

COURSE OUTLINE

(1) GENERAL

SCHOOL	UNIVERSITY OF THESSALY		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	TK0201	SEMESTER	1
COURSE TITLE	Physics I		
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
Upon successful completion of the course the student will be able to: • Know and understand in depth the basic concepts, principles and laws related to the Mechanics of the Material, Solid Body, Fluids and Thermodynamics. • Apply the knowledge gained in solving complex problems. • To evaluate, analyze and correlate this knowledge. • Develop critical thinking skills to interpret everyday reality phenomena. • Collaborate harmoniously and productively with other classmates in problem solving as well as work assignments.		4	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	General Background		
PREREQUISITE COURSES:	Physics I, Physics II, Probabilities and Statistics, Geographic Information Systems , Technical Drawing and CAD		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

(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 main objective is that the student has an advanced knowledge of the principles of physics, to be able to describe simple or more complex natural phenomena, to be able to identify the parameters that play a key role in the phenomenon and to choose the appropriate equations to describe them.

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?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive</i>
<i>thinking Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

(3) SYLLABUS

Units and measurement, Vectors, Motion along a straight line, motion with constant acceleration. Kinematics. Relative Motion. Galilean Transformation.
Forces. Newton's Laws.
Torques, Dynamics of rigid bodies.
Work – Power – Energy, Potential and kinetic energy.
Momentum – angular momentum.
Rotation. Complex rotation. Gravitation
Oscillations and waves. Sound waves.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face		
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Examples and exercises.		
TEACHING METHODS	<i>Activity</i>	<i>Semester workload</i>	

<i>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.</i> <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>	Courses	56 hours
	Exercises Study	71 hours
	Exams preparation	20
	Exams	3 hours
	Course total	150 hours
STUDENT PERFORMANCE EVALUATION		
Description of the evaluation procedure <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> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Written exams 100%	

(5) ATTACHED BIBLIOGRAPHY

-Suggested bibliography: (In Greek)

Φυσική:Βασικές αρχές, Halliday David, Resnick Robert, Walker Jearl(Γενική επιστ.επιμ. Στυλιάρης Ευστάθιος)

ΦΥΣΙΚΗ ΓΙΑ ΕΠΙΣΤΗΜΟΝΕΣ ΚΑΙ ΜΗΧΑΝΙΚΟΥΣ: ΜΗΧΑΝΙΚΗ, ΤΑΛΑΝΤΩΣΕΙΣ ΚΑΙ ΜΗΧΑΝΙΚΑ ΚΥΜΑΤΑ, ΘΕΡΜΟΔΥΝΑΜΙΚΗ, ΣΧΕΤΙΚΟΤΗΤΑ, RAYMOND A. SERWAY, JOHN W. JEWETT

Πανεπιστημιακή Φυσική, Κουνάβης Παναγιώτης

ΜΗΧΑΝΙΚΗ, C. Kittel, W. D. Knight, M. A. Ruderman, A. C. Helmholtz, B. J. Moyer

Θεμελιώδης πανεπιστημιακή φυσική, Wolfson Richard (Συγγρ.) - Κατσικίνη Μαρία, Κουνάβης Παναγιώτης, Κουσουρήs Κωνσταντίνος (Επιμ.)

Φυσική για Επιστήμονες και Μηχανικούς, 5η Έκδοση, Τόμος Α, Giancoli C. Douglas, Ζαχαριάδου Αικατερίνη-Στυλιανή, Κεχαγιάs Αλέξανδρος, Ρέκανος Ιωάννης, Τσιπολίτης Γεώργιος (Επιστ. Επιμέλεια).

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ENGLISH:

D. Young, R. A. Freedman, T. R. Sandin, A. Lewis Ford, Sears and Zemansky's University Physics (10th Edition) Addison-Wesley Pub Co; 10th edition, 1999.

D. C. Giancoli, Physics for Scientists & Engineers with Modern Physics, Addison-Wesley, 4th Edition, 2008.

Paul G. Hewitt, J. Suchocki, L. A. Hewitt «Conceptual Physical Science», Longman; 2nd edition (January 1999)