Course guide  
300207 - I1 - Informatics I

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

Degree: BACHELOR’S DEGREE IN AEROSPACE SYSTEMS ENGINEERING (Syllabus 2015). (Compulsory subject).

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

LECTURER

Coordinating lecturer: CRISTINA BARRADO MUXI

Others: Primer quadrimestre:  
CRISTINA BARRADO MUXI - 2A11  
ENRIQUE PASTOR LLORENS - 2A11

Segon quadrimestre:  
CRISTINA BARRADO MUXI - 2A11, 2A12  
RUBEN HIDALGO CARRILLO - 2A31, 2A32  
MARIA CRISTINA MARINESCU - 2A21, 2A22  
M. ANGELICA REYES MUÑOZ - 2A21, 2A22

PRIOR SKILLS

None

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:  
CE3. CE 3 AERO. Conocimientos básicos sobre el uso y programación de los ordenadores, sistemas operativos, bases de datos y programas informáticos con aplicación en ingeniería. (CIN/308/2009, BOE 18.2.2009)

General:  
CG1. (ENG) CG1 - Capacidad para el diseño, desarrollo y gestión en el ámbito de la ingeniería aeronáutica que tengan por objeto, de acuerdo con los conocimientos adquiridos, los vehículos aeroespaciales, los sistemas de propulsión aeroespacial, los materiales aeroespaciales, las infraestructuras aeroportuarias, las infraestructuras de aeronavegación y cualquier sistema de gestión del espacio, del tráfico y del transporte aéreo.

CG2. (ENG) CG2 - Planificación, redacción, dirección y gestión de proyectos, cálculo y fabricación en el ámbito de la ingeniería aeronáutica que tengan por objeto, de acuerdo con los conocimientos adquiridos, los vehículos aeroespaciales, los sistemas de propulsión aeroespacial, los materiales aeroespaciales, las infraestructuras aeroportuarias, las infraestructuras de aeronavegación y cualquier sistema de gestión del espacio, del tráfico y del transporte aéreo.
**Transversal:**

CT6. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

CT3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world’s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.

CT7. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

CT4. 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.

CT5. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

**Basic:**

CB2. (ENG) CB2 - Que los estudiantes sepan aplicar sus conocimientos a su trabajo o vocación de una forma profesional y posean las competencias que suelen demostrarse por medio de la elaboración y defensa de argumentos y la resolución de problemas dentro de su área de estudio

CB3. (ENG) CB3 - Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética

CB4. (ENG) CB4 - Que los estudiantes puedan transmitir información, ideas, problemas y soluciones a un público tanto especializado como no especializado

CB5. (ENG) CB5 - Que los estudiantes hayan desarrollado aquellas habilidades de aprendizaje necesarias para emprender estudios posteriores con un alto grado de autonomía

**TEACHING METHODOLOGY**

Students should have and bring laptop with Internet connection by WiFi

- Teaching methodologies are: self-learning, cooperative learning, project based learning and peer-review

**LEARNING OBJECTIVES OF THE SUBJECT**

At the end of the course students shall be able to:

- Describe the most used functions of an operating system and give examples
- Write computer program using data structures, basic control statements, search algorithms, functions and file access.
- Be confident with an IDE (Integrated Developers Environment)
- Present work done in public
- Self-learning from a reference, search skills and self-corrections
- Work in group

**STUDY LOAD**

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities</td>
<td>23,0</td>
<td>15.33</td>
</tr>
<tr>
<td>Hours small group</td>
<td>43,0</td>
<td>28.67</td>
</tr>
<tr>
<td>Self study</td>
<td>84,0</td>
<td>56.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h
CONTENTS

Operating systems

Description:
1.1 Functions and services of operating systems

Related activities:
Activity 1: Initiation to programming

Full-or-part-time: 10h
Laboratory classes: 3h
Guided activities: 1h 30m
Self study: 5h 30m

Basic elements of programming

Description:
2.1 Basic data structures
2.2 Conditional and iterative sentences
2.3 Vectors and matrices
2.4 Basic algorithmic schemas

Related activities:
Activity 1: Introduction to programming

Full-or-part-time: 40h
Laboratory classes: 12h
Guided activities: 6h
Self study: 22h

Advanced programming elements

Description:
3.1 Structures.
3.2 Files.
3.3 Functions.
3.4 Objects.
3.5 Graphics.

Related activities:
Activity 2: Project.

Full-or-part-time: 55h
Laboratory classes: 15h
Guided activities: 7h 30m
Self study: 32h 30m
Program development environment

Description:
4.1 Creation of projects
4.2 Building the project
4.3 Solving errors by debugging

Related activities:
Activity 1: Initiation to programming
Activity 2: Project

Full-or-part-time: 45h
Laboratory classes: 13h
Guided activities: 8h
Self study: 24h

ACTIVITIES

Initiation to programming

Description:
Guided and self-learning activities consist in reading/watching teaching materials, writing programs (with the support for auto-evaluation) and solving problems in pairs.
Class sessions have the following parts:
· Solving doubts from previous week in groups
· Teachers solving most frequent doubts
· Brief key theory class exposition
· Working in individual / pair assignments
Cooperative work is a key element in the methodology

Specific objectives:
At the end of the course the students shall be able to:
· Write correct programs in the selected programming language
· Select and apply correct schemas in simple programs
· Be able to create from scratch a project, build it and solve the errors that may have

Material:
· Self-learning documentation
· Programming environment
· Exercises notebook
· Weekly working plan
All material available in ATENEA

Delivery:
A list of deliverables (individual/group) are given, with at least one each week.
Presenting 80% of these deliverables in due time in a necessary condition to pass the course.
Some deliverables have Basic Learning Objectives exercises

Full-or-part-time: 75h
Laboratory classes: 21h 30m
Guided activities: 11h 30m
Self study: 42h
(ENG) TÍTOL ACTIVITAT 2: PROJECTE (CONJUNT AMB L’ASSIGNATURA TECNOLOGIA AEROESPACIAL I TRANSPORT AERI)

**Full-or-part-time:** 75h  
Laboratory classes: 21h 30m  
Guided activities: 11h 30m  
Self study: 42h

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**GRADING SYSTEM**

Defined at the course infoweb.

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**EXAMINATION RULES.**

Minimum of 80% of on-time deliverables.  
Basic Learning Objectives are given from the beginning of the course.

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**BIBLIOGRAPHY**

**Basic:**  

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**RESOURCES**

**Other resources:**  
Atenea