

## [GBX201] FUNDAMENTALS OF COMPUTING SCIENCE

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN BIOMEDICAL ENGINEERING		<b>Subject</b>	COMPUTING SCIENCE
<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>	4.56	82 class hours + 68 non-class hours = <b>150 total hours</b>

### 2030 AGENDA GOALS



### PROFESSORS

DE ITURRATE REYZABAL, MIKEL

### 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
<b>Total:</b>				<b>6</b>

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

### SECONDARY LEARNING RESULTS

**1RGB190** Understand and apply the phases for developing, based on defined objectives and planning, a technically complex project in line with your knowledge. Reflect on your training needs, being aware of your limitations.

#### 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

2 h.

NCH

1 h.

TH

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: 2 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 3 h.

**1RGB193** Write a clear and concise project report using the information sources and report structure provided, and using language that is correct, inclusive, and non-discriminatory.

#### LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on

CH

2 h.

NCH

1 h.

TH

3 h.

projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

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

**RGB107** Develops and structures programs to solve problems using flow control structures, variables, and logical operators.

**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.

**1RGB192** Learn and describe the phases involved in developing engineering teams, and identify and describe the professional functions of an engineer, becoming aware of the contribution to the achievement of sustainable development goals (SDGs).

**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.

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**

(No mechanisms)

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

**RGB108** Automate operations and organize source code into functions to improve the program development process and solve generic problems that arise.

**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.	5 h.
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*

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:** 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 Designs and uses arrays correctly to solve problems through programs.**

**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*

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:** 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.

**1RGB191 Contribute to the team's operating strategy by prioritizing common goals, encouraging and valuing everyone's participation, and taking responsibility for individual tasks and meeting deadlines.**

**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.

1 h.

3 h.

**EVALUATION SYSTEM**

*W*

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.

**1RGB194** Give a clear and concise oral presentation and defense of the project, using language that is correct, inclusive, and non-discriminatory.

**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**

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

*W*

100%

**MAKE-UP MECHANISMS**

Observation (technical capacity, attitude and participation)

**CH - Class hours:** 2 h.

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

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

**CONTENTS**

1. Course presentation
2. Installation and configuration of the programming environment
3. Introduction to programming
4. Development of basic programs in the C language
5. Algorithms, functions, and code decomposition
6. Use of arrays
7. Characters and character strings (strings)
8. Numerical systems (binary, octal, and hexadecimal)
9. POPBL

**LEARNING RESOURCES AND BIBLIOGRAPHY**

**Learning resources**

- [!] *Apuntes de la asignatura*
- [!] *Plataforma Moodle*
- [!] *Transparencias de la asignatura*
- [!] *Realización de prácticas en ordenador*
- [!] *Presentaciones en clase*

**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, Francisco J. C/C++. Curso de programación. RA-MA S.A. Editorial y Publicaciones. ISBN:978-8499648125