

[GMC302] GRAPHIC EXPRESSION II

GENERAL INFORMATION

Studies	DEGREE IN MECHANICAL ENGINEERING		Subject	GRAPHIC EXPRESSION
Semester	2	Course	1	Mention / Field of specialisation
Character	COMPULSORY		Language	EUSKARA
Plan	2022	Modality	Face-to-face	Total hours
Credits	6	Hours/week	4.97	89.5 class hours + 60.5 non-class hours = 150 total hours

PROFESSORS

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REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
GRAPHIC EXPRESSION I	(No previous knowledge required)

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GMR101 - To know and apply graphic engineering techniques		x		5,4
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		0,28
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		0,32
Total:				6

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

ENAAE LEARNING RESULTS

- ENA102** - Knowledge and comprehension: Knowledge and comprehension of the engineering disciplines of their speciality, at the level necessary to acquire the rest of the competencies of the degree, including notions of the latest advances.
- ENA104** - Analysis in engineering: The ability to analyse complex products, processes and systems in their field of study; choose and apply relevant analytical, calculation and experimental methods in a suitable way; and correctly interpret the results of such analyses.
- ENA105** - Analysis in engineering: The ability to identify, formulate and solve engineering problems in their speciality; choose and apply adequately established analytical, calculation and experimental methods; and acknowledge the importance of social, health and safety, environmental, economic, and industrial restrictions.
- ENA106** - Engineering projects: Ability to project, design and develop complex products (parts, components, finished products, etc.), processes and systems of their speciality, which meet the established requirements, including awareness of the social, health and safety, environmental, economic and industrial aspects, as well as selecting and applying appropriate project methods.
- ENA113** - Practical application of engineering: Knowledge of application of materials, equipment and tools, engineering technology and processes, and their limitations in the field of their speciality.
- ENA114** - Practical application of engineering: Ability to apply standards of engineering practice in their speciality.
- ENA119** - Communication and Teamwork: Ability to effectively communicate information, ideas, problems and solutions in the field of engineering and with society in general.
- ENA120** - Communication and Teamwork: Ability to operate effectively in domestic and international contexts, individually and as a team, and to cooperate with both engineers and people from other disciplines.

SECONDARY LEARNING RESULTS

RGM190 [!] *Conocer y aplicar las fases para desarrollar de forma guiada, con los objetivos y la planificación previamente definidos, un proyecto de complejidad técnica acorde con los conocimientos de formación básica de la ingeniería. Reflexiona sobre los cono*

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	2 h.	2 h.	4 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)
Comments: Continuous evaluation. FEEDBACK received from the tutor in the project follow-up meetings

CH - Class hours: 2 h.
NCH - Non-class hours: 2 h.
TH - Total hours: 4 h.

RGM191 [!] *Contribuir en la estrategia de funcionamiento del equipo priorizando los objetivos comunes, fomentando y valorando la participación de todas las personas y responsabilizándose de las tareas individuales, así como del cumplimiento de plazos.*

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	1,5 h.	1,5 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

(No mechanisms)
Comments: Continuous evaluation. FEEDBACK received from the tutor in the project follow-up meetings

CH - Class hours: 1,5 h.
NCH - Non-class hours: 1,5 h.
TH - Total hours: 3 h.

RGM193 [!] *Redacta una memoria de proyecto clara y concisa utilizando las fuentes de información y estructura de memoria facilitadas, 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	2 h.	2 h.	4 h.

EVALUATION SYSTEM

	W
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%

MAKE-UP MECHANISMS

(No mechanisms)
Comments: Continuous evaluation. FEEDBACK received from the tutor in the project follow-up meetings

CH - Class hours: 2 h.
NCH - Non-class hours: 2 h.
TH - Total hours: 4 h.

RGM194 [!] *Realiza una presentación oral y defensa del proyecto clara y concisa, haciendo 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	2 h.	2 h.	4 h.

EVALUATION SYSTEM

	W
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%

MAKE-UP MECHANISMS

(No mechanisms)
Comments: Continuous evaluation. FEEDBACK received from the tutor in the project follow-up meetings

CH - Class hours: 2 h.

NCH - Non-class hours: 2 h.
TH - Total hours: 4 h.

RGM123 [!] *Entiende el objetivo y funcionamiento de un conjunto mecánico y representar correctamente las piezas de cualquier conjunto siguiendo las normas de representación*

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2 h.	4 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	1 h.	2 h.	3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.	2 h.	7 h.
Carrying out exercises and solving problems individually and/or in teams	9 h.	8 h.	17 h.
Practical work in workshops and/or laboratories, individually and/or in teams	2 h.	3 h.	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	45%	(No mechanisms)
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	10%	Comments: There will be no make-up exams, there is the possibility of reviewing them with the lecturers before handing them in. The individual test will have a make-up exam, the first exam will have a weight of 25 % and the make-up exam will have a weight of 75 %. If the minimum mark is not reached, the exam mark will be considered as the total learning mark.
Individual written and/or oral tests or individual coding/programming tests	45%	

CH - Class hours: 19 h.
NCH - Non-class hours: 17 h.
TH - Total hours: 36 h.

RGM124 [!] *Representar correctamente cualquier conjunto mecánico*

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2 h.	4 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	1 h.	2 h.	3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.	3 h.	9 h.
Carrying out exercises and solving problems individually and/or in teams	9 h.	6 h.	15 h.
Practical work in workshops and/or laboratories, individually and/or in teams	3 h.	3 h.	6 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%	(No mechanisms)
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	10%	Comments: There will be no make-up exams, there is the possibility of reviewing them with the lecturers before handing them in. The individual test will have a make-up exam, the first exam will have a weight of 25 % and the make-up exam will have a weight of 75 %. If the minimum mark is not reached, the exam mark will be considered as the total learning mark.
Individual written and/or oral tests or individual coding/programming tests	50%	

CH - Class hours: 21 h.
NCH - Non-class hours: 16 h.
TH - Total hours: 37 h.

RGM125 [!] *Acotar correctamente cualquier pieza de un conjunto mecánico, definiendo si fuesen necesarias, las tolerancias para su correcto funcionamiento*

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	5 h.	5 h.	10 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	4 h.	3 h.	7 h.
Carrying out exercises and solving problems individually and/or in teams	33 h.	12 h.	45 h.

EVALUATION SYSTEM

	<i>W</i>
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	45%
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	10%
Individual written and/or oral tests or individual coding/programming tests	45%

MAKE-UP MECHANISMS

(No mechanisms)
Comments: There will be no make-up exams, there is the possibility of reviewing them with the lecturers before handing them in. The individual test will have a make-up exam, the first exam will have a weight of 25 % and the make-up exam will have a weight of 75 %. If the minimum mark is not reached, the exam mark will be considered as the total learning mark.

CH - Class hours: 42 h.
NCH - Non-class hours: 20 h.
TH - Total hours: 62 h.

CONTENTS

1. The Representation of Mechanical Components
 2. Tolerances
 - a. Dimensional tolerances
 - b. Surface tolerances
 - c. Geometric tolerances
3. Representation of plans
4. Knowledge of commercial mechanical elements
 - a. Identification of the commercial mechanical elements of a plane
 - b. Identification of characteristics to ensure the correct use of mechanical elements according to catalog and rules

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Topic related web quires
 Moodle Platform
 Class presentations
 Lab practical training

Bibliography

PRECIADO BARRERA, Cándido; MORAL GARCIA Francisco Jesus. Normalización del dibujo técnico. 1ª Edición. Donostia: Editorial Donostirra, 2004.
 AURIA APILLUELO, José M; IBAÑEZ CARABANTES, Pedro; UBIETO ARTUR, Pedro. Dibujo Industrial Conjuntos y Despieces. 2ª Edición. Madrid: Thomson 2005.
 JENSEN, Cecil. Geometric dimensioning & tolerancing. Albany, Delmar 2003.
 PUNCOCHAR, Daniel E. Interpretation of Geometric dimensioning and tolerancing. 2ª Edición. New York: Industrial Press, 1997.