

230568 - PHSTELE - Photonics Systems in Telecommunications

Coordinating unit:	230 - ETSETB Barcelona School of Telecommunications Engineering
Teaching unit:	739 - TSC - Department of Signal Theory and Communications
Academic year:	2015 - 2016
Degree:	Master's Degree in Photonics Erasmus Mundus Master's Degree in Photonics Engineering, Nanophotonics and Biophotonics
ECTS credits: 3	Teaching languages: English

Academic staff

Coordinator: [María Santos](#) (UPC) santos@tsc.upc.edu

Degree competences to which the subject contributes

Transversal:

1. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.
2. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.
3. ENTREPRENEURSHIP AND INNOVATION: Being aware of and understanding how companies are organised and the principles that govern their activity, and being able to understand employment regulations and the relationships between planning, industrial and commercial strategies, quality and profit.
4. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

Teaching methodology

Lectures

Objectives and short description of the course

'Microwave Photonics' is a cross-disciplinary field of knowledge concerned with interactions between the 'optical' and the 'electrical' portions of the electromagnetic spectrum, with differentiated concepts and techniques. In this subject we will give an overview of the main techniques and devices involved in the field of Microwave Photonics from a practical perspective and with emphasis on applications. Some of the topics will be covered in a lecture format, whereas others will be subjects for in-class student presentations and subsequent discussion in a collegial seminar-style format.

Study load

Total learning time: 75h	Hours large group:	22.5h	30%
	Hours medium group:	0h	0%
	Hours small group:	0h	0%
	Guided activity:	2.25h	3%
	Self study:	50.25h	67%



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Course index

1. **Microwave-Photonic Systems: concepts and devices**
2. **Radio-over-fiber systems**
3. **Microwave Photonic filtering techniques**
4. **Antenna optical beam forming and beam steering networks**
5. **Microwave Photonic measurement techniques**

Qualification system

Passing grade depends on class participation, a written report on a guided research work (term-paper) and a final written exam (50%+50%).

Bibliography

- COX III, C.H. "Analog Optical Links. Theory and Practice", Cambridge University Press , 2006. ISBN: 0-521-02778-0.
- LEE, C. H., "Microwave Photonics". 2nd edition. CRC Press, 2013. ISBN: 1-466-50286-X.
- IEZEQUIEL, S. "Microwave Photonics. Devices and Applications", John Wiley 2009. ISBN: 0-470-84854-5.