

## [GOD302] MANUFACTURING PROCESSES

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN INDUSTRIAL ORGANIZATION ENGINEERING	<b>Subject</b>	PRODUCTION ENGINEERING
<b>Semester</b>	1	<b>Course</b>	2
<b>Character</b>	COMPULSORY	<b>Mention / Field of specialisation</b>	
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face
<b>Credits</b>	6	<b>Hours/week</b>	5.5
		<b>Language</b>	CASTELLANO/EUSKARA
		<b>Total hours</b>	99 class hours + 51 non-class hours = <b>150 total hours</b>

### PROFESSORS

SAENZ DE ARGANDOÑA FERNANDEZ DE GOROSTIZA, ENEKO
CHAMORRO SANCHEZ, XABIER

### REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESSION	<i>(No previous knowledge required)</i>

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GOR202</b> - To know production and manufacturing systems		x		5,4
<b>G-RTR1</b> - 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
<b>G-RTR2</b> - 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		0,28
<b>Total:</b>				<b>6</b>

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

#### ENAEE LEARNING RESULTS

ENAEE LEARNING RESULTS	ECTS
<b>ENAE02</b> - Knowledge and understanding: A systematic understanding of the key aspects and concepts of their branch of engineering.	3,04
<b>ENAE04</b> - Knowledge and understanding: To be aware of the multidisciplinary context of engineering.	0,4
<b>ENAE05</b> - Analysis in engineering: Ability to apply their knowledge and understanding in identifying, formulating and solving engineering problems using established methods.	0,44
<b>ENAE06</b> - Analysis in engineering: Ability to apply their knowledge and understanding in analysing product, process and method engineering.	0,44
<b>ENAE08</b> - Engineering projects: Ability to apply their knowledge in the development and completion of projects which meet specific requirements.	0,42
<b>ENAE17</b> - Transversal competences: To work effectively, both individually and in a team.	0,42
<b>ENAE18</b> - Transversal competences: To use different methods to communicate effectively with the engineering community and society in general.	0,42
<b>ENAE19</b> - 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.	0,42
<b>Total:</b>	<b>6</b>

### SECONDARY LEARNING RESULTS

**RG0290** [!] *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

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 h.	4 h.

#### EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	<b>W</b> 100%
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#### MAKE-UP MECHANISMS

*(No mechanisms)*

**CH - Class hours:** 3 h.  
**NCH - Non-class hours:** 1 h.  
**TH - Total hours:** 4 h.

**RG0291** [!] *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**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	3 h.	1 h.	4 h.

**EVALUATION SYSTEM**

	<i>W</i>
Individual written and/or oral tests or individual coding/programming tests	100%

**MAKE-UP MECHANISMS**

(No mechanisms)

**CH - Class hours:** 3 h.  
**NCH - Non-class hours:** 1 h.  
**TH - Total hours:** 4 h.

**RG0293** [!] *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**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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 h.	4 h.

**EVALUATION SYSTEM**

	<i>W</i>
Individual written and/or oral tests or individual coding/programming tests	100%

**MAKE-UP MECHANISMS**

(No mechanisms)

**CH - Class hours:** 3 h.  
**NCH - Non-class hours:** 1 h.  
**TH - Total hours:** 4 h.

**RG0294** [!] *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**

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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	2 h.	1 h.	3 h.

**EVALUATION SYSTEM**

	<i>W</i>
Individual written and/or oral tests or individual coding/programming tests	100%

**MAKE-UP MECHANISMS**

(No mechanisms)

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

**RG0203** [!] *Selección los procesos de fabricación adecuados para asegurar que los estándares de producto se mantienen a lo largo del tiempo*

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.	6 h.	10 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	4 h.	8 h.	12 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	16 h.		16 h.
Carrying out exercises and solving problems individually and/or in teams	20 h.	10 h.	30 h.
Practical work in workshops and/or laboratories, individually and/or in teams	10 h.	2 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	20%	(No mechanisms)	
Individual written and/or oral tests or individual coding/programming tests	80%		

**CH - Class hours:** 54 h.  
**NCH - Non-class hours:** 26 h.  
**TH - Total hours:** 80 h.

**RG0204** [!] *Selecciona las tecnologías más adecuadas para fabricar el producto dentro de las especificaciones establecidas por el cliente*

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	10 h.	10 h.	20 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	4 h.	6 h.	10 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.		10 h.
Carrying out exercises and solving problems individually and/or in teams	10 h.	5 h.	15 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)	
Individual written and/or oral tests or individual coding/programming tests	80%		

**CH - Class hours:** 34 h.  
**NCH - Non-class hours:** 21 h.  
**TH - Total hours:** 55 h.

## CONTENTS

- 1 - Materials
- 2 - Casting
- 3 - Forging
- 4 - Sheet forming
- 5 - Polymers
- 6 - Machining
- 7 - 3D printing

8 - Joints

9 - Cost estimation

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
Video projections  
Lab practical training

### Bibliography

Fundamentos de Manufactura Moderna. Materiales, Procesos y Sistemas. Mikell P. Groover  
Manufactura. Ingeniería y Tecnología. Serope Kalpakjian y Steven R. Schmid . Pearson Education