# 25817 - Manufacturing processes

**Información del Plan Docente**

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| **Academic Year** | 2016/17 |
| **Academic center** | 110 - Escuela de Ingeniería y Arquitectura |
| **Degree** | 271 - Bachelor's Degree in Industrial Design and Product Development Engineering<br>330 - Complementos de formación Máster/Doctorado |
| **ECTS** | 9.0 |
| **Course** | 3 |
| **Period** | Four-month period |
| **Subject Type** | ENG/Complementos de Formación, Compulsory |
| **Module** | --- |

## 1.Basic info

## 1.1.Recommendations to take this course

## 1.2.Activities and key dates for the course

## 2.Initiation

## 2.1.Learning outcomes that define the subject

## 2.2.Introduction

## 3.Context and competences

## 3.1.Goals

## 3.2.Context and meaning of the subject in the degree

## 3.3.Competences

## 3.4.Importance of learning outcomes

## 4.Evaluation

## 5.Activities and resources

## 5.1.General methodological presentation

The learning process designed for this subject is based on the following:

The contents of the course will be presented to the student with theoretical presentations and practical exercises, some of which require non-presential and group work by students.

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## 5.2.Learning activities

The program offered to the students to help them achieving the expected results includes the following activities:

Lectures where the exposure of content with presentations and examples will allow learning the definitions, concepts and theoretical bases of the different manufacturing processes as well as the other contents of the subject. Scheduled learning activities are grouped into the topics of the program.

Practical work. The practical work will help to understand and assimilate the theoretical concepts necessary for the subject. The practical sessions are scheduled so that engage in the topics listed in the program of practical sessions.

## 5.3.Program

Agenda of theoretical-practical lectures:

- Introduction. Process classification.
- Metrology; dimensional measurement, form and roughness, measurement assessment.
- Material removal processes; machining with geometrically well-defined tool edges, Electrical discharge Machining, Machining with geometrically undefined tool edges, cutting.
- Finishing machining processes; Machining with geometrically undefined tool edges, coatings, heat and chemical surface treatments.
- Primary shaping processes; Casting with non-permanent moulds, die casting, injection, powder metallurgy and ceramics, plastics.
- Forming processes; rolling, forging, extrusion, drawing and metal sheet and tube forming.
- Joinning and assembly processes; fixed (adhesive, welding, bracinr and soldering), demountable (fit and screws).
- Automatization
- Quality.

Program of practical sessions:

- *Process classification (manufacturing workshop).*
- *Metrology.*
- *Machining.*
- *Quality.*
- *Forming.*
- *Casting.*
- *Welding.*
- *Working sessions focused on the module project.*

## 5.4.Planning and scheduling

The schedule of presential sessions and expositions of works will be defined at the beginning of the course

## 5.5.Bibliography and recomended resources

1. Kalpakjian, Serope. Manufactura, ingeniería y tecnología. Vol. 1 y 2, Tecnología de materiales / Serope Kalpakjian, Steven R. Schmid ; 7ª ed. Naucalpan de Juárez (México): Pearson Educación, 2014
2. Valero C., "Introducción a los Procesos de fabricación", Kronos, Zaragoza, 2001.
3. Hernández Riesco, Germán. Manual del soldador / Germán Hernández Riesco ; Asociación Española de Soldadura y Tecnologías de Unión . - 18ª ed. Madrid : CESOL, D.L. 2007
4. Groover, Mikell P.. Fundamentos de manufactura moderna : Materiales, procesos y sistemas / Mikell P. Groover . - 1a ed. México : Prentice-Hall Hispanoamericana, cop. 1997
5. Boothroyd, Geoffrey. Product design for manufacture and assembly / Geoffrey Boothroyd, Peter Dewhurst, Winston

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Knight . - 2nd. ed. rev. and expanded New York ; Basel : Marcel Dekker, cop. 2002
6. Flinn, Richard A.. Materiales de ingeniería y sus aplicaciones / Richard A. Flinn, Paul K. Trojan ; Traducción Gustavo Tovar Sanchez ; Revisión técnica Hector Hernandez A. . - 3a. ed. Bogotá [etc.] : McGraw-Hill, 1991
7. Camarero de la Torre, Julián. Matrices moldes y utillajes / Julián Camarero de la Torre , Arturo Martínez Parra . - 1ª ed. Madrid : CIE Dossat 2000, 2003
8. Coca Rebollero, Pedro. Tecnología mecánica y metrotecnia / Pedro Coca Rebollero, Juan Rosique Jimenez . - [4ª ed., reimp.] Madrid : Pirámide, D. L. 2005
9. DeGarmo, E. Paul. Materiales y procesos de fabricación / E. Paul DeGarmo, J. Temple Black, Ronald A. Kohser ; [versión española por J. Vilardell] . - 2ª ed., reimp. Barcelona : Reverté, imp. 2002
10. Boljanovic, Vukota. Sheet metal forming processes and die design / Vukota Boljanovic New York : Industrial Press, cop. 2004