[GDI302] MATERIALS I

GENERAL INFORMATION

Studies	DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING	**Subject**	MATERIALS AND PROCESS
Semester	1	**Course**	2
Character	COMPULSORY	**Mention / Field of specialisation**	
Plan	2022	**Modality**	Face-to-face
Credits	4,5	**Hours/week**	3.06
Language	CASTELLANO/EUSKARA		
Total hours	55 class hours + 57.5 non-class hours = **112.5 total hours**		

PROFESSORS

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URIBE AZKARRETA, MAITANE

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
CHEMISTRY	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GDR206 - To analyze, select and implement different metallic (ferrous and non-ferrous alloys) and non-metallic materials from the point of view of their properties for design		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		0,24
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		0,24
			Total:	**4,5**

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

ENAEE LEARNING RESULTS	ECTS
ENAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch of engineering.	1,2
ENAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.	0,3
ENAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and method engineering.	0,9
ENAE08 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which meet specific requirements.	0,66
ENAE09 - Engineering projects: Understanding of the different methods and ability to use them.	0,24
ENAE10 - Research & innovation: Ability to perform bibliographic searches, to use databases and other sources of information.	0,12
ENAE11 - Research & innovation: Ability to design and carry out experiments, to interpret data and draw conclusions.	0,12
ENAE12 - Research & innovation: Technical and lab competences.	0,12
ENAE13 - Practical application of engineering: Ability to select and use suitable equipment, tools and methods.	0,12
ENAE14 - Practical application of engineering: Ability to combine theory and practice in order to solve engineering problems.	0,12
ENAE15 - Practical application of engineering: Understanding of applicable methods and techniques and their limitations.	0,12
ENAE16 - Practical application of engineering: To be aware of the implications of the practical application of engineering.	0,12
ENAE17 - Transversal competences: To work effectively, both individually and in a team.	0,12
ENAE18 - Transversal competences: To use different methods to communicate effectively with the engineering community and society in general.	0,12
ENAE19 - Transversal competences: Demonstrate that they are aware of the responsibility implied in the practical application of engineering, the social and environmental impact, and show commitment with professional ethics, responsibility and regulations of the practical application of engineering.	0,12
Total:	**4,5**

SECONDARY LEARNING RESULTS

RGD290 **[!]** ***Proponer los objetivos y la planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías propias de su especialidad,- que en ocasiones llegan a la vanguardia del conocimiento- y definir una estrategia de***

aprendiz

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
Co-assessment	50%	*(No mechanisms)*
Observation (technical capacity, attitude and participation)	50%	

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

RGD291 **[!]** ***Establecer las responsabilidades de los miembros del equipo utilizando técnicas adecuadas para fomentar la eficiencia del equipo para el desarrollo del proyecto en los plazos establecidos (compartir recursos, aportar ideas, habilidades comunicativas***

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)*

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

RGD293 **[!]** ***Redacta y estructura correctamente la memoria del proyecto, haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje. Para ello, busca y hace uso de las fuentes de información adecuadas.***

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)*

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

RGD294 **[!]** ***Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	2 h.	3 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	100%	*(No mechanisms)*

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

RGD207 **[!]** ***Relacionar las propiedades mecánicas de los metales con su composición y tratamiento térmicos***

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.	8 h.	12 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	6 h.	8 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	28 h.	2 h.	30 h.
Carrying out exercises and solving problems individually and/or in teams	2 h.	9 h.	11 h.
Practical work in workshops and/or laboratories, individually and/or in teams	2 h.	2 h.	4 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	10%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
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	20%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	70%	

CH - Class hours: 38 h.
NCH - Non-class hours: 27 h.
TH - Total hours: 65 h.

RGD208 **[!]** ***Relacionar las propiedades mecánicas, físicas y el comportamiento en servicio de los polímeros con su composición y microestructura***

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.	10,5 h.	14,5 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	7 h.	9 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	8 h.		8 h.
Practical work in workshops and/or laboratories, individually and/or in teams	2 h.	2 h.	4 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	10%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
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	20%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	70%	

CH - Class hours: 16 h.
NCH - Non-class hours: 19,5 h.
TH - Total hours: 35,5 h.

CONTENTS

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Moodle Platform
Subject notes
Class presentations
Video projections
Lab practical training
Slides of the subject

Bibliography

Asbhy, M. Unit 1. The materials of engineering. Presentación. Granta Design and M. F. Ashby, 2018.

Asbhy, M. Unit 2. Materials property charts: mapping materials. Presentación. Granta Design and M. F. Ashby, 2018

Asbhy, M. Unit 3. The Elements databse: properties, relationships and resources. Presentación. Granta Design and M. F. Ashby, 2018.

"Materials: engineering, science, processing and design";. Ashby, Michael; Shercliff, Hugh; Cebon, David. Elsevier, Amsterdam. 2007. 1st edition. ISBN-13: 978-0-7506-8391-3. ISBN-10: 0-7506-8391-0 https://katalogoa.mondragon.edu/janium-bin/sumario.pl?Id=20210923145641

"Ciencia e Ingeniería de los Materiales"; vol. I y II; Callister, W.D./ Ed. Reverté; Barcelona, 1995, 3ª edición

Programa de selección de materiales CES de Michael Ashby

"Ciencia e Ingeniería de los Materiales"; W.D. Callister, Jr., D. G. Rethwisch, 2ª edición (correspondiente a la 9ª Edición original), Ed. Reverté; Barcelona, 2016.