

30158 - Communication Theory

Syllabus Information

Academic year: 2024/25

Subject: 30158 - Communication Theory

Faculty / School: 179 - Centro Universitario de la Defensa - Zaragoza

Degree: 563 - Bachelor's Degree in Industrial Organisational Engineering

ECTS: 6.0

Year: 4

Semester: First semester

Subject type: Optional

Module:

1. General information

The subject Communication Theory makes students know and be able to analyse different aspects related to communication systems.

Main goals:

- To describe the basic aspects of communication systems.
- To characterize the three main parts of a communication system: transmitter, channel and receiver.
- To describe the properties of information signals and its perturbations (noise, distortion, etc.).
- To perform the analysis of signals and systems in a communication system.
- To know the most significant digital modulations, their properties and mathematical expressions.

2. Learning results

In order to successfully pass the subject, the students will have to show that they are able to:

1. Describe the working principles and applications of the basic methods and systems for transmitting information.
2. Describe the techniques of analog and digital modulation.

3. Syllabus

The course will address the following topics:

1. INTRODUCTION
2. RANDOM SIGNALS AND NOISER
3. THE TRANSMISSION CHANNEL
4. BASE BAND DIGITAL TRANSMISSION
5. DIGITAL MODULATION TECHNIQUES

4. Academic activities

The methodology followed for the teaching-learning process is mainly based on:

- **Participatory master classes:** masterclasses exposing the main theoretical concepts of each topic, accompanied by practical examples and problem solving. The student will actively participate in their resolution.
- **Learning based on problem solving.**
- **Solving cooperative problems and flipped classroom.**
- **Assessment tests.** Personalized attention to the student through tutorials with the aim of reviewing and discussing the materials and topics presented in class.
- **Study and autonomous work** of the student.

5. Assessment system

FIRST CALL

The students will be evaluated through continuous assessment.

1. Midterm written exam of the lessons 1-3 of the subject (25%).
2. Final term written exam of the lessons 4-5 of the subject (35%).
3. Continuous assessments during all the semester with autonomous and group work (40%).

In the final mark of the continuous assessment (100%) all the assessment instruments carried out throughout the course will be taken into account.

In order to pass the subject, the average of the written exams must be equal to or greater than 5 and the student's final grade must be equal to or greater than 5 in the final mark of the continuous assessment.

Final Exam

The students who do not pass the subject by continuous assessment or who would like to improve their grades, will have the right to take the Final Exam, prevailing, in any case, the best of both grades. This Final Exam will be a single exam and will have the 100% weight in the final grade. To pass the subject, the student's final grade must be equal to or greater than 5.

SECOND CALL

Final Exam

The students who do not pass the subject in the first call may take the Final Exam for the second call. This Final Exam will be a single exam and will have the 100% weight in the final grade. To pass the subject, the student's final grade must be equal to or greater than 5.

Assesment system	Weight	LR-1	LR-2
Midterm written exam (Lessons 1-3)	25%	x	
Final term written exam (Lessons 4-5)	35%	x	x
Continuous assessments	40%	x	x

6. Sustainable Development Goals

9 - Industry, Innovation and Infrastructure