

[GFK001] Programming II

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING PHYSICS APPLIED TO INDUSTRY		Subject	Key Technologies
Semester	1	Course	3	Mention / Field of specialisation
Character	COMPULSORY		Language	ENGLISH
Plan	2022	Modality	Face-to-face	Total hours
Credits	4,5	Hours/week	0	67 class hours + 45.5 non-class hours = 112.5 total hours

2030 AGENDA GOALS



PROFESSORS

REGUERA BAKHACHE, DANIEL

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
Programming I	(No previous knowledge required)

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GFR203 - To know, understand and apply the fundamentals of scientific programming by developing algorithms in programming languages such as Python and Julia.		x		3,78
G-RTR1 - 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		0,4
G-RTR2 - 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
Total:				4,5

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

SECONDARY LEARNING RESULTS

1RGF391 [!] (1 sem) *Coordinar el equipo de trabajo, estimulando la cohesión y clima para lograr la integración de todas las personas y su contribución para alcanzar un rendimiento apropiado, a nivel individual como grupal, para el desarrollo del proyecto en clase*

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
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

(No mechanisms)
Comments: Continuous assessment. Retake is not foreseen.

CH - Class hours: 2 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 3 h.

RGF306 Develops and structures programs in the Julia language to solve problems using control flow structures, variables and logical operators.

LEARNING ACTIVITIES

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in

CH	NCH	TH
2 h.	6,5 h.	8,5 h.

interdisciplinary contexts, real and/or simulated, 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.		8 h.
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Carrying out exercises and solving problems individually and/or in teams	2 h.	4 h.	6 h.
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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	40%
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Individual written and/or oral tests or individual coding/programming tests

Individual written and/or oral tests or individual coding/programming tests	60%
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CH - Class hours: 12 h.

NCH - Non-class hours: 10,5 h.

TH - Total hours: 22,5 h.

1RGF390 [!] (1 sem) *Definir y gestionar los objetivos y planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías - llegando en ocasiones a la vanguardia del conocimiento- y definir una estrategia de autoaprendizaje eficaz*

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.
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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	85%
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(No mechanisms)

Comments: Continuous assessment. Retake is not foreseen.

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%
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CH - Class hours: 3 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 4 h.

1RGF393 [!] (1 sem) *Elabora la memoria del proyecto, aportando argumentos elaborados y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.*

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.
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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%
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(No mechanisms)

Comments: Continuous assessment. Retake is not foreseen.

CH - Class hours: 3 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 4 h.

1RGF392 [!] (1 sem) *Identificar y argumentar de forma precisa los ODS en los que incide el proyecto realizado, aportando posibles acciones para la mejora.*

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	100%	(No mechanisms)	
Comments: Continuous assessment. Retake is not foreseen.			
CH - Class hours: 2 h. NCH - Non-class hours: 1 h. TH - Total hours: 3 h.			

RGF305 Develops and deploys algorithms in the Python language to solve problems using object orientation and the corresponding scientific libraries.

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	12 h.	12 h.	24 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.		4 h.
Computer simulation exercises, individually and/or in teams	2 h.	18 h.	20 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	24 h.		24 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	40%	Individual written and/or oral tests or individual coding/programming tests	
Individual written and/or oral tests or individual coding/programming tests	60%		
CH - Class hours: 42 h. NCH - Non-class hours: 30 h. TH - Total hours: 72 h.			

1RGF394 [!] (1 sem) Realiza una presentación oral del proyecto, justificando las soluciones propuestas con argumentos elaborados y precisos, y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.

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	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	100%	(No mechanisms)	
Comments: Continuous assessment. Retake is not foreseen.			
CH - Class hours: 3 h. NCH - Non-class hours: 1 h. TH - Total hours: 4 h.			

CONTENTS

1. Introduction to Python object-oriented programming

1. Classes
2. Instances
3. Inheritance
2. Scientific programming with Python
 1. Numpy
 2. Pandas
3. Introduction to scientific programming with Julia
 1. Variables
 2. Data types
 3. Functions
 4. Control statements

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

[!] *Plataforma Moodle*

Bibliography

<https://labur.eus/oBq7d>