Universidad Zaragoza

Year : 2020/21

26803 - Mathematics

Syllabus Information

Academic Year: 2020/21
Subject: 26803 - Mathematics
Faculty / School: 100 - Facultad de Ciencias
Degree: 297 - Degree in Optics and Optometry
ECTS: 9.0
Year: 1
Semester: Annual
Subject Type: Basic Education
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as theory sessions, autonomous works, courseworks, group works and assignments.

Students are expected to participate actively in the class.

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.

4.2.Learning tasks

This is a 9 ECTS course organized as follows:

? **Lectures** (6 ECTS: 60 hours). Lecture notes and a set of problems (and their corresponding solutions) will be available for the students. At the end of each topic, some of the problems will be solved in class by the teacher and the rest will be done individually. The lecturer will also assign, from those unsolved problems, -2 problems to groups of 4-5 students, which they will submit to the teacher.

? **Laboratory sessions** (1.5 ECTS: 15 hours). Two-hour sessions that take place approximately every 2-3 weeks. Students are provided in advance with task guidelines for each session.

? **Assignments** (1.5 ECTS: 15 hours). Individually or in small groups on lab reports and different assignments during the course.

4.3.Syllabus

The course will address the following topics:

1.- Geometry and Trigonometry

2.- Linear equations. Matrices. Transformations.

3.- Complex numbers.

4.- Real functions. Continuity. Derivability.

5.- Plane curves. Representations. Conics.

6.- Functions of several variables.

7.- Integration. Applications.

8.- Power series.

9.- Surfaces. Representations.

4.4.Course planning and calendar

Information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the "Facultad de Ciencias" website and the department website (https://ciencias.unizar.es, ...).

4.5.Bibliography and recommended resources

BB Abellanas Rapun, Lorenzo. Teoría y problemas de métodos de cálculo / Lorenzo Abellanas Rapún, Alberto Galindo Madrid [etc] : McGraw-Hill, 1989

BB Ayres, Frank. Cálculo / Frank Ayres, Elliot Mendelson ; traducción Yelka María García . - 4ª ed. Bogotá [etc.] : McGr

BB Ayres, Frank. Teoría y problemas de matrices / Frank Ayres, Jr. México, D.F. [etc.] : McGraw-Hill, 1983

BB Curso práctico de cálculo y precálculo / Domingo Pestana...[et al.] Barcelona : Ariel, D.L. 2000

BB Stewart, James. Cálculo : conceptos y contextos / James Stewart ; [traducción, Joaquín Ramos Santalla] . - 3ª ed. M International Thomson Editores, cop. 2006

BC Apostol, Tom M.. Calculus. Vol.1, Cálculo con funciones de una variable, con una introducción al álgebra lineal / Tor reimp. Barcelona [etc.] : Reverté, cop. 2002

BC Apostol, Tom M.. Calculus. Vol.2, Cálculo con funciones de varias variables y álgebra lineal, con aplicaciones a las diferenciales y a las probabilidades / Tom M. Apostol. - 2ª ed., 7ª reimp. Barcelona, [etc.] : Reverté, D.L. 2002

BC Ayres, Frank. Teoría y problemas de cálculo diferencial e integral / Frank Ayres ; traducción y adaptación, Luis Gutié Gutiérrez Vázquez . Madrid [etc.] : McGraw-Hill, D.L. 1988

BC Ayres, Frank. Teoría y problemas de trigonometría plana y esférica / Frank Ayres ; traducción y adaptación Antonio : McGraw-Hill, cop.1970 (imp.1987)

BC Bartle, Robert G.. Introducción al análisis matemático de una variable / Robert G. Bartle, Donald R. Sherbert . - 2a e [etc] : Limusa, 2000

BC Bradley, Gerald L.. Cálculo de una variable / Gerald L. Bradley, Karl J. Smith ; traducción, José Luis Vicente Córdob Pedro Paúl Escolano . - [1a. ed. en español] Madrid [etc.] : Prentice Hall, cop. 1998

BC Bradley, Gerald L.. Cálculo de varias variables / Gerald L. Bradley, Karl J. Smith ; traducción, José Luis Vicente Cór técnica, Pedro Paúl Escolano Madrid [etc.] : Prentice Hall, D.L. 1998

BC Brickell, F.. Matrices y espacios vectoriales / F. Brickell . - 1a. ed. México : Limusa, 1974

BC Durán, Antonio J.. Historia con personajes de los conceptos del cálculo / Antonio José Durán Madrid : Alianza, D.L.

BC Lang, Serge. Cálculo / Serge Lang ; versión española de Federico Velasco Coba, Manuel López Mateos, Hugo Pere Fondo educativo interamericano, imp. 1976

BC Spiegel, Murray R.. Fórmulas y tablas de matemática aplicada / Murray R. Spiegel, John Liu, Lorenzo Abellanas Ra Madrid [etc] : MacGraw-Hill, D.L. 2004