Universidad Zaragoza

Year : 2019/20

30120 - Manufacturing Technology

Syllabus Information

Academic Year: 2019/20
Subject: 30120 - Manufacturing Technology
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
Degree: 425 - Bachelor's Degree in Industrial Organisational Engineering
ECTS: 6.0
Year: 2
Semester: Second semester
Subject Type: Compulsory
Module: ---

1.General information

1.1.Aims of the course

The great variety of objects, pieces, products ... that there are in the market have been obtained through a more or less complex productive process. This course provides the keys to determine some of them. Selecting a productive process is a global objective in the course.

A product has finish, precision specifications ... which are consistent with its function. Adapting the functionality of the product with criteria of sufficient quality makes the task of selecting a specific production process easier.

All manufactured components have a life and a cost. Connecting these variables and get the component to fulfill its function with guarantee is a challenge to achieve.

Selecting a productive process is the overall aim of the course.

1.2.Context and importance of this course in the degree

Each course of the degree aims at covering a field in the Technological and Scientific training of the student, in this case, the selection of a process. Success at completing this task will condition the viability of the product, both technically and economically.

Directing and managing a company, or a part of it, objective for the graduate who takes this degree, requires, among others, the competence to take action and, where appropriate, improve the productive process of the company.

1.3.Recommendations to take this course

There are no particular requirements to take this course. However, the contents to be taken will require the skills and abilities acquired, mainly, in the subjects of Technical Drawing, Statistics, Physics, Mathematics and Materials Engineering

2.Learning goals

2.1.Competences

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 organization of teaching will be carried out using the following steps:

- **Lectures**: Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports

of the subject are displayed, highlighting the fundamental, structuring them into topics and or sections, interrelating them.

- **Practice Sessions**: The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.
- **Laboratory Workshop**: The lecture group is divided up into various groups, according to the number of registered students, but never with more than 20 students, in order to make up smaller sized groups.
- **Individual Tutorials**: Those carried out giving individual, personalized attention with a teacher from the department. Said tutorials may be in person or online.

4.2.Learning tasks

The course includes the following learning tasks:

- 40 hours of lectures, with 60% theoretical demonstration and 40% solving type problems.
- 12 hours of laboratory workshop, in two-hour sessions.
- 6 hours of written assessment tests, two hours per test.
- 2 hours of PPT presentations.
- 90 hours of personal study, divided up over the 15 weeks of the 2nd Semester.

There is a tutorial calendar timetable set by the teacher that can be requested by the students who want a tutorial.

4.3.Syllabus

The course will address the following topics:

Contents:

- **Topic 1. Metrology.** Introduction to Metrology. Measuring Instruments: Direct and indirect measurement. Surface roughness. Tolerances and fittings.
- **Topic 2. Process Control.** Process Capability Studies. Control Chart.
- **Topic 3. Moulding.** Introduction to the casting process. Types of Casting Process. Economical and Technical considerations.
- **Topic 4. Plastic Deformation Processes.** Metal Rolling. Metal Forging. Metal Extrusion and Stretching. Operations in metal sheets.
- **Topic 5. Welding and Joining Processes.** Joining Processes. Metallurgy and Welding Processes.
- **Topic 6. Machining Processes.** Fundamentals of cutting. Machine tools.

Practicing contents:

- Practice 1. Thread control.
- Practice 2. Gear control.
- Practice 3. Measurement of angles and conicity.
- Practice 4. Verification of roughness, tolerance control on-axis, depth measurement, the distance between holes.
- Practice 5. Measurement and sketching of a mechanical component.

4.4.Course planning and calendar

The lectures and problem lessons are taught in the timetable organized by the School, as well as the hours assigned to laboratory practice tasks.

https://eupla.unizar.es/asuntos-academicos/calendario-y-horarios

The dates of the final exams will be those that are officially published at http://www.eupla.unizar.es/asuntos-academicos/examenes

The written assessment tests will be related to the following topics:

- **Test 1**: Topic 1.
- **Test 2**: Topic 2 and 3.
- **Test 3**: Topic 4, 5 and 6.

The topics used for the PPT presentations will be proposed before Week 10.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=30120&year=2019