

## [GBM201] DEVELOPMENT TECHNOLOGY

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN BIOMEDICAL ENGINEERING		<b>Subject</b>	NEW PRODUCT ENGINEERING
<b>Semester</b>	1	<b>Course</b>	2	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPULSORY		<b>Language</b>	CASTELLANO
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b>
<b>Credits</b>	3	<b>Hours/week</b>	2.67	48 class hours + 27 non-class hours = <b>75 total hours</b>

### PROFESSORS

ORTUBAY IBABE, RAFAEL
OTALORA ORTEGA, HARRY YASIR

### REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESSION I	[!] <i>Conceptos básicos de matemáticas: Geometría, trigonometría...</i>
BIOMATERIALS I	[!] <i>Conceptos básicos de física: presión, cambios de unidades...</i>

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GBR208</b> - To apply manufacturing knowledge to the development of implants and biomedical instruments		x		2,6
<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		0,16
<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	0,24
<b>Total:</b>				<b>3</b>

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

### SECONDARY LEARNING RESULTS

**RGB290** [!] *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
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	1,5 h.	,5 h.	2 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)

**CH - Class hours:** 1,5 h.

**NCH - Non-class hours:** ,5 h.

**TH - Total hours:** 2 h.

**RGB291** [!] *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
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	1,5 h.	,5 h.	2 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Self-assessment	25%	Observation (technical capacity, attitude and participation)
Co-assessment	25%	
Observation (technical capacity, attitude and participation)	50%	

**CH - Class hours:** 1,5 h.  
**NCH - Non-class hours:** ,5 h.  
**TH - Total hours:** 2 h.

**RGB293** [!] *Redacta y estructura correctamente la memoria del proyecto, haciendo un uso correcto, incluso y no discriminatorio del lenguaje. Para ello, busca y hace uso de las fuentes de información adecuadas.*

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	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 exercises, term projects, challenges and problems	100%	(No mechanisms)

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

**RGB294** [!] *Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, incluso y no discriminatorio del lenguaje.*

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	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 exercises, term projects, challenges and problems	100%	Observation (technical capacity, attitude and participation)

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

**RGB216** [!] *Define los procesos de fabricación por arranque de viruta y de fabricación aditiva utilizados en el sector biomédico analizando y definiendo sus ventajas y limitaciones así como sus principales variables*

LEARNING ACTIVITIES	CH	NCH	TH
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning		6,75 h.	6,75 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.		12 h.
Carrying out exercises and solving problems 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	20%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	80%	

**CH - Class hours:** 14 h.  
**NCH - Non-class hours:** 8,75 h.  
**TH - Total hours:** 22,75 h.

**RGB217** [!] *Es capaz de seleccionar y aplicar el proceso de fabricación óptimo para un componente biomédico que tenga una geometría y material dados*

**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	14 h.	5,5 h.	19,5 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%	<i>(No mechanisms)</i>	
Individual written and/or oral tests or individual coding/programming tests	50%		

**CH - Class hours:** 14 h.  
**NCH - Non-class hours:** 5,5 h.  
**TH - Total hours:** 19,5 h.

**RGB232** [!] *Define los procesos de fabricación por conformado utilizados en el sector biomédico analizando y definiendo sus ventajas y limitaciones así como sus principales variables*

**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	1 h.	6 h.	7 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.		1 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	9 h.		9 h.
Carrying out exercises and solving problems individually and/or in teams	2 h.	3,75 h.	5,75 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%	Individual written and/or oral tests or individual coding/programming tests	
Individual written and/or oral tests or individual coding/programming tests	80%		

**CH - Class hours:** 13 h.  
**NCH - Non-class hours:** 9,75 h.  
**TH - Total hours:** 22,75 h.

**CONTENTS**

1. Sheet metal transformation processes

2. Forge

3. Transformation of plastics

4. Machining

5. Additive manufacturing

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

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

### Bibliography

Fundamentals of modern manufacturing. Materials, processes and systems. Mikell P. Groover