COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	Y201-2023	**SEMESTER**	1st Semester
COURSE TITLE	Physics II		

TEACHING ACTIVITIES If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	5	8.0

COURSETYPE Background, General Knowledge, Scientific Area, Skill Development	Background
PREREQUISITES	
TEACHING & EXAMINATION LANGUAGE:	Greek
COURSE OFFERED TO ERASMUS STUDENTS:	NO
COURSE URL:	https://eclass.emt.duth.gr/courses/PHYSICS192/

2. LEARNING OUTCOMES

Learning Outcomes
Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

The aim and objective of the course is to enable students to understand the basic concepts and basic laws of Electricity such as the electric field, Gauss's law in electricity, Magnetism such as the magnetic field and magnetic induction, as well as the Biot-Savart laws, Gauss's law in magnetism and Faraday's law.Also, students will know and study electrical circuits and their basic laws of analysis such as Kirchhoff's laws. Through this course they will learn about the Nature and Propagation of Light, the characteristics, properties and basic principles of propagation of electromagnetic waves in various media, as well as basic concepts of Optics such as Contribution and Diffraction.Finally, they will learn basic concepts of Atomic and Nuclear Physics such as the atomic model of Hydrogen, the spin of electrons, the structure of materials, properties of nuclei, stability and radioactivity, nuclear reactions, nuclear fission.
Upon successful completion of the course, the student will have acquired:
• Ability to demonstrate in-depth knowledge and understanding of the basic concepts, principles and laws related to Electricity and Magnetism, basic laws for the analysis of electrical circuits, as well as basic concepts of Optics and Wave Physics in general, as well as Atomic and Nuclear Physics.
• Ability to apply this knowledge to solve related complex problems.

• Critical thinking skills so that they can evaluate, analyze and correlate this knowledge. • Ability to interpret everyday life phenomena. • Ability to develop collaboration with other students to solve problems related to this course.
General Skills Name the desirable general skills upon successful completion of the module Search, analysis and synthesis of data and information, Project design and management ICT Use,Adaptation to new situations, Equity and Inclusion Decision making, Respect for the natural environment Autonomous work, Sustainability Teamwork, Demonstration of social, professional and moral responsibility Working in an international environment, and sensitivity to gender issues Working in an interdisciplinary environment, Production of new Critical thinking research ideas Promoting free, creative and inductive reasoning
Search, analysis and synthesis of data and information, ICT Use Autonomous work Teamwork Critical thinking

3. COURSE CONTENT

1. Electric Charge, Coulomb's Law, 2. Electric Field, Gauss's Law, Electric Potential 3. Capacitors and R-C Dielectric Circuits 4. Magnetic Fields and Magnetic Forces, 5. Magnetic Field Sources, Ampere's Law, 6. Electromagnetic Induction, Faraday's Law, 7. Lenz's Law, Induced Electric Fields 8. R-L, R-C, R-L-C Circuits, Kirchhoff's Laws, 9. Alternating Current, Power in AC Circuits. 10. Nature and Propagation of Light, 11. Reflection, Refraction, Polarization, Interference and Diffraction 12. Structure of Atoms, Molecules and Matter, Properties of Nuclei, 13. Radioactivity, Nuclear Reactions, Nuclear Fission and Fusion.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD Face to face, Distance learning, etc.	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) Use of ICT in Teaching, in Laboratory Education, in Communication with students	Use of ICT in Teaching Use of ICT in Communication with students

TEACHING ORGANIZATION
The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research& analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards

Activity	Workload/semester
Lectures	65
Writing project	7
Bibliographic research & analysis	65
Total	**137**

STUDENT EVALUATION
Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course assessment and how students are informed

Student evaluation languages
Greek

Method (Formative or Concluding)
Formative

Student evaluation methods	**Rate**
Written Exam with Problem Solving	100

5. Suggested Bibliography

C. Giancoli, Φυσική για Επιστήμονες και Μηχανικούς, τόμ. 2, Α. Ζαχαριάδου, Α. Κεχαγιάς, Ι. Ρέκανος, και Γ. Τσιπολίτης, Επιμ., 5η έκδ. ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ & ΥΙΟΙ Α.Ε., 2025.
R. SERWAY και J. JEWETT, ΦΥΣΙΚΗ ΓΙΑ ΕΠΙΣΤΗΜΟΝΕΣ ΚΑΙ ΜΗΧΑΝΙΚΟΥΣ: ΗΛΕΚΤΡΙΣΜΟΣ ΚΑΙ ΜΑΓΝΗΤΙΣΜΟΣ, ΦΩΣ ΚΑΙ ΟΠΤΙΚΗ, ΣΥΓΧΡΟΝΗ ΦΥΣΙΚΗ, τόμ. 2, 8η έκδ. ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, 2013.
D. HALLIDAY, και R. RESNICK, ΦΥΣΙΚΗ, τόμ. 2, 4η έκδ. ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΕΣ ΕΚΔΟΣΕΙΣ Α.Γ.ΠΝΕΥΜΑΤΙΚΟΣ, 2009.

Eudoxus

C. Giancoli, Φυσική για Επιστήμονες και Μηχανικούς, τόμ. 2, Α. Ζαχαριάδου, Α. Κεχαγιάς, Ι. Ρέκανος, και Γ. Τσιπολίτης, Επιμ., 5η έκδ. ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ & ΥΙΟΙ Α.Ε., 2025.
R. SERWAY και J. JEWETT, ΦΥΣΙΚΗ ΓΙΑ ΕΠΙΣΤΗΜΟΝΕΣ ΚΑΙ ΜΗΧΑΝΙΚΟΥΣ: ΗΛΕΚΤΡΙΣΜΟΣ ΚΑΙ ΜΑΓΝΗΤΙΣΜΟΣ, ΦΩΣ ΚΑΙ ΟΠΤΙΚΗ, ΣΥΓΧΡΟΝΗ ΦΥΣΙΚΗ, τόμ. 2, 8η έκδ. ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ, 2013.
D. HALLIDAY, και R. RESNICK, ΦΥΣΙΚΗ, τόμ. 2, 4η έκδ. ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΚΕΣ ΕΚΔΟΣΕΙΣ Α.Γ.ΠΝΕΥΜΑΤΙΚΟΣ, 2009.