

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	PHYSICS DEPARTMENT		
LEVEL OF STUDIES	GRADUATE		
COURSE CODE	304	SEMESTER	6 & 8
COURSE TITLE	DIDACTICS OF PHYSICAL SCIENCES		
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	
	4	4	
<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, specialised general knowledge, skills development</i>	General Background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning outcomes</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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> 										
<p>It is expected that upon completion of the course, the students:</p> <ol style="list-style-type: none"> 1. Have acquired basic knowledge about the teaching of the Physical Sciences. 2. Understand the importance of students' Alternative Ideas in Physical Sciences. 3. Have understood the importance of the experiment in the teaching of Physical Sciences. 4. Have understood the teaching methods of Physical Sciences. 5. Have met the constructive teaching model of Physical Sciences. 6. Apply the constructive teaching model for the basic Physical Sciences concepts. 										
<p>General Competences</p> <p><i>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></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Team work</i></td> <td style="border: none;"><i>Criticism and self-criticism</i></td> </tr> </table>	<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>
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<i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Production of free, creative and inductive thinking</i> <i>Others...</i>
Working independently. Production of free, creative and inductive thinking.	

(3) SYLLABUS

<ul style="list-style-type: none"> • The nature of Science and of learning. • The processes of the scientific method and the teaching of Physics. • Teaching with experiments • Alternative ideas of students and their impact on teaching. • The constructive learning model. • The role of the experiment in conceptual change. • Pre-existing ideas of students for various concepts of Physics. Examples of the constructive approach.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to face learning	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in teaching. Communication with students via e-course.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <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> <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>	Activity	Semester workload
	Lectures	60
	Bibliography study	27
	Project	10
	Exams	3
	Course Total	100
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <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>	Tests during the courses. Project and oral presentation End-of-semester written exams.	

(5) ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*
- *Related academic journals:*

- Κώστας Ραβάνης: Εισαγωγή στη Διδακτική και στη Διδασκαλία των Φυσικών Επιστημών, Εκδόσεις Νέων Τεχνολογιών, 2016
- Δήμητρα Σπυροπούλου –Κατσάνη : Διδακτικές και παιδαγωγικές προσεγγίσεις στις φυσικές επιστήμες. Θεωρίες μάθησης, αναλυτικά προγράμματα και πρότυπα/μοντέλα διδασκαλίας, διδακτική αξιοποίηση του πειράματος, Τυπωθήτω, 2008.
- Παναγιώτης Β. Κόκκοτας, Διδακτική των φυσικών επιστημών, Σύγχρονες προσεγγίσεις στη διδασκαλία των φυσικών επιστημών: Η εποικοδομητική προσέγγιση της διδασκαλίας και της μάθησης, Εκδόσεις Γρηγόρη, 2008