Universidad Zaragoza

Year : 2020/21

29924 - Manufacturing Technology

Syllabus Information

Academic Year: 2020/21
Subject: 29924 - Manufacturing Technology
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 435 - Bachelor's Degree in Chemical Engineering
ECTS: 6.0
Year: 3
Semester: Second semester
Subject Type: Compulsory
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

Generic competences:

C02. Ability to plan, budget, organize, direct and control tasks, people and resources.

C03. Ability to combine the basic and specialized knowledge of Engineering to generate innovative and competitive proposals in the professional activity.

C04. Capacity to solve problems and making decisions with initiative, creativity and critical thinking.

C08. Ability to analyze and assess social and environmental impact of technical solutions, acting with ethics, professional responsibility and social commitment, always looking for quality and continuous improvement.

Specific competences

C26. Basic Knowledges of production and manufacturing systems.

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The 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

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

4.2.Learning tasks

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

Lectures (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), there will be six practical sessions of three hours duration. Students will have the scripts in advance.

Study (90 hours), personal study of theoretical part and realization of problems. Continuous work throughout the semester of the various learning activities will be encouraged. Tutorials are included here, identification of learning problems, orientation in the course, attention to exercises and work ...

4.3.Syllabus

The course will address the following topics:

1) Lecture (T1) (28 horas).

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

- Definitions
- Process classification (DIN 858)

Contents block 2. Process and manufacture 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
- 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 block4. Metrology and Quality (Lessons6, 7, 8, 9 y 10) (10 h).

4.1 Metrology (4 h).

- Inspection and industrial metrology.
- 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).

4.4.Course planning and calendar

In-person sessions and case studies calendar

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

- Every week 3 hours of classes.
- Once every two weeks there will be a practice.

The dates of the official exams and tests will be set by the management of the center.

The partial test will be informed sufficiently in advance of its the doing date.

The detailed calendar of the various activities to be carried out will be established once the University and the Center have approved the academic calendar.

Resources

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

Subject notes and presentations

Exercises notes and Laboratory Guidelines.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=29924&year=2019