

## 30100 - Mathematics I

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 30100 - Mathematics I

**Faculty / School:** 175 - Escuela Universitaria Politécnica de La Almunia  
179 - Centro Universitario de la Defensa - Zaragoza

**Degree:** 425 - Bachelor's Degree in Industrial Organisational Engineering  
563 - Bachelor's Degree in Industrial Organisational Engineering

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject type:** Basic Education

**Module:**

### 1. General information

Basic mathematical methods are part of the many tools that all professionals in Engineering must have to solve the problems that arise in their work. This subject belongs to the basic training module and provides students with the ability to solve mathematical problems that may arise in engineering: differential and integral calculus.

**Defence profile:** The curriculum is in the process of being phased out. The content of this teaching guide is the same as that of the 2023-2024 academic year. It can be consulted on this same website by selecting the aforementioned academic year at the top

### 2. Learning results

1. Solves mathematical problems that may arise in Engineering.
2. Have the ability to apply the acquired knowledge of Differential and Integral Calculus; Numerical Methods and Numerical Algorithms.
3. Know how to use numerical methods in the solution of some mathematical problems.
4. Knows the reflexive use of symbolic and numerical calculation tools
5. Possess scientific-mathematical thinking skills that allow them to ask and answer certain mathematical questions.
6. Be skilled in handling mathematical language; in particular, symbolic and formal language.

### 3. Syllabus

#### COMPANY PROFILE

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

### 4. Academic activities

#### COMPANY PROFILE

- **Theoretical classes**, in which the fundamental concepts are presented, complemented with detailed examples that illustrate them.
- **Practical classes**, in which problems are proposed to be solved using the concepts and methods previously considered and with the support of specific computer software.
- **Assessment tests**.
- **Personal work of the student** (individually or in groups).

### 5. Assessment system

#### COMPANY PROFILE

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, 4, 5 and 6. Their weight in the final grade will be 50% each.

The final grade (100%) will be calculated by adding weighted the grade of each evaluation milestone, without the requirement of to achieve a minimum grade in each of the tests. In order to pass the course, the student must obtain a final 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
- orginsed and clear presentation.

## 6. Sustainable Development Goals

4 - Quality Education

5 - Gender Equality

9 - Industry, Innovation and Infrastructure