

## 28825 - Manufacturing Processes II

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	175 - Escuela Universitaria Politécnica de La Almunia
<b>Degree</b>	424 - Bachelor's Degree in Mechatronic Engineering
<b>ECTS</b>	6.0
<b>Course</b>	3
<b>Period</b>	Second semester
<b>Subject Type</b>	Compulsory
<b>Module</b>	---

### **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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Presentation general methodology

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

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

&mdash; 46 hours of lectures, with 50% theoretical demonstration and 50% solving type problems.

&mdash; 10 hours of laboratory workshop, in 1 or 2 hour sessions.

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&mdash; 6 hours of written assessment tests, one hour per test.

&mdash; 4 hours of PPT presentations.

&mdash; 86 hours of personal study, divided up over the 15 weeks of the 2<sup>nd</sup> semester.

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

### 5.3.Program

#### Theoretical content

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

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

<b>Unit 1</b>	<b>Processes of forming by plastic deformation</b>  Introduction. Rolling. Forging. Extrusion. Deep drawing, Folding, Applications.
<b>Unit 2</b>	<b>Processes of forming by subtractive manufacturing</b>  Theory of metal machining. Cut parameters, Technology of cutting tools. Geometry. Cutting fluids, Highly efficient

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machining

### **Machines.**

#### **Unit 3**

Introduction. Lathe, milling machine, drill, etc. Geometry shapes obtained and processes.

### **Processes of plastics and composite forming**

#### **Unit 4**

Introduction. Injection. Extrusion. Blowing. Calendering Mechanization. Rolling of composite materials.

### 2 Practical contents

- 1 Machining through chip removal in conventional machines
- 2 Machining through chip removal in CNC machines.
- 3 Two technical visits to factories with different production processes.

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,

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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 internal or external laboratory that will be conducted by the students 6 hour sessions (flexible schedule) are listed below

### 5.4.Planning and scheduling

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### 5.5.Bibliography and recommended resources

- 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
- Groover, Mikell P.. Fundamentos de manufactura moderna : Materiales, procesos y sistemas / Mikell P. Groover . - 1a ed. México : Prentice-Hall Hispanoamericana, cop. 1997
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- Coca Rebollo, Pedro. Tecnología mecánica y metrotecnica / Pedro Coca Rebollo, Juan Rosique Jimenez . - [4ª ed., reimpr.] Madrid : Pirámide, D. L. 2005