



Year : 2018/19

30335 - Optical Transmission Devices and Systems

Syllabus Information

Academic Year:	2018/19
Subject:	30335 - Optical Transmission Devices and Systems
Faculty / School:	110 -
Degree:	438 - Bachelor's Degree in Telecommunications Technology and Services Engineering
ECTS:	6.0
Year:	
Semester:	Second semester
Subject Type:	
Module:	---

General information

Aims of the course

Context and importance of this course in the degree

Recommendations to take this course

Learning goals

Competences

Learning goals

Importance of learning goals

Assessment (1st and 2nd call)

Assessment tasks (description of tasks, marking system and assessment criteria)

Methodology, learning tasks, syllabus and resources

Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, autonomous work, and tutorials.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

Learning tasks

Lectures: the teacher will explain the theoretical contents of the course (40 hours per term) and solve illustrative applied problems (10 hours per term). These problems and exercises can be found in the problem sets provided at the repository available via Moodle. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions: sessions will take place in the laboratory. There will be 5 two-hour sessions (10 hours per term). The presence of the student is mandatory in this task. Students will work together in groups actively doing tasks using software specific for the simulation of optical links.

Guided assignments: students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures. They will be submitted when specified by the teachers.

Autonomous work: students are expected to spend about 75 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students

Syllabus

The course will address the following topics:

Theory sessions:

Topic 1. Transmission properties of optical fibers

Topic 2. Optical emitters

Topic 3. Optical detectors and receivers

Topic 4. Optical amplifiers. Erbium doped optical amplifier (EDFA)

Topic 5. Characterization of passive devices

Topic 6. Design of optical links. Power and dispersion balance

Topic 7. Optical networks simulation software

Laboratory sessions: In the Laboratory sessions the students will apply some of the topics addressed in the theory lessons using optical networks simulation software.

Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Escuela de Ingeniería y Arquitectura " website (<https://eina.unizar.es/>)

Bibliography and recommended 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
- Dutton, Harry. Understanding Optical Communications - Prentice Hall, 1998
- 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] - WDM systems and networks : modeling, simulation, design and engineering / Neophytos (Neo) Antoniadis, 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.