

## 29806 - Graphic expression and computer-assisted design

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 29806 - Graphic expression and computer-assisted design

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

326 - Escuela Universitaria Politécnica de Teruel

**Degree:** 440 - Bachelor's Degree in Electronic and Automatic Engineering

444 - Bachelor's Degree in Electronic and Automatic Engineering

**ECTS:** 6.0

**Year:** 1

**Semester:** 440-First semester o Second semester

107-First semester o Second semester

444-Second semester

**Subject type:** Basic Education

**Module:**

### 1. General information

Graphic Expression and Computer Aided Design is a compulsory subject whose fundamental contents are the standardization of industrial drawing, representation system and computer aided design. The student must have a previous general knowledge of the contents of the subject of technical drawing of Bachillerato and specifically of the constructions of: triangles, quadrilaterals, regular polygons, geometric places, technical curves, conic curves and cyclic curves.

This is a subject whose evaluable contents alone do not yet provide the student with direct capabilities to contribute to the achievement of the 2030 Agenda, however, they are essential to base the subsequent knowledge of the rest of the degree that is more directly related to the SDGs and therefore to the 2030 Agenda.

### 2. Learning results

- Master the resolution of graphical problems that may arise in Engineering.
- Develop skills and abilities that allow expressing with precision, clarity and objectivity graphic solutions.
- Acquires the capacity of abstraction to be able to view an object from different positions in space.

### 3. Syllabus

#### Río Ebro Campus (Zaragoza).

The program of the subject is as follows:

- Standardization and Industrial Drawing. Introduction to Graphic Expression. Standardization and Computer Aided Design . Drawing tools and equipment. Formats, scales, line types and writing. Dihedral views.  
Thread representation. Cuts, sections. Annotation.
- Dihedral System. Point, straight line and plane. Intersections. Parallelism and perpendicularity. Changes of projection planes. Single and double auxiliary views. Turns. Downgrades. Distances measurement.
- Surfaces. Apparent contour, representation and generation. Flat sections. Transforms and geodesics.  
Intersection with straight line. Developments.

Practical classes:

- CAD package commands.
- Use of symbol libraries.
- Explanation of the CAD package commands.
- Use of symbol libraries with blocks and attributes.
- Performance of application exercises in 2D of increasing complexity.

#### Teruel Campus.

The program of the subject is as follows:

Theory (30 hours):

- Standardization and Industrial Drawing. Introduction to Graphic Expression. Standardization and Computer Aided Design . Drawing tools and equipment. Formats, scales, line types and writing. Dihedral views - Representation of threads. Cuts, sections. Annotation.
- Dihedral System. Point, straight line and plane. Intersections. Parallelism and perpendicularity. Changes of projection

- planes. Single and double auxiliary views. Turns. Downgrades. Distances measurement.
- Surfaces. Apparent contour, representation and generation. Flat sections. Transforms and geodesics.

Intersection with straight line. Developments.

Practices (30 hours):

- CAD package commands.
- Explanation of the CAD package commands.
- Performance of application exercises in 2D and 3D of increasing complexity.

## 4. Academic activities

### Río Ebro Campus (Zaragoza).

- In the theory classes (15 hours), the contents of Standardization of Industrial Drawing and Industrial Systems will be presented

Representation, with each topic illustrated with numerous examples.

- In the problem classes (29 hours), the students will solve the exercises under the supervision of the teacher.
- The laboratory practices (15 hours) will be developed in small groups, where the student will use the Computer Aided Design software for the execution of the proposed exercises.
- For the proposed assignments (20 hours), students will work individually under the guidance of the teacher.
- Personal study and work (69 hours).
- Assessment tests (2 hours)

### Teruel Campus.

- In the theory classes (15 hours), the contents of Standardization of Industrial Drawing and Industrial Systems will be presented

Representation, with each topic illustrated with numerous examples.

- In the problem classes (29 hours), the students will solve the exercises under the supervision of the teacher.
- The laboratory practices (15 hours), will be developed individually, where the student will handle the software of

Computer Aided Design for the execution of the proposed exercises

- For the proposed assignments (20 hours), students will work individually under the guidance of the teacher.

These works will have a specific delivery date.

- Personal study and work (69 hours).
- Assessment tests (2 hours)

## 5. Assessment system

### Río Ebro Campus (Zaragoza).

During the term:

- Intermediate tests: 30% of the total of the subject. The assessment will be based on two tests carried out during the term on the date and time indicated by the teacher and on assignments that must be handed in. It will be graded from 0 to 10, and the student must obtain a minimum grade of 5 to average.
- Laboratory practices: 10% of the total of the subject. The grade will be awarded on the basis of the exercises performed during the practice. It will be graded from 0 to 10, having the student to obtain a minimum grade of 5 to average a.

Global assessment.

- Student who has passed the evaluation during the term: It will have a weight of 60% of the total of the subject and must solve, from the proposed exercises, only those indicated by the teacher. A minimum grade of 5 must be obtained for averaging; otherwise the final grade for the course will be a maximum of 4.0 (failure) for not complying with the conditions required for averaging.
- Student who has not passed the assessment during the term: It will have a weight of 90% and 100% of the proposed exercises must be solved. The student must obtain a minimum grade of 5 in order to obtain an average; otherwise, the final grade will be a maximum of 4.0 (failure) due to failure to comply with the conditions required for average

Additionally, during the global evaluation, there will be a Computer Aided Design exam for the students who have not obtained the minimum grade during the subject, and a minimum grade of 5 must be obtained in order to be averaged.

### Teruel Campus.

- Exam: 60% of the total of the subject. It will be graded from 0 to 10, and the student must obtain a minimum grade of 5 in order to average a grade of.

- Laboratory practices: 30% of the total of the subject- The grade will be awarded on the basis of the exercises performed during the practice. It will be graded from 0 to 10, having the student to obtain a minimum grade of 5 to average a.
- Assessment throughout the semester. 10% of the total of the subject. The grade will be awarded on the basis of the assignments that will be commissioned during the course with a specific due date. The teacher will tutor the work indicating the student's mistakes in order to improve the learning of the subject. It will be graded from 0 to 10, having the student to obtain a minimum grade of 5 for averaging.

A minimum grade of 5 must be obtained for averaging; otherwise the final grade for the course will be a maximum of 4.0 (failure) for not complying with the conditions required for averaging.

There will also be a Computer Aided Design test, with a weight of 10%, for those students who have not obtained the minimum grade during the term who have not obtained the minimum qualification during the term, and the student must obtain a minimum grade of 5.

Students who have not passed the assignments will have a weight of 70% in the global exam.