Course guides  
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: 2021  
ECTS Credits: 6.0  
Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Salavedra Moli, Josep  
Others: FRANCESC VALLVERDÚ BAYÉS - ANTONI GASULL LLAMPALLAS - JOSEP SALAVEDRA MOLI - M. ASUNCION MORENO BILBAO - ELISA SAYROL CLOLS - CLIMENT NADEU CAMPRUBI - FRANCESC REY MICOLAU

REQUIREMENTS

MATEL

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generic: 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>
</tr>
</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

4. **Correlation function. Power Spectrum.**

   **Description:**
   Correlation function and power spectrum.

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

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### 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: