Course guide
230722 - PID - Photonic Integrated Devices for Telecom & Iot

Last modified: 20/06/2019

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: **Academic year:** 2019 **ECTS Credits:** 5.0
Languages: English

LECTURER

Coordinating lecturer: José Antonio Lázaro

Others: Sandra Bermejo

PRIOR SKILLS

Basic knowledge from 1st-2nd years of Bachelor in Physics, Electronics or Telecommunications.

TEACHING METHODOLOGY

Theoretical Introduction & Lab Practice - Desing

LEARNING OBJECTIVES OF THE SUBJECT

Conceiving and Designing new Photonic Integrated Devices,
Introduction to fabrication in Clean Room and Lab characterization of Devices.

STUDY LOAD

Type	Hours	Percentage
Hours small group	13,0	10.40
Hours large group	26,0	20.80
Self study	86,0	68.80

Total learning time: 125 h

CONTENTS

Unit 1

Description:
Overview of the current and future demands for photonic integrated devices

Full-or-part-time: 38h
Theory classes: 10h
Self study : 28h

Unit 2

Description:
Current and future technologies addressing the demands: Silicon Photonics, additional technologies to expand Silicon Photonics functionalities as: graphene, III-V materials, nano-materials, etc.

Full-or-part-time: 34h
Theory classes: 5h
Self study : 29h

Unit 3

Description:
Introduction to Clean Room Fabrication Technologies

Full-or-part-time: 34h
Theory classes: 5h
Self study : 29h

GRADING SYSTEM

Continuous assessment (60%) + Control examination (40%)

BIBLIOGRAPHY

Basic:
- Chrostowski, L.; Hochberg, M. Silicon photonics design. Cambridge: Cambridge University Press, 2015. ISBN 9781107085459.
- Inniss, D., Rubenstein, R. Silicon photonics: fueling the next information revolution [on line]. Amsterdam: Elsevier Science & Technology, 2016 [Consultation: 18/09/2019]. Available on: https://ebookcentral.proquest.com/lib/upcatalunya-ebooks/detail.action?docID=4760965. ISBN 9780128029923.
- Fortino, G.; Trunfio, P. eds.. Internet of things based on smart objects: technology, middleware and applications [on line]. Cham: Springer International Publishing, 2014 [Consultation: 15/07/2019]. Available on: http://dx.doi.org/10.1007/978-3-319-00491-4. ISBN 9783319004914.

Complementary:
- Kasap, S.O.; Sinha, R.K. Optoelectronics and photonics: principles and practices. 2nd ed. Boston: Pearson, 2013. ISBN 9780273774174.