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[GMD301] FUNDAMENTALS OF COMPUTING SCIENCE

GENERAL INFORMATION

Studies	DEGREE IN MECHANICAL ENGINEERING	**Subject**	COMPUTER SCIENCE
Semester	1	**Course** 1	
Character	BASIC TRAINING	**Mention / Field of specialisation**	
Plan	2022	**Modality** Face-to-face	
Credits	6	**Hours/week** 4.33	**Language** EUSKARA/CASTELLANO
		Total hours	78 class hours + 72 non-class hours = **150 total hours**

2030 AGENDA GOALS

8 DECENT WORK AND ECONOMIC GROWTH 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PROFESSORS

	EREÑO INCERA, ANA MONSERRAT
	AZPI-ORMAZABAL, ESTEBE (GOIERRI)
	BADIOLA ZABALA, GOIZALDE

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
G-RA04 - To know the use and programming of computers, operating systems, databases and computer programs with applications in engineering		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		0,36
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		0,24
			Total:	**6**

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

ENAEE LEARNING RESULTS

ENA101 - Knowledge and comprehension: Knowledge and understanding of mathematics and other basic sciences inherent in them engineering speciality, at a level that allows them to acquire the other competencies of the degree.

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.

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

1RGM194 (1 sem)

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.	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)*

Comments: Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled,

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mistakes are corrected and feedback is given to overcome the project.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

1RGM192 (1 sem)

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.	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)*

Comments: Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled, mistakes are corrected and feedback is given to overcome the project.

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CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

1RGM193 (1 sem)

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.	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)*

Comments: Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled, mistakes are corrected and feedback is given to overcome the project.

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CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

RGM107 [!] *Desarrolla y estructura programas para resolver problemas haciendo uso de estructuras de control de flujo, variables y operadores lógicos*

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		3,6 h.	3,6 h.
Personal study and flexible development of concepts and subjects using active dynamics, to	2 h.		2 h.

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foster more meaningful learning

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	13 h.	2,4 h.	15,4 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	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	10%	*(No mechanisms)*
Individual written and/or oral tests or individual coding/programming tests	90%	

CH - Class hours: 25 h.
NCH - Non-class hours: 11 h.
TH - Total hours: 36 h.

RGM108 [!] *Automatiza operaciones y organiza el código fuente en funciones para mejorar el proceso de desarrollo de programas y dar solución a problemas genéricos que se les plantea*

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		4,5 h.	4,5 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	2 h.		2 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	13 h.	5 h.	18 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	10 h.	10,5 h.	20,5 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	10%	*(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	90%	

CH - Class hours: 25 h.
NCH - Non-class hours: 20 h.
TH - Total hours: 45 h.

1RGM190 (1 sem)

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.	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)*

Comments: Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled, mistakes are corrected and feedback is given to overcome the project.

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NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

RGM109 **[!]** *Diseña y hace uso de arrays de forma correcta para resolver problemas mediante programas*

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		5,4 h.	5,4 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	2 h.		2 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	13 h.		13 h.
Computer simulation exercises, individually and/or in teams	13 h.	20,6 h.	33,6 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	10%	*(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	90%	

CH - Class hours: 28 h.
NCH - Non-class hours: 26 h.
TH - Total hours: 54 h.

1RGM191 **(1 sem)**

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.	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)*
Comments: Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled, mistakes are corrected and feedback is given to overcome the project.		**Comments:** Continuous evaluation. Through the meetings with the tutor and the experts throughout the project, the work is channelled, mistakes are corrected and feedback is given to overcome the project.

CH - Class hours: 0 h.
NCH - Non-class hours: 3 h.
TH - Total hours: 3 h.

CONTENTS

1. Introduction2. Environment Installation3. Explanation of the theory4. Implementation of simple programs in the C language5. Decomposition of algorithms into functions6. Use of arrays7. Use of character strings (String)8. Conversion of number systems9. POPBL

LEARNING RESOURCES AND BIBLIOGRAPHY

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Learning resources	Bibliography
(No resources)	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ln k. pl?grupo=ENERGIA11&ejecuta=15

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(No resources)	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ln k. pl?grupo=ENERGIA11&ejecuta=15