

## 29826 - Electronic Instruments

### Información del Plan Docente

<b>Academic Year</b>	2017/18
<b>Faculty / School</b>	110 - Escuela de Ingeniería y Arquitectura 326 - Escuela Universitaria Politécnica de Teruel
<b>Degree</b>	440 - Bachelor's Degree in Electronic and Automatic Engineering 444 - Bachelor's Degree in Electronic and Automatic Engineering
<b>ECTS</b>	6.0
<b>Year</b>	3
<b>Semester</b>	Second semester
<b>Subject Type</b>	Compulsory
<b>Module</b>	---

### **1.General information**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

- The course will be based on combining theoretical explanations with practical exercises and laboratory work.
- Lectures will provide theoretical background on fundamentals of instrumentation and sensors

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- Case studies and real applications will be worked out at the classroom
- The students will do laboratory work related to sensors and instrumentation systems
- Individual and group assignments will be proposed
- Student participation is considered very important in order to acquire the learning outcomes and skills needed

### 5.2.Learning tasks

#### Classroom activities: 2,4 ECTS (60 hours)

##### 1) Course lectures (T1) (30 hours).

Fundamentals of electronic instrumentation and sensors will be developed, mixing theoretical concepts and practical applications.

##### 2) Case studies (T2) (15 hours)

Different case studies will be worked out at the classroom. Students are encouraged to prepare them in advance. Assignments could also be worked out in this part.

##### 3) Laboratory work (T3) (15 hours).

Several laboratory sessions will be carried out in small groups. Each session will be evaluated in the laboratory. Students have to prepare sessions in advance.

#### personal work: 3,6 ECTS (90 hours)

##### 4) Assignments (T6) (20 hours)

Individual and group assignments will be proposed

##### 5) Personal study (T7) (66 hours)

Continuous study will be promoted among students. They can also attend tutorials to solve the specific problems they can face in the course.

##### 6) Evaluation activities (T8) (4 hours)

Assessment will be based on coursework (laboratory work and assignments) and final examination

### **5.3.Syllabus**

1. Data acquisition systems
2. A/D and D/A converters
3. Sensors
4. Signal conditioning circuits and amplifiers
5. Electromagnetic compatibility and noise
6. Filters
7. Signal and data transmission

Note. A more detailed program will be provided at the beginning of the course.

### **5.4.Course planning and calendar**

Timetables for classroom and laboratory sessions will be published prior to the beginning of the course at the web of EINA <https://eina.unizar.es/> and EUPT <https://eupt.unizar.es/>

A course timetable is also provided to the student, which includes a detailed description of the dates for submission <https://moodle2.unizar.es/add/>

### **5.5.Bibliography and recommended resources**