

## 28831 - Automation and Industrial IT

### 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>	4
<b>Period</b>	First 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:**

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

## 28831 - Automation and Industrial IT

The current subject (the teacher should put THE NAME OF THE SUBJECT here) 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

### 5.2.Learning activities

The programme offered to the students to help them achieve their target result is made up of the following activities:

It involves the active participation of the student, in such a way that for achieving the learning target, not falling away from those already set out, the following activities will be developed:

Face-to-face generic activities

- Theory classes: The theoretical concepts of the subjects are explained and illustrative examples are developed as support to the theory when necessary.
- Practical classes: Problems and practical cases are carried out as complementary to the studied theoretical concepts.
- Laboratory workshop: groups of students will carry out these activities guided / tutored by the teacher.

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

The level of experimentation considered for the subject is considered high.

Taking into account the overall schedule of the subject, the activities of the students (in this subject) are distributed as follows:

- 25 hours of lecture / theory classes (theoretical demonstration and solving type problems)
- 25 hours of laboratory workshop (2 hours session)
- 10 hours of assessment test (written and practical)
- 90 hours of personal study.

### 5.3.Program

Contents of the subject required to achieve the target result.

The guidelines followed to elaborate the contents were as follows:

- The contents proposed in the check memory are respected
- a syllabus whose chapters generally match the title of the specified program was developed.

Theoretical content:

## 28831 - Automation and Industrial IT

### 1.- Architecture of a PLC

- RAM, ROM, ALU,PSW.
- Digital E/S.
- PAE and PAA
- Brands
- Scan Cycle

### 2.- Configuration and programing of PLC

- Timers an couters.
- Flanks
- Aritmetic operations
- Comparisons and jumps
- Functions
- Data blocks
- Organitations bloks

### 3.- Sensors and industrial detectors

- Inductive and capacitive sensors.
- Photocells
- Temperature and pressure sensors
- Load cells

### 5.- Grafcet

### 6.- Industrial communications.

- MPI communication
- Industrial Buses
- o Profibus, profinet

### Practical contents

#### 1.- Process control (discrete)

- Industrial processes simulation models.
- Flexible cell control.

#### 2.- Frecuency inverter.

- Configuration and programming comercial trade inverters
- Asynchronous Three- phase motor speed control.

## 28831 - Automation and Industrial IT

### 5.4.Planning and scheduling

The schedule of the lectures as well as the carrying out of the practices will be established by the centre at the beginning of each course (This timetable / schedule will be published on the website of the centre).

Other activities (Handing of practices, assessment test etc) are planned according to number of groups and communicate to students in advance at the beginning of course.

### 5.5.Bibliography and recommended resources

- Kuo C. Benjamín.. Sistemas de control automático/Benjamin C. Kuo. - 7ª edición Pearson Educación, 1996
- Guerrero, Vicente. Comunicaciones industriales / Vicente Guerrero, Luis Martínez, Ramón L. Yuste. - 1ª ed Barcelona : Marcombo, cop. 2010
- Ogata, Katsuhiko. Ingeniería de control moderna / Katsuhiko Ogata ; traducción Sebastián Dormido Canto, Raquel Dormido Canto ; revisión técnica Sebastián Dormido Bencomo ; revisión técnica para Latinoamérica Amadeo Mariani ... [et al.] . - 5ª ed. Madrid : Pearson Educación, D.L. 2010

#### Material

- Presentaciones PPTX Digital/ Moodle
- Manuales técnicos Digital / Moodle
- Herramientas Software Pc's Laboratorio