Integral Project

Academic Year: (2021 / 2022)   **Review date: 08-07-2020**

Department assigned to the subject:

Coordinating teacher: MERINO MARTINEZ, MARIO

Type: Electives ECTS Credits : 12.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is recommended to have passed (or be enrolled in) all courses related to spacecraft subsystems, systems engineering, and project management.

OBJECTIVES

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

CG1 Capacity for the formulation, critical verification and defense of hypotheses, as well as the design of experimental tests for verification.
CG5 Ability to handle the English, technical and colloquial language.

Specific competences

CE15 Ability to develop a professional activity in an organization, being aware of the business and enterprise context.

DESCRIPTION OF CONTENTS: PROGRAMME

It is considered relevant for the present program that students can deepen and shape part of their space engineering curriculum according to their interests and motivations, in a personalized way. To this end, this elective course focuses on the development of supervised projects by the student (individually or in teams).

Examples of supervised projects are: development of a subsystem or spacecraft hardware; development and implementation of spacecraft or operations software; test of and experiments with space systems; advanced modeling and simulation of space systems and/or the space environment; development of new technologies.

The integral project might be continued in the Master thesis. A minimum of enrolled students can be required for this course to take place.

LEARNING ACTIVITIES AND METHODOLOGY

FORMATIVE ACTIVITIES OF THE CURRICULUM

AF1 Theoretical class
AF2 Practical classes
AF3 Practices in computer classroom
AF4 Laboratory practices
AF6 Group work
AF7 Individual student work
AF8 Evaluation activities

The course will initiate with a series of masterclasses (AF1 and AF2).
The integral project will make use predominantly of activities AF6 and AF7. As a function of the particularities of each project (indivudual or in teams), a specific program will be designed with individual and collective office hours for the supervision of the projects.
Finally, continuous and final evaluation (AF8) will consist of the presentation of results by the students in oral and written form.

ASSESSMENT SYSTEM

Continuous evaluation (100%)
- Presentations on the project advances, intermediate milestones
- Intermediate progress meetings
- Attitude and participation in the course

Final exam (60%):
- Oral defense session of the integral project.
- Written report (final).

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

For the extraordinary evaluation, the grade will be the best grade of the two:
1) Grade of the extraordinary exam
2) Grade of the extraordinary exam (60%) plus continuous evaluation grade (40%).
It is still necessary to reach a MINIMUM of 4/10 in the exam and 5/10 in the global grade to pass the course.

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

 - NASA NASA SP-2016-6105 Systems Engineering Handbook, NASA, 2016