Course guide
220007 - C2 - Calculus II

Last modified: 10/07/2023

Unit in charge:	Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit:	749 - MAT - Department of Mathematics.

Degree:	BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).
	BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2023   **ECTS Credits:** 6.0   **Languages:** Catalan

LECTURER

Coordinating lecturer:	ANTONIO MAGAÑA NIETO

Others:	JAUME HARO
	ANTONI GUILLAMON

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. The ability to solve mathematical problems that may arise in an engineering context. The ability to apply knowledge of linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithms; statistics and optimisation

Generical:
2. THE ABILITY TO ANALYSE AND SYNTHESISE: The ability to think abstractly about the fundamental concepts of a text or exposition and to intelligibly present the result of one's work.

TEACHING METHODOLOGY

· Attendance theory lessons.
· Attendance exercises lessons.
· Autonomous work.

In theory lessons there will be introduced the basic concepts and results of each topic, as well as examples and practical instances
In practical lessons the students are due to solve exercises and problems that would help them to understand the theory concepts.
On the other hand, the students are due to solve a collection of problem, both during lessons and autonomous work. Along the course, a tracing of the learning of the student will be made. As a reference, there will be a solved problem collection available. Teachers will set doubts hours.

LEARNING OBJECTIVES OF THE SUBJECT

Provide the basic concepts of differential and integral calculus in several variables. Introduce the concept of parameterization of a curve and a surface. Introduce the vector calculus and it more relevant applications.

STUDY LOAD

Type	Hours	Percentage
Hours large group	32,0	21.33
Hours medium group	28,0	18.67
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

1. Curves.

Description:

Related activities:

Full-or-part-time: 21h 02m
Theory classes: 4h 27m
Practical classes: 3h 44m
Self study : 12h 51m

2. Introduction to several variables functions.

Description:

Related activities:

Full-or-part-time: 14h 58m
Theory classes: 2h 40m
Practical classes: 3h 44m
Self study : 8h 34m

3. Differential calculus.

Description:

Related activities:

Full-or-part-time: 39h 02m
Theory classes: 8h
Practical classes: 7h 28m
Self study : 23h 34m

4. Integral calculus.

Description:

Related activities:

Full-or-part-time: 33h 15m
Theory classes: 6h 13m
Practical classes: 5h 36m
Self study : 21h 26m

5. Vector analysis.

Description:

Related activities:

Full-or-part-time: 41h 43m
Theory classes: 10h 40m
Practical classes: 7h 28m
Self study : 23h 35m

GRADING SYSTEM

Continouos avaluation: 25%
Midterm exam: 25%
Final exam: 50%

EXAMINATION RULES.

The final and midterm exams are individually developed. The teacher may ask the students to identify themselves.

BIBLIOGRAPHY

Basic:
- Marsden, Jerrold E.; Tromba, Anthony. Cálculo vectorial [on line]. 6a ed. Madrid: Pearson, 2018 [Consultation: 14/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7634. ISBN 9788490355787.
- Leseduarte Milán, Ma. Carme [et al.]. Càlcul II: Problemes. Terrassa: Omnia Science, 2014. ISBN 978-84-941872-5-4.
- Rogawski, Jon. Cálculo. Vol. 2, Varias variables [on line]. 2ª ed. original. Barcelona: Reverté, cop. 2012 [Consultation: 14/06/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5635410. ISBN 9788429151749.

Complementary:
- Salas, Saturnino L [et al.]. Calculus: una y varias variables, vol. 2 [on line]. 4a ed. Barcelona: Reverté, 2002 [Consultation: 14/06/2022]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?docID=5635415&query=Calculus%3A+una+y+varias+variables. ISBN 9788429151589.
- Fàbrega, Albert [et al.]. Exàmens de càlcul resolts. 2a ed. Terrassa: Cardellach Còpies, 2004. ISBN 848497877X.