Course guide
220101 - ELO - Electronics

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2022  ECTS Credits: 4.5  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Lopez Martinez, Antonio Miguel
Others: Ferrer Arnau, Luis Jorge

PRIOR SKILLS

Previous knowledge in electromagnetism laws is recommended.

REQUIREMENTS

Previous knowledge in circuit analysis laws is recommended.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONtributes

Specific:
1. An understanding of the basics of electronics

TEACHING METHODOLOGY

The course is divided into three parts:
1. Sessions exhibition content.
2. Sessions for practice (exercises and lab).
3. Self-study and completion of a project.
In the content of the sessions, teachers will introduce the theoretical foundations of the subject, concepts, and examples appropriate to facilitate understanding.
In practical sessions, teachers will guide students in applying theoretical concepts to problem solving in the classroom, and for the design and analysis of different circuits in the laboratory.
The student autonomously, must work to assimilate and fix concepts, and also to develop the project correctly assigned in class.
Teachers will provide a curriculum and monitoring activities (ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

Understanding the fundamentals, theory, semiconductor devices and circuits. Theory and characteristics of operational amplifiers. Non-linear applications. Active filters.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>14,0</td>
<td>12.44</td>
</tr>
<tr>
<td>Hours large group</td>
<td>31,0</td>
<td>27.56</td>
</tr>
<tr>
<td>Self study</td>
<td>67,5</td>
<td>60.00</td>
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</tbody>
</table>

Total learning time: 112.5 h

CONTENTS

Module 1: Diode

Full-or-part-time: 19h 30m
Theory classes: 5h
Laboratory classes: 2h
Self study: 12h 30m

Module 2: BJT Transistor

Full-or-part-time: 21h
Theory classes: 6h
Laboratory classes: 3h
Self study: 12h

Module 3: M.O.S Transistor

Full-or-part-time: 25h
Theory classes: 7h
Laboratory classes: 3h
Self study: 15h

Module 4: Operational Amplifier

Full-or-part-time: 24h
Theory classes: 7h
Laboratory classes: 3h
Self study: 14h

Module 5: Active Filters

Full-or-part-time: 11h 30m
Theory classes: 3h
Laboratory classes: 1h 30m
Self study: 7h
Module 6: Nonlinear Circuits

**Full-or-part-time:** 11h 30m  
Theory classes: 3h  
Laboratory classes: 1h 30m  
Self study : 7h

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>Full-or-part-time</th>
<th>Theory classes</th>
<th>Laboratory classes</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACTIVITY 1 - THEORY AND PROBLEMS</strong></td>
<td>44h</td>
<td>28h</td>
<td>6h</td>
<td>10h</td>
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<tr>
<td><strong>ACTIVITY 2 - LABORATORY</strong></td>
<td>18h</td>
<td>8h</td>
<td></td>
<td>10h</td>
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<tr>
<td><strong>ACTIVITY 3 - MIDTERM EXAM</strong></td>
<td>13h 30m</td>
<td>1h</td>
<td></td>
<td>12h 30m</td>
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<tr>
<td><strong>ACTIVITY 4 - PROJECT</strong></td>
<td>15h</td>
<td></td>
<td></td>
<td>15h</td>
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<tr>
<td><strong>ACTIVITY 5 - FINAL EXAM</strong></td>
<td>22h</td>
<td>2h</td>
<td></td>
<td>20h</td>
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GRADING SYSTEM

Partial exam: 35%
Laboratory practices: 10%
Project: 15%
Final exam: 40%

Re-evaluation: Partial Exam

The unsatisfactory results of the partial exam will be redirected by written test in the same day of the final exam at the same time interval (3 hours). The qualification will be between 0 and 10. The qualification obtained will replace the initial one if it is higher. This test can be done by all students, even those who have passed the partial exam if they wish.

BIBLIOGRAPHY

Basic:

Complementary: