

## 30015 - Manufacturing Processes and Industrial Drawing

### Información del Plan Docente

|                  |  |
|------------------|--|
| Academic Year    | 2017/18  |
| 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**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The general aim of this subject is learning the main aspects of manufacturing of mechanical components by casting, deformation and welding processes, as well as their representation by industrial design techniques.

#### **5.2.Learning tasks**

## **30015 - Manufacturing Processes and Industrial Drawing**

In sessions of classroom -whole group- the more theoretical aspects are addressed in the form of master class and completed with technical case study. The practical sessions take place in smaller groups to work with specialized applications and equipment manufacturing workshop. In addition, it develops a tutored project.

### **5.3.Syllabus**

#### **A.-Industrial Drawing**

Theoretical Contents:

- Standardization applied to Technical Drawing.
- Assembly drawings, parts list and part drawings.
- Materials used to manufacture.
- Representation of threads and threaded joints. Designation of screws and nuts.
- Standard roughness values. Graphical symbols of surface texture.
- Indication of dimensional, geometrical and general tolerances.
- Representation and designation of joint and safety elements.
- Representation and designation of bearings and their accessories.
- Representation of gears and actuating elements.
- Representation of hydraulic systems.

CAD Practical Sessions:

- Guided practice.
- Three-dimensional design of a piece.
- Three-dimensional development of the project work

#### **B.- Manufacturing Processes**

## 30015 - Manufacturing Processes and Industrial Drawing

I) Introduction, concept and classification of manufacturing processes

II) Molding and casting processes

1. Principles of foundry processes
2. Casting and injection molding
3. Polymers transformation

III) Metal forming processes

1. Plastic deformation
2. Rolling
3. Forge
4. Extrusion and drawing
5. Sheet forming

IV) Joining processes

a. Welding processes

b. Thermal cutting

### Manufacturing Laboratory

One session to three main parts of classroom theory: Deformation, molding and welding processes

### 5.4.Course planning and calendar

6 ECTS: 150 h / student:

1. Block manufacturing processes: (classroom + laboratory of metal manufacturing + exams)
2. Block industrial drawing: (master class + practical learning+ drawing work + exams)

### 5.5.Bibliography and recommended resources