Degree competences to which the subject contributes

Specific:
CEE22. Ability to characterize deterministic and random signals in time or space, and in the frequency domain.
CEE15. Ability to apply synchronization techniques and use standard buses considering electrical aspects and protocols.
CEE21. Ability to process continuous variable signals using digital techniques.
CEE23. Ability to analyze, model, identify and simulate linear systems, especially digital filters and adaptive systems.

Transversal:
CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.
CT5. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

Teaching methodology
- Lectures
- Application classes
- Laboratory work
- Team work (distance)
- Individual work (distance)
- Exercises
- Short and extended answer tests (Partial and Final Exams)

Planning of activities:
Exercises:
- Description: Exercises to strengthen the theoretical knowledge.
Laboratory work:
- Description: Implementation of techniques in Matlab in teams.
Short answer test (Control):
- Description: Mid term control.
Extended answer test (Final exam):
- Description: Final examination test with theoretical questions and short exercises.

Learning objectives of the subject
230691 - SPEE - Signal Processing for Electronic Engineering

Learning objectives of the subject:
Understanding the concepts and techniques of the field of statistical signal processing, and their application to problems arising from real applications.

Learning results of the subject:
Depending on the student performance, partial achievement of the learning objectives.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group:</th>
<th>Self study:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39h</td>
<td>86h</td>
</tr>
<tr>
<td></td>
<td>31.20%</td>
<td>68.80%</td>
</tr>
</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning time</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1. **Fundamentals of signal processing** | **32h** | Theory classes: 7h  
Laboratory classes: 3h  
Self study: 22h |
| 2. **Digital filter design** | **31h** | Theory classes: 6h  
Laboratory classes: 4h  
Self study: 21h |
| 3. **Basic estimation theory and spectral estimation** | **30h** | Theory classes: 6h  
Practical classes: 3h  
Self study: 21h |
| 4. **Signal modelling and optimal filtering** | **32h** | Theory classes: 7h  
Laboratory classes: 3h  
Self study: 22h |

## Qualification system

- **Final exam**: from 40% to 50%
- **Mid-term exam**: from 10% to 30%
- **Laboratory work**: from 10% to 30%
- **Individual/team assessments**: from 10% to 30%
Bibliography

Basic:


Complementary:


Others resources:

Audiovisual material

Teacher's material: notes, problem sets, laboratory guides

Resource