

Academic Year/course: 2022/23

## 30393 - Instrumentation Electronics

### Syllabus Information

**Academic Year:** 2022/23

**Subject:** 30393 - Instrumentation Electronics

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

**Degree:** 581 - Bachelor's Degree in Telecommunications Technology and Services Engineering

**ECTS:** 6.0

**Year:** 4

**Semester:** Second semester

**Subject Type:** Optional

**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 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. Introduction to instrumentation
2. Circuits
  1. Amplification in instrumentation
  2. Filters
  3. Noise and interference
  4. Other adapting circuits
3. Sensors
4. Laboratory instrumentation and other systems

### **4.4. Course planning and calendar**

Following the official calendar at the EINA web page

### **4.5. Bibliography and recommended resources**

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30393>