

## 29721 - Basic principles of electronics

### Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	434 - Bachelor's Degree in Mechanical Engineering
ECTS	6.0
Course	3
Period	Half-yearly
Subject Type	Compulsory
Module	---

### 1.Basic info

#### 1.1.Recommendations to take this course

#### 1.2.Activities and key dates for the course

### 2.Initiation

#### 2.1.Learning outcomes that define the subject

#### 2.2.Introduction

### 3.Context and competences

#### 3.1.Goals

#### 3.2.Context and meaning of the subject in the degree

#### 3.3.Competences

#### 3.4.Importance of learning outcomes

### 4.Evaluation

### 5.Activities and resources

#### 5.1.General methodological presentation

#### 5.2.Learning activities

#### 5.3.Program

0. Introduction. The functions of electronics in mechanical engineering. Electronic systems.

1. Sensing and conditioning. Electronic sensors used in mechanical engineering. Operational amplifier: linear stages.

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2. Digital electronics and microprocessor systems.
3. Power supplies and batteries. Diodes, and voltage regulators.
4. Electronic control of power systems. Bipolar transistors, MOS transistors, thyristors

### **Practical sessions**

Session 1 - Laboratory instrumentation. Electrical measurements. Simulation of electronic circuits.

Session 2 - Sensing and amplification.

Session 3 - Sensing, control and visualizations using a microprocessor system.

Session 4 - Power supply and linear voltage regulation.

Session 5 - Small project: control of a DC motor using a microprocessor based system

### **5.4.Planning and scheduling**

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