



Year : 2018/19

30358 - Optical Communications Laboratory

Syllabus Information

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| Academic Year: | 2018/19 |
| Subject: | 30358 - Optical Communications Laboratory |
| Faculty / School: | 110 - |
| Degree: | 438 - Bachelor's Degree in Telecommunications Technology and Services Engineering |
| ECTS: | 6.0 |
| Year: | 4 |
| Semester: | First semester |
| Subject Type: | Optional |
| 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 and the procedures used in the Laboratory. This information can be found at the repository available via Moodle. The students will also present and discuss the results obtained in the Laboratory sessions. Each presentation will be followed by a discussion with the rest of the students and the teacher to promote peer-assessment of their work.

Laboratory sessions: sessions will take place twice a week and last 2 hours each. The presence of the student is mandatory in this task. Students will work together in groups in the laboratory actively designing and performing experiments using different set-ups and measurement devices.

Guided assignments: students will be asked to elaborate essays and oral presentations discussing the results obtained in the laboratory (including bibliographical research, analysis, summary, scientific rigor, coherence of expression and citations). They will be submitted when specified by the teachers. **Autonomous work:** students are expected to study theory, solve problems, prepare lab sessions, elaborate essays and oral presentations and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

Syllabus

The course will address the following topics:

Topic 1. Optical fibers. Manipulation and characterization of different types of optical fibers and cables

Topic 2. Programing in optical networks simulation software

Topic 3. Handling and characterization of active devices: optical sources, photodetectors, and optical amplifiers

Topic 4. Passive devices use and characterization: Multiplexers, couplers, etc.

Topic 5. Experimental analysis of WDM systems

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

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

BIBLIOGRAPHY: Books to expand some of the concepts explained in class.

- 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