

[GGB202] PHYSICS II

GENERAL INFORMATION

Studies	DEGREE IN BIOMEDICAL ENGINEERING		Subject	PHYSICS
Semester	2	Course	1	Mention / Field of specialisation
Character	BASIC TRAINING		Language	EUSKARA
Plan	2022	Modality	Face-to-face	Total hours
Credits	6	Hours/week	5.17	93 class hours + 57 non-class hours = 150 total hours

2030 AGENDA GOALS



PROFESSORS

(No professor appointed)

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	(No previous knowledge 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

SECONDARY LEARNING RESULTS

2RGB190 Understand and apply the phases for developing, based on defined objectives and planning, a technically complex project in line with your knowledge. Reflect on your training needs, being aware of your limitations.

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	NCH	TH
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.

2RGB192 Learn and describe the phases involved in developing engineering teams, and identify and describe the professional functions of an engineer, becoming aware of the contribution to the achievement of sustainable development goals (SDGs).

LEARNING ACTIVITIES

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

CH	NCH	TH
2 h.	1 h.	3 h.

interdisciplinary contexts, real and/or simulated, individually and/or in teams

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: 2 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 3 h.

RGB117 Identify, examine, and calculate oscillations and wave phenomena.

LEARNING ACTIVITIES

CH

NCH

TH

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

2,5 h.

2 h.

4,5 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

12 h.

12 h.

Carrying out exercises and solving problems individually and/or in teams

2,5 h.

6 h.

8,5 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%

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

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

80%

CH - Class hours: 19 h.

NCH - Non-class hours: 8 h.

TH - Total hours: 27 h.

RGB118 Solve problems and operations in the field of electromagnetism, correctly relating the physical quantities involved.

LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

2 h.

2 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

20 h.

7 h.

27 h.

Carrying out exercises and solving problems individually and/or in teams

10 h.

15 h.

25 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%

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

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

80%

CH - Class hours: 32 h.

NCH - Non-class hours: 22 h.

TH - Total hours: 54 h.

2RGB193 Write a clear and concise project report using the information sources and report structure provided, and using language that is correct, inclusive, and non-discriminatory.

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

2RGB194 Give a clear and concise oral presentation and defense of the project, using language that is correct, inclusive, and non-discriminatory.

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	100%	Observation (technical capacity, attitude and participation)	
CH - Class hours: 2 h.			
NCH - Non-class hours: 1 h.			
TH - Total hours: 3 h.			

RGB119 Analyze and solve direct current and alternating current circuits.

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		8 h.	8 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.		2 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	16 h.	8 h.	24 h.
Carrying out exercises and solving problems individually and/or in teams	14 h.	6 h.	20 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%	Individual written and/or oral tests or individual coding/programming tests	
Individual written and/or oral tests or individual coding/programming tests	80%		
CH - Class hours: 32 h.			
NCH - Non-class hours: 22 h.			
TH - Total hours: 54 h.			

2RGB191 Contribute to the team's operating strategy by prioritizing common goals, encouraging and valuing everyone's

participation, and taking responsibility for individual tasks and meeting deadlines.

LEARNING ACTIVITIES

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

	<i>W</i>
Self-assessment	25%
Co-assessment	25%
Observation (technical capacity, attitude and participation)	50%

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.

CONTENTS

1. Oscillations and waves. Simple harmonic motion. Oscillations. Oscillatory motion. Characteristics of waves. Wave phenomena. 2. Electrostatics. Electric charge. Coulomb's law. Electric field. Electric potential. Electrostatic energy. Capacitors. 3. Direct current circuits. Electric current. Resistance. Joule effect. Electromotive force. Ohm's law. Electric power. Circuit analysis techniques: Kirchoff's laws, Thévenin's theorem, superposition principle. 4. Electromagnetism. Magnetic fields. Field sources. Magnetic flux. Electromagnetic forces. Forces on currents. Magnetic materials. Electromagnetic induction. Inductance. 5. Alternating current circuits. Analysis of RLC alternating current circuits in steady state. Complex impedance. Phasors. Active, reactive, and apparent power. Power factor.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

- [!] *Apuntes de la asignatura*
- [!] *Plataforma Moodle*
- [!] *Presentaciones en clase*

Bibliography

- Física Universitaria; F. W. Sears, M. W. Zemansky, H. D. Young, R. A. Freedman; Pearson Ed., 2004 (2. Bol.)
- Física para la ciencia y la tecnología; P. A. Tipler, G. Mosca, Reverté, 2010 (2. Bol.).
- Fisika zientzialari eta ingeniariarentzat; P. M. Fishbane, S. Gasiorowicz, S. T. Thornton, EHU-ko argitalpen zerbitzua, 2008
- Análisis de circuitos en ingeniería; W. H. Hayt, J. E. Kemmerly, McGraw Hill, 8 Ed., 2012.
- Electric circuits; J. W. Nilsson, S. A. Riedel; Pearson, 10. Ed, 2014
- Fundamentals of Electric Circuits; C. K. Alexander, M. N. O. Sadiku; McGraw-Hill, 4. Ed., 2008.