

30157 - Linear Systems

Información del Plan Docente

Academic Year	2018/19
Subject	30157 - Linear Systems
Faculty / School	179 - Centro Universitario de la Defensa - Zaragoza
Degree	457 - Bachelor's Degree in Industrial Organisational Engineering 563 - Bachelor's Degree in Industrial Organisational Engineering
ECTS	6.0
Year	4
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed for the teaching-learning process is mainly based on masterclasses exposing the main theoretical concepts of each topic. These theoretical concepts will be complemented by problem sessions that apply those concepts on realistic scenarios. In all the cases, active participation of the students will be promoted planning and solving topics proposed in class.

4.2.Learning tasks

Learning activities are mainly the study of the learning material given in the classes, the realization of the practical

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exercises provided for each topic and the realization of the evaluating exercises given periodically.

4.3.Syllabus

The programme of the subject includes the following topics:

1. INTRODUCTION TO SIGNALS AND SYSTEMS: Basic operations with signals, energy and power concepts, system classification
2. SPECTRAL ANALYSIS: Fourier series analysis for periodic signals, Fourier Transform and its properties, energy and power spectral densities, bandwidth
3. SIGNAL TRANSMISSION: Transfer function, amplitude and phase functions. Filtering
4. AMPLITUDE MODULATIONS: DSB modulation. SSB modulation. Demodulation of DSB and SSB. Modulation and demodulation of AM signals. Power ratios for pure tone modulations. Commutation modulators
5. ANGLE MODULATIONS: Frequency and phase modulations for pure tones. Spectrum of a pure tone modulated with FM. Approximate bandwidth of a FM signal. Frequency translation and multiplication. FM modulators and demodulators. Superheterodine receivers

4.4.Course planning and calendar

The schedule of the subject will be determined by the Centre in the academic calendar of the corresponding year. Lessons start at the end of september, first semester. The activities of the subject can be consulted in the Activities and Resources section. Important dates of the subject, such as tests and other programmed activities, will be indicated beforehand by the teacher both in class and Moodle.

4.5.Bibliography and recommended resources

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Oppenheim, Alan Victor. Señales y sistemas / Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab ; traducción, Gloria Mata Hernández ; revision tecnica, Agustín Suárez Fernández . - [2ª ed. en español, reimp.] México [etc.] : Prentice Hall, cop. 1998