

26803 - Mathematics

Syllabus Information

Academic Year: 2019/20

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 d 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 Córdoba 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 Córdoba 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 Per 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