

## [GEI301] FUNDAMENTALS OF COMPUTING SCIENCE

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN INDUSTRIAL ELECTRONICS ENGINEERING		<b>Subject</b>	COMPUTER SCIENCE	
<b>Semester</b>	1	<b>Course</b>	1	<b>Mention / Field of specialisation</b>	
<b>Character</b>	BASIC TRAINING				
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Language</b>	EUSKARA
<b>Credits</b>	6	<b>Hours/week</b>	5.17	<b>Total hours</b>	93 class hours + 57 non-class hours = <b>150 total hours</b>

### 2030 AGENDA GOALS



### PROFESSORS

GARRO ARRAZOLA, UNAI

CUENCA ARIZA, JAVIER

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>G-RA04</b> - To know the use and programming of computers, operating systems, databases and computer programs with applications in engineering		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		0,36
<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

**Total:** 6

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

### ENAEF 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

**RGE107** [!] *Desarrolla y estructura programas para resolver problemas haciendo uso de estructuras de control de flujo, variables y operadores lógicos*

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2 h.	4 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	9 h.	7 h.	16 h.
Carrying out work experience in real environments and writing the corresponding report	2 h.	5 h.	7 h.
<b>EVALUATION SYSTEM</b>	<b>W</b>	<b>MAKE-UP MECHANISMS</b>	
Reports on the completion of exercises, case studies,	4%	Individual written and/or oral tests or individual	

computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems		coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	90%	Prototype / Product
Prototype / Product	6%	

**CH - Class hours:** 22 h.

**NCH - Non-class hours:** 14 h.

**TH - Total hours:** 36 h.

**RGE108** [!] *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
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2 h.	4 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	12 h.	11 h.	23 h.
Carrying out work experience in real environments and writing the corresponding report	4 h.	4 h.	8 h.

#### EVALUATION SYSTEM

	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	4%
Individual written and/or oral tests or individual coding/programming tests	91%
Prototype / Product	5%

#### MAKE-UP 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  
Individual written and/or oral tests or individual coding/programming tests

**CH - Class hours:** 28 h.

**NCH - Non-class hours:** 17 h.

**TH - Total hours:** 45 h.

#### 1RGE190 (1 sem)

#### 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	3 h.		3 h.

#### EVALUATION SYSTEM

	W
Observation (technical capacity, attitude and participation)	100%

#### MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)  
**Comments:** Continuous assessment.

**CH - Class hours:** 3 h.

**NCH - Non-class hours:** 0 h.

**TH - Total hours:** 3 h.

#### 1RGE191 (1 sem)

#### 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	3 h.		3 h.

#### EVALUATION SYSTEM

	W
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#### MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation) 100%

Observation (technical capacity, attitude and participation)

**Comments:** Continuous assessment.

**CH - Class hours:** 3 h.

**NCH - Non-class hours:** 0 h.

**TH - Total hours:** 3 h.

### **1RGE192 (1 sem)**

#### **LEARNING ACTIVITIES**

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

**CH**

3 h.

**NCH**

**TH**

3 h.

#### **EVALUATION SYSTEM**

**W**

Observation (technical capacity, attitude and participation) 100%

#### **MAKE-UP MECHANISMS**

Observation (technical capacity, attitude and participation)

**Comments:** Continuous assessment.

**CH - Class hours:** 3 h.

**NCH - Non-class hours:** 0 h.

**TH - Total hours:** 3 h.

### **1RGE193 (1 sem)**

#### **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**

1,5 h.

**NCH**

1,5 h.

**TH**

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

**Comments:** - Continuous assessment. - It may be asked to redo the document.

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

**NCH - Non-class hours:** 1,5 h.

**TH - Total hours:** 3 h.

### **1RGE194 (1 sem)**

#### **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**

1,5 h.

**NCH**

1,5 h.

**TH**

3 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**

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

**Comments:** - Continuous assessment.

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

**NCH - Non-class hours:** 1,5 h.

**TH - Total hours:** 3 h.

**RGE109** [!] *Diseña y hace uso de arrays de forma correcta para resolver problemas mediante programas*

**LEARNING ACTIVITIES**

	<b>CH</b>	<b>NCH</b>	<b>TH</b>
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	2 h.	4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	15 h.		15 h.
Carrying out exercises and solving problems individually and/or in teams	14 h.	21 h.	35 h.

**EVALUATION SYSTEM**

**W**

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

100%

**MAKE-UP MECHANISMS**

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

**CH - Class hours:** 31 h.

**NCH - Non-class hours:** 23 h.

**TH - Total hours:** 54 h.

## CONTENTS

Numeric System  
Installation and configuration of the development environment  
Introduction to the subject  
Development of basic programs in C language  
Functions and Decomposition of Algorithms and Code  
Use of arrays (numeric vectors)  
Characters and Character Strings (String)

## LEARNING RESOURCES AND BIBLIOGRAPHY

**Learning resources**

(No resources)

**Bibliography**

Kernighan, Brian W.; Ritchie, Dennis M. The C Programming Language. Englewood Cliffs, New Jersey: Prentice Hall. 1978 ISBN: 978-9688802052  
Goizelaia Ordorika, Iñaki. Programazioaren Oinarriak. EHU/UPV. 1999 ISBN: 978-84-8373-139-0