

30157 - Linear Systems

Información del Plan Docente

Academic Year	2016/17
Academic center	179 - Centro Universitario de la Defensa - Zaragoza
Degree	563 - Bachelor's Degree in Industrial Organisational Engineering 457 - Bachelor's Degree in Industrial Organisational Engineering
ECTS	6.0
Course	4
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

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.

5.2.Learning activities

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Learning activities are mainly the study of the learning material given in the classes, the realization of the practical exercises provided for each topic and the realization of the evaluating exercises given periodically.

5.3.Program

El programa de la asignatura incluye los siguientes temas:

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. LINEAR AND TIME INVARIANT SYSTEMS: Convolution, properties of linear and time invariant systems
4. SIGNAL TRANSMISSION: Transfer function, amplitude and phase functions. Filtering
5. 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
6. 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

5.4.Planning and scheduling

5.5.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