

29924 - Manufacturing Technology

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	435 - Bachelor's Degree in Chemical Engineering
ECTS	6.0
Course	3
Period	Half-yearly
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 in-person training process will be given in three main levels: theory classes, exercises classes and laboratory, with a growing level of participation by the student.

In the sessions with the complete group, It will be illustrated the theoretical concepts in a master class format. These concepts will be reinforced with exercise resolution and case studies. The practical sessions will be organized in smaller groups in order to work with dedicated software applications and equipment from the manufacturing laboratory.

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This process shall be completed with the alumni's personal work for preparation readings, theory study and exercises completion.

5.2.Learning activities

The program presented to the alumni in order to help him to achieve the expected results, comprises the following activities:

Theory Classes (28h), including the content illustration with presentations and examples. This will facilitate the definitions, concepts and theoretical basis learning process regarding the different manufacturing process and any other content of the subject. The scheduled learning activities are grouped considering the topics indicated in the program.

Practical classes (14 h), performance problems and cases involving students, coordinated at all times with the theoretical contents.

Practical sessions (18 h), programmed with the topics listed in the program.

5.3.Program

Agenda of theoretical-practical lectures

1) In-person class (T1) (28 horas).

Contents block 1. Introduction (Lesson 0) (1 h).

- Definitions
- Process classification (DIN 858)

Contents block 2. Process and manufact. technologies (Lessons 1, 2, 3, 4 y 5) (14 h).

2.1. Primary shaping processes (4 h).

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

2.2. Material removal processes (4 h).

- Machining and cutting.
- Finishing machining processes

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- Electrical discharge machining

2.3. Forming processes (3 h).

- Volumetric forming processes:

- Rolling

- Forging

- Extrusión

- Laminar forming processes:

- Cut

- Deep drawing

- Bending

2.4. Union process **and assembly** (3 h).

- Welding metallurgy

- Welding process

- Other union processes

Contents block 3. Manufacturing systems (Lesson 3) (3 h).

- Characterization and analysis .

- CNC programming .

- Tools.

Contents block 4. Metrology and Quality (Lessons 6, 7, 8, 9 y 10) (10 h).

4.1 Metrology (4 h).

- Inspection and industrial metrology .

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- Measurement assessment .
- Systems and methods of measurement .
- Fits and tolerances

4.2 Quality (6 h).

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

2) Problems and resolution practical cases (T2) (14 horas).

5.4.Planning and scheduling

In-person sessions and case studies calendar

The master classes, exercise resolution classes and the laboratory will be given according to the official schedule of the center (schedule available in the center's website)

The rest of the activities will be scheduled considering the number of alumni and it will be informed with enough time to the interested

Every teacher will inform about his private tutoring available hours

The exams and official dates will be fixed by the Management Team of the center.

Resources

Apart from the bibliography, it is recommended the following material:

- 1- Subject notes and presentations
- 2- Exercises notes and Laboratory Guidelines.

5.5.Bibliography and recommended resources

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- BB** Ingeniería de la calidad / Raquel Acero ... [et al.] . - 2ª ed. Zaragoza : Centro Universitario de la Defensa, 2013
Kalpakjian, Serope. Manufactura, ingeniería y tecnología. Vol. 2, Procesos de manufactura / Serope Kalpakjian, Steven R. Schmid ; traducción Javier
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- BB** Valero Ruiz, Juan Carlos De Francisco Moreno ; con la colaboración de Fernando Torres, Luis Berges, María José Oliveros . - 2ª ed. Zaragoza : Kronos, 2001
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- BC** herramienta / Geoffrey Boothroyd Bogotá [etc.] : McGraw-Hill Latinoamericana, cop. 1978
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- BC** Temple Black, Ronald A. Kohser ; [versión española por J. Vilardell] . - 2ª ed., reimp. Barcelona : Reverté, imp. 2002
DIN 8580. Manufacturing processes -
- BC** Terms and definitions, division. Deutsches Institut Fur Normung E.V. (German National Standard), 2003.
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- BC** manufactura moderna : Materiales, procesos y sistemas / Mikell P. Groover . - 1a ed. México : Prentice-Hall Hispanoamericana, cop. 1997
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- BC** ingeniería de la calidad / Tilo Pfeifer, Fernando Torres . - 1ª. ed. española act. y amp., 1ª reimp. Zaragoza : Mira, 2002
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- BC** Jesús A. Royo Sánchez, Alejandro

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José Manuel Franco Gimeno . - 1ª ed.
[Zaragoza : s. n.], 2002f(Kronos)
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incertidumbre de medida de las
calibraciones Ministerio de Industria,
Comercio y turismo, Madrid, 1992.

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