

SUBJECT TEACHING GUIDE

1042 - Integrated Systems for Manufacturing and Process Control

Master's Degree in Industrial Engineering
Master's Degree in Industrial Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Master's Degree in Industrial Engineering Master's Degree in Industrial Engineering			Type and Year	Compulsory. Year 1 Compulsory. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Integrated Systems for Manufacturing and Process Control Industrial Technology Industrial Technologies				
Course unit title and code	1042 - Integrated Systems for Manufacturing and Process Control				
Number of ECTS credits allocated	5	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	ESTHER GONZALEZ SARABIA				
E-mail	esther.gonzalezs@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2021)				
Other lecturers	ELENA HOYOS VILLANUEVA LAURA CASTAÑÓN JANO				

3.1 LEARNING OUTCOMES

- Students will know the majority of industrial manufacturing process, their techniques and technologies.
Students will know about the main manufacturing systems and methodologies present in the industry and will be able to evaluate their efficiency.
Students will know the main inspection techniques and their technologies. And students will be qualified to carry out quality controls according to the statistical theory.
- Students will know PLCs, programming and architecture.
Students will handle PLCs for programming logic automatism and process control.
Students will know SCADA systems.

4. OBJECTIVES	
<p>Knowledge of the main industrial manufacturing processes, their techniques and technologies. Knowledge of the different manufacturing systems used in the industry . Knowledge of cell manufacturing and group technology. Knowledge about inspection techniques and their technology. Application to quality control.</p>	
<p>Knowledge of the structure of a PLC, configurations and basic programming principles. Knowledge of the PLCs-based implementation of logic automatism and process control. Knowledge of SCADA systems.</p>	

6. SUBJECT PROGRAM	
CONTENTS	
1	Industrial manufacturing processes.
2	Support technologies for automated manufacturing (CAD-CAM).
3	Technology and procedures applied in the control of quality.
4	PLCs. General concepts. Basic programming.
5	PLC-based process control. PLC Architecture.
6	Supervisory control. SCADA systems.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Written exam of the blocks 1, 2 and 3	Written exam	No	Yes	30,00
Project of blocks 1, 2 and 3.	Work	No	No	10,00
Practical assessment of blocks 1, 2 and 3	Laboratory evaluation	No	No	10,00
Programming exam of blocks 4,5 and 6.	Laboratory evaluation	No	Yes	30,00
Multiple choice exam of blocks of blocks 4, 5 and 6.	Activity evaluation with Virtual Media	No	Yes	20,00
TOTAL				100,00
Observations				
In case of a new health alert by COVID-19 makes impossible the evaluation in person, remote evaluation of the works (practical laboratory exercises and written tests) would be carried out.				
Observations for part-time students				
Part-time students who can not attend the practical classes and continuous assessment can overcome them by taking a exam.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
"Fundamentals of Modern Manufacturing. Materials, Processes, and Systems", M. P. Groover, Fourth Edition, 2010.
"Autómatas Programables. Entorno y aplicaciones", E. Mandado, J. Marcos, C. Fernández, J.I. Armesto, S. Pérez, Thomson Editores Spain, Paraninfo, 2005
"Automation, Production Systems, and Computer-Integrated Manufacturing". M. P. Groover. Fourth Edition. Pearson, 2016.
"Autómatas Programables", J. Balcells, J.L. Romeral, Ed. Marcombo, 1997

