

29726 - Automatic Control Systems

Syllabus Information

Academic year: 2023/24

Subject: 29726 - Automatic Control Systems

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 434 - Bachelor's Degree in Mechanical Engineering

ECTS: 6.0

Year: 3

Semester: Second semester

Subject type: Compulsory

Module:

1. General information

This subject develops the ability to apply knowledge of the fundamentals of automation and control methods, ubiquitous in all types of processes in mechanical industries (energy, manufacturing, etc.) and in all types of products (vehicles, household appliances, etc.), in order to provide them with autonomy, safety, quality, effectiveness and efficiency.

Due to its cross-cutting nature, its potential contribution, directly or indirectly, in favor of any of the SDGs is evident, particularly the following: 3, 7, 8, 9, 11 y 12.

2. Learning results

- Identify the subsystems and their relevant interconnections to automate the overall operation of the system Select the most appropriate modeling, analysis and design techniques based on control requirements Apply the techniques and methods for the design of the control system in compliance with the specifications.

3. Syllabus

1. Basic concepts of automatics.
2. Automation of discrete event systems. Programmable Logic Controllers (PLC's).
3. Dynamic behavior of continuous systems: steady state, stationary sinusoidal, stability and transient response; model and dynamic behavior of first and second order systems, higher order, delays.
4. Feedback systems. PID control: root locus techniques and frequency methods; basic actions of control; tuning methodologies and practical variants; control schemes.

4. Academic activities

- Lectures (30 hours)
- Problem classes and case resolution (15 hours)
- Laboratory practices (15 hours)
- Personal study and work, and evaluation tests (90 hours)

5. Assessment system

Global, individual, written test. It consists of questions and problems similar to those of the lectures and practicals, on all the contents of the subject. It is rated Ex, between 0 and 10.

Continuous assessment of practical work, carried out in pairs or, exceptionally, individually. It is voluntary and, for grading, it is required to have performed (sufficiently well) all the laboratory practices, and, at the end of the course period, to present a written report and answer questions about it in a final oral test. It is qualified as EC, between 0 and 2.5

Subject grade = IF $Ex \geq 4$: $\min(Ex+EC, 10)$; IF $Ex < 4$: EX.