Course guide
205089 - 205089 - The Space Environment

Last modified: 02/04/2024

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 748 - FIS - Department of Physics.

Degree: MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Optional subject).
MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Optional subject).

Academic year: 2024 **ECTS Credits:** 3.0 **Languages:** English

LECTURER

Coordinating lecturer: Manel Soria

Others: Jordi Gutiérrez

PRIOR SKILLS

Knowledge of Satellites Design

TEACHING METHODOLOGY

Lectures and design projects

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours large group	27,0	36.00
Self study	48,0	64.00

Total learning time: 75 h

CONTENTS

The Space Environment and its Effects on Spacecraft Design

Description:
1. Introduction.
2. The gravitational field
3. The magnetic field and the van Allen belts
4. Neutral environment: the high atmosphere
5. The plasma environment
6. Cosmic rays
7. Meteoroids and Space Debris

Related activities:
Use of Spenvis

Full-or-part-time: 75h
Theory classes: 27h
Self study : 48h

GRADING SYSTEM

Class participation and class exercices: 30%
Assignment: 30%
Project: 40%
Students with a grade below 5.0 in the project, or the assignments, or the classroom participation, will be able to take an additional written exam covering all the subject, that will take place in the date fiexed in the calendar of final exams. The grade obtained in this exam will range between 0 and 10, and will replace the part or parts below 5.0 only in case it is higher, up to a maximum of 5.0 points. The additional exam will be done on the appointed day for the reconduction of bimonthly subjects in the academic calendar.

BIBLIOGRAPHY

Basic:
- Pisacane, Vicent L. The space environment and its effects on space systems. 2nd. Reston: AIAA Education Series, 2016. ISBN 9781624103537.
- Tribble, Alan C. The space environment: implications for spacecraft design [on line]. Princeton: Princeton University, 2003 [Consultation: 16/07/2024]. Available on: https://www-degruyter-com.recursos.biblioteca.upc.edu/document/doi/10.1515/9780691213071/html. ISBN 0691102996.