

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	SCHOOL OF SCIENCES		
<b>ACADEMIC UNIT</b>	DEPARTMENT OF MATHEMATICS		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE PROGRAM		
<b>COURSE CODE</b>		<b>SEMESTER</b>	<b>G</b>
<b>COURSE TITLE</b>	STATISTICS		
<b>INSTRUCTOR</b>	Theodosios Dimitrakos		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	6	
<b>COURSE TYPE</b>	Special 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://www.math.aegean.gr/index.php/en/academics/undergraduate-programs">http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs</a>		

### (2) LEARNING OUTCOMES

<b>Learning outcomes</b>
The basic aim of the course is to introduce students into the methodology of estimating parameters and into the mathematical structure of Statistics. Basic topics of Mathematical Statistics are presented together with the basic methodology of finding population estimators. Furthermore appropriate examples are provided for the understanding of the methodology. These examples are related to well-known continuous and discrete probability distributions.
<b>General Competences</b>
Search for, analysis and synthesis of data and information, with the use of the necessary methodology. Production of new research ideas. Production of free, creative and inductive thinking.

### (3) SYLLABUS

Basic elements of Probability theory: basic definitions, convergence, Normal distribution, Independent random variables, Random sample, Statistic functions, Estimation of parameters, Unbiased estimators, Minimum variance estimators, Cramer-Rao inequality, Sufficiency, Completeness, Unbiased uniformly minimum variance estimators, Method of moments, Maximum Likelihood estimators, Bayes and minimax estimators, Confidence Intervals and Hypothesis Testing.	
<b>TEACHING MATERIAL DISTRIBUTION</b>	The teaching material of the course is uniformly distributed during the semester.

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

<b>DELIVERY</b>	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	Communication with students via e-mail	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	52
	Independent study	98

	Course total (25 per ECTS)	<b>150</b>
<b>COURSE COMMITMENTS</b>	Attending course is not obligatory.	
<b>STUDENT PERFORMANCE EVALUATION</b>	Student's evaluation is done in Greek through a written examination which includes short-answers questions and problem solving. For students with disabilities, evaluation takes place via oral exams.	

**(5) ATTACHED BIBLIOGRAPHY**

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| <ol style="list-style-type: none"> <li>1. Basic Methods of Estimating Parameters, G. Hliopoulos</li> <li>2. Statistical Inference, Vol I, G. Roussas, G. Stamatelos (translation)</li> <li>3. Mathematical Statistics, T. Papaioannou, C. Ferentinos</li> <li>4. Mathematical Statistics, F. Koliva-Mahaira.</li> </ol> <p><i>- Related Foreign Bibliography:</i></p> <ol style="list-style-type: none"> <li>1. Theoretical Statistics, D.R. Cox and D.V. Hinkley, Chapman &amp; Hall.</li> </ol> |
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