Universidad Zaragoza

Academic Year/course: 2022/23

29900 - Mathematics I

Syllabus Information

Academic Year: 2022/23
Subject: 29900 - Mathematics I
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 435 - Bachelor's Degree in Chemical Engineering
ECTS: 6.0
Year: 1
Semester: First semester o Second semester
Subject Type: Basic Education
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process designed for this course is based on:

- The attitude of the teacher that, even using conventional lessons in order to communicate most of the contents, will apply them in the classes to the practical resolution of the exercises and consolidate the concepts introduced, fostering the participation of the students. The scholars must feel that the teacher is accessible and receptive to the resolution of doubts and problems.

-The attitude of the student, that we believe it should be active and participative. The scholars dispose of, on the one hand, computer classes aiming at their participation, on the other, teamwork which seeks to inspire commitment with teacher and fellows. The student must remember that he should work/study from the beginning of the course.

4.2. Learning tasks

The program offered to the student in order to achieve the expected results includes the following activities.

Classroom lessons. In this type of learning, the teacher exposes most of the contents of the course including, possibly, some proofs. No distinction is made between theory and problems hours. They are structured in an introduction to the topic, some theoretical contents and practical exercises to consolidate what has been learnt.

The student will dedicate three hours per week to this type of activity, to which will be added those necessary to carry out the teaching assignment of the course. It is strongly recommended the student not to miss an hour. Daily study and participative attitude are strongly helpful.

Computer lessons. In the T3 practices of the course, mathematical algorithms are analyzed and programmed by means of symbolic and numerical programming software installed in the EINA computer laboratories. The student will have a script of the topic that the student will have to develop in each session.

In this activity, the student spends 12 hours divided into sessions of two hours every two weeks.

Group meetings (with the teacher), to perform supervised works whenever the scholars require support and guidance. They use the class stuff and the references for the course. In those meetings, the teacher may ask some

questions related to the topic in order to evaluate the knowledge of the matters included.

Tutorials. The teacher deals with the specific needs of each student on a more personal basis.

Individual work. The student should review the information given in order to understand the following lessons, to do outlines, summaries and exercises of the subjects involved. The teacher provides collections of problems to the student in order to achieve the objectives of the course. Their resolution is not compulsory, and it does not take part in the evaluation process, but it is strongly recommended.

4.3. Syllabus

The course will address the following topics:

1. Real numbers. Elementary real functions
2. Complex numbers. Elementary complex functions.
3. Differential calculus in one variable. Numerical resolution of equations.
4. Approximation of functions. Taylor's formula. Interpolation.
5. Integral calculus of functions of one variable. Numerical integration.
6. Differential calculus of functions of several variables.
7. Integral calculus of functions of several variables.
8. Numerical series and power series.

4.4. Course planning and calendar

Schedule of on-site classes and presentation of teamwork.

Classes and practical sessions in the laboratory are held according to the schedule and times established by the Engineering School, available on its website.

Each teacher will inform about the office hours.

Other activities will be planned and announced well in advance.

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=29900