

29828 - Industrial Automation

Syllabus Information

Academic year: 2023/24

Subject: 29828 - Industrial Automation

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

The objective of the subject is to train the student in the key aspects of industrial automation: advanced programming of programmable controllers, industrial communications, human-machine interfaces, supervisory systems, etc.

The aim is to ensure that after passing the course the student has sufficient capacity for analysis, design and maintenance of medium/large automation systems. Also that during the practical sessions, has had a contact with real devices in all the aspects mentioned above.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of the United Nations () Agenda (<https://www.un.org/sustainabledevelopment/es/>), specifically, the learning activities planned in this subject will contribute to the achievement of target 8.2 of Goal 8, and targets 9.1 and 9.4 of Goal 9.

2. Learning results

- Knowledge of automated industrial technologies and installations.
- Knowledge of the architecture and programming languages of programmable logic controllers.
- Knowledge and implementation of discrete systems control.
- Knowledge and application of industrial communications and field buses.
- Knowledge and application of monitoring systems.
- Knowledge of safety and regulations in automated systems.

3. Syllabus

- Automation Technologies. Industrial programmable controllers.
- Automation Technologies. Sensors and Actuators.
- Programming of automatons. Languages and implementation of formal models.
- The study guide for gear modes and stops: Gemma.
- Programmable Logic Controllers operation and safety
- Introduction to Industrial Communications.
- Fieldbuses and Industrial Ethernet
- Supervision systems.
- Industrial safety.

4. Academic activities

- Lectures (30 hours). Expository sessions of theoretical and practical content.
- Problem classes and case resolution (12 hours). Problems and cases will be developed with the participation of the students.
- Practices (18 hours). Advanced programming of programmable logic controllers, industrial communications, human-machine interfaces, supervisory systems, PC-based control, etc.
- Teaching assignments (24 hours). Activities that the student will perform alone or in groups and that the teacher will be proposing throughout the teaching period.
- Study (60 hours). Personal study of the theoretical part of the course and problems.
- Assessment tests (6 hours) The assessment also allows the student to check their degree of understanding and assimilation.
-

5. Assessment system

- Individual examination (20%). CT rated from 0 to 10. To be carried out during the period established by the center for continuous assessment.
- Practices assessment (30%) CP rated from 0 to 10. Carried out throughout the term (in each session of practices), based on presentations, files delivered and resolution of questions.
- Evaluation of teaching assignments (50%). CTP rated from 0 to 10. Based on the memory and files submitted and (if applicable) the defense made in accordance with the schedule of presentations to be established.

Some of the practices will be graded at the end of the session itself. The previous preparation, the student's work during the session, and the final solution provided.

In order to pass the subject it is essential to obtain a minimum of 40% in each of the three parts. In this case, the overall grade will be $(0.20*CT+0.30*CP+0.50*CTP)$. Otherwise, the overall grade will be the minimum between 4 and the result of applying the above formula. The subject is passed with an overall grade of 5 out of 10.

Each official call will include individual tests to evaluate the aforementioned items, which students may take if they wish students may take if they wish to do so.