Course guides
230082 - FDE - Fundamentals of Electronics

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR’S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Compulsory subject).

Academic year: 2020  ECTS Credits: 7.0  Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Voz Sanchez, Cristobal
Others: Bermejo Broto, Alexandra
Fernandez Chimeno, Mireya
Guede Fernandez, Federico
Lopez Gonzalez, Juan Miguel
Mateu Mateus, Marc
Orpella Garcia, Alberto
Puigdollers Gonzalez, Joaquin
Rodriguez Martinez, Angel
Rosell Ferrer, Francisco Javier
Rubio Sola, Jose Antonio
Vargas Drechsler, Manuel Agustin

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

General:
10 ECI N1. They will have acquired knowledge related to experiments and laboratory instruments and will be competent in a laboratory environment in the ICC field. They will know how to use the instruments and tools of telecommunications and electronic engineering and how to interpret manuals and specifications. They will be able to evaluate the errors and limitations associated with simulation measures and results.

TEACHING METHODOLOGY

Theoretical classes
Laboratory classes
Cooperative work (out of classrooms)
Individual work (out of classrooms)
Short answer controls (Test)
Long answer controls
Long answer controls (Final examination)
Laboratory
Laboratory examination

LEARNING OBJECTIVES OF THE SUBJECT
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>26.0</td>
<td>14.86</td>
</tr>
<tr>
<td>Self study</td>
<td>97.0</td>
<td>55.43</td>
</tr>
<tr>
<td>Hours large group</td>
<td>52.0</td>
<td>29.71</td>
</tr>
</tbody>
</table>

Total learning time: 175 h

CONTENTS

Analysis of electric circuits

**Description:**

**Full-or-part-time:** 50h
- Theory classes: 20h
- Self study: 30h

The capacitor and the inductor

**Description:**

**Full-or-part-time:** 12h
- Theory classes: 5h
- Self study: 7h

The junction diode and its applications

**Description:**

**Full-or-part-time:** 25h
- Theory classes: 10h
- Self study: 15h
The transistor and the signal amplifier

Description:

Full-or-part-time: 25h
Theory classes: 10h
Self study: 15h

Laboratory of Electronic

Description:
1. Presentation of the Laboratory
2. The power source and the digital multimeter
3. Electric measurements in DC
4. The oscilloscope and function generator
5. Introduction to the operational amplifier
6. Introduction to RC circuits
7. Control of electronic instrumentation
8. Fabrication of a wave square generator
9. Electric characteristic of a diode, LED and Zener
10. The transformer, rectifying circuits and capacitor filter.
11. The bipolar junction transistor: DC analysis
12. Signal amplification with a bipolar junction transistor

Full-or-part-time: 60h
Laboratory classes: 26h
Self study: 34h

GRADING SYSTEM

Laboratory: 20% (20% practice, 40% instrumentation exam in the laboratory, 40% final laboratory exam)
Theory: 80% (5% ongoing evaluation in the group, 35% midterm exam, 60% final exam)
Reassesment of theory (80% of the subject) according to regulation. The laboratory mark (can not be reassessed ) will be that of the course with the same weight (20% of the subject).

BIBLIOGRAPHY

Basic:

Complementary: