

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Sciences		
ACADEMIC UNIT	Department of Physics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	14	SEMESTER	1
COURSE TITLE	INTRODUCTION TO COMPUTERS		
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	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, skills development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	http://ecourse.uoi.gr/course/view.php?id=495		

(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>The course provides the students with:</p> <p>a) basic knowledge for the use of modern personal electronic computers (PC), their hardware and software,</p> <p>b) skills for the use of software related to word and text processing, spread sheet development, calculation and graphical representations of data, as well as function and data analysis,</p> <p>c) introduction to the concepts and uses of algorithms for solving mathematical and physical problems with the help of pseudo-codes.</p> <p>In particular after the successful completion of the course the student will be in position to:</p> <ul style="list-style-type: none"> • process and manage electronic files with the most widespread PC operating systems,

- create and process text and manuscripts, scientific and exercise reports with the use of modern text and word editor software,
- conduct calculations and process data of mathematical and physical quantities, as well as create and process graphical representations of such quantities with the use of modern spread sheet software,
- analyse data series of physical quantities and calculate their features such as mean and median values, standard deviation and error processing with the use of modern spread sheet software,
- fit mathematical functions to data series from experimental measurements and determine their analytical expressions by least square minimization methods, as well as fitting with pre-formed functions with the use of modern spread sheet software,
- design algorithms in the form of pseudo-codes for solving mathematical and physical problems such as max, min, mean and error values of data series, convergence series values, least common multiple etc,
- implement the use algorithms for designing code with modern programming languages.

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 thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

Search for, analysis and synthesis of data and information, with the use of the necessary technology.
 Decision-making.
 Working independently.
 Working in an interdisciplinary environment.
 Production of free, creative and inductive thinking.

(3) SYLLABUS

General introductions to the structure and function of modern personal computers. Hardware. Software. Synopsis of DOS and UNIX operation systems (OS). Windows and Linux environments. Word processors. Spread sheets. Graphics and data analysis packages. Introduction to Algorithms.

(4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face learning.	
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Use of ICT in teaching, use of electronic projectors, use of PC by the students and the instructors in laboratory education. Direct communication with students on lectures and in laboratories. Additional usage of the Moodle asynchronous e-learning system.	
<p style="text-align: center;">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></p> <p><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></p>	Activity	Semester workload
	Lectures	26
	Laboratory practice	26
	Study and analysis of bibliography	22
	Non-directed study	22
	Essay writing	26
	Exams	3
	Course total	125
<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i></p> <p><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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	In-field and in-practice examination which refers to solving given problems on PC by producing relative archive files, as well as developing written answers in exercises.	

(5) ATTACHED BIBLIOGRAPHY

<p>- Suggested bibliography: - Related academic journals:</p> <ul style="list-style-type: none"> • "Εισαγωγή στους Αλγόριθμους", Coemen T.H. LeisersonCH.E. Rivest R.L. Stein C. Μετάφραση Ι. Παπαδόγγονας, Παν/κές Εκδόσεις Κρήτης/ΙΤΕ, ΗΡΑΚΛΕΙΟ 2012. • "Η Επιστήμη των Υπολογιστών" (Εκδ 10η), J. Glenn Brooksear Μετάφραση Κ. Κουρκουμπέτης, Εκδόσεις ΣΥΜΜΕΤΡΙΑ, ΑΘΗΝΑ 2009. • "Εισαγωγή στην Πληροφορική", (Εκδ. 2η), Μπεμ Α. Καραμπάτζος Γ., Εκδόσεις ΣΥΜΜΕΤΡΙΑ, ΑΘΗΝΑ 2000. • http://www.libreoffice.org/download/release-notes/
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- "A Guide to Microsoft Excel 2007 for Scientists and Engineers", Bernard Liengme, Academic Press, LONDON 2009.
- "Beginning OpenOffice Calc: From Setting Up Simple Spreadsheets to Business Forecasting", Jacek Artymiak, Apress 2011.
- "Beginning OpenOffice 3: From Novice to Professional", Andy Channelle, Apress 2009.