

220002 - Calculus I

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering		
Teaching unit:	749 - MAT - Department of Mathematics		
Academic year:	2019		
Degree:	BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)		
ECTS credits:	6	Teaching languages:	Catalan

Teaching staff

Coordinator:

Magaña Nieto, Antonio

Others:

Saludes Closa, Jordi
Llongueras Arola, Maria Dolors

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

Teaching methodology

- Attendance sessions of exposition of the contents
- Attendance sessions of practical work.
- Self-developed study and realization of exercises.

During theory lessons the basic concepts will be introduced, as well as examples and practical cases. In the practical lessons, the students are due to solve problems in order to help them to understand the concepts and to acquire the ability of correctly expressing themselves.

The students are due to solve a problems collection during both attendance and not attendance work.

A solved list of problems will be available in order to be a reference for the students.

Learning objectives of the subject

Providing basic knowledge about differential and integral calculus in one variable. Introduction to complex numbers.

Study load

Total learning time: 150h	Hours large group:	32h	21.33%
	Hours medium group:	28h	18.67%
	Self study:	90h	60.00%

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Content

1. Numbers and functions	Learning time: 22h 10m Theory classes: 3h 34m Practical classes: 4h 40m Self study : 13h 56m
2. Derivation	Learning time: 26h 34m Theory classes: 6h 13m Self study : 20h 21m
3. Integration	Learning time: 49h 44m Theory classes: 10h 13m Practical classes: 11h 40m Self study : 27h 51m
4. Series and sequences	Learning time: 51h 32m Theory classes: 12h Practical classes: 11h 40m Self study : 27h 52m

Planning of activities

ACTIVITY 1. MIDTERM EXAM	Hours: 3h Theory classes: 3h
ACTIVITY 2. FINAL EXAM	Hours: 3h Theory classes: 3h
ACTIVITY 3: THEORY SESSIONS AND PRACTICES	Hours: 144h Theory classes: 26h Practical classes: 28h Self study: 90h

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Qualification system

Continuous assessment: 25%
First midterm exam: 25%
Final exam: 50%

Regulations for carrying out activities

The final and the partial exams are due to be done individually. The teacher may ask the students to identify themselves.

Bibliography

Basic:

Salas, Saturnino L. [et al.]. Calculus : una y varias variables [on line]. 4a ed. Barcelona: Reverté, 2002 [Consultation: 16/07/2019]. Available on: <http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7715>. ISBN 8429151567.

Leseduarte Milán, Ma. Carme [et al.]. Càlcul I : problemes i exercicis. Terrassa: UPC. ETSEIT. Departament de Matemàtica Aplicada II, 2003. ISBN 846883369X.

Complementary:

Fàbrega Enfedaque, Albert [et al.]. Exàmens de càlcul resolts. Terrassa: Cardellach Còpies, 1998.

Larson, Ron [et al.]. Cálculo, vol. 1, Cálculo con geometría analítica. Madrid: McGraw-Hill, 2006. ISBN 9701052749.

Magaña Nieto, Antonio [et al.]. Càlcul I : problemes resolts. Barcelona: Edicions UPC, 1994. ISBN 8476534434.

Guzmán, Miguel. Problemas, conceptos y métodos del análisis matemático : estrategias del pensamiento matemático. Madrid: Pirámide, 1990-1993. ISBN 8436805542.

Spivak, Michael. Càlcul infinitesimal. Barcelona: Reverté, 1995. ISBN 8429151370.

Apostol, Tom M. Calculus, vol. 1, Cálculo con funciones de una variable, con una introducción al álgebra lineal. Barcelona: Reverté, 1972. ISBN 8429150013.

Others resources: