COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Physics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**10YKO08**	**SEMESTER**	**4**
COURSE TITLE	**Basic Physics Laboratory IV**		

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	No
COURSE WEBSITE (URL)	*https://eclass.uoa.gr/courses/PHYS201/*

(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*

In this laboratory course the students, through the corresponding laboratory experiments, consolidate the necessary knowledge concerning electromagnetism and modern physics which have already been taught in previous courses. Additionally, the university students are teaching the basic principles of Physics at university and school students.

With the completion of the course the students are able to describe the operation of the experimental devices and at the same time, to understand and be able to explain in detail the theoretical background and the physical phenomena that are being studied.

With the completion of the course the students are able to understand and explain in detail the basic concepts of Electromagnetism and modern Physics, where the laboratory experiments are based.

With the completion of the course the students are able to evaluate the experimental results and propose methods and ways to make their outcomes more accurate.

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	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*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
Team work
Production of free, creative and inductive thinking
Analytical and synthetic thinking
Planning
New Technology skills
Creativity
Communication skills
Information management
Meeting Deadlines and Keeping Schedules
Problemsolving
Teaching skills

(3) SYLLABUS

- Magnetic field of circular conductors and coils. The Biot-Savart law.
- Study of RLC resonance circuit. Use of oscilloscope.
- Power generation. Lenz's law. Motor. Generator. Use of stroboscope.
- Motion of electrons in a homogeneous magnetic field. Measurement of charge-to-mass ratio
- Hall effect in conductors. Carriers calculation.
- Spectroscopy. Spectral lines and Bohr theory.
- Photoelectric effect.
- Operation and current-voltage characteristics of transformers.
- 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 and microteaching preparation</td><td>25</td></tr>
<tr><td>Microteaching</td><td>25</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course Total</td><td>100</td></tr>
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<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

- Suggested bibliography

- R.A. Serway Physics, Τόμος II, Ηλεκτρομαγνητισμός,
- David J.Griffiths, Εισαγωγή στην Ηλεκτροδυναμική, Πανεπιστημιακές Εκδόσεις Κρήτης, 2012