

30701 - Mathematics 1

Syllabus Information

Academic Year: 2020/21

Subject: 30701 - Mathematics 1

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 470 - Bachelor's Degree in Architecture Studies

ECTS: 6.0

Year: 1

Semester: First semester

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 lectures, computer sessions, problem-solving sessions, group work, autonomous work, tutorials, and exams.

Most of the central ideas and topics are given in lectures to the whole group of students. They break up into small groups of 15 to 20 students for computer sessions. The problem-solving sessions allow students to work out practically under the close assistance and guideline of the teacher. In addition, there are computer sessions every two weeks which allow to emphasize numerical aspects of the course.

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

For the proper monitoring of the course, the student must perform an ongoing study from the first day of class. As a support, the student will have the assistance of the teacher, both in the classroom and in tutorials.

4.2.Learning tasks

This course is organized as follows:

- **Lectures**
- **Computer sessions**
- **Proble-solving sessions**

- **Group work**
- **Autonomous work and study**
- **Tutorials**
- **Exams**

4.3.Syllabus

This course will address the following topics:

Algebra

- Algebraic structures.
- Linear spaces. Properties.
- Linear applications. Matrix representation.
- Diagonalization. Applications.

Affine and euclidean geometry

- Geometrical applications of linear Algebra. Basic concepts on affine geometry and its most important elements.
- Metric geometry. The golden proportion.

Calculus. Functions of one variable

- Real functions of real variable. Limits and continuity.
- Derivability. Applications.
- Approximation.
- Integration. Geometrical applications.
- Numerical methods of solving equations. Approximation and interpolation of real functions of real variable.

4.4.Course planning and calendar

- Deadlines for intermediate examinations and submission of group work will be announced in advance.

Further 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 College of Higher Engineering and Architecture (EINA) website (<https://eina.unizar.es/>) and Moodle.

4.5.Bibliography and recommended resources

- David C. Lay, ?Álgebra lineal y sus aplicaciones?
Pearson Addison Wesley (3ª Ed.), 2007.
- Gilbert Strang, ?Álgebra lineal y sus aplicaciones?
International Thomson, (4ª Ed.), 2007.
- Salas, Hille y Etgen, ?Calculus. Una y varias variables?
Reverté, (4ª Ed.), 2002