

Academic Year/course: 2021/22

## 25880 - Manufacturing processes

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 25880 - Manufacturing processes

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

**Degree:** 558 - Bachelor's Degree in Industrial Design and Product Development Engineering

**ECTS:** 6.0

**Year:** 3

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

## 1. General information

## 2. Learning goals

## 3. Assessment (1st and 2nd call)

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, autonomous work, and evaluation.

Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

Further information regarding the course will be provided on the first day of class.

### 4.2. Learning tasks

The course includes the following learning tasks:

- Lectures (1.16 ECTS): 29 hours.
- Laboratory sessions (0.84 ECTS): 21 hours.
- Guided assignments (0.4 ECTS): 10 hours.
- Tutorials (0.2 ECTS): 5 hours.
- Study of theory (2.4 ECTS): 60 hours.
- Practical work assignments (0.8 ECTS): 20 hours.
- Evaluation (0.2 ECTS): 5 hours.

**Lectures:** the professor will explain the theoretical contents of the course and solve illustrative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the semester. Lectures run for 3 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

**Laboratory sessions:** sessions will last 3 hours each (7 sessions in total). Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

**Guided assignments:** students will complete assignments, problems, and exercises related to concepts seen in laboratory sessions and lectures. They will be submitted at the beginning of every laboratory sessions to be discussed and analyzed. If assignments are submitted later, students will not be able to take the assessment test.

Autonomous work (the study of theory and practical work assignments): students are expected to spend about 90 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

### **4.3. Syllabus**

The course will address the following topics:

- Introduction.
- Process classification.
- Quality.
- Joining and assembly processes: fixed (adhesive, welding, brazing and soldering) and demountable (fit and screws).
- Forming processes: rolling, forging, extrusion, drawing and metal sheet and tube forming.
- Primary shaping processes: Casting with non-permanent molds, die casting, injection, powder metallurgy and ceramics, and plastics.

Program of practical sessions:

- Manufacturing Workshop.
- Quality.
- Welding.
- Forming.
- Casting.
- Working sessions focused on the project.

### **4.4. Course planning and calendar**

The schedule of presential sessions, the information about the learning tasks, the deadline of the reports and the schedule expositions of works will be defined at the beginning of the course and will be shown via Moodle.

### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25880>