## GENERAL INFORMATION

| Data of the subject | |
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| **Subject name** | Engineering drawing and CAD |
| **Subject code** | DIM-GITI-121 |
| **Mainprogram** | Bachelor's Degree in Engineering for Industrial Technologies |
| **Involved programs** | Grado en Ingeniería en Tecnologías Industriales [First year] |
| **Credits** | 7,5 ECTS |
| **Type** | Obligatoria (Grado) |
| **Department** | Department of Mechanical Engineering |

| Teacher Information | |
|---|---|
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# DESCRIPTION OF THE SUBJECT

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|---|---|
| **Department** | Department of Mechanical Engineering |
| **EMail** | fcmanriquelara@icai.comillas.edu |

## Contextualization of the subject

### Prerequisites

No prerequisites are required, although it is recommended to know the basic foundations of geometry and drawing studied in the high school courses.

## Course contents

### Contents

The basic lines contained in the program are articulated around the fundamental concepts of graphic expression aimed at realization of technical plans.

1. **Normalization**.

Norm concept. standardized formats. Line thickness and types. Scales. Lettering.

2. **Industrial drawing**.

Normalized views: Elevation, plan and profile. Projection methods: European and American. Auxiliary Views. Sections and sectional views. Conventionalisms. Dimensioning.

3. **Mechanical Assemblies.**

Assembly drawing. Bill of materials. Threaded elements. Normalized mechanical elements.

4. **Descriptive geometry**.

Application of the techniques of descriptive geometry for the representation of parts.

5. **Tolerances.**

Basic concept. Tolerance, precision and uncertainty. Interchangeability. Caliber. Dimensional, geometric and surface tolerance. Graphic representation.

6. **Computer Aided Design.**

2D CAD: representation, reuse, dimensioning and printing.

3D CAD: Parametric design. Drawings. modeling of assemblys. Rapid prototyping.

## EVALUATION AND CRITERIA

## Grading

The final mark of the subject will be as follows, both in the ordinary call and in the extraordinary:

- Short tests in class **10%**
- Homework **20%**
- Midterm exam **10%**
- CAD Final Exam (minimum grade of 4.0) **20%**
- Final Exam (minimum grade of 4.0) **40%**

In case of not exceeding the minimum mark in one or both final exams, the mark that will appear in the record will be the minimum of the one obtained in these final exams.

Additionally, the final grade can be seen increased depending on the work in CAD class: a positive evaluation in more than 85% of sessions and a CAD exam grade greater than 5.0 adds 0.5 extra points.

Class attendance is mandatory and will be checked every day. The absence of more than 15% of the teaching hours or the non-delivery of the Internships may result in the impossibility to apply for the final exams both in the ordinary call and in the extraordinary.

During exams:

- The student must bring their own drawing material, which cannot be loaned or exchanged between students.
- The use of programmable calculators will not be allowed.
- The use of books, notes or forms that could falsify the results of the exam will not be allowed, except those provided with the test statement if any.
- Mobile phones must remain off, inside the backpack, purse or folder and away from the student.
- It is not allowed to attend the exam with a smartwatch or any other device that allows the connection or storage of data.

## BIBLIOGRAPHY AND RESOURCES

### Basic References

Jesús Felez, Mª Luisa Martinez. Ingeniería Gráfica y Diseño. Editorial Sintesis, 2008.