

## [GBD202] GRAPHIC EXPRESSION II

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN BIOMEDICAL ENGINEERING		<b>Subject</b>	GRAPHIC EXPRESSION
<b>Semester</b>	1	<b>Course</b>	2	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPULSORY		<b>Language</b>	EUSKARA
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b>
<b>Credits</b>	4,5	<b>Hours/week</b>	3.92	70.6 class hours + 41.9 non-class hours = <b>112.5 total hours</b>

### PROFESSORS

ZUGASTI TESO, FELIX

### REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESSION I	(No previous knowledge required)

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GBR205</b> - To integrate the principles of mechanical elements and assemblies to solve Biomedical Engineering problems.		x		4,02
<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		0,24
<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>4,5</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

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

CH	NCH	TH
1,9 h.	1,1 h.	3 h.

#### EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

**W**  
100%

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems  
Observation (technical capacity, attitude and participation)

**CH - Class hours:** 1,9 h.

**NCH - Non-class hours:** 1,1 h.

**TH - Total hours:** 3 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

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

CH	NCH	TH
1,9 h.	1,1 h.	3 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:** 1,9 h.  
**NCH - Non-class hours:** 1,1 h.  
**TH - Total hours:** 3 h.

**RGB293** [!] *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
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	1,9 h.	1,1 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**

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems  
 Observation (technical capacity, attitude and participation)

**CH - Class hours:** 1,9 h.  
**NCH - Non-class hours:** 1,1 h.  
**TH - Total hours:** 3 h.

**RGB294** [!] *Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo 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	1,9 h.	1,1 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**

Observation (technical capacity, attitude and participation)

**CH - Class hours:** 1,9 h.  
**NCH - Non-class hours:** 1,1 h.  
**TH - Total hours:** 3 h.

**RGB209** [!] *Entiende el objetivo y funcionamiento de un conjunto mecánico y representa correctamente las piezas de cualquier conjunto siguiendo las normas de representación*

**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	5 h.	3 h.	8 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.		4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and	7 h.	4 h.	11 h.

procedures associated with the subjects

Carrying out exercises and solving problems individually and/or in teams 9 h. 8,25 h. 17,25 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

40%

Individual written and/or oral tests or individual 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

40%

**CH - Class hours:** 25 h.

**NCH - Non-class hours:** 15,25 h.

**TH - Total hours:** 40,25 h.

**RGB210** [!] *Representa y acota correctamente cualquier pieza de un conjunto mecánico definiendo si fuesen necesarias, las tolerancias para su correcto funcionamiento*

**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

5 h.

3 h.

8 h.

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

2 h.

2 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

14 h.

5 h.

19 h.

Carrying out exercises and solving problems individually and/or in teams

17 h.

14,25 h.

31,25 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

42,5%

Individual written and/or oral tests or individual 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

15%

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

42,5%

**CH - Class hours:** 38 h.

**NCH - Non-class hours:** 22,25 h.

**TH - Total hours:** 60,25 h.

**CONTENTS**

- 1.Representation of mechanical assemblies
- 2.Representation of elements of an assembly
- 3.Knowledge of commercial elements
  - a.Identification of a commercial element in a plane
  - b.Be able to select choose a commercial element from a catalogue
- 4.Tolerance
  - a.Dimensional Tolerance
  - b.Superficial Tolerance

c.Geometric Tolerance

5.SolidWroks

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
Class presentations  
Moodle Platform  
Programmes

### Bibliography

1. U.D. Adierazpen grafikoa I
2. U.D. Elementu mekanikoak
3. U.D. Perdoi dimentsionalak
4. U.D. Gainazal perdoiak
5. U.D. Perdoi geometrikoak
6. "Normalización del dibujo técnico" Cándido Preciado y Francisco Jesús Moral; Editorial Donostiarra
7. "Dibujo Industrial, Conjuntos y Despieces" J.M. Auria Apilluelo, P. Ibañez Carabantes y P. Ubieto Artur; Editorial Thomson
8. "Interpretation of Geometry, Dimensioning and Tolerancing" Daniel E. Puncochar; Editorial Industrial Press Inc  
[http://katalogoa.mondragon.edu/janium-bin/janium\\_login\\_opac\\_re\\_Ink.pl?grupo=BIOMEDIKOA21&ejecuta=65&\\_ST](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_Ink.pl?grupo=BIOMEDIKOA21&ejecuta=65&_ST)