

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Sciences		
ACADEMIC UNIT	Department of Physics		
LEVEL OF STUDIES	School of Sciences		
COURSE CODE	M314	SEMESTER	1
COURSE TITLE	Educational Technologies and Applications in Physics Education		
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
		3	5
<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

Learning outcomes <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> <i>Consult Appendix A</i> <ul style="list-style-type: none"> • 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
<p>At the end of the course the students are expected:</p> <ul style="list-style-type: none"> • To have gained knowledge in modern technologies and their applications in education. • To be able to use the relative software for compiling scientific papers and presentations. • To have gained experience and be able to use relative software for the graphical representation of mathematical and physical data and functions, as well as for conduction of analytical calculations and data fittings for applications in physics education. • To have gained experience and be able to use relative software for the simulation of physics experiments and its use in physics education. • To be able to use the internet for searching and locating relative sources of interest in the field of physics and physics education. • To have gained experience and be able to use relative computer software for student performance evaluation and its application for educational purposes.
General Competences <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>Search for, analysis and synthesis of data and information, with the use of the necessary technology</p> <p>Adapting to new situations</p> <p>Decision-making</p> <p>Working independently</p> <p>Team work</p> <p>Working in an international environment</p> <p>Working in an interdisciplinary environment</p> <p>Production of new research ideas</p>	<p>Project planning and management</p> <p>Respect for difference and multiculturalism</p> <p>Respect for the natural environment</p> <p>Showing social, professional and ethical responsibility and sensitivity to gender issues</p> <p>Criticism and self-criticism</p> <p>Production of free, creative and inductive thinking</p> <p>.....</p> <p>Others...</p> <p>.....</p>
<p>Search, analyse and compile data and information, with the use of the necessary technology.</p> <p>Working independently.</p> <p>Team work.</p>	

(3) SYLLABUS

Introduction to educational technologies and learning theories. The open software and its applications in education. The Linux operating system. Data, graph and function analysis, fitting and interpretation. Graphical image processing software. Compilation of scientific texts: commercial and open software. Simulations in education, relative software and applications in physics problems. The internet at the service of education, search for information and applications. Performance evaluation: computer software and applications.

(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>	Use of the internet www for the presentation of examples in the educational procedures, applications in the classroom and examples which include team work. The presentation is conducted by computer and projector. The Moodle asynchronous e-learning system is used for dissemination of notes, exercises and communication between the students and the instructor.	
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	13
	Laboratory practice	26
	Study and analysis of bibliography	30
	Essay writing	39
	Exams	3
	Autonomous study	14
	Course total	125
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>	The final mark is a combination of: <ul style="list-style-type: none"> • Essay evaluation 30% • Multiple choice questionnaires 30% • Practical examination/final project 40% 	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:

1. Instructor's notes

2. Παναγιωτακόπουλος, Χ., Πιερρακέας, Χ., & Πιντέλης, Π. ,Το εκπαιδευτικό λογισμικό και η αξιολόγηση του , Μεταίχμιο, (2003).

3. Συμεών Ρετάλης, Οι προηγμένες τεχνολογίες διαδικτύου στην υπηρεσία της μάθησης, Εκδόσεις Καστανιώτη (2005)