

## [GIH302] SOFTWARE ANALYSIS AND DESIGN

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN COMPUTER ENGINEERING		<b>Subject</b>	SOFTWARE ENGINEERING, INFORMATION SYSTEMS AND SMART SYSTEMS	
<b>Semester</b>	2	<b>Course</b>	2	<b>Mention / Field of specialisation</b>	
<b>Character</b>	COMPULSORY		<b>Language</b>	CASTELLANO/EUSKARA	
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b>	73.5 class hours + 39 non-class hours = <b>112.5 total hours</b>
<b>Credits</b>	4,5	<b>Hours/week</b>	4.08		

### PROFESSORS

EREÑO INCERA, ANA MONSERRAT
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>GIR210</b> - To conceive projects, services and computer systems, ensuring their reliability, security and quality, taking into account ethical aspects and assessing their economic and social impact		x		4,02
<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		0,24
<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: 4,5

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

### SECONDARY LEARNING RESULTS

**RG1290** [!] *Proponer los objetivos y la planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías propias de su especialidad,- que en ocasiones llegan a la vanguardia del conocimiento- y definir una estrategia de aprendiz*

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

**RG1291** [!] *Establecer las responsabilidades de los miembros del equipo utilizando técnicas adecuadas para fomentar la eficiencia del equipo para el desarrollo del proyecto en los plazos establecidos (compartir recursos, aportar ideas, habilidades comunicativas*

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	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%			
<b>Comments:</b> Continuous assessment.				
<b>CH - Class hours:</b> 2 h.				
<b>NCH - Non-class hours:</b> 1 h.				
<b>TH - Total hours:</b> 3 h.				

**RG1293** [!] *Redacta y estructura correctamente la memoria del proyecto, haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje. Para ello, busca y hace uso de las fuentes de información adecuadas.*

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

<b>RG1294</b> [!] <i>Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.</i>				
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	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:** 2 h.

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

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

**RG1223** [!] *Aplica procesos de desarrollo en la fase de análisis de requisitos basados en los ciclos de vida de la ingeniería del software*

#### 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.		2 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	5 h.	3 h.	8 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	15 h.	9 h.	24 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.	4 h.	10 h.
Carrying out exercises and solving problems 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

50%

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

**Comments:** Minimum grade: 5

#### 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%.

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

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

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

**RG1224** [!] *Diseña soluciones apropiadas utilizando métodos de la ingeniería del software y aplicando patrones de diseño*

#### 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.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	2 h.	1 h.	3 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	8 h.	4 h.	12 h.
Carrying out exercises and solving problems individually and/or in teams	8,5 h.	5 h.	13,5 h.

#### EVALUATION SYSTEM

W

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

9%

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

58%

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

20%

#### 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.

Prototype / Product

13%

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

**CH - Class hours:** 32,5 h.

**NCH - Non-class hours:** 18 h.

**TH - Total hours:** 50,5 h.

## CONTENTS

1. Software development life cycles and processes
  - 1.1 Introduction to software applications
  - 1.2 Life Cycles
  - 1.3 Development process
    - 1.3.1 Unified Process
2. Analysis Phases
  - 2.1 Requirements Analysis
  - 2.2 Analysis Techniques
  - 2.3 Software Architecture
  - 2.4 UML Modelling
3. Design Phase
  - 3.1 Design Patterns
  - 3.2 Interface Design

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Subject notes  
 Moodle Platform  
 Specific Master Software  
 Topic related web quires

### Bibliography

<https://labur.eus/biblio-gih302>