25880 - Manufacturing processes

Información del Plan Docente

Academic Year	2017/18
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

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 methodology followed in this course is oriented towards 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.

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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.

5.2.Learning tasks

The course includes 6 ECTS organized according to:

- Lectures (1.2 ECTS): 30 hours.
- Laboratory sessions (0.6 ECTS): 15 hours.
- Guided assignments (0.6 ECTS): 15 hours.
- Tutorials (0.2 ECTS): 5 hours.
- Study of theory (2.6 ECTS): 65 hours.
- Practical work assignments (0.6 ECTS): 15 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 take place every 2 weeks (6 sessions in total) and last 2.5 hours each. 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 (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.

5.3.Syllabus

Agenda of theoretical-practical lectures:

* Introduction.

* Quality.

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* Process classification.

* 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, bracing and soldering), demountable (fit and screws).

Program of practical sessions:

* Manufacturing Workshop.

* Quality.

* Welding.

* Forming.

* Casting.

* Working sessions focused on the module project.

5.4.Course planning and calendar

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

5.5.Bibliography and recommended 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 Hernádez 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 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

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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