Course guide
820090 - PRE - Programming for Engineers

Unit in charge: Barcelona East School of Engineering
Teaching unit: 723 - CS - Department of Computer Science.

Degree:
- BACHELOR’S DEGREE IN BIOMEDICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).
- BACHELOR’S DEGREE IN MATERIALS ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: JAVIER FARRERES DE LA MORENA - FERRAN JUAN BARUEL
Others: Primer quadrimestre:
JAVIER FARRERES DE LA MORENA - T11, T12
FERRAN JUAN BARUEL - T11, T12

PRIOR SKILLS
This is a second programming course. Preferably it is desirable that the students have acquired already the basic programming
abilities (done in Informática Q1).

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Understand the basics behind the use and programming of PCs, operating systems, databases and software with applications in
engineering.

Transversal:
2. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment
(a final thesis, for example) based on a critical appraisal of the information resources used.

TEACHING METHODOLOGY
There are weekly one theory session and one practice session in computer laboratory. In parallel the students will propose and
develop a project. Some practice sessions along the course will be devoted to the proposal. Collaborative learning. Project based
learning (PBL).

LEARNING OBJECTIVES OF THE SUBJECT

Learning objectives:
1. Analyzing complex problems by means of mechanisms or reduction to smaller problems.
2. Introducing the student to the use of abstract data types.
3. Introducing the student to Object Oriented Programming.
4. Introducing the student to Event Oriented Programming and development of applications with graphical interface (GUI)
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
</tbody>
</table>

Total learning time: 150 h

CONTENTS

Introduction

Description:
Tasks and evaluation method is explained.

Full-or-part-time: 10h
Theory classes: 2h
Laboratory classes: 4h
Self study: 4h

Analysis and life cycle

Description:
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Full-or-part-time: 6h
Theory classes: 2h
Self study: 4h

Application design

Description:
Diverse methodologies of application design are explained and practiced.

Specific objectives:
- Diseño descendente
- Diseño modular
- Diseño orientado a objetos
- Diseño modular

Full-or-part-time: 36h
Theory classes: 14h
Laboratory classes: 2h
Self study: 20h
### Abstract data types

**Description:**

**Full-or-part-time:** 6h  
  Theory classes: 2h  
  Self study: 4h

### Programming in graphic environment

**Description:**  
Basic notions are explained need to program visual elements, and a project is developed.

**Full-or-part-time:** 20h  
  Laboratory classes: 10h  
  Self study: 10h

### (ENG) Desarrollo

**Description:**

**Full-or-part-time:** 8h  
  Theory classes: 4h  
  Laboratory classes: 4h

### GRADING SYSTEM

The subject is valued in successive deliverables of a project the student develops along the course. The various deliverables and their weights are the following:

- Visual Design 15%
- Competency Work 15%
- Object Oriented Design 20%
- Portfolio 20%
- Final Project 40%

### EXAMINATION RULES

There is no final exam.
BIBLIOGRAPHY

Basic: