![Universidad Europea Valencia logo]

1. OVERVIEW

Subject area	Automated Systems
Degree	Bachelor's Degree in Industrial Organisation Engineering
School/Faculty	Faculty of Science, Engineering and Design
Year	Second
ECTS	6 ECTS
Type	Core
Language(s)	Spanish
Delivery Mode	On campus
Semester	Second

2. INTRODUCTION

Automated Systems is one of the compulsory subjects in the Degree in Industrial Organisation Engineering at the Universidad Europea. This subject introduces students to the basic concepts of automation as it is used in industry.

Industrial automation uses robots and computer-based control systems to replace human labour in different stages of the industrial manufacturing process. For example, automated tools and mobile components can process and finish off materials, while automated transportation systems move parts through the different phases of production.

This subject is part of the block on Electrical, Electronic and Automated Engineering and provides students with their first look at the basic automation processes.

3. SKILLS AND LEARNING OUTCOMES

Basic skills (CB, by the acronym in Spanish):

CB2 - Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.

CB3 - Students have the ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.

CB4 - Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

CB5 - Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Cross-curricular skills (CT, by the acronym in Spanish):

CT2 - Independent learning: skills for choosing strategies to search, analyse, evaluate and manage information from different sources, as well as to independently learn and put into practice what has been learnt.

CT3 - Teamwork: ability to integrate and collaborate actively with other people, areas and/or organisations to reach common goals.

CT4 - Written/spoken communication: ability to communicate and gather information, ideas, opinions and viewpoints to understand and be able to act, spoken through words or gestures or written through words and/or graphic elements.

CT5 - Analysis and problem-solving: be able to critically assess information, break down complex situations, identify patterns and consider different alternatives, approaches and perspectives in order to find the best solutions and effective negotiations.

CT8 - Entrepreneurial spirit: ability to take on and carry out activities that generate new opportunities, foresee problems or lead to improvements.

Specific skills (CE, by the acronym in Spanish):

CE08 - Ability to use basic knowledge of production and manufacturing systems in industrial organisation processes.

Learning outcomes (RA, by the acronym in Spanish):

RA1 - To pass the subject, students must show ability to suitably solve basic problems associated with electrical, electronic and automated engineering which may arise in engineering projects. These include analysis and design of electrical installations and electronic or automated systems.

The following table shows how the skills developed in the subject area match up with the intended learning outcomes:

Skills	Learning outcomes (RA, by the acronym in Spanish)
CB2, CB3, CB4, CB5, CT2, CT3, CT4, CT5, CT8, CE8	RA1

4. CONTENTS

- Fundamentals of production and manufacturing systems.
- Forming and machining processes.
- Dimensional metrology.
- Automated and smart manufacturing.

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:
Master lectures (On Campus learning)

- Collaborative learning
- Problem-based learning
- Project-based learning
- Learning based on laboratory work (laboratory, workshop and simulation environments)
- Case study
- Gamification
- Field work (field trips, work experience)

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

On campus:

Learning activity	Number of hours
Master lectures and practical seminars	28.8
Problem-solving	12
Case studies and field studies	8
Laboratory work	16
Debates and discussions	8
Learning contract (definition of interests, needs and objectives)	2
Autonomous learning	66
Tutorials	7.2
Knowledge tests	2
TOTAL	**150**

7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

On campus:

Assessment system	Weighting
On Campus tests to evaluate objectives of theory/practical learning (exam-type objective tests, written compositions, oral presentations, case studies/problem solving, debates, simulation tests)	50
Off-site tests to assess theory/practical learning (case studies/problem-solving)	30
Attitude assessment tests (attitude assessment rubrics, class participation)	10
Self- and co-assessment (learning contract, learning outcomes)	10

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities and the deadlines and assessment procedures for each activity.

8. BIBLIOGRAPHY

The recommended bibliography is indicated below:

- B.R. Mehta, Y. Jaganmohan Reddy, Industrial Process Automation Systems
- Richard Zurawski, Integration Technologies for Industrial Automated Systems
- Luc Jaulin, Automation for Robotics (Control, Systems and Industrial Engineering)
- Martin Hollender, Collaborative Process Automation Systems