

28821 - Manufacturing Processes I

Información del Plan Docente

Academic Year	2016/17
Academic center	175 - Escuela Universitaria Politécnica de La Almunia
Degree	424 - Bachelor's Degree in Mechatronic Engineering
ECTS	6.0
Course	3
Period	First 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 learning process designed for this subject is based on the following:

Presentation general methodology

Strong interaction between the teacher/student. This interaction is brought

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into being through a division of work and responsibilities between the students and the teacher. Nevertheless, it must be taken into account that, to a certain degree, students can set their learning pace based on their own needs and availability, following the guidelines set by the teacher.

The current subject Production Processes I is conceived as a stand-alone combination of contents, yet organized into three fundamental and complementary forms, which are: the theoretical concepts of each teaching unit, the solving of problems or resolution of questions and laboratory work, at the same time supported by other activities

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

– **Theory Classes** : Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.

– **Practical Classes** : 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

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department. Said tutorials may be in person or online.

5.2.Learning activities

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The programme offered to the student to help them achieve their target results is made up of the following activities...

Involves the active participation of the student, in a way that the results achieved in the learning process are developed, not taking away from those already set out, the activities are the following:

Programmed learning activities

— **Face-to-face generic activities** :

● **Theory Classes** : The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary.

● **Practical Classes** : Problems and practical cases are carried out, complementary to the theoretical concepts studied.

● **Laboratory Workshop** : This work is tutored by a teacher, in groups of

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no more than 20 students.

— **Generic non-class activities :**

● Study and understanding of the theory taught in the lectures.

● Understanding and assimilation of the problems and practical cases solved in the practical classes.

● Preparation of seminars, solutions to proposed problems, etc.

● Preparation of laboratory workshops, preparation of summaries and reports.

● Preparation of the written tests for continuous assessment and final exams.

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the semester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table. These figures are obtained from the subject file in the Accreditation Report of the degree, taking into account the level of experimentation considered for the said subject is moderate.

Activity	Weekly school hours
Lectures	3
Laboratory Workshop	1
Other Activities	6

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Nevertheless, the previous table can be shown into greater detail, taking into account the following overall distribution:

— 45 hours of lectures, with 50% theoretical demonstration and 50% solving type problems.

— 10 hours of laboratory workshop, in 1 or 2 hour sessions.

— 5 hours of written assessment tests, one hour per test.

— 4 hours of PPT presentations.

— 86 hours of personal study, divided up over the 15 weeks of the 2 nd semester.

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

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5.3.Program

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Theoretical content

The choice of the content of the different teaching units has been made according to the proposal in the subject record of Manufacturing Processes I of the Mechatronics Engineering Degree verification report.

The theoretical contents are distributed based on the 4 teaching units in the table below.

	Metrology
Unit 1	Introduction. Measuring instruments. Direct measurements. Tolerances.
	Quality Control
Unit 2	History of quality control Basic concepts. Process and total quality control. Process capacity. Types of controls. Benefits of quality
	Casting
Unit 3	Introduction. Sand, shell, centrifugal casting. Casting processes. Mould design, Defectology.
	Joint and assemble processes.
Unit 4	Introduction. Fusion welding. Solid state welding. Metallurgy. Adhesive joints. Threaded fasteners. Rivets. Springs.

2:Practical contents

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Each unit discussed in the previous section, has associated practices, whether through practical cases, interpretation and commentary on readings associated with the subject and / or tasks leading to obtain results and their analysis and interpretation.

Measuring, testing, experimenting are activities that cannot be missing in the training of an Engineer.

A series of practice tasks based on the number of credits assigned to the course, workshop and laboratory capacity, machines and instruments available have been prepared.

The intended goal is to have a feedback from practice to theory and vice versa.

Measuring to design accurately, experimenting to evaluate a process are, among other objectives, dealt with by the internship program.

The practice tasks to be developed in the laboratory that will be conducted by the students 2 hour sessions are listed below

	Measuring mechanical elements
1	Cylinders, Prisms, Cones, Threads and Gears.
2	Measuring with Tridimensional Machine.
	Surface roughness
3	Assess several mechanical surfaces.
	Welded / fastened joints.
4	Practically perform a joint system and

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produce the appropriate documentation

5.4.Planning and scheduling

Activity	Teaching week															Hours	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		P
Unit 1																	14
Unit 2																	11
Unit 3																	11
Unit 4																	18
Test 1																	2
Test 2																	1
Test 3																	1
Test 4																	2
PPT																	2
Estu. Pers	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	90
Total	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	150

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The dates of the final exams will be published officially in <http://www.eupla.es/secretaria/academica/examenes.html>.

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

- Test 1: Unit 1. Metrology
- Test 2: Unit 2. Quality Control
- Test 3: Unit 3. Molding
- Test 4: Theme 4. Joint Processes

The topics that will be dealt with in the POWER POINT PRESENTATIONS will be suggested before the 8th week

Resources

materials

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Material
Metrology Laboratory
Materials Laboratory
Machining Laboratory

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5.5. Bibliography and recommended resources

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