COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS & ACTUARIAL – FINANCIAL MATHEMATICS		
LEVEL OF STUDIES	POSTGRADUATE PROGRAM Statistics & Actuarial – Financial Mathematics		
COURSE CODE	**333-**	**SEMESTER**	**B**
COURSE TITLE	COMPUTATIONAL STATISTICS		
INDEPENDENT TEACHING ACTIVITIES		**WEEKLY TEACHING HOURS**	**CREDITS**
		2	6
COURSE TYPE	SPECIALISED GENERAL KNOWLEDGE		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://www.samos.aegean.gr/samos_actuar/modules_eng.html		

(2) LEARNING OUTCOMES

Learning outcomes
Students will be able to: apply, implement and interpret a computational approach to relevant statistical problems.
General Competences
Search for, analysis and synthesis of data and information, with the use of the necessary technology Decision-making Working independently and Team work Working in an interdisciplinary environment

(3) SYLLABUS

Monte Carlo methods, simulation and the Law of large numbers. Production of pseudo-random sequences. The Kolmogorov-Smirnov and Anderson-Darling tests. Integration in high dimensional spaces. Sampling with the inverse cumulative method, the accept-reject method, majorization, adaptive methods. Markov chain Monte Carlo methods, Metropolis Hastings and the Gibbs sampler.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	• Synchronous and Asynchronous E-Learning. • Face-to-face learning.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Communication with students via eclass educational platform and via e-mail. • Educational material stored and presented into eclass educational platform.	
TEACHING METHODS	***Activity***	***Semester workload***

	Lectures	24
	Problem solving – projects – Lab work	52
	Independent study	74
	Course total (25 per ECTS)	**150**
STUDENT PERFORMANCE EVALUATION	Student evaluation is done in Greek through a written examination which includes short-answer questions and problem solving. For students with disabilities, evaluation takes place via oral exams.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Gentle, James E. (2002), Elements of Computational Statistics, Springer, ISBN 0-387-95489-9
2. Givens, Geof H.; Hoeting, Jennifer A. (2005), Computational Statistics, Wiley Series in Probability and Statistics, Wiley-Interscience, ISBN 978-0-471-46124-1
3. Monahan, John (2001), Numerical Methods of Statistics, Cambridge University Press, ISBN 978-0-521-79168-7
4. Thisted, Ronald Aaron (1988), Elements of Statistical Computing: Numerical Computation, CRC Press, ISBN 0-412-01371-1.