Last update: 04-07-2019

230722 - PID - Photonic Integrated Devices for Telecom & Iot

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering

Teaching unit: 739 - TSC - Department of Signal Theory and Communications

Academic year: 2019

Degree: MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional)
MASTER'S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Teaching unit Optional)

ECTS credits: 5 Teaching languages: English

Teaching staff

Coordinator: José Antonio Lázaro

Others: Sandra Bermejo

Opening hours

Timetable: Tutoring sessions

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

Total learning time: 125h	Hours large group:	26h	20.80%
	Hours small group:	13h	10.40%
	Self study:	86h	68.80%

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Content

Unit 1	Learning time: 38h Theory classes: 10h Self study : 28h

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

Unit 2	Learning time: 34h Theory classes: 5h Self study : 29h

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.

Unit 3	Learning time: 34h Theory classes: 5h Self study : 29h

Description:
Introduction to Clean Room Fabrication Technologies

Qualification system

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

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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.