

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCE		
ACADEMIC UNIT	PHYSICS		
LEVEL OF STUDIES	UNDER GRADUATE		
COURSE CODE	15	SEMESTER	1
COURSE TITLE	ELEMENTS OF PROBABILITY AND STATISTICS		
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		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	HELLENIC-GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://ecourse.uoi.gr/course/view.php?id=224		

(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 student knowledge for understanding the principles of statistical data acquisition, classification, tabulation and mathematical techniques for solving relative problems. More specifically after the successful attendance of the course students should be in position to:</p> <ul style="list-style-type: none"> • Collect, tabulate, and interpret statistical data • Use the theory of probability to generalize the interpretation from statistical samples to the statistical population • To formulate statistical problems and use probabilities for their solution • Find the relation between two variables from statistical data

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>	
<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>
<ul style="list-style-type: none"> • Search for, data acquisition, analysis and synthesis using the necessary technologies • Working independent • Improvement of free, creative and inductive consideration 	

(3) SYLLABUS

Probability and Physics. Tabulation, graphs statistical data, Theory of combination and probability. Theory of probability. Conditional probability and Bayes' rule. Probability concepts. Frequency distributions (binomial, Poisson, Normal, Maxwell). Elements of error theory, Estimations of parameters, statistical inference, test hypotheses, goodness of fit.

(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 e-course learning system, with uploaded notes, exercises for practice and communication with students	
TEACHING METHODS <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>	Activity	Semester workload
	Lectures	26
	Tutorials	13
	Applications	13
	Study of bibliography	50
	Non-directed study	20
exams	3	

<p>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</p>				
<p>STUDENT PERFORMANCE EVALUATION 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 Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</p>	<table border="1"> <tr> <td data-bbox="644 192 976 232">Course total</td> <td data-bbox="979 192 1307 232">125</td> </tr> </table> <p>Tests (20%), intermediate exams (30%), final exams (50%)</p>		Course total	125
Course total	125			

(5) ATTACHED BIBLIOGRAPHY

<p>- Suggested bibliography: - Related academic journals:</p> <p>Bibliography</p> <ul style="list-style-type: none"> • Γ. Χάλκος, Στατιστική, Εκδόσεις Δάρδανος, Αθήνα (2005) ISBN 978-960-402-394-3 • Δ.Π. Χατζηνικολάου, Έκδοση Β, Εκδόσεις Κιορογλου Λαμπρινή, Ιωάννινα (2002), ISBN 960-99661-0-5 • Πιθανότητες και στατιστική, Murray R. Spiegel, Μετάφραση Σ. Περισίδης, Εκδόσεις ΕΣΠΙ, Αθήνα, 1977, ISBN 0-07-060220-4
