30335 - Optical Transfer Devices and Systems

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS	6.0
Course	
Period	Second semester
Subject Type	
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

Teaching Methodology:

Theory lesson: Exposition of the fundamental contents of the subject. This activity will be developed in the classroom.

Practical lesson: The teacher will propose practical questions whose solution will require the application of the concepts previously explained. These activities are proposed and presented in the classroom, but can be prepared and developed outside, both individually or in group.

Laboratory activity: The students perform practical tasks to consolidate some of the concepts developed in the lessons. This activity will be performed in a laboratory. For this activity, it is necessary the presence of the student in the laboratory.

Tutored assignments: The teacher will propose some assignments to get further insight into some aspects of the subject. These activities are proposed and presented in the classroom, but can be prepared and developed outside, both individually or in group.

Individual tutoring: Individual assistance to the students.

5.2.Learning activities

The activities designed to learn this subject are the following:

- **Theory lessons** , where the basic concepts of this subject will be explained using the teaching materials available to the students (40 hours per term).

- **Practical lessons** , where practical questions related to the theory will be proposed and solved. They will be scheduled at the end of each theory block (10 hours per term).

- **Laboratory sessions** , where the students will learn to use software and equipment specific to the subject in order to perform tasks that will help them to assimilate some concepts. This activity requires the presence of the student and will be developed in small groups in the Optical Laboratory on the third floor of the Ada Byron Building in Campus Río Ebro. There are 5 two-hour sessions (10 hours per term).

- **Tutored assignment** s, proposed by the teacher to help the students to get further insight into some particular aspects of the subject. These activities are proposed and presented in the classroom, but can be prepared and developed outside, both individually or in group.

5.3.Program

PROGRAM of Optical Transmission devices and systems:

30335 - Optical Transfer Devices and Systems

1. Optical fibers. Transmission Properties.
2. Optical emitters. Properties.
3. Optical detectors and receivers.
4. Optical amplifiers. Erbium doped fiber amplifiers (EDFAs).
5. Passive devices. Characterization.
6. Design of optical links. Power and time balance.
7. Optical networks simulation software.

5.4.Planning and scheduling

During one term, the activities will be scheduled as follows:

- Theory lessons integrated with and practical lessons, 3 or 4 hours per week.

- Laboratory sessions in reduced groups, 5 two-hour sessions, approximately 1 per fortnight.

The detailed Activity Schedule for each particular year is published using the digital support provided by Universidad de Zaragoza.

In any case, the theory and practical lessons are distributed according to the schedule stablished by the Engineering and Architecture School (EINA). The same holds for the laboratory sessions for which the student has the option to join one of the available lab groups.

The global evaluation examinations will be held in the dates stablished by the EINA.

5.5.Bibliography and recomended resources

- Keiser, Gerd. Optical Fiber communications / Gerd Keiser . - 2nd edition New York [etc.] : McGraw-Hill, cop. 1991
- Senior, John. Optical fiber communications : principles and practice / John M. Senior . - 2nd. ed. New York [etc.] : Prentice Hall, cop. 1992
- Gowar, John. Optical communication systems / John Gowar . - 2nd. ed. New York [etc.] : Prentice Hall, cop. 1993
- Agrawal, Govind P.. Fiber-Optic communication systems / Govind P. Agrawal . - 3rd ed. New York [etc.] : John Wiley & Sons, cop. 2002
- [Fibras Ópticas] - Snyder, Allan W.. Optical waveguide theory / Allan W. Snyder, John D. Love . 1st ed. London [etc] : Chapman and Hall, 1983
- [Fibras Ópticas] - Ghatak, Ajoy. Introduction to fiber optics / Ajoy Ghatak, K. Thyagarajan . [1st ed.] Cambridge : Cambridge University Press, cop. 1998
- [Fibras Ópticas] - Capmany, José. Fundamentos de comunicaciones opticas / José Capmany, F. Javier Fraile-Peláez, Javier Martí . Madrid : Sintesis, D.L. 1998
- [Fuentes, detectores] - Saleh, Bahaa E.A.. Fundamentals of photonics / Bahaa E.A. Saleh, Malvin Carl Teich . [1st ed.] New York [etc.] : Wiley and Sons, cop. 1991
- [Fuentes, detectores] - Capmany, José. Fundamentos de comunicaciones opticas / José Capmany, F. Javier Fraile-Peláez, Javier Martí . Madrid : Sintesis, D.L. 1998
- [Sistemas] - Kaminov, I . Optical Fiber Telecommunications IIIA / I. KAMINOV & T. KOCH (Eds.) Academic

Press,1997
- [Sistemas] - Kaminov, I . Optical Fiber Telecommunications IIIB / I. KAMINOV & T. KOCH (Eds.) Academic Press,1997
- [Sistemas] - Franz, J. Optical Communication Systems / J.Franz & V. Jain Academic Wiley, 1996
- [Sistemas] - WDM systems and networks : modeling, simulation, design and engineering / Neophytos (Neo) Antoniades, Georgios Ellinas, Ioannis Roudas editors . New York : Springer, cop. 2012

Using the digital support available in University of Zaragoza, the students of the course will have access to all documentation provided by the teachers.