Goi Eskola Politeknikoa | Mondragon Unibertsitatea
Course: 2024 / 2025 - Course planning

[GBB202] PHYSICS II

GENERAL INFORMATION

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

2030 AGENDA GOALS

8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

PROFESSORS

OROBENGOA GURIDI, DANEL

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 (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	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.

2RGB192 (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	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 [!] *Identifica, examina y calcula la oscilación y los fenómenos de onda*

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

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 (2 sem)

Goi Eskola Politeknikoa | Mondragon Unibertsitatea
Course: 2024 / 2025 - Course planning

Goi Eskola
Politeknikoa
Escuela Politécnica
Superior

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
Self-assessment	25%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
Co-assessment	25%	
Observation (technical capacity, attitude and participation)	50%	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.Direct current circuits. Electric current. Resistance. Joule effect. Electromotive force. Ohm's law. Electrical 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 alternating current RLC circuits in permanent regime. Complex impedance. Active, reactive and apparent power. Power factor.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
[!] *Apuntes de la asignatura*	Física Universitaria; F. W. Sears, M. W. Zemansky, H. D. Young, R. A. Freedman; Pearson Ed., 2004 (2. Bol.)
[!] *Plataforma Moodle*	Física para la ciencia y la tecnología; P. A. Tipler, G. Mosca, Reverté, 2010 (2. Bol.).
[!] *Presentaciones en clase*	Fisika zientzialari eta ingeniarientzat; P. M. Fishbane, S. Gasiorowicz, S. T. Thornton, EHU-ko argitalpen zerbitzua, 2008
	Análisis de circuitos en ingeniería; W. H. Hayt, J. E. Kemmerly, Mc Graw 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.