Basic: