6422 Industrial Computing

| ECTS credits: 6 | Semester: 1 |

Teaching objectives

The general objective of the module is to train students in the applied knowledge of industrial computing and communications. In addition with this module, it is expected that the student will achieve the following objectives:

- Know the fundamentals of industrial computing.
- Complete basic PLC programmes.
- Design industrial communication networks.
- Design human-machine interfaces.
- Design SCADA systems.

Gaining this knowledge will allow the student to approach the study of subject matter on the degree course grounded in the application of industrial computing and communication knowledge and to solve specific problems successfully in their professional field.

6423 Technical Office Work

| ECTS credits: 6 | Semester: 1 |

Teaching objectives

Initiate the student in the different activities that they will develop in the immediate future such as a Graduate in Industrial Electronic Engineering and Automation.

6431 Industrial Automation

| ECTS credits: 6 | Semester: 2 |

Teaching objectives

The general objective of the module is to train the student in the design of industrial control and automation systems. Moreover, following this module, the student is expected to achieve the following objectives:

- Know the history of industrial automation.
- Analyze and design conventional industrial automated systems.
Bachelor’s Degree in Industrial Electronics & Automation Engineering

- Solve complex problems of industrial automation using advanced programming in Programmable Logic Controllers (PLCs)
- Design industrial control and automation systems through the use of modelling tools and programming Discrete Events Systems: Grafcet, Redes de Petri, Gemma, etc.
- Know and use computer tools for the analysis, design and simulation of automated systems.
- Design industrial control and automation systems using field buses.

Gaining this knowledge will allow the student to approach the study of subject matter on the degree course grounded in the design of industrial control and automated systems and to solve specific problems successfully in their profession field.

6432 Industrial Robotics

| ECTS credits: 6 | Semester: 2 |

Teaching objectives

The general objective of the module is to provide the student with knowledge of the principles and applications of robotic systems, in addition to training students in robotic system modelling and simulation.

Moreover, with this module, the aim is for the student to achieve the following objectives:

- Know the history of industrial robotics.
- Know the morphology and applications of an industrial robot.
- Analyze and solve robotic problems of kinetics and dynamics.
- Manage control over robotic kinetics and dynamics.
- Know and use computer tools for the analysis, design and programming of industrial robots.
- Design robotic systems, using simulation tools.

Gaining this knowledge will allow the student to approach the study of subject matter on the degree course grounded in robotic systems and to solve the specific problems of their profession in a successful manner.
6433 Final Project
ECTS credits: 18  Semester: 2

Teaching objectives

Train the student in the preparation and management of technical projects, the application of current regulations and the development of their professional duties.

OPTIONAL COURSES

6424 Applications of Industrial Electronics
ECTS credits: 6  Semester: 1

Teaching objectives

- Analyze the functional principles and the parameters which should guide the control of different applications of power electronics.
- Train students to define and size the energy converter corresponding to each specific application contemplated in the programme.

6425 Automation of Solar and Wind Power Facilities
ECTS credits: 6  Semester: 1

Teaching objectives

- Give the student the necessary capabilities to design and set up solar and wind-power installations.
- Let the student know the control systems used at present in the automation of solar and wind-power installations.

6426 Renewable Energies
ECTS credits: 6  Semester: 1

Teaching objectives

- Understand renewable energies as a family of technologies compatible with the conservation of the environment.
- Know the most common renewable resources and the principle technologies for their exploitation.
- Know the basic procedures of sizing solar, wind-power installations, etc.
Bachelor’s Degree in Industrial Electronics & Automation Engineering

- Train students in the use of specific instrumentation and software linked to renewable energies.
- Know the basic regulatory framework applicable in the context of renewable energy installations.

6427 Safety & Workplace Accident Prevention
ECTS credits: 6 | Semester: 1

Teaching objectives

- Introduce the student to the basic concepts of safety and health in the workplace.
- Introduce students to knowledge of the general techniques of analysis, evaluation and risk control in the workplace.
- Introduce students to knowledge of Risk Prevention routines in the workplace.
- Familiarize the student with basic regulations and documentation in the field of prevention.

6428 Electronic Systems Integration
ECTS credits: 6 | Semester: 1

Teaching objectives

The objective of this module is the integration of electronic sub-systems studied in the different electronic modules on the degree course, which constitute an electronic system, for their assembly and integration with other technologies, in order to define, for example, a production line.

6429 Electric installations
ECTS credits: 6 | Semester: 1

Teaching objectives

The student should gain general knowledge of Electrical Installations, types, associated problematic aspects, issues concerning electromagnetic compatibility and distortion. Students will be given an introduction to their design. As a first objective, it is proposed that they are able to design low-voltage installations, of all types, high voltage installations, transformation centres and, moreover, know about high voltage installations.
6430 Computer Assisted Design

ECTS credits: 6  |  Semester: 1

Teaching objectives

- Introduce and familiarize the student with the use of techniques and applications relating to Computer-Assisted Engineering Design; as software tools that present a clear alternative to conventional design methods.
- Know the formal groundings of interactive modelling functions of commercial CAD systems, with the purpose of evaluation their range and limitation, in their configuration for solving graphic modelling problems in 3D.
- Provide the student with a picture of the possibilities for CAD integration in the design process of Concurrent Engineering and in other Graphic Engineering themes such as DMU, rapid prototyping and reverse engineering.
- Know the basic information management and documentation techniques for CAD products, both in the field of data organization, safety, creation of libraries and use of catalogues, as well as in the exchange between applications, arising from the needs of 3D modelling.
- Acquire the necessary knowledge to design three dimensional elements on the computer. To do so, it is necessary to adapt the principles and methods for working in 3D.
- Manipulate and modify tri-dimensional elements on the computer.
- Connect devices on the basis of previously designed elements, restricting the degrees of freedom of each element.
- Simulate device functioning.
- Know how to obtain the plans of devices and their elements, with regard to standardization.
- Construct virtual scenarios, applying materials for that purpose to the different elements that are found at the scene and a specific lighting plan. In other words, the student should know how to prepare photo-realistic images and animations.

6434 Work placements

ECTS credits: 6  |  Semester: -

Teaching objectives

- Gain an initial practical experience in the use of capabilities that have been acquired in a real working environment.
- Immersion of the student in the world of work.