Universidad Zaragoza

Academic Year/course: 2021/22

60032 - Comunication physics

Syllabus Information

Academic Year: 2021/22
Subject: 60032 - Comunication physics
Faculty / School: 100 - Facultad de Ciencias
Degree: 538 - Master's in Physics and Physical Technologies
589 - Master's in Physics and Physical Technologies
ECTS: 5.0
Year: 1
Semester: Second semester
Subject Type: Optional
Module:

1. General information

1.1. Aims of the course

The course is intended to provide a general scope of communication systems from the point of view of Physics including: emitters, transmission media and receivers analyzed as different parts where various physical phenomena take place and as a whole communication system composed of interrelated elements. The link between performance limits of communication systems and the underlying physical phenomena will be made clear, as well as how electronics, optoelectronics and information theory can improve the capacity and quality of data transmission systems.

2. Learning goals

3. Assessment (1st and 2nd call)

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

The course evaluation will be performed by means of continuous assessment through the following activities:
Activity 1
It consists of solving exercises based on the theoretical lessons. Solutions must be submitted in scheduled deadlines and their presentation in the classroom might be required. Exercises not submitted on time will be deemed failed. This activity will be graded from 0 to 10 points and its weight in the global mark of the course is 20%.
Activity 2
Laboratory sessions with previous quizzes must be solved and submitted in scheduled deadlines. Questionnaires not submitted on time will be deemed failed. This activity will be graded from 0 and 10 points and its weight in the global mark of the course is 40%.
Activity 3
It will consist in developing some topic-related assignments suggested by the teachers and a possible oral presentation in class in dates to be indicated. The student will have the opportunity to choose between bibliographic and/or theoretical-practical projects. This activity will be graded from 0 to 10 points and its weight in the global mark of the course is 40%.
To pass the course, a mark of at least 4 points must be reached in each assessed activity.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the acquisition of theoretical and experimental skills in the field of the communication systems. The course consists of three well separated learning strategies:

- Knowledge acquisition about the contents of the course (3 ECTS).
- Solving problems related to the contents of the course (1 ECTS).
- Introduction to design, characterization and experimental measurements of main communication transceiver blocks (1ECTS).

These activities will allow the student to acquire the desired knowledge on the course contents, experimental skills in communication systems, and problem-solving competences.

4.2. Learning tasks

The course includes the following learning tasks:

- Lectures on the main topics of the course and problem-solving tasks.
- Laboratory sessions.
- Student autonomous work on solving proposed exercises.
- Study, oral presentation and class discussion, of selected topics.

Teaching and assessment activities will take place face-to-face except if the competent authority and the University of Zaragoza established to carry them out remotely due to the sanitary situation.

4.3. Syllabus

The course will address the following topics:

1. Introduction
2. Theory of communications
3. Advanced treatment of propagation of the electromagnetic signal
4. Antennas
5. Transmitter
6. Receiver

4.4. Course planning and calendar

Further information concerning the timetable, classroom, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the Faculty of Science http://ciencias.unizar.es/

4.5. Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=60032&year=2019