

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Physics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	10YKO06	SEMESTER	2
COURSE TITLE	PHYSICS II BASIC LABORATORY		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Laboratory practice	3	4	
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special Background		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in the English language for Erasmus students		
COURSE WEBSITE (URL)	https://eclass.uoa.gr/courses/PHYS179/		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The course provides the student with the opportunity to practice experimental arrangements and to complement his/her knowledge of understanding physical magnitudes associated with motion of bodies, such as speed, acceleration, mass, power, work, energy, momentum, spin, and also with the viscosity of fluids. The student also has the opportunity to observe and understand some statistical distributions followed by some physical phenomena. Additionally, the university students are teaching the basic principles of Physics at school students.

With the completion of the course the student:

- Identifies the physical laws involved in the experiments underway.
- Identifies the instruments of the experimental devices and the sizes they measure.
- Identifies operating limits and instrument errors.
- Recognizes the appropriate software for capturing experimental values of the sizes.
- Selects the appropriate instruments for experimental arrangements.
- Performs experiments and collects experimental data.
- Calculates the values of the physical sizes involved in each experimental process.
- Composing experimental arrangements.
- Analyzes experimental data, computes sizes and presents them using tables and graphs.
- Evaluates the results of measurements in relation to the corresponding Engineering laws.
- Explains the physical sizes and laws involved in the respective experiments.
- Supports his conclusions in writing.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently / Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

Others...

The course aims at the following general competences

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism
Production of free, creative and inductive thinking
Analytical and synthetic thinking
Critical thinking
Time management
Planning
Taking initiative/responsibility
New Technology skills
Learning word/excel/
Creativity
Determination
Communication skills
Information management
Self control skills
Meeting Deadlines and Keeping Schedules
Flexibility / Adaptability
Problem solving

(3) SYLLABUS

- Study of statistical distributions.
- Study of the motion with constant acceleration using Atwood engine.
- Study of viscosity of fluids .
- Rigid body rotation, moments of inertia, static and kinetic friction.
- The Cavendish experiment.
- 2nd and 3rd Newton's laws of motion, impulse and collisions.
- Natural and rotational pendulum.
- . Verification of Hook's law.
- Preparation, presentation and teaching of laboratory experiments, as well as the basic principles of experimentation in physics, by Physics Department students to other university students and high-school pupils

(4) TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face													
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>Yes</p> <p>Electronic communication with the students using ICT (Information and Communications Technology)</p> <p>Computer-aided lectures, use of Overhead Projectors, eclass platform</p>													
<p>TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i></p> <p><i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<table border="1"> <thead> <tr> <th data-bbox="699 725 1027 757">Activity</th> <th data-bbox="1035 725 1361 757">Semester workload</th> </tr> </thead> <tbody> <tr> <td data-bbox="699 757 1027 788">Laboratory practice</td> <td data-bbox="1035 757 1361 788">25</td> </tr> <tr> <td data-bbox="699 788 1027 887">Individual study.Study and analysis of bibliography. Preparation.</td> <td data-bbox="1035 788 1361 887">20</td> </tr> <tr> <td data-bbox="699 887 1027 918">Writing reports / essays</td> <td data-bbox="1035 887 1361 918">30</td> </tr> <tr> <td data-bbox="699 918 1027 949">Microteaching</td> <td data-bbox="1035 918 1361 949">25</td> </tr> <tr> <td data-bbox="699 949 1027 981">Course Total</td> <td data-bbox="1035 949 1361 981">100</td> </tr> </tbody> </table>		Activity	Semester workload	Laboratory practice	25	Individual study.Study and analysis of bibliography. Preparation.	20	Writing reports / essays	30	Microteaching	25	Course Total	100
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<p>STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Oral examination</p> <p>Writing essays</p> <p>Essay presentation</p> <p>Microteaching preparation</p> <p>Laboratory reports</p>													

(5) ATTACHED BIBLIOGRAPHY

- Φυσική (1^η έκδοση) (Τόμος 1) D. Halliday, R. Resnick, J. Walker (γεν. Επιμέλεια) Κ. Παπανικόλας, Α.Καραμπαρμπούνης, Σ. Κοέν, Π. Σπυράκης
- Πανεπιστημιακή Φυσική, Τόμος Α, Hugh D. Young
- Φυσική για επιστήμονες & μηχανικούς, Τόμος Α, Giancoli