Optical networking technologies

Academic Year: (2023 / 2024)

Department assigned to the subject: Electronic Technology Department

Coordinating teacher: VAZQUEZ GARCIA, MARIA CARMEN

Type: Electives ECTS Credits : 3.0

Year : 2 Semester : 1

## OBJECTIVES

-Acquire skills for understanding new technologies involved in optical networks and their appropriate use and integration to solve new problems or applications.

-Knowing the capabilities of new photonic components to improve the performance of optical networks such as routers, switches, amplifiers.

-Ability to handle optical networks design tools.

-Ability to develop effective information search and to identify the state of the art technology in optical networks and their possible application in new systems.

-Knowing the state of the art and future trends in optical networking technologies.

## DESCRIPTION OF CONTENTS: PROGRAMME

- 1. Optical fiber basics
- 2. Connectors and passive devices
- 3. Active devices
- 4. Photonics Integrated Circuits
- 5. Optical communications networks principles
- 6. Wavelength Division Multiplexing Networks Technologies
- 7. Technologies in Access and in Switched Optical Networks
- 8. Impact of new technologies under development on optical systems and networks

#### LEARNING ACTIVITIES AND METHODOLOGY

Lectures Exercises Laboratory work-simulations Tutorials Team group Individual reports

#### ASSESSMENT SYSTEM

Ordinary exam: -Test 35% -exercises and lab reports (team work) 30% -lectures discussions and seminars 10% -project work and public defense 25%

Extraordinary exam: The same as ordinary exam or a final exam with 100%

% end-of-term-examination:	35
% of continuous assessment (assigments, laboratory, practicals):	65

# BASIC BIBLIOGRAPHY

- null Fiber Optic Measurement Techniques, Academic Press, 2008

- I Kaminov et al Optical Fiber Telecommunications Volumen VIA:Components and Subsystems, Academic Press, 2013

Review date: 21-04-2023

- Senior Optical Fiber Communications: principles and practice, Prentice Hall, 1992

# ADDITIONAL BIBLIOGRAPHY

- B Li et al, chapter 9: C Vázquez et al chapter 9: Optical switches materials and design, Woodhead Publishing Limited, 2010

- A Texeira et al. chapter2: C Vázquez et al Optical Transmission The FP7 BONE Project Experience, Ch2: Signal Processing, Management and Monitoring in Transmission Networks, Springer , 2012