

Academic Year/course: 2021/22

## 29826 - Electronic Instrumentation

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 29826 - Electronic Instrumentation

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

326 - Escuela Universitaria Politécnica de Teruel

**Degree:** 440 - Bachelor's Degree in Electronic and Automatic Engineering  
444 - Bachelor's Degree in Electronic and Automatic Engineering

**ECTS:** 6.0

**Year:** 3

**Semester:** Second semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The course is based on combining theoretical explanations with practical exercises and practical work. A wide range of teaching and learning tasks are implemented, such as:

- Lectures will provide theoretical background on the fundamentals of instrumentation and sensors
- 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

#### 4.2. Learning tasks

The course includes the following 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 in 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 practical sessions will be carried out in small groups. Students have to prepare sessions in advance.

**Autonomous work: 3,6 ECTS (90 hours)**

- **4) Assignments (T6)** (30 hours). Individual and group assignments will be proposed

- **5) Personal study (T7)** (56 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). An Assessment will be based on coursework (practical work and assignments) and final examination

### 4.3. Syllabus

The course will address the following topics:

1. Data acquisition systems
2. A/D and D/A converters
3. Sensors
4. Signal conditioning circuits and amplifiers
5. Fundamentals of electromagnetic compatibility and noise
6. Filters for instrumentation applications.
7. Signal and data transmission

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

### 4.4. Course planning and calendar

Timetables for classroom and laboratory sessions will be published prior to the beginning of the course on 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://moodle.unizar.es/add/>

### 4.5. Bibliography and recommended resources

Course notes and other documentation:

<https://moodle.unizar.es/add/>

References: