[GJC301] MECHANICAL TECHNOLOGY

GENERAL INFORMATION

Studies	DEGREE IN MECHATRONICS ENGINEERING			**Subject**	?
Semester	1	**Course**	1	**Mention / Field of specialisation**	???
Character	OPTIONAL				
Plan	2025	**Modality**	Face-to-face	**Language**	CASTELLANO/EUSKARA
Credits	6	**Hours/week**	5	**Total hours**	90 class hours + 60 non-class hours = **150 total hours**

2030 AGENDA GOALS

PROFESSORS

LARRAÑAGA AMILIBIA, JON
HERRERO DORCA, NURIA
GOMEZ SAGARZAZU, MIREN
OROBENGOA GURIDI, DANEL
AZPI-AURTENETXE, JON (SOMORROSTRO)
CENTENO TELLERIA, MANU
LASA BASTIDA, MIKEL
URIBE AZKARRETA, MAITANE
DORRONSORO BALERDI, JULEN

REQUIRED PREVIOUS KNOWLEDGE

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

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GJR114 - To know and apply the basic principles of materials engineering, metrology and industrial fluidic systems	x			5,4
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		0,36
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:	6

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

SECONDARY LEARNING RESULTS

1RGJ194 (1 sem) Give a clear and concise oral presentation and defense of the project, using language correctly.

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 h.	2 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	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: With the oral presentation of the project of the second semester

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

RGJ1113 **They identify the components and describe the functions they perform in a fluid power system, understanding the circuits and diagrams in which they are displayed.**

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	4 h.	3 h.	7 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	10 h.	12 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	16 h.	2 h.	18 h.
Carrying out exercises and solving problems individually and/or in teams	8 h.	7 h.	15 h.
Practical work in workshops and/or laboratories, individually and/or in teams	10 h.	6 h.	16 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	27%
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	10%
Individual written and/or oral tests or individual coding/programming tests	63%

MAKE-UP MECHANISMS

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

Comments: If a retake exam is needed, the mark will be calculated 25% first exam 75% retake

CH - Class hours: 40 h.
NCH - Non-class hours: 28 h.
TH - Total hours: 68 h.

1RGJ190 **(1 sem) Understand and apply the phases for developing, based on defined objectives and planning, a technically complex project in line with your knowledge. Reflect on your training needs, being aware of your limitations.**

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	100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: With the project of the second semester

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

RGJ1112 **They know and apply the measurement and control techniques and devices used in the manufacturing industry.**

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.		3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	2 h.	1 h.	3 h.
Practical work in workshops and/or laboratories, individually and/or in teams	6 h.	3 h.	9 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies,	45%

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual

computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems		coding/programming tests
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	10%	**Comments:** If a retake exam is needed, the mark will be calculated 25% first exam 75% retake
Self-assessment	45%	

CH - Class hours: 11 h.
NCH - Non-class hours: 4 h.
TH - Total hours: 15 h.

1RGJ193 (1 sem) Write a clear and concise project report using the information sources and report structure provided, and using language that is correct, inclusive, and non-discriminatory.

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 h.	2 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:** vision and correction of the written report of the semester project

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

1RGJ191 (1 sem) Contribute to the team's operating strategy by prioritizing common goals, encouraging and valuing everyone's participation, and taking responsibility for individual tasks and meeting deadlines.

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 h.	2 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:** With the project of the second semester

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

1RGJ192 (1 sem) Learn and describe the phases involved in developing engineering teams, and identify and describe the professional functions of an engineer, becoming aware of the contribution to the achievement of sustainable development goals (SDGs).

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	100%	*(No mechanisms)*

exercises, term projects, challenges and problems

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

RGJ1111 Distinguish between different types of materials by understanding the fundamentals of materials science, technology, and chemistry, comprehending the relationship between microstructure, synthesis or processing, and the properties of materials.

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.	2 h.	5 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	8 h.	10 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	19 h.	6 h.	25 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	2 h.	6 h.
Practical work in workshops and/or laboratories, individually and/or in teams	4 h.	2 h.	6 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	27%
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	10%
Individual written and/or oral tests or individual coding/programming tests	63%

MAKE-UP MECHANISMS

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

Comments: If a retake exam is needed, the mark will be calculated 25% first exam 75% retake

CH - Class hours: 32 h.
NCH - Non-class hours: 20 h.
TH - Total hours: 52 h.

CONTENTS

he Mechanical Technology course is made up of three well-differentiated sections:1. MATERIALS- Metallic alloys* Steels and castings and their designations.* Heat and surface treatments of steels.* Non-ferrous metals- Plastics* Classification and structure* Mechanical properties* Physical properties- Tests* Mechanical tests* Non-destructive testing2. METROLOGY- Accuracy- Measuring elements: rulers, calipers, micrometers, dial indicators, gauges and standards- Dial gauges, gauges and standards- Roughness meters3. FLUIDS- Fluids applications in industry- Fluids for power transmission applications (hydraulics and pneumatics).- Actuators- Valves and pumps- Compressed air installations- Hydraulic and pneumatic accumulator- Hydraulic circuits of industrial machines (Interpretation and design)

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Topic related web quires
Labs
Moodle Platform
Video projections
Lab practical training
Slides of the subject

Bibliography

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ILANGO, S., SOUNDARARAJAN, V. 2007. Introduction to hydraulicsand pneumatics. PHI Learning Pvt. Ltd

RABIE, M. 2009. Fluid Power Engineering. McGraw-Hill.

MORO, M. 2017. Fundamentos de Metrología Dimensional.Marcombo Universitari

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