

30047 - Electronic Instrumentation

Syllabus Information

Academic Year: 2020/21

Subject: 30047 - Electronic Instrumentation

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 436 - Bachelor's Degree in Industrial Engineering Technology

ECTS: 6.0

Year: 4

Semester: Second semester

Subject Type: Optional

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 learning process will be based on three different levels: theoretical classes, problem-solving classes and practical sessions. The level of student participation will be high.

-In the theory classes, the basics will be presented, but also materials with which the students will need to work on. Examples and case studies will be requested to be presented by students, even some lessons will be interactive and students will have to present some parts of the class to others with the provided materials (these are part of the activities under evaluation)

- Problems and cases will be solved in the problem classes. Students will be requested to solve the problems and some times present to others.

- Several guided laboratory lessons will be done in reduced groups. These will showcase hands-on examples of circuits explained in class and virtual instruments will also be taught.

- Depending on the overall number of students, guided practical instrumentation projects could be requested. These will be small but useful tools, in general, based on either Arduino or Labview comprising a set of sensors, signal conditioning and acquisition and some form of information presentation.

4.2.Learning tasks

The course includes the following learning tasks:

1. Classes with presentations
2. Problem-solving classes

3. Laboratory sessions
4. Self - work or group work of activities that will be evaluated
5. Personal work and study
6. Personal sessions with the teacher
7. Evaluation sessions

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. Filters and EMI
6. Signal and data transmission

4.4.Course planning and calendar

Following the official calendar at the EINA web page

4.5.Bibliography and recommended resources

- Link:

http://biblos.unizar.es/br/br_citas.php?codigo=29826&year=2020