

## [GBX201] FUNDAMENTALS OF COMPUTING SCIENCE

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN BIOMEDICAL ENGINEERING		<b>Subject</b>	WORK PLACEMENT
<b>Semester</b>	1	<b>Course</b>	1	<b>Mention / Field of specialisation</b>
<b>Character</b>	BASIC TRAINING		<b>Language</b>	EUSKARA
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b>
<b>Credits</b>	6	<b>Hours/week</b>	4.53	81.5 class hours + 68.5 non-class hours = <b>150 total hours</b>

### PROFESSORS

ROMERO BASCONES, DAVID

### 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		0,28
<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		0,32
<b>Total:</b>				<b>6</b>

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

### SECONDARY LEARNING RESULTS

**RGB107** [!] *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		4 h.	4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	10 h.	2 h.	12 h.
Carrying out exercises and solving problems individually and/or in teams	10 h.	10 h.	20 h.

#### EVALUATION SYSTEM

	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	10%
Individual written and/or oral tests or individual coding/programming tests	90%

#### MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests  
**Comments:** The first learning result can be made-up by means of a retake exam, applying the 25%-75% rule.

**CH - Class hours:** 20 h.

**NCH - Non-class hours:** 16 h.

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

**RGB108** [!] *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		5 h.	5 h.

individually and/or in teams

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects 8 h. 2 h. 10 h.

Carrying out exercises and solving problems individually and/or in teams 15 h. 15 h. 30 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%

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

Individual written and/or oral tests or individual coding/programming tests 90%

**Comments:** As knowledge is taught in an incremental way during the subject, the retaking exam for the second learning result will be the third checkpoint (applying the 25-75% rule).

**CH - Class hours:** 23 h.

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

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

**RGB109** [!] *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 6 h. 6 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects 14 h. 4 h. 18 h.

Carrying out exercises and solving problems individually and/or in teams 15 h. 15 h. 30 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%

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

Individual written and/or oral tests or individual coding/programming tests 90%

**Comments:** A retake exam will be held, applying the 25% - 75% rule.

**CH - Class hours:** 29 h.

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

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

**RGB190** [!] *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**

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 2,5 h. 1,5 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 100%

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:** 2,5 h.

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

**TH - Total hours:** 4 h.

**RGB191** [!] *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**

	<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	2 h.	1 h.	3 h.

**EVALUATION SYSTEM**

	<i>W</i>
Self-assessment	25%
Co-assessment	25%
Observation (technical capacity, attitude and participation)	50%

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

**RGB193** [!] *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**

	<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	2,5 h.	1,5 h.	4 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	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:** 2,5 h.  
**NCH - Non-class hours:** 1,5 h.  
**TH - Total hours:** 4 h.

**RGB194** [!] *Realiza una presentación oral y defensa del proyecto clara y concisa, haciendo uso correcto, inclusivo y no discriminatorio del lenguaje.*

**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	2,5 h.	1,5 h.	4 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	100%

**MAKE-UP MECHANISMS**

Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2,5 h.  
**NCH - Non-class hours:** 1,5 h.  
**TH - Total hours:** 4 h.

**CONTENTS**

1. Subject presentation
2. Instalation and configuration of the programming environment
3. Introduction to the programation
4. Development of basic programmes in C language
5. Algorithms, functions and code decomposition
6. Use of array-s
7. Characters and strings
8. Numerical sistems (binary, octal and hexadecimal)
9. POPBL

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
Moodle Platform  
Slides of the subject  
Computer practical training  
Class presentations

### Bibliography

Kernighan, Brian W., Ritchie, Dennis M. The C Programming Language. Englewood Cliffs, New Jersey: Prentice Hall, 1978. ISBN: 978-9688802052  
Goirizelaia Ordorika, I. Programazioaren Oinarriak. Bilbao: Euskal Herriko Unibertsitatea, 1999. ISBN 9788483731390  
Ceballos, Franisco J. C/C++. Curso de programación. RA-MA S.A. Editorial y Publicaciones. ISBN:978-8499648125