

Course guide

300283 - SE - Space Exploration

Last modified: 09/06/2023

Unit in charge: Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: 748 - FIS - Department of Physics.

Degree: MASTER'S DEGREE IN AEROSPACE SCIENCE AND TECHNOLOGY (Syllabus 2021). (Optional subject).

Academic year: 2023 **ECTS Credits:** 5.0 **Languages:** English

LECTURER

Coordinating lecturer: Defined in the course webpage at the EETAC website.

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CE1 MAST21. Apply the scientific method to the study of the particular phenomenology of the aerospace environment.
CE2 MAST21. Apply systems engineering in the aerospace environment for the design and management of the different technological aspects associated with a mission.
CE3 MAST21. Carry out, present and publicly defend a research work carried out in a group, on a research topic in the aerospace field.

Generical:

CG2 MAST. Identify and apply the fundamental theoretical, experimental and numerical analyzes currently used in aerospace engineering.
CG3 MAST. Identify and consistently manage the different types of aerospace vehicles and the technological, design and implementation aspects of payloads for scientific missions.

Transversal:

CT3. TEAMWORK: Being able to work in an interdisciplinary team, whether as a member or as a leader, with the aim of contributing to projects pragmatically and responsibly and making commitments in view of the resources that are available.

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Managing the acquisition, structuring, analysis and display of data and information in the chosen area of specialisation and critically assessing the results obtained.

CT5. FOREIGN LANGUAGE: Achieving a level of spoken and written proficiency in a foreign language, preferably English, that meets the needs of the profession and the labour market.

Basic:

CB9. Students will be able to communicate their conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous manner.
CB10. Students will acquire learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

TEACHING METHODOLOGY

Lectures.
Paper discussions.
Individual and team work.
Tutorials.

LEARNING OBJECTIVES OF THE SUBJECT

To provide knowledge of the main activities carried out on space exploration by space agencies, industry and academia.

To provide knowledge of the current and future research to support space exploration.

STUDY LOAD

Type	Hours	Percentage
Self study	80,0	64.00
Hours large group	45,0	36.00

Total learning time: 125 h

CONTENTS

Space Exploration

Description:

1. Introduction to the course.
2. Space Exploration. Past, present, and future exploration plans of space agencies and industry: Moon, Mars and beyond.
3. Science for Exploration. ISRU.
4. Life Support Systems.
5. Energy management.

Full-or-part-time: 125h

Theory classes: 45h

Guided activities: 80h

GRADING SYSTEM

Defined in the course webpage at the EETAC website.

RESOURCES

Other resources:

Research papers.

www.esa.int

www.nasa.gov