[GIG302] INDUSTRIAL COMPUTING

GENERAL INFORMATION

Studies	DEGREE IN COMPUTER ENGINEERING			**Subject**	COMPUTER ENGINEERING
Semester	1	**Course**	2	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2022	**Modality**	Face-to-face	**Language**	EUSKARA
Credits	4,5	**Hours/week**	4	**Total hours**	72.02 class hours + 40.48 non-class hours = **112.5 total hours**

2030 AGENDA GOALS

PROFESSORS

AZKARATE FERNANDEZ, IGOR
AYERDI CANTALEJO, JON

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GIR204 - To develop software and integration solutions based on adequate knowledge of current theories, models and techniques, as well as available standards and technologies		x		4,02
G-RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - becoming aware of respect for human rights and fundamental rights, and analyzing and assessing the impact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or avant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies with a high degree of autonomy		x		0,32
G-RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language		x		0,16
			Total:	4,5

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

LEARNING OUTCOMES OF THE QUALITY SEAL

EINF01 - Describe and explain mathematical concepts, theories and methods related to computing, computer equipment, computer communications and computer applications in accordance with the curriculum.

EINF04 - Apply and integrate knowledge from other computer science disciplines to support the study of one's own area of specialisation (or areas of specialisation).

EINF06 - Use a series of techniques to identify the needs of real problems, analyse their complexity and evaluate the feasibility of possible solutions using computer techniques.

EINF07 - Describe a specific problem and its solution at various levels of abstraction.

EINF08 - Select and use the appropriate analytical, simulation and modelling methods.

SECONDARY LEARNING RESULTS

1RGI293 (1 sem)

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	1,34 h.	,66 h.	2 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%
Prototype / Product	30%

Comments: Continuous assessment. It may be asked to redo the

MAKE-UP MECHANISMS

(No mechanisms)

document.

CH - Class hours: 1,34 h.
NCH - Non-class hours: ,66 h.
TH - Total hours: 2 h.

1RGI292 **(1 sem)**

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	1,34 h.	,66 h.	2 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%
Prototype / Product	30%

Comments: Continuous assessment.

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 1,34 h.
NCH - Non-class hours: ,66 h.
TH - Total hours: 2 h.

1RGI291 **(1 sem)**

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	2 h.	1 h.	3 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%
Prototype / Product	30%

Comments: Continuous assessment.

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

1RGI294 **(1 sem)**

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	1,34 h.	,66 h.	2 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	20%	*(No mechanisms)*
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%	
Prototype / Product	30%	

Comments: Continuous assessment.

CH - Class hours: 1,34 h.
NCH - Non-class hours: ,66 h.
TH - Total hours: 2 h.

RGI210 **[!]** ***Es capaz de desarrollar sistemas de control industriales basados en PLCs***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.		2 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.	4 h.	10 h.
Carrying out exercises and solving problems individually and/or in teams	12 h.	8 h.	20 h.
Practical work in workshops and/or laboratories, individually and/or in teams	11 h.	7 h.	18 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	70%	Individual written and/or oral tests or individual coding/programming tests
Prototype / Product	30%	**Comments:** Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%.

Comments: Minimum grade: 5

CH - Class hours: 31 h.
NCH - Non-class hours: 19 h.
TH - Total hours: 50 h.

1RGI290 **(1 sem)**

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	2 h.	1 h.	3 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	20%	*(No mechanisms)*
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%	
Prototype / Product	30%	

Comments: Continuous assessment.

CH - Class hours: 2 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 3 h.

RGI209 **[!]** ***Sabe aplicar las técnicas de modelado y control de sistemas industriales***

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	3 h.	1,4 h.	4,4 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.		2 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	11 h.	6,6 h.	17,6 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.	3 h.	8 h.
Carrying out exercises and solving problems individually and/or in teams	12 h.	6,5 h.	18,5 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	9%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	23%
Individual written and/or oral tests or individual coding/programming tests	55%
Prototype / Product	13%

Comments: Minimum grade: 5 Project evaluation based on technical rubric

MAKE-UP MECHANISMS

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

Comments: Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%. Project: There will not be any retake of the individual defense.

CH - Class hours: 33 h.
NCH - Non-class hours: 17,5 h.
TH - Total hours: 50,5 h.

CONTENTS

[!]

1. Introducción 1.1 Conceptos báscos: Concurrencia, tiempo real, modelización de sistemas, maquinas de estados y buses de campo.2. Modelado y control de sistemas 2.1 Técnicas de modelado de sistemas industriales 2.2 Control de bajo nivel (PID, PI, P) 2.3 Control de alto nivel (Máquinas de estado, Grafcet, Redes de Petri)"3. Programación PLCs y controladores industriales

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
[!] *Apuntes de la asignatura*	https://labur.eus/biblio-GIG302
[!] *Plataforma Moodle*	
[!] *Software específico de la titulación*	
[!] *Realización de prácticas en laboratorio*	