Universidad Zaragoza

Year : 2020/21

29826 - Electronic Instrumentation

Syllabus Information

Academic Year: 2020/21
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

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

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. 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.

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