

[GBH201] FUNDAMENTALS OF ELECTRONICS

GENERAL INFORMATION

Studies	DEGREE IN BIOMEDICAL ENGINEERING		Subject	ELECTRONIC SYSTEMS AND CONTROL	
Semester	1	Course	2	Mention / Field of specialisation	
Character	COMPULSORY		Language	EUSKARA	
Plan	2022	Modality	Face-to-face	Total hours	51.5 class hours + 23.5 non-class hours = 75 total hours
Credits	3	Hours/week	2.86		

PROFESSORS

ANTIA JUARISTI, ANE

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
PHYSICS II	(No previous knowledge required)

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GBR207 - To solve problems related to electronic circuits, calculation of voltages, currents and values ??of electronic components in a circuit	x		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

RGB290 [!] *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	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	1,25 h.	,75 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%	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: 1,25 h.

NCH - Non-class hours: ,75 h.

TH - Total hours: 2 h.

RGB291 [!] *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	1,25 h.	,75 h.	2 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANISMS	
Self-assessment	25%	(No mechanisms)	

Co-assessment	25%
Observation (technical capacity, attitude and participation)	50%

CH - Class hours: 1,25 h.

NCH - Non-class hours: ,75 h.

TH - Total hours: 2 h.

RGB293 [!] *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

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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

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.

RGB294 [!] *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

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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

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

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.

RGB230 [!] *Plantear y resolver circuitos electrónicos simples basados en diodos, transistores y amplificadores operacionales*

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	3 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	7 h.	3 h.	10 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	11 h.	5 h.	16 h.
Carrying out exercises and solving problems individually and/or in teams	11 h.	6 h.	17 h.

EVALUATION SYSTEM

Presentation and defence of exercises, case studies,

W

20%

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual

computer practical work, simulation practical work, coding/programming tests
 laboratory practical work, term projects, end of degree
 project, master's thesis, challenges and problems
 Individual written and/or oral tests or individual 80%
 coding/programming tests

CH - Class hours: 32 h.
NCH - Non-class hours: 14 h.
TH - Total hours: 46 h.

RGB231 [!] *Plantear y resolver circuitos en régimen transitorio utilizando la transformada de Laplace*

LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
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	3 h.	2 h.	5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	4 h.	1 h.	5 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	3 h.	7 h.

EVALUATION SYSTEM

W

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	20%
Individual written and/or oral tests or individual coding/programming tests	80%

MAKE-UP MECHANISMS

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

CH - Class hours: 13 h.
NCH - Non-class hours: 6 h.
TH - Total hours: 19 h.

CONTENTS

- 1.- Fundamentals of Analog Electronics
 - 1.1.- Semiconductors
 - 1.2.- Diodes
 - 1.3.- Transistors
 - 1.4.- Operational amplifiers
- 2- Transforms
 - 2.1.-Laplace transform

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Moodle Platform
 Class presentations
 Slides of the subject

Bibliography

"Circuitos Eléctricos";, J.W.Nilsson, S.A. Riedel, Prentice Hall
 "Circuitos Eléctricos";, J.A. Edminister y M. Nahvi, McGraw Hill
 "Zirkuitu Elektrikoak";, J. Epelde, Elhuyar
 "Principios de electrónica";, Malvino, Mc Graw Hill
 "Medical Instrumentation, Application and Design";, John G. Webster, Wiley