[GFE006] Industrial Computer

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING PHYSICS APPLIED TO INDUSTRY			**Subject**	Industrial Electronics
Semester	1	**Course**	4	**Mention / Field of specialisation**	???
Character	OPTIONAL				
Plan	2022	**Modality**	Face-to-face	**Language**	CASTELLANO
Credits	4,5	**Hours/week**	0	**Total hours**	61 class hours + 51.5 non-class hours = **112.5 total hours**

2030 AGENDA GOALS

PROFESSORS

MUXIKA OLASAGASTI, EÑAUT

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GENERAL PHYSICS II	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GFR310 - Understand the fundamentals and applications of digital electronics and microprocessors	x	x		4,5
			Total:	4,5

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RGF426 **[!]** ***Selecciona un microprocesador/microcontrolador para una aplicación concreta***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2,5 h.	4,5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.	4 h.	9 h.
Carrying out exercises and solving problems individually and/or in teams	7 h.	4 h.	11 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	100%	Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 14 h.
NCH - Non-class hours: 10,5 h.
TH - Total hours: 24,5 h.

RGF427 **[!]** ***Realiza el desarrollo SW completo de una aplicación basada en microprocesador, diagnosticando y corrigiendo problemas de hardware en un circuito impreso***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	4 h.	6 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	9 h.	10 h.	19 h.
Carrying out exercises and solving problems individually and/or in teams	18 h.	16 h.	34 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	50%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

Individual written and/or oral tests or individual coding/programming tests	50%	Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 29 h.
NCH - Non-class hours: 30 h.
TH - Total hours: 59 h.

RGF425 **[!]** ***Realiza el esquema electrónico de un sistema lógico basado en microprocesador***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	4 h.	6 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	9 h.		9 h.
Carrying out exercises and solving problems individually and/or in teams	7 h.	7 h.	14 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	100%	Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 18 h.
NCH - Non-class hours: 11 h.
TH - Total hours: 29 h.

CONTENTS

1. Concepts and fundamentals
   1.1 What is a microcontroller?
   1.2 Microcontroller families
   1.3 Microcontroller applications
2. Microcontroller boards
   2.1 Components and design requirements
   2.2 Circuit design and interconnections
   2.3 Circuit interpretation and analysis
3. Microcontroller architecture and operation
   3.1 Microcontroller architecture
   3.2 Execution sequence (pipeline)
   3.3 Peripherals and memory map
4. Timing sequencing
   4.1 Purpose of timers in a microcontroller
   4.2 Clock system
   4.3 Timers
   4.4 Internal timer of the ARM Cortex M family (Systick)
   4.5 Manufacturer-specific timers
5. Interrupts and exceptions
6. Other peripherals

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Specific Master Software	*(No bibliography)*
Computer practical training	
Slides of the subject	
Moodle Platform	