

Academic Year: ( 2022 / 2023 )

Review date: 27-05-2022

Department assigned to the subject: Department of Bioengineering and Aerospace Engineering

Coordinating teacher: GARCIA-HERAS CARRETERO, JAVIER

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

## OBJECTIVES

Familiarise the student with the System Engineering work, its challenges and the techniques used to perform it.

### Basic competences

CB6 To possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context

CB7 Students must know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study

CB8 Students must be able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments

CB9 Students must know how to communicate their conclusions and the knowledge and ultimate reasons that sustain them to specialized and non-specialized audiences in a clear and unambiguous way

CB10 Students must have the learning skills allowing them to continue studying in a way that will be largely self-directed or autonomous.

### General competences

CG2 Ability to make value judgments and prioritize in making conflicting decisions using systemic thinking.

CG3 Ability to analyze and correct the environmental and social impact of the technical solutions of any space system

CG4 Ability to work in multidisciplinary teams in a cooperative way to complete work tasks

CG5 Ability to handle the English, technical and colloquial language.

CG6 Ability to know adequately the business context of the professional sector, as well as to know and understand the applicable legislation in the exercise of the profession

### Specific competences

CE1 Ability to conceive space products that respond to the needs of the stakeholders, defining functions, concepts and architecture, as well as developing project management.

CE2 Ability to plan and develop the design of space products in their different phases.

CE3 Ability to develop a complete system that meets the design specifications and the expectations of the interested parties. This includes the production of products; acquire, reuse or code products; integrate products in top-level assemblies; verify products against design specifications; validate the

products against the expectations of the interested parties; and the transition of products to the next level of the system.

CE4 Ability to manage technical activities during the life cycle of the project.

## DESCRIPTION OF CONTENTS: PROGRAMME

Common topics:

Subjects in this matter provide students with a solid understanding of systems engineering, requirements, verification and validation, as well as space project management. It allows presenting the breakdown of a spatial system into segments and subsystems, useful for understanding the rest of the subjects. It provides the tools that will be applied in the preliminary design and then in the design project.

Specific topics of each subject:

Space System Engineering. The program of the subject includes:

1. Fundamentals of System Engineering (SE)
2. Requirements Engineering
3. Project Phases and Models
4. Verification and Validation
5. System Engineering planning
6. Organization of the work
7. System Engineering tools
8. System Modelization
9. System Architectures

## LEARNING ACTIVITIES AND METHODOLOGY

Theory sessions in master classes  
Problem sessions in reduced groups  
Personal and group work

## ASSESSMENT SYSTEM

End-of-term exam (40%)  
Continuous evaluation (60%)

In order to pass the subject, two requirements need to be met:

- 1) to have a MINIMUM mark of 4.0/10 in the end-of-term exam;
- 2) to have a minimum overall mark of 5.0/10 (weighing 40% of the end-of-term exam mark and 60% of the mark of the continuous evaluation).

<b>% end-of-term-examination:</b>	40
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	60