[GJK307] INSTRUMENTATION LABORATORY

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING			**Subject**	?
Semester	1	**Course**	4	**Mention / Field of specialisation**	???
Character	OPTIONAL				
Plan	2025	**Modality**	Face-to-face	**Language**	CASTELLANO/EUSKARA
Credits	4,5	**Hours/week**	2.36	**Total hours**	42.5 class hours + 70 non-class hours = **112.5 total hours**

2030 AGENDA GOALS

PROFESSORS

CABEZAS OLIVENZA, MIREYA

REQUIRED PREVIOUS KNOWLEDGE

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

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GJR416 - To know and apply principles of electronic instrumentation			x	4,02
G-TR1 - 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		0,24
G-TR2 - 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		0,24
			Total:	4,5

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

SECONDARY LEARNING RESULTS

RGJ418 Design electronic circuits to perform current measurements with different sensors

LEARNING ACTIVITIES	CH	NCH	TH
Computer simulation exercises, individually and/or in teams	8 h.	14 h.	22 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	4,5 h.	4 h.	8,5 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	8 h.	12 h.
Practical work in workshops and/or laboratories, individually and/or in teams	6 h.	2 h.	8 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	50%
Individual written and/or oral tests or individual coding/programming tests	50%

MAKE-UP MECHANISMS

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

CH - Class hours: 22,5 h.
NCH - Non-class hours: 28 h.
TH - Total hours: 50,5 h.

RGJ419 Design electronic circuits to control electrical machines

LEARNING ACTIVITIES	CH	NCH	TH

Computer simulation exercises, individually and/or in teams	5 h.	12 h.	17 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.		5 h.
Carrying out exercises and solving problems individually and/or in teams	6 h.	10 h.	16 h.
Practical work in workshops and/or laboratories, individually and/or in teams	4 h.	8 h.	12 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%	*(No mechanisms)*
Individual written and/or oral tests or individual coding/programming tests	50%	

CH - Class hours: 20 h.
NCH - Non-class hours: 30 h.
TH - Total hours: 50 h.

RGJ491 Coordinate the work team, fostering cohesion and a positive atmosphere to achieve the integration of all individuals and their contribution to achieving appropriate performance, both individually and as a group, for the development of the project.

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		3 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	100%	*(No mechanisms)* **Comments:** Continuous assessment. Retake is not foreseen.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

RGJ493 Prepare the project report, providing detailed arguments and using language that is correct, inclusive, and non-discriminatory.

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		3 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	100%	*(No mechanisms)* **Comments:** Continuous assessment. Retake is not foreseen.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

RGJ490 Define and manage the objectives and planning of a project that allows you to acquire and/or reinforce knowledge of specific technologies in your field of expertise—which are sometimes at the cutting edge of knowledge—and define a strategy.

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in		3 h.	3 h.

interdisciplinary contexts, real and/or simulated, individually and/or in teams

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	100%	*(No mechanisms)* **Comments:** Continuous assessment. Retake is not foreseen.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

RGJ494 Give an oral presentation of the project, justifying the proposed solutions with detailed and precise arguments, and using language that is correct, inclusive, and non-discriminatory.

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		3 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	100%	*(No mechanisms)* **Comments:** Continuous assessment. Retake is not foreseen.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

CONTENTS

The course consists of three laboratory exercises:Exercise 1: Representation of a function using logic gates. (Simulation and assembly)Exercise 2: Design of a temperature alarm. (Simulation and assembly)Exercise 3: Design of a speed regulator for a DC motor. (Simulation)

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources
Topic related web quires
Moodle Platform
Class presentations
Lab practical training

Bibliography

[1] P. Arruti, J. Errasti and J. C. Lizarbe. (2001, Logika Digitala Eta Mikroprogramagarria Available: www.elhuyar.org/edizioak/produktuak/LOGIKA-DIGITALA.pdf

[2] C. Cole. (2011, 2011). Real Digital - A Hands-on Approach to Digital Design Available: http://www.digilentinc.com/classroom/realdigital/.

[3] B. Holdsworth and R. C. Woods, Digital Logic Design. Oxford: Newnes, 2003. http://ezproxy.mondragon.edu:81/login?url=http://www.engineeringvillage.com/controller/servlet/OpenURL?genre=book&isb n=9780750645829

[4] R. F. Tinder, R. F. Tinder and Referex, Engineering Digital Design. San Diego: Academic Press, 2000. ezproxy.mondragon.edu:81/login? url=http://www.engineeringvillage.com/controller/servlet/OpenURL?genre=book&isbn=9780126912951