

29725 - Manufacturing Technology II

Syllabus Information

Academic year: 2023/24

Subject: 29725 - Manufacturing Technology II

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 330 - Complementos de formación Máster/Doctorado
434 - Bachelor's Degree in Mechanical Engineering

ECTS: 6.0

Year: 434 - Bachelor's Degree in Mechanical Engineering: 3

330 - Complementos de formación Máster/Doctorado: XX

Semester: Second semester

Subject type: 434 - Compulsory

330 - ENG/Complementos de Formación

Module:

1. General information

The objective of the subject is to learn aspects related to mechanical manufacturing by means of casting, deformation and welding joining processes, structuring it in phases and applying a methodology. The subject aims to provide the student with knowledge of the fundamentals of the different manufacturing processes of preforming, forming and joining, with sufficient capacity to observe and analyze the influence of the mechanical principles that govern on product design and process planning. In addition, sufficient knowledge should be acquired to structure the processes and the tooling tooling in not very complex metal-mechanical constructions.

SDG: 12: Target 12.5

2. Learning results

The student:

- Acquire a broad knowledge base based on scientific, technological and economic criteria on the different processes and systems for different non-chipping manufacturing processes and systems.
- Identify their advantages and disadvantages, as well as the defects and the means to control and solve them.
- Know the machines, as well as the basic design principles of some tooling tools used in molding and forming processes such as molds (metallic and disposable) and single and multi-step dies for presses.
- Select the most suitable manufacturing processes based on the knowledge of their capabilities and limitations, according to the technological, technical and economical requirements of the product and the market.

3. Syllabus

Theoretical-practical syllabus

I) Introduction to non-cutting processes and their classification

II) Molding, casting and injection preforming processes

III) Metal plastic deformation forming processes (foundations, rolling, forging, extrusion and drawing, sheet and tube forming).

IV) Joining and assembly processes in metal-mechanical constructions

a. Welding processes and their metallurgy

b. Thermal cutting processes

c. Other joining and assembly processes

Laboratory/classroom practicals

Two 3-hour sessions in each of the following blocks: Foundry, union in metallic constructions.

4. Academic activities

After the beginning of the theoretical classroom activities, the practical sessions will begin.

The dates for the work/s and/or delivery of the report/s will be established at the beginning of the term and will be done after the end of the corresponding part to be evaluated.

The subject takes place in the classroom with theory classes and problems and/or case studies (42 h) and in the laboratory/workshop facilities for the 6 practicals (18h).

Optionally (not mandatory) and depending on their existence, visits to trade fairs or technological events will be proposed, as

well as visits to manufacturers, installers and/or assembly companies.

5. Assessment system

The **global** assessment activities are divided into:

1. 60-question theory test of the entire syllabus, including problems/applications/selection: 70 %
2. Mechanical manufacturing work: 20%
3. Practice reports (one report per Block of practices): 10%

The minimum required in each evaluation activity (written tests, subject work and reports of each practice) in order to average and pass the subject is 4 points out of 10.

A grade lower than 5 points in the June theory exam is NOT preserved for the second call.

The mechanical fabrication work will follow the format and content indicated by the teachers. The work will be delivered to the professor before the beginning of the classroom presentations, which will be done by all students in class during the last weeks of the term. The subject will be communicated to the teacher and accepted during the first month of class, being obligatory the attendance to two short sessions of explanation and evolution of the same to the teacher in the dates of the term that are indicated.

For students who do not pass the work and practical part (failure to complete and/or submit all reports in the required format and date), in the global assessment test they will have to take an additional test related to them (exam). This test will consist of a part related to the work format and another part related to each of the blocks of the practices.