29825 - Manufacturing Technology

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura 326 - Escuela Universitaria Politécnica de Teruel
Degree	440 - Bachelor's Degree in Electronic and Automatic Engineering 444 - Bachelor's Degree in Electronic and Automatic Engineering
ECTS	6.0
Course	3
Period	Second semester
Subject Type	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 student will have the opportunity to attend three different kinds of teaching activities which will require him a growing level of participation: lectures, problems sessions and laboratory sessions.

Theoretical concepts, problems and case studies will be explained to students in a large group format. Though laboratory sessions will be arranged in smaller groups to work with different software programs and laboratory equipment.

This teaching process should be complemented with the students' individual work encompassing activities such as readings or study theoretical and practical topics.

5.2.Learning activities

In class work: 2.4 ECTS (60 hours)

1) Lectures (28 hours)

Oral presentations of theoretical concepts. The basis of the manufacturing technologies together with real examples will be shown. The topics to be covered can be seen in the "teaching program part".

2) Problems and technical cases sessions (14 hours)

Problems and cases, related with the theoretical contents, will be developed and explained together with the students participation though they will be encouraged to work previously on them.

3) Laboratory sessions (18 hours)

Six laboratory sessions that last three hours have been planned. Students will have access to the needed documentation in advance.

Out-of-class work: 3.6 ECTS (90hours)

4) Individual work (85 hours).

The student should study all the theoretical topics and practice in the solution of problems. The student will be encouraged to work in a continuous manner by means of a uniform work load along the semester. Here are also included tutorial meetings for students requiring individual attention to help them in their learning process.

5) Examination tasks (5 hours)

They have a twofold goal: to grade the student academic progress, and to inform him about the learning level he have reached in the course.

5.3.Program

Teaching program for theoretical-practical lectures:

Contents block 1: Introduction.

- Definitions

29825 - Manufacturing Technology

- Classification of manufacturing processes (DIN 8580)

Contents block 2: Processes and manufacturing technologies.

2.1. Primary shaping processes.

- Casting with non-permanent moulds, die casting, injection moulding.
- Powder metallurgy.
- Additive manufacturing

2.2. Material removal processes.

- Metal cutting theory.
- Conventional machining: turning, milling, drilling.
- Abrasive processes
- Non-conventional machining processes: EDM, wire-EDM...

2.3. Forming processes.

- Volumetric forming processes: Rolling, forging, extrusion.
- Laminar forming processes: Cut, deep drawing, bending.

2.4. Welding and joining processes.

- Welding metallurgy
- Welding processes
- Other union processes

Contents block 3: Manufacturing systems.

- Characterization and analysis.
- CNC programming.
- Tooling and fixturing.
- Maintenance.

Contents block 4: Metrology and Quality.

4.1 Metrology.

- Inspection and industrial metrology.
- Measurement assessment.
- Systems and methods of measurement.
- Fits and tolerances

4.2 Quality.

- Basic concepts of quality.
- Quality planning.
- Quality in product design and process.
- Quality in manufacturing.

5.4.Planning and scheduling

Lectures, problems, laboratory sessions and official exams schedule will be defined by the EINA (schedules are available in EINA web page). There will be in a general way:

- Three hours in class per week.

- One laboratory session every two weeks.

Mid-semester exam will be done in April, though students will be notified in advance.

All the information concerning optional works will be published in the ADD.

5.5.Bibliography and recomended resources

The following resources are recommended:

- Lectures notes and problems
- Laboratory sessions documentation

This information can be complemented with the following bibliography:

BB	1.1 Valero Ruiz, Carlos. Introducción a los procesos de fabricación / autores Carlos Valero Ruiz, Juan Carlos De Francisco Moreno ; con la colaboración de Fernando Torres, Luis Berges, María José Oliveros . - 2ª ed. Zaragoza : Kronos, 2001
BB	1.2 Groover, Mikell P.. Fundamentos de manufactura moderna : Materiales, procesos y sistemas / Mikell P. Groover . - 1a ed. México : Prentice-Hall Hispanoamericana, cop. 1997
BB	1.3 Kalpakjian, Serope. Manufactura, ingeniería y tecnología. Vol. 1, Tecnología de materiales / Serope Kalpakjian, Steven R. Schmid ; traducción Jesús Elmer Murrieta Murrieta ; revisión técnica Ulises Figueroa López, Francisco Sandoval Palafo. 7ª ed. Naucalpan de Juárez (México) : Pearson Educación, 2014
BB	1.3 Kalpakjian, Serope. Manufactura, ingeniería y tecnología. Vol. 2, Procesos de manufactura / Serope Kalpakjian, Steven R. Schmid ; traducción Javier Enríquez Brito ; revisión técnica Ulises Figueroa López, Francisco Sandoval Palafox, Jorge Eduardo Aguirre Aguilar . - 7ª ed. Naucalpan de Juárez (México) : Pearson Educación, 2014
BB	1.4 Pfeifer, Tilo. Manual de gestión e ingeniería de la calidad / Tilo Pfeifer, Fernando Torres . - 1ª. ed. española act. y amp., 1ª reimp. Zaragoza : Mira, 2002
BC	2.1 Hernández Riesco, Germán. Manual del soldador / Germán Hernádez Riesco ; Asociación Española de Soldadura y Tecnologías de Unión . - 18ª ed. Madrid : CESOL, D.L. 2007

29825 - Manufacturing Technology

BC	2.2 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
BC	2.3 Boothroyd, Geoffrey. Fundamentals of Machining and Machine Tools / Boothroyd, G., Knight, W.A New York: Marcel Dekker, 1989
BC	2.4 DIN 8580. Manufacturing processes - Terms and definitions, division. Deutsches Institut Fur Normung E.V. (German National Standard), 2003.
BC	2.5 Manrique, E.. Metrología básica / E. Manrique, A. Casanova Barcelona : Edebe, 1994
BC	2.6 Planificación y gestión de la producción / Jesús A. Royo Sánchez, Alejandro Hernández Paricio, Luis Berges Muro, José Manuel Franco Gimeno . - 1ª ed. [Zaragoza : s. n.], 2002|f(Kronos)

At the EUPT (TERUEL):

BB	Groover, Mikell P.. Fundamentos de manufactura moderna : Materiales, procesos y sistemas / Mikell P. Groover . - 1a ed. México : Prentice-Hall Hispanoamericana, cop. 1997
BB	Kalpakjian, Serope. Manufactura, ingeniería y tecnología / Serope Kalpakjian, Steven R. Schmid ; traducción Jaime Espinosa Limón ; revisión técnica Francisco Sandoval Palafox, Ulises Figueroa López, Roberto Hernández Cárdenas . - 5ª ed. Naucalpan de Juárez (México) : Pearson Educación, 2008
BB	Pfeifer, Tilo. Manual de gestión e ingeniería de la calidad / Tilo Pfeifer, Fernando Torres . - 1ª. ed. española act. y amp., 1ª reimp. Zaragoza : Mira, 2002
BB	Valero Ruiz, Carlos. Introducción a los procesos de fabricación / autores Carlos Valero Ruiz, Juan Carlos De Francisco Moreno ; con la colaboración de Fernando Torres, Luis Berges, María José Oliveros . - 2ª ed. Zaragoza : Kronos, 2001
BC	Boothroyd, Geoffrey . Fundamentals of machining and machine tools / Geoffrey Boothroyd, Winston A. Knight. - 3rd ed Boca Raton : Taylor & Francis, cop. 2006
BC	DeGarmo, E. Paul. Materiales y procesos de fabricación / E. Paul DeGarmo, J.

29825 - Manufacturing Technology

	Temple Black, Ronald A. Kohser ; [versión española por J. Vilardell] . - 2ª ed., reimp. Barcelona : Reverté, imp. 2002
BC	Deutsches Institut Fur Normung E.V. (German National Standard). DIN 8580 Manufacturing processes - Terms and definitions, division Editorial: 2003-09
BC	Hernández Riesco, Germán. Manual del soldador / Germán Hernádez Riesco ; Asociación Española de Soldadura y Tecnologías de Unión . - 18ª ed. Madrid : CESOL, D.L. 2007
BC	Manrique, E.. Metrología básica / E. Manrique, A. Casanova Barcelona : Edebe, 1994
BC	Planificación y gestión de la producción / Jesús A. Royo Sánchez, Alejandro Hernández Paricio, Luis Berges Muro, José Manuel Franco Gimeno . - 1ª ed. [Zaragoza : s. n.], 2002|f(Kronos)