

30015 - Manufacturing Processes and Industrial Drawing

Syllabus Information

Academic year: 2024/25

Subject: 30015 - Manufacturing Processes and Industrial Drawing

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 436 - Bachelor's Degree in Industrial Engineering Technology

ECTS: 6.0

Year: 2

Semester: Second semester

Subject type: Compulsory

Module:

1. General information

The objective of the subject is to learn aspects related to the design and development of mechanical components and their representation. Therefore, you will learn the fundamentals of the different manufacturing processes of preforming, deforming and joining, with sufficient capacity to observe and analyze the influence of the mechanical principles that govern them in the design of the product and the planning of the process. In addition, knowledge is acquired on process parameters and tooling. Knowledge will also be acquired to interpret and develop an industrial assembly in the aspects related to Graphic Expression, for the integration of standardized elements and for the application of materials, surface finishes and tolerances, as well as knowledge for the use of CAD tools.

2. Learning results

- Select the manufacturing processes based on the knowledge of their capabilities and limitations and according to the technological, technical and economical requirements of both product and market
- Recognize and applies the basic considerations for setting up a process sheet
- Acquire a critical attitude towards solutions already used, so as to encourage them to deepen the study and analysis of the topics covered in this discipline and to propose innovative strategies.
- Know and understand the fundamentals of industrial drawing to apply them to the interpretation of plans and to develop reasoned solutions to geometric problems in plan and space.
- Value standardization as the ideal conventionalism to simplify not only production but also communication, giving it a universal character.
- Be capable of integrating and selecting standardized and commercial elements in the design of mechanical assemblies, interpreting handbooks and catalogs
- Know and understand different concepts such as tolerances and surface qualities and is able to apply them to specific problems in the field of Industrial Drawing.

3. Syllabus

Manufacturing Processes Block

I. Introduction and classification of manufacturing processes

II. Preforming molding processes: casting, molding and injection molding

III. Plastic metal forming processes: fundamentals, rolling, forging, extrusion and drawing and sheet and tube forming

IV. Bonding and thermal cutting processes

Industrial Drawing Block

I. Standardization.

II. Assembly and exploded views, sketches and lists of elements.

III. Notation of tolerances, surface quality and other symbols.

IV. Representation and designation of threaded elements, connecting and securing elements, bearings, gears and drive elements, welds and other mechanical elements.

4. Academic activities

The chronological distribution will be carried out starting with an introductory week to the manufacturing block to later develop the complete block of Industrial Drawing and finally in the month of April to resume the block of Manufacturing until the end of the term.

In the Block of Manufacturing Processes, the distribution will be 21 h. of master class (theoretical) and technical cases and problem solving and 9 h. of practical sessions.

In the Industrial Drawing Block, the distribution will be: 14h of master class (theoretical), 7 h. of problems and 9 h. of practical sessions.

5. Assessment system

The student must obtain a grade of at least 4.0 (out of 10) in each block and in each part of each block, and an overall average of at least 5.0.

Manufacturing Processes Block.

It consists of three parts.

- Part 1: 10% of FP (Practical). It consists of the preparation of a report per practice to be delivered within a maximum period of 1 week after its completion . Failure to submit on time and/or a grade lower than 4.0 in any of the reports will result in a negative evaluation. In such a case, you must take the corresponding total test in the global assessment.
- Part 2 and 3: 90% . Limited-response written test
 - 2a: 70% theory
 - 2b: 20% problems

These tests will include questions from the entire syllabus, as well as practical cases, applications, interrelation between processes from different blocks or from a single block. Minimum of 4 points in both parts (2a and 2b), if not, the student must examine in the second call of both parts.

Industrial Drawing Block.

The evaluation system consists of two parts that account for 50% of the block:

- Group technical project: this will be a project to be developed by several students to be delivered on the day of the global test and which will be previously agreed with the teacher. The type of work to be carried out will be mobile industrial assemblies , containing elements such as screws, bearings, gears, etc. Students who wish to do somay submit it in advance, before a date set by the teacher.
- Exam: It will consist of a theoretical-practical exercise to be developed from a proposed industrial set.

6. Sustainable Development Goals

7 - Affordable and Clean Energy

8 - Decent Work and Economic Growth