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 *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Laboratory practice	3	4

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	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 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, for the acquisition of pedagogical and educational competence by the students of the Department.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Yes

Electronic communication with the students using ICT (Information and Communications Technology)

Computer-aided lectures, use of Overhead Projectors,

eclass platform</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

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.

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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Laboratory practice</td><td>30</td></tr>
<tr><td>Individual study. Study and analysis of bibliography. Preparation.</td><td>20</td></tr>
<tr><td>Writing reports / essays</td><td>25</td></tr>
<tr><td>Microteaching</td><td>25</td></tr>
<tr><td>Course Total</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

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

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Oral examination
Writing essays
Essay presentation
Microteaching preparation
Laboratory reports</td></tr>
</table>

(5) ATTACHED BIBLIOGRAPHY

- Φυσική (1η 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