

## [GIE306] CONCURRENT AND DISTRIBUTED SYSTEMS

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN COMPUTER ENGINEERING	<b>Subject</b>	?
<b>Semester</b>	2	<b>Course</b>	3
<b>Character</b>	COMPULSORY	<b>Mention / Field of specialisation</b>	
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face
<b>Credits</b>	6	<b>Language</b>	EUSKARA/CASTELLANO
		<b>Total hours</b>	98 class hours + 52 non-class hours = <b>150 total hours</b>

### 2030 AGENDA GOALS



### PROFESSORS

MUÑOZ VALENTI, UNAI

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GIR307</b> - To implement software for parallel and distributed architectures		x		5,08
<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		0,44
<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		0,48

**Total:** 6

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

### SECONDARY LEARNING RESULTS

#### 2RGI391 (2 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	NCH	TH
3 h.	1 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	20%
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	50%
Prototype / Product	30%

**Comments:** Continuous assessment.

#### MAKE-UP MECHANISMS

(No mechanisms)

**CH - Class hours:** 3 h.  
**NCH - Non-class hours:** 1 h.  
**TH - Total hours:** 4 h.

#### RGI313 [!] *Aplica técnicas de programación paralela para optimizar la ejecución del software*

#### LEARNING ACTIVITIES

CH	NCH	TH
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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.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	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	8 h.	4 h.	12 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	4 h.	2 h.	6 h.
Carrying out exercises and solving problems individually and/or in teams	17 h.	10 h.	27 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

6%

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

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

15%

**Comments:** Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%. Project: There will not be any retake of the individual defense.

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

70%

Prototype / Product

9%

**Comments:** Minimum grade: 5 Project evaluation based on technical rubric

**CH - Class hours:** 33 h.

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

**TH - Total hours:** 50 h.

#### 2RG1393 (2 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

4 h.

2 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

20%

(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

50%

Prototype / Product

30%

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

**CH - Class hours:** 4 h.

**NCH - Non-class hours:** 2 h.

**TH - Total hours:** 6 h.

#### RG1314 [!] Diseña aplicaciones distribuidas haciendo uso de plataformas de middleware y distribución de mensajes

#### 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.

1,4 h.

4,4 h.

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

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	11 h.	6,6 h.	17,6 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	27 h.	17 h.	44 h.

#### EVALUATION SYSTEM

**W**

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

6%

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

15%

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

70%

Prototype / Product

9%

**Comments:** Minimum grade: 5 Project evaluation based on technical rubric

#### MAKE-UP MECHANISMS

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

**Comments:** Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%. Project: There will not be any retake of the individual defense.

**CH - Class hours:** 49 h.

**NCH - Non-class hours:** 28 h.

**TH - Total hours:** 77 h.

#### 2RGI390 (2 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.

1 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

20%

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

50%

Prototype / Product

30%

**Comments:** Continuous assessment.

#### MAKE-UP MECHANISMS

(No mechanisms)

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

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

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

#### 2RGI392 (2 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

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

20%

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

50%

Prototype / Product

30%

#### MAKE-UP MECHANISMS

(No mechanisms)

**Comments:** Continuous assessment.

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

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

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

## 2RGI394 (2 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	4 h.	2 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

20%

(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

50%

Prototype / Product

30%

**Comments:** Continuous assessment.

**CH - Class hours:** 4 h.

**NCH - Non-class hours:** 2 h.

**TH - Total hours:** 6 h.

## CONTENTS

- |                                    |   |   |                                   |                        |   |                                   |                                    |                          |
|------------------------------------|---|---|-----------------------------------|------------------------|---|-----------------------------------|------------------------------------|--------------------------|
| 1. Concurrency and Parallelisation | 1.1 Introduction to Concurrency and Parallelisation | 1.2 Techniques for Parallel and Multicore Programming | 1.3 Concurrent Programming (Java) | 2. Distributed Systems | 2.1 Introduction to Distributed Systems (Distributed Object Paradigm) | 2.2 Design of distributed systems | 2.3 Message Distribution Platforms | 2.4 Middleware platforms |
|------------------------------------|---|---|-----------------------------------|------------------------|---|-----------------------------------|------------------------------------|--------------------------|

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
Moodle Platform  
Specific Master Software

### Bibliography

<https://labur.eus/biblio-GIE306>