Course guides
230005 - FO - Fundamentals of Computers

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 701 - DAC - Department of Computer Architecture.

Degree:
- BACHELOR’S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).
- BACHELOR’S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).
- BACHELOR’S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Compulsory subject).
- BACHELOR’S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Compulsory subject).
- BACHELOR’S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Compulsory subject).
- BACHELOR’S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Compulsory subject).

Academic year: 2020  ECTS Credits: 6.0  Languages: Catalan, English, Spanish

LECTURER

Coordinating lecturer: Beatriz Otero Calviño

Others: Otero Calviño, Beatriz
Guerrero Zapata, Manel
Jimenez Castells, Marta
Valverde Amador, Antonio Javier
Jordan, Francisco
Llorente Viejo, Silvia
Monreal Arnal, Teresa
Tous Liesa, Rubén
Gil Gomez, Maria Luisa

PRIOR SKILLS

This course has no prerequisites.

REQUIREMENTS

This course does not require having previously taken any other course.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:
1. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.
TEACHING METHODOLOGY

Practical classes  
Theory classes  
Laboratory classes  
Team work (no presentia)  
Self study (no presentia)  
Quizzes  
Final exam  
Laboratory practices  
Project

LEARNING OBJECTIVES OF THE SUBJECT

The goals of this course are that:

1. The student must be able to code, test, and debug programs using the C language to solve elementary problems.

2. The student understands and masters the basics of procedural programming and uses the top-down design technique to solve the problems raised.

3. The student must understand what is about an operating system and its role on a computer functionality. He or She must know basic commands of a general purpose operating system.

Learning outcomes:

1. To Know the operation of a basic computer and how develop simple programs using it.

2. To use automatic tools for editing, compiling, running and debugging programs.

3. To correctly state the problem structure from a given problem description and identify alternative solutions.

4. To apply a suitable resolution choice and prove the correctness of that solution.

5. To know and correctly use the tools, instruments and applications, available at the lab, and properly achieve the analysis of the collected data.

6. To complete assigned tasks on a given schedule following the guidelines set by the course's profesor. The student must also be able to assess his or her work's progress, and the degree of fulfillment of this course's objectives.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>85,0</td>
<td>56.67</td>
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<tr>
<td>Hours small group</td>
<td>26,0</td>
<td>17.33</td>
</tr>
<tr>
<td>Hours large group</td>
<td>39,0</td>
<td>26.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h
## CONTENTS

### Topic 1. Basic computer architecture

**Description:**
Basic structure of a computer: memory, I/O and CPU. Description of the three subsystems. Representation of the information. Memory units. Process of implementation of a program.

**Full-or-part-time:** 7h  
Theory classes: 3h  
Laboratory classes: 2h  
Self study : 2h

### Topic 2. Basic programming concepts

**Description:**

**Full-or-part-time:** 25h 40m  
Theory classes: 12h  
Laboratory classes: 4h  
Self study : 9h 40m

### Topic 3. Flow control statements

**Description:**

**Full-or-part-time:** 32h  
Theory classes: 12h  
Laboratory classes: 4h  
Self study : 16h

### Topic 4. Data structures

**Description:**

**Full-or-part-time:** 38h  
Theory classes: 12h  
Laboratory classes: 6h  
Self study : 20h
**Topic 5. Functions**

**Description:**

**Full-or-part-time:** 40h 20m
- Theory classes: 16h
- Laboratory classes: 4h
- Self study: 20h 20m

**Topic 6. Files**

**Description:**
Management of files.

**Full-or-part-time:** 7h
- Theory classes: 3h
- Laboratory classes: 2h
- Self study: 2h

**GRADING SYSTEM**

Laboratory (40%) = (30% - 50%) Quizz + (70% - 50%) Project (Non-reevaluable act)
- Quizzes theorical (0% - 20%)
- Final exam (40% - 60%)

**BIBLIOGRAPHY**

**Basic:**

**Complementary:**