

SUBJECT TEACHING GUIDE

G1002 - Industrial Informatics and Communications

Degree in Industrial Electronic Engineering and Automatic Control Systems

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	Degree in Industrial Electronic Engineering and Automatic Control Systems			Type and Year	Compulsory. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Automation and Systems Control Module: Specific Technology				
Course unit title and code	G1002 - Industrial Informatics and Communications				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TECNOLOGIA ELECTRONICA E INGENIERIA DE SISTEMAS Y AUTOMATICA				
Name of lecturer	JESUS ANTONIO ARCE HERNANDO				
E-mail	antonio.arce@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2019)				
Other lecturers	PEDRO CORCUERA MIRO QUESADA ESTHER GONZALEZ SARABIA ELENA HOYOS VILLANUEVA				

3.1 LEARNING OUTCOMES

- Ability to programming and manage data structures using a high level language
- Ability to design an information system and industrial control
- Configure and use a communications network for industrial application

4. OBJECTIVES

Acquire programming techniques and management of data structures using high level programming languages.
 Knowing the architecture of an information system for industrial application.
 Acquire techniques for designing and managing databases.
 Knowing standards and protocols of industrial communication networks and field buses.

6. SUBJECT PROGRAM

CONTENTS

1	Block 1: Programming and data structures Introduction to C language Data Structures in C: static vectors and records. Functions. Data structures: dynamic memory. Files.
2	Block 2: Information systems and databases Advanced programming. Visual programming. Databases.
3	Block 3: Industrial communications networks and fieldbuses. OSI model of industrial networks. Standards and protocols. TCP / IP model. Fieldbuses.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Theory Block 1	Written exam	No	Yes	20,00
Practice Block 1	Work	No	Yes	13,33
Practice Block 2. Portfolio tasks	Laboratory evaluation	No	No	33,33
Exam Block 3	Written exam	No	Yes	33,34
TOTAL				100,00
Observations				
The evaluation corresponds to the average of the marks obtained in each block.				
Observations for part-time students				
Part time students who do not participate in the continuous assessment process must take a test related to the contents not evaluated.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Programación estructurada en C, J. Antonakos, K. Mansfield, Prentice Hall
 Introducción a la programación con C, A. Marzal, I. Gracia, Colección Sapientia Repositorio UJI,
 (<http://repositori.uji.es/xmlui/handle/10234/24306>)
 C Programming: A Modern Approach, K. N. King, W. W. Norton & Company
 Web Programming, Step by Step. M.Stepp, J. Miller, V. Kirst, Ed. Lulu
 Fundamentos de bases de datos, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill
 Comunicaciones industriales: principios básicos, Manuel Castro Gil [et al.], Ed. UNED
 Comunicaciones industriales: sistemas distribuidos y aplicaciones, Manuel Castro Gil [et al.], Ed. UNED

