

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	SCHOOL OF EDUCATION		
<b>ACADEMIC UNIT</b>	DEPARTMENT OF PRIMARY EDUCATION		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	DEY 056	<b>SEMESTER</b>	3 <sup>rd</sup>
<b>COURSE TITLE</b>	Basic Concepts on Physics		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	3	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	General background		
<b>PREREQUISITE COURSES:</b>	No		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="http://ecourse.uoi.gr/course/view.php?id=587">http://ecourse.uoi.gr/course/view.php?id=587</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>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</i></p> <ul style="list-style-type: none"> <li>• Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</li> <li>• Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</li> <li>• Guidelines for writing Learning Outcomes</li> </ul>
<p>By the end of the course, students should be able:</p> <ol style="list-style-type: none"> <li>1. To be familiar with the basic knowledge of the science of Physics and especially with basic concepts to the needs of Primary Education students. They will learn how to approach concepts as, speed, acceleration, gravity, traction, force, momentum, energy, pressure, density etc. All these concepts are connected with examples from everyday life and the students are learning to answer to questions based on phenomena that are connected with these science concepts.</li> <li>2. To use simple mathematics as a useful tool for exploring concepts and problems of Physics.</li> <li>3. To describe the phenomena and problems of Physics solely by using its concepts (qualitatively).</li> <li>4. To apply the conceptual description of phenomena and problem solving approach to situations related to the curriculum in Primary Education.</li> </ol>
<p><b>General Competences</b></p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma</i></p>

<i>Supplement and appear below), at which of the following does the course aim?</i>	
<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 Respect for the natural environment</i>
<i>Decision-making</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism</i>
<i>Working independently</i>	<i>Production of free, creative and inductive thinking .....</i>
<i>Team work Working in an international environment</i>	<i>Others...</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	

- Search for, analysis and synthesis of data and information, with the use of strategies for developing reasonable arguments in exploring concepts in Physics.
- Improving the decision making, the respect for the natural environment, the planning and the observation of natural phenomena.
- Adapting new situations, Working independently, Team work, Production of new research ideas.

### (3) SYLLABUS

- Nature of Science
- Know and understand the most important phenomena of Mechanics and Heat
- Inductive thinking on environmental issues and problem solving
- Students' conceptions about various physics concepts and how to use conceptions as a learning process. Examples and applications of the concepts of Mechanics and Heat.
- Adaptation of students' ideological constructs and researches to the needs of the educational process and curriculum in Primary Education

### (4) TEACHING and LEARNING METHODS – EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face to face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in teaching	
<b>TEACHING METHODS</b> <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 nondirected study according to the principles of the ECTS</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	26
	Tutorial	13
	Educational Visits	10
	Study and analysis of bibliography	52
	Additional Work (Exercise Solutions)	21
	Exams	3
<b>TOTAL</b>	<b>125</b>	
<b>STUDENT PERFORMANCE EVALUATION</b> <i>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.</i>	Written or oral exams	

<i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	
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## **(5) ATTACHED BIBLIOGRAPHY**

### **Suggested bibliography (from system Endoxos)**

- Hewitt, P. (2006). Οι έννοιες της Φυσικής. Πανεπιστημιακές Εκδόσεις Κρήτης.
- Holton, G., & Brush, G.S (2018). Εισαγωγή στις έννοιες & τις θεωρίες της φυσικής επιστήμης ( επιστ. επιμ. Σκορδούλης Κ.). Εκδ. Γ. ΔΑΡΔΑΝΟΣ - Κ. ΔΑΡΔΑΝΟΣ Ο.Ε.

### **Additional bibliography**

- Charpak, G. (2003). Μαθητές Ερευνητές και Πολίτες. Μια πρωτοποριακή διδασκαλία των επιστημών (μετάφραση. Μήτσικα Ε., Τσικρίκας Ν.) εκδ. Σαββάλας, Αθήνα.
- Καλκάνης, Γ.Θ. (2000). Εφαρμογές των Τεχνολογιών Πληροφόρησης στις Φυσικές Επιστήμες, Πανεπιστήμιο Αθηνών, Αθήνα.
- Καριώτογλου, Π. (2006). Παιδαγωγική γνώση του περιεχομένου φυσικών επιστημών, εκδ. Γράφημα, Θεσσαλονίκη.
- Κασσέτας, Ι.Α. (1996). Το μακρόν Φυσική - προ του βραχέος διδάσκω, εκδ. Σαββάλα, Αθήνα.