

29700 - Mathematics I

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	434 - Bachelor's Degree in Mechanical Engineering
ECTS	6.0
Year	1
Semester	Half-yearly
Subject Type	Basic Education
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, autonomous work, and tutorials.

Students are expected to participate actively in the class throughout the semester .

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

5.2.Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (1'68 ECTS): 42 hours.
- Laboratory sessions (0'48 ECTS): 12 hours.
- Guided assignments (0'24 ECTS): 06 hours.
- Autonomous work (3'6 ECTS): 90 hours.

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the semester. Lectures run for 3 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions: sessions will take place every 2 weeks (6 sessions in total) and last 2.5 hours each. Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

Guided assignments: students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures. They will be submitted at the beginning of every laboratory sessions to be discussed and analyzed. If assignments are submitted later, students will not be able to take the assessment test.

Autonomous work: students are expected to spend about 90 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

5.3.Syllabus

The course contents are divided into two main groups:

Block 1: Differential Calculus. Analytical and numerical methods:

- Fundamental concepts (function, limit, continuity, derivability and differentiability).
- Polynomial approximation. Numerical methods.
- Applications.

Block 2: Integral Calculus. Analytical and numerical methods:

- Indefinite integral.
- Defined integral.
- Applications.

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Escuela de Ingeniería y Arquitectura " website (<https://eina.unizar.es/>)

5.5.Bibliography and recommended resources

[BB: Basic Bibliography / BC: Additional Bibliography]

- [BB] Barragués, José Ignacio. Análisis matemático con soporte interactivo en Moodle / José Ignacio Barragués Fuentes, Iera Arrieta Cortajarena , María Juncal Manterola Zabala Madrid : Prentice Hall, 2010
- [BB] Cálculo diferencial e integral I. Problemas resueltos / Ernesto Javier Espinosa Herrera (coordinador) ; Ignacio Canals Navarrete ... [et al.] . - 1ª ed. México D. F. : Reverté : Departamento de Ciencias Básicas, Universidad Autónoma Metropolitana, 2008
- [BB] Cálculo I : teoría y problemas de análisis matemático en una variable / Alfonso García López ... [et al.] . - 2ª ed. [Madrid] : Clagsa, D. L. 1998
- [BB] Curso práctico de cálculo y precálculo / Domingo Pestana...[et al.] Barcelona : Ariel, D.L. 2000
- [BB] Edwards, Charles Henry, Jr.. Cálculo diferencial e integral / C.H. Edwards, Jr., David E. Penney . - 1a ed. en español México [etc.] : Prentice Hall Hispanoamericana, cop. 1997
- [BB] Larson, Ron. Cálculo 2 de varias variables / Ron Larson, Bruce H. Edwards ; revisión técnica, Marlene Aguilar Abalo ... [et al.] ; [traducción: Joel Ibarra Escutia ... (et al.)] . 9ª ed. México [etc.] : McGraw Hill, cop. 2010
- [BB] Larson, Ron. Cálculo I / Ron Larson, Robert P. Hostetler, Bruce H. Edwards ; traductores, Sergio Antonio Durán Reyes ... [et al.] ; revisores técnicos, María del Carmen Hano Roa, José Job Flores Godoy, Lorenzo Abellanas Rapún. - 8ª ed. México [etc.] : McGraw-Hill, cop. 2006
- [BB] Leris López, María Dolores. Ejercicios resueltos de cálculo infinitesimal / Mª Dolores Leris López, Jesús Ma. Montaner Lavedán, Zenaida Uriz Ayestarán Zaragoza : [los autores], D.L.1991
- [BB] Salas, Saturnino L.. Calculus : una y varias variables / Salas, Hille, Etgen . - 4ª ed. española, reimp. / actualización de la 4ª ed. española correspondiente a la 8ª ed. en inglés y revisión de la obra, Carles Casacuberta Vergés Barcelona : Reverté, D.L. 2005-2007
- [BB] Stewart, James. Cálculo : conceptos y contextos / James Stewart ; [traducción, Joaquín Ramos Santalla] . - 3ª ed. México [etc.] : International Thomson Editores, cop. 2006
- [BB] Thomas, George B. Cálculo : una variable / George B. Thomas Jr., ; revisado por Maurice D. Weir, Joel Hass, Frank R. Giordano ; traducción, Elena de Oteyza de Oteyza, Víctor Hugo Ibarra Mercado ; revisión técnica, Carlos Bosch Giral... [et al.] . - 11a. ed. México [etc.] : Pearson Educación de Mexico, cop. 2005