



GENERAL INFORMATION         Studies DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING Semester 1       Subject MATERIALS AND PROCES         Semester 1       Course 2       Mention / Field of specialisation         Plan 2022       Modality Face-to-face       Language EUSKARA/CASTELLANO Total hours 55 class hours + 57.5 non-c hours         Coredits 4,5       Hours/week 3.06       Total hours 55 class hours + 57.5 non-c hours         Coredits 4,5       Hours/week 3.06       Total hours 55 class hours + 57.5 non-c hours         Coredits 4,5       Hours/week 3.06       Total hours 55 class hours + 57.5 non-c hours         Coredits 4,5       PROFESSORS         GALDOS ERRASTI, LANDER AGINE BIKUÑA, JULEN         EEQUIRED PREVIOUS KNOWLEDGE         Knowledge (No specific previous subjects required)       (No previous knowledge required)         Knowledge (No specific previous subjects required)       Knowledge sett of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or arti-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy       X         NAE02 - Knowledge and understanding: A systematic understanding of the key aspects a	class hours	s = <u>112.5 1</u> <u>ECTS</u> 4,02 0,32 0,16 <b>4,5</b>	
PRODUCT DEVELOPMENT ENGINEERING         Semester       1       Course 2       Mention / Field of specialisation         Plan       2022       Modality       Face-to-face       Language       EUSKARA/CASTELLANO         Total hours       55 class hours + 57.5 non-thours       Socialisation         Image: EUSKARA/CASTELLANO         Total hours       55 class hours + 57.5 non-thours         Image: EUSKARA/CASTELLANO         Total hours       55 class hours + 57.5 non-thours         Image: EUSKARA/CASTELLANO         OPOFESSORS         GALDOS ERRASTI, LANDER         AGRINE BIKUÑA, JULEN         REQUIRED PREVIOUS KNOWLEDGE         Knowledge         (No specific previous subjects required)       (No previous knowledge required)         (No specific previous subjects required)       (No previous knowledge required)         CUSTON ESUTS         Kooke specific to their specialty and of gradual complexity, -         x denoting means of the production processes related to the transformation of metal and and arts and select the production processes related to the transformation of metal and and arts and select the most appropriate one for each component of a product and and assessing the pact of the proposed solutions on the SDOS = 1 o acquire and	class hours uired) <u>AB</u>	<b>ECTS</b> 4,02 0,32 0,16	
specialisation         Plan 2022       Modality Face-to-face         Language       EUSKARA/CASTELLANO         Credits       4.5       Hours/week       3.06       Total hours 55 class hours + 57.5 non-on-hours         Coredits       4.5       Hours/week       3.06       Total hours 55 class hours + 57.5 non-on-hours         Coredits       4.5       Hours/week       3.06       Total hours 55 class hours + 57.5 non-on-hours         Coredits       2030 AGENDA GOALS         PROFESSORS         GALDOS ERRASTI, LANDER         AGINE DEVICUS KNOWLEDGE         Knowledge         (No specific previous subjects required)       (No previous knowledge required)         (No specific previous subjects required)       (No previous knowledge required)         SACOUNT SECOND         CEARNING RESULTS       KC       sk         REQUIRED PREVIOUS KNOWLEDGE         SACOUNT SECOND       (No previous knowledge required)         Action of the speciality of of gradual complexity, -       ×         SACOUNT SECOND         SACOUNT SECOND       SACOUNT SECOND       S	uired) AB	<b>ECTS</b> 4,02 0,32 0,16	
Nodality Face-to-face       Language EUSKARA/CASTELLANO         Credits 4,5       Hours/week 3.06       Total hours 55 class hours + 57.5 non-chours         Colspan="2">Colspan="2"         Colspan="2">Colspan="2"       Colspan="2"       Colspan="2"       Colspan="2"       Colspan="2"       Colspan="2"       Colspan="2"       Colspan="2"         Colspan="2" <th colsp<="" th=""><th>uired) AB</th><th><b>ECTS</b> 4,02 0,32 0,16</th></th>	<th>uired) AB</th> <th><b>ECTS</b> 4,02 0,32 0,16</th>	uired) AB	<b>ECTS</b> 4,02 0,32 0,16
Credits 4,5       Hours/week 3.06       Total hours 55 class hours + 57.5 non-Chours         Comparison of the control of the con	uired) AB	<b>ECTS</b> 4,02 0,32 0,16	
Control of the production processes related to the transformation of metal and a sessing the product of the production processes related to the transformation of metal and a sets of the most appropriate one for each component of a product.  RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - coming aware of respect for human rights and fundamental rights, and analyzing and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or ant-garde, demonstrating the ability to write in multidisciplinary teams and/or undertake further studies the anity and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language  RAD20 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or gineering.  NEO2 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or gineering.  NEO2 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or gineering.  NEO2 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or gineering.  NEO2 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.  NEO2 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.  NEO3 - Knowledge and understanding of the development and completion of projects which m based or gineering.  NEO4 - Analysis in engineering: Ability to apply their knowledge in the development and completion of projects which m based or gineering.  NEO9 - Engineering projects: Ability to apply their knowledge and understanding in analysing product, process and enforce equirements.  NEO9 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which m bacific requirements.  NEO9 - Engineering projects:	uired) AB	<b>ECTS</b> 4,02 0,32 0,16	
2030 AGENDA GOALS  PROFESSORS  GALDOS ERRASTI, LANDER AGIRRE BIKUÑA, JULEN  REQUIRED PREVIOUS KNOWLEDGE  (No specific previous subjects required) (No previous knowledge required) (No previous knowledge) (No specific previous subjects required) (No specific previous subjects specific to their specially and of gradual complexity, - coming aware of respect for human rights and fundamental rights, and analyzing and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or ant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and herent manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language  Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or gineering. NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering. NAE05 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and ethod engineering. NAE04 - Knowledge and understanding of the different methods and ability to use them. NAE05 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which m becific requirements. NAE09 - Engineering projects: Understanding of the different methods and ability to use them. NAE09 - Engineering projects: Understanding of th	AB	4,02 0,32 0,16	
GALDOS ERRASTI, LANDER         AGIRRE BIKUÑA, JULEN         REQUIRED PREVIOUS KNOWLEDGE         Knowledge         (No specific previous subjects required)       (No previous knowledge required)         LEARNING RESULTS       KC       SK         SR204 - To identify and select the production processes related to the transformation of metal and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or ant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy       RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and herent manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language         Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or agineering.         NAEEE LEARNING RESULTS         NAEE4 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.         NAEE6 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and ender engineering.         NAEE6 - Analysis in engineering Ability to apply their knowledge in the development and completion of projects which m becific requirements.         NAE66 - Analysis in engineering and preform bibli	AB	4,02 0,32 0,16	
GALDOS ERRASTI, LANDER         AGIRRE BIKUÑA, JULEN         REQUIRED PREVIOUS KNOWLEDGE         Knowledge         (No specific previous subjects required)       (No previous knowledge required)         LEARNING RESULTS       KC       SK         SR204 - To identify and select the production processes related to the transformation of metal and astics and select the most appropriate one for each component of a product       KC       SK         Consider of previous subjects specific to their specialty and of gradual complexity, -       ×         seconing aware of respect for human rights and fundamental rights, and analyzing and assessing the protoced solutions on the SDGs - to acquire and/or apply basic, advanced and/or rant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy       RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and sherer tmanner, orally and in writing, based on quality information, self-made or obtained from different purces, using inclusive and non-discriminatory language         X.Ket Skills / AB: Abilities         NAEE LEARNING RESULTS         NAEE LEARNING RESULTS         NAEE4 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.         NAEE4 - Knowledge and understanding: A bystemat	AB	4,02 0,32 0,16	
GALDOS ERRASTI, LANDER         AGIRRE BIKUÑA, JULEN         REQUIRED PREVIOUS KNOWLEDGE         Knowledge         (No specific previous subjects required)       (No previous knowledge required)         LEARNING RESULTS       KC       SK         SR204 - To identify and select the production processes related to the transformation of metal and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or ant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy       RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and herent manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language         Knowledge or Content / SK: Skills / AB: Abilities         NAEE LEARNING RESULTS       NAEE LEARNING RESULTS         NAEE 4 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.       NAE66 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and esthed engineering.         NAE66 - Engineering projects: Understanding of the different methods and ability to use them.       NAE60 - Engineering projects: Understanding of the different methods and ability to use them.         NAE60 - Engineering projects: Understanding of the different methods and ability to use them. <td>AB</td> <td>4,02 0,32 0,16</td>	AB	4,02 0,32 0,16	
AGIRRE BIKUÑA, JULEN	AB	4,02 0,32 0,16	
REQUIRED PREVIOUS KNOWLEDGE         Subjects       Knowledge         (No specific previous subjects required)       (No previous knowledge required)         EARNING RESULTS       KC       SK         DR204 - To identify and select the production processes related to the transformation of metal and astics and select the most appropriate one for each component of a product       KC       SK         RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, -       ×       ×         scoming aware of respect for human rights and fundamental rights, and analyzing and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or anart-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy       ×         RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and wherent manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language       ×         X: Knowledge or Content / SK: Skills / AB: Abilities       NAE02 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.       NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.         NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.       NAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and endendering.	AB	4,02 0,32 0,16	
Subjects         Knowledge           (No specific previous subjects required)         (No previous knowledge required)           LEARNING RESULTS         KC         SK           SR294 - To identify and select the production processes related to the transformation of metal and astics and select the most appropriate one for each component of a product         KC         SK           RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, -         ×         x           scoming aware of respect for human rights and fundamental rights, and analyzing and assessing the pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or anart-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies th a high degree of autonomy         ×           RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and wherent manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language         ×           X: Knowledge or Content / SK: Skills / AB: Abilities         NAE02 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.         NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.           NAE08 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and tendo engineering.         NAE08 - Analysis in engineering: Ability to apply their knowledge in the development and completion of projects which m bacific requireme	AB	4,02 0,32 0,16	
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LEARNING RESULTS         KC         SK           SR204 - To identify and select the production processes related to the transformation of metal and astics and select the most appropriate one for each component of a product         X           RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity,	AB	4,02 0,32 0,16	
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R204 - To identify and select the production processes related to the transformation of metal and astics and select the most appropriate one for each component of a product         RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, -		4,02 0,32 0,16	
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<ul> <li>pact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or ant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies that high degree of autonomy</li> <li>RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and </li> <li>RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and </li> <li>* manner, orally and in writing, based on quality information, self-made or obtained from different urces, using inclusive and non-discriminatory language</li> <li>* Knowledge or Content / SK: Skills / AB: Abilities</li> <li>NAEE LEARNING RESULTS</li> <li>NAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch or agineering.</li> <li>NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.</li> <li>NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.</li> <li>NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.</li> <li>NAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and ethod engineering.</li> <li>NAE08 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which m becific requirements.</li> <li>NAE09 - Engineering projects: Understanding of the different methods and ability to use them.</li> <li>NAE10 - Research &amp; innovation: Ability to perform bibliographic searches, to use databases and other sources of formation.</li> </ul>	Total:		
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<ul> <li>burces, using inclusive and non-discriminatory language</li> <li>C: Knowledge or Content / SK: Skills / AB: Abilities</li> <li>NAEE LEARNING RESULTS</li> <li>NAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch on gineering.</li> <li>NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.</li> <li>NAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and tethod engineering.</li> <li>NAE08 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which m pecific requirements.</li> <li>NAE09 - Engineering projects: Understanding of the different methods and ability to use them.</li> <li>NAE10 - Research &amp; innovation: Ability to perform bibliographic searches, to use databases and other sources of formation.</li> </ul>	Total:	4,5	
<ul> <li>C: Knowledge or Content / SK: Skills / AB: Abilities</li> <li>NAEE LEARNING RESULTS</li> <li>NAE02 - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch on ngineering.</li> <li>NAE04 - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.</li> <li>NAE06 - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and the thod engineering.</li> <li>NAE08 - Engineering projects: Ability to apply their knowledge in the development and completion of projects which modelic requirements.</li> <li>NAE09 - Engineering projects: Understanding of the different methods and ability to use them.</li> <li>NAE10 - Research &amp; innovation: Ability to perform bibliographic searches, to use databases and other sources of formation.</li> </ul>	Total:	4,5	
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<b>NAE10</b> - Research & innovation: Ability to perform bibliographic searches, to use databases and other sources of formation.		0,28	
		0,2	
NAE44 Dessents 9 intervetion. Ability to design and some out superinters to intervent data and draw some business			
<b>NAE11</b> - Research & innovation: Ability to design and carry out experiments, to interpret data and draw conclusions.		0,2	
NAE13 - Practical application of engineering: Ability to select and use suitable equipment, tools and methods.		0,2	
NAE14 - Practical application of engineering: Ability to combine theory and practice in order to solve engineering probl		0,24	
NAE15 - Practical application of engineering: Understanding of applicable methods and techniques and their limitation		0,2	
NAE16 - Practical application of engineering: To be aware of the implications of the practical application of engineering	g.	0,2	
NAE17 - Transversal competences: To work effectively, both individually and in a team.		0,12	
NAE18 - Transversal competences: To use different methods to communicate effectively with the engineering commune nd society in general.	inity	0,12	
<b>NAE19</b> - Transversal competences: Demonstrate that they are aware of the responsibility implied in the practical applic engineering, the social and environmental impact, and show commitment with professional ethics, responsibility and egulations of the practical application of engineering.		0,12	
	Total:	4,5	

1RGD290 (1 sem)



## Goi Eskola Politeknikoa | Mondragon Unibertsitatea Course: 2024 / 2025 - Course planning



LEARNING ACTIVITIES			СН	NCH	ТН
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual				3 h.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	SMS		
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	100%	Presentation and defe practical work, simulat term projects, end of d and problems	nce of exerc	work, laborato	ry practical work,
CH - Class hours: 0 h. NCH - Non-class hours: 3 h. TH - Total hours: 3 h.					
1RGD291 (1 sem)					
LEARNING ACTIVITIES			СН	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual			1	3 h.	3 h.
EVALUATION SYSTEM	w	MAKE-UP MECHANIS	SMS		
Presentation and defence of exercises, case studies,	100%		(No mech	anisms)	
computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems			(		
CH - Class hours: 0 h. NCH - Non-class hours: 3 h. TH - Total hours: 3 h.					
1RGD293 (1 sem)					
LEARNING ACTIVITIES	rovido oclu	tions to problems in	СН	2 h.	2 h.
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual	ly and/or in			2 11.	2 11.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS			
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	100%		(No mech	anisms)	
CH - Class hours: 0 h. NCH - Non-class hours: 2 h. TH - Total hours: 2 h.					
1RGD292 (1 sem)					
LEARNING ACTIVITIES			СН	NCH	тн
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual			1 h.	1 h.	2 h.
	ly and/or in	teams			



100%



Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems (No mechanisms)

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

1RGD294 (1 sem)						
LEARNING ACTIVITIES		(	СН	NCH	ТН	
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM				2 h.	2 h.	
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	100%		lo mecha	nnisms)		
CH - Class hours: 0 h. NCH - Non-class hours: 2 h. TH - Total hours: 2 h.						

## RGD205 [!] Definir los procesos de fabricación adecuados para cada componente del producto

LEARNING ACTIVITIES			СН	NCH	ТН
Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individua				20 h.	20 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects			40 h.	16 h.	56 h.
Carrying out exercises and solving problems individually and/or in teams		8 h.	7,5 h.	15,5 h.	
Carrying out work experience in real environments and w	riting the c	corresponding report	6 h.	3 h.	9 h.
EVALUATION SYSTEM	w	MAKE-UP MECHAN	ISMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	30%	Individual written and coding/programming		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	20%		
Individual written and/or oral tests or individual coding/programming tests	50%		
CH - Class hours: 54 h. NCH - Non-class hours: 46,5 h. TH - Total hours: 100,5 h.			

## CONTENTS

1. Foundry2. Forging3. Sheet metal forming4. Plastic forming5. 3D printing

## LEARNING RESOURCES AND BIBLIOGRAPHY





Learning resources	Bibliography
[!] Consultas en páginas web relacionadas con el tema	https://labur.eus/X3P9j
[!] Plataforma Moodle	Mikell P. Groover, "Fundamentals of Modern Manufacturing:
[!] Presentaciones en clase	Materials, Processes, and Systems", John Wiley & Sons,
[!] Proyección de videos	2020
[!] Realización de prácticas en laboratorio	

[!] Software específico de la titulación

[!] Transparencias de la asignatura

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