

## 28800 - Mathematics I

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 28800 - Mathematics I

**Faculty / School:** 175 - Escuela Universitaria Politécnica de La Almunia

**Degree:** 424 - Bachelor's Degree in Mechatronic Engineering

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject type:** Basic Education

**Module:**

### 1. General information

The basic mathematical methods which form part of the number of tools with which all engineers must count on to solve any problem that might appear on their work. This subject provides the student with the capacity to solve mathematical problems that might appear in engineering about differential and integral calculus.

### 2. Learning results

1. Applying the basic concepts of differential and integral calculus, linear algebra, statistic and probability.
2. Knowledge of the specific mathematical software and its use on the problem solving.
3. Knowledge of mathematical terminology, notation and methods.
4. Critical analysis of the obtained results.

### 3. Syllabus

1. Complex numbers
2. Real functions of a real variable. Limits and continuity.
3. Differential calculus in one variable functions.
4. Integral calculus in one variable functions.
5. Functions of various variables. Limits and continuity.
6. Differential calculus in various variables functions.

### 4. Academic activities

- **Theoretical lessons**, in which the fundamental concepts are explained complemented by detailed examples to illustrate them.
- **Practical lessons** in which problems that must be solved using the concepts and methods previously considered and the support of specific software are proposed.
- **Assessment.**
- **Autonomous work** (individual or group).

### 5. Assessment system

There will be **two written tests** along the term. They will test theoretical and practical aspects of the subject. They are related to learning results 1, 2, 3 and 4. Their weight in the final grade will be 50% each.

Final grade (100 %) will be calculated considering each evaluation assessment, without having to reach a minimum grade in each of the tests. To pass the subject, the student must obtain a grade equal or higher than 50 %.

If the student has not passed any of these activities during the semester, they will have the opportunity to pass the subject by means of a **global test** in the two official exams.

**Assessment criteria:** The assessment criteria are the same. The following will be valued:

- understanding of the mathematical concepts used to solve the problems;
- use of strategies and efficient proceedings for their resolution,
- clear and detailed explanations with justification for the answers,
- absence of mathematical errors in the development and the solutions,
- adequately interpret the results obtained,

- correct use of terminology and notation,
- organised and clear presentation.

## **6. Sustainable Development Goals**

- 4 - Quality Education
- 5 - Gender Equality
- 9 - Industry, Innovation and Infrastructure