Course guide
230088 - SSIS - Signals and Systems

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.
Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Compulsory subject).
Academic year: 2022 ECTS Credits: 6.0 Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura
Others: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma

REQUIREMENTS
LINEAR CIRCUITS AND SYSTEMS - Precorequisite
MATHEMATICS FOR TELECOMMUNICATIONS - Prerequisite

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Generical:
12 CPE N2. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

TEACHING METHODOLOGY
Theoretical classes as well as practical ones using Matlab

LEARNING OBJECTIVES OF THE SUBJECT
Signals and systems in the time and frequency domains

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>52,0</td>
<td>34.67</td>
</tr>
<tr>
<td>Hours small group</td>
<td>13,0</td>
<td>8.67</td>
</tr>
<tr>
<td>Self study</td>
<td>85,0</td>
<td>56.67</td>
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</tbody>
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Total learning time: 150 h
CONTENTS

1. Introduction. Signals and systems in the time domain

Description:
Time-domain Signal Processing

Full-or-part-time: 36h
Theory classes: 12h
Laboratory classes: 4h
Self study: 20h

2. Signals and systems in the frequency domain. The Fourier Transform

Description:
Fourier Transform of analog signals and systems. Sampling Theorem.

Full-or-part-time: 54h
Theory classes: 20h
Laboratory classes: 4h
Self study: 30h

3. Fourier Transform of discrete-time signals. DFT

Description:
Fourier Transform of discrete-time signals. Discrete Fourier Transform (DFT)

Full-or-part-time: 42h
Theory classes: 14h
Laboratory classes: 4h
Self study: 24h


Description:
Correlation function and power spectrum.

Full-or-part-time: 16h
Theory classes: 4h
Laboratory classes: 1h
Self study: 11h

GRADING SYSTEM

Continuous assessment (40%)
Final exam (60%)
Students with an excellent continuous assessment are eligible to do not take the final exam and completing the course evaluation with a specific activity.
BIBLIOGRAPHY

Basic:

Complementary: