[GFA007] Numerical Methods

GENERAL INFORMATION

Studies	ENGINEERING PHYSICS APPLIED TO INDUSTRY			**Subject**	Mathematics
Semester	2	**Course**	2	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2022	**Modality**	Face-to-face	**Language**	CASTELLANO
Credits	3	**Hours/week**	0	**Total hours**	46 class hours + 29 non-class hours = **75 total hours**

2030 AGENDA GOALS

PROFESSORS

MENDIGUREN OLAETA, JOSEBA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
CALCULUS I	*(No previous knowledge required)*
LINEAR ALGEBRA	
CALCULUS II	
Mathematical Methods Applied to Engineering	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GFR110 - Solving any mathematical problems that may arise in engineering through the use of numerical methods		x		2,6
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		0,16
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		0,24
			Total:	3

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

SECONDARY LEARNING RESULTS

RGF223 **[!]** ***Conoce los conceptos teóricos y estrategias numéricas adecuadas para la resolución de diferentes problemas matemáticos***

LEARNING ACTIVITIES	CH	NCH	TH
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	7,5 h.	5 h.	12,5 h.
Carrying out exercises and solving problems individually and/or in teams	7,5 h.	5 h.	12,5 h.

EVALUATION SYSTEM	W
Individual written and/or oral tests or individual coding/programming tests	100%

MAKE-UP MECHANISMS

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

Comments: First CP 25% and second CP 75%

CH - Class hours: 15 h.
NCH - Non-class hours: 10 h.
TH - Total hours: 25 h.

2RGF293 **(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	1 h.	1 h.	2 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)*

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

2RGF294 **[!]** ***(2 sem)Realiza una presentación oral del proyecto con argumentos elaborados por sí mismos 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	1 h.	1 h.	2 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)*

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

2RGF291 **(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	1 h.	1 h.	2 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)*

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

RGF224 **[!]** ***Es capaz de seleccionar, implementar, utilizar y resolver problemas matemáticos de manera numérica en un entorno de desarrollo integrado (IDE)***

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	6 h.	7 h.	13 h.
Carrying out exercises and solving problems individually and/or in teams	20 h.	7 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	62%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
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	33%	**Comments:** First reports %25 and second reports 75%. The student must get a minimum of 5 (out of 10) in the exam and work to get the averaged. If that requirement is not meet the score bellow 5 its selected as representative score.
Individual written and/or oral tests or individual coding/programming tests	5%	

CH - Class hours: 26 h.
NCH - Non-class hours: 14 h.
TH - Total hours: 40 h.

2RGF290 **(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	1 h.	1 h.	2 h.

EVALUATION SYSTEM	W
Self-assessment	25%
Co-assessment	25%
Observation (technical capacity, attitude and participation)	50%

MAKE-UP MECHANISMS

(No mechanisms)

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

2RGF292 **(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	1 h.	1 h.	2 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: 1 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 2 h.

CONTENTS

- Error analysis

- Linear quation system direct resolution

- Linear quation system ditekrative resolution

- INumerical interpolation

- Numerical integration and differentiation

- Nonlinear equations

- Nonlinear equation systems

- Polinomial zeros

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
(No resources)	https://labur.eus/XgSYL