

[GEB302] PHYSICS II

GENERAL INFORMATION

Studies	DEGREE IN INDUSTRIAL ELECTRONICS ENGINEERING	Subject	PHYSICS
Semester	2	Course	1
Character	BASIC TRAINING	Mention / Field of specialisation	
Plan	2022	Modality	Face-to-face
Credits	6	Language	EUSKARA
		Hours/week	5.19
		Total hours	93.5 class hours + 56.5 non-class hours = 150 total hours

2030 AGENDA GOALS



PROFESSORS

SARASOLA ALTUNA, IZASKUN
CABEZAS OLIVENZA, MIREYA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	[!] [!] [!]

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
G-RA09 - To understand and master the basic concepts of the general laws of fields and waves; and electromagnetism and its application to solve engineering problems		x		5,4
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		0,36
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:				6

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

ENAAE LEARNING RESULTS

ENA101 - Knowledge and comprehension: Knowledge and understanding of mathematics and other basic sciences inherent in them engineering speciality, at a level that allows them to acquire the other competencies of the degree.

ENA104 - Analysis in engineering: The ability to analyse complex products, processes and systems in their field of study; choose and apply relevant analytical, calculation and experimental methods in a suitable way; and correctly interpret the results of such analyses.

ENA106 - Engineering projects: Ability to project, design and develop complex products (parts, components, finished products, etc.), processes and systems of their speciality, which meet the established requirements, including awareness of the social, health and safety, environmental, economic and industrial aspects, as well as selecting and applying appropriate project methods.

ENA113 - Practical application of engineering: Knowledge of application of materials, equipment and tools, engineering technology and processes, and their limitations in the field of their speciality.

ENA119 - Engineering and Teamwork: Ability to effectively communicate information, ideas, problems and solutions in the field of engineering and with society in general.

ENA120 - Communication and Teamwork: Ability to operate effectively in domestic and international contexts, individually and as a team, and to cooperate with both engineers and people from other disciplines.

SECONDARY LEARNING RESULTS

RGE117 [!] *Identifica, examina y calcula la oscilación y los fenómenos de onda*

LEARNING ACTIVITIES	CH	NCH	TH
Practical work in workshops and/or laboratories, individually and/or in teams	5 h.	7 h.	12 h.
Carrying out work experience in real environments and writing the corresponding report	10 h.	5 h.	15 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANISMS	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory	55%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term	

exercises, term projects, challenges and problems
Individual written and/or oral tests or individual coding/programming tests 28%
Prototype / Product 17%
Comments: - Courseworks: minimum grade 5. - PBL project grade: 30% product, 20% technical content of the report and 50% individual technical defense.

projects, challenges and problems
Prototype / Product
Comments: - For the courseworks, their correction will be asked. The maximum mark for the corrected courseworks will be 5.0. - In the project / PBL there will not be any retake of the individual defense.

CH - Class hours: 15 h.
NCH - Non-class hours: 12 h.
TH - Total hours: 27 h.

2RGE190 (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

1,5 h.

NCH

1,5 h.

TH

3 h.

EVALUATION SYSTEM

W

Observation (technical capacity, attitude and participation) 100%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

Comments: Continuous assessment.

CH - Class hours: 1,5 h.
NCH - Non-class hours: 1,5 h.
TH - Total hours: 3 h.

2RGE191 (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

2 h.

NCH

1 h.

TH

3 h.

EVALUATION SYSTEM

W

Observation (technical capacity, attitude and participation) 100%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

Comments: Continuous assessment.

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

2RGE193 (2 sem)

LEARNING ACTIVITIES

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

CH

1,5 h.

NCH

1,5 h.

TH

3 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

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

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

CH - Class hours: 1,5 h.
NCH - Non-class hours: 1,5 h.
TH - Total hours: 3 h.

RGE118 [!] *Resuelve los problemas y las operaciones en el campo del electromagnetismo, relacionando correctamente las magnitudes físicas implicadas*

LEARNING ACTIVITIES

	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	3 h.	8 h.	11 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	14 h.		14 h.
Carrying out exercises and solving problems individually and/or in teams	19 h.	10 h.	29 h.

EVALUATION SYSTEM

W

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

Comments: - Control point: minimum grade 5.

MAKE-UP MECHANISMS

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

Comments: - Students with less than a 5 at the control point must retake the exam. - Final note of the control point: control point 25% and retake 75%.

CH - Class hours: 36 h.
NCH - Non-class hours: 18 h.
TH - Total hours: 54 h.

2RGE194 (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	1,5 h.	1,5 h.	3 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

100%

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

Comments: - Continuous assessment.

CH - Class hours: 1,5 h.
NCH - Non-class hours: 1,5 h.
TH - Total hours: 3 h.

2RGE192 (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

Observation (technical capacity, attitude and participation)

100%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

Comments: Continuous assessment.

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

TH - Total hours: 3 h.

RGE19 [!] *Analiza y resuelve los circuitos de corriente directa y la corriente alterna*

LEARNING ACTIVITIES

	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.	5 h.	9 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	11 h.		11 h.
Carrying out exercises and solving problems individually and/or in teams	19 h.	15 h.	34 h.

EVALUATION SYSTEM

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

Comments: - Control point: minimum grade 5.

W

100%

MAKE-UP MECHANISMS

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

Comments: - Students with less than a 5 at the control point must retake the exam. - Final note of the control point: control point 25% and retake 75%.

CH - Class hours: 34 h.

NCH - Non-class hours: 20 h.

TH - Total hours: 54 h.

CONTENTS

1. Oscillations and oscillators Simple harmonic motion. Characteristics Mass spring system: displacement, velocity and acceleration. Energy in simple harmonic motion Pendulum Damped simple harmonic motion 2. Electrodynamics Electric charge. Coulomb's law Electric field and flow: Gauss's law. Electric potential. Electrostatic energy Electrical energy storage: Capacitors 3. Direct current circuits Electrical circuit and main electrical variables: voltage, current. Resistance. Ohm's law Joule effect and electrical power Simple direct current circuits Solving complex DC circuits: Kirchhoff's laws, Thévenin's theorem, superposition principle. 4. Electromagnetism Magnetic fields and electric current: Biot's and Savart's law. Magnetic flux and flux density and Magnetic circuits Electromagnetic induction: Faraday's law. Accumulation of magnetic energy: Inductance. 5. Alternating current circuits Single-phase alternating current electrical network Analysis of simple alternating current circuits in permanent regime. Complex impedance. Phasors and vector diagrams Solving alternating current circuits with complex numbers. Active, reactive and apparent power. Power factor Power factor improvement

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Moodle Platform
Class presentations

Bibliography

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Nilsson, J. W.; Riedel, S. A. Electric circuits. Boston: Pearson, 10. Ed, 2015. ISBN: 978-0-292-06054-5
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