

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	333-0012	SEMESTER	B
COURSE TITLE	FINANCIAL MODELLING		
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 following the course: <ol style="list-style-type: none">1. They will be able to respond to complex modeling problems that often arise in the field of financial analyst and actuary's professional experience and escape from routine ones such as credit risk and the use of large amounts of data in it, of the VaR in certain distributions, etc.2. they fill in their knowledge in other courses such as Risk Measurement and Management and Portfolio Optimization with more statistical background.
General Competences
Search, analysis and synthesis of data and information, using the necessary technologies Decision making Autonomous work

(3) SYLLABUS

<ol style="list-style-type: none">1. Modeling of Interest Rates and through them pricing of Bonds using Stochastic Differential Equations, such as Vacicek, CIR, Hull-White.2. Credit Risk Modeling with Logistic Regression and Multivariate Statistical Analysis Techniques (Discrimination Analysis, PCA, etc.)3. Modeling Asset Performance (CAPM, APT, Fama-French)4. Simulation techniques (Reverse Method, Barrier, etc.) for the use of appropriate law invariant risk measures.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	<ul style="list-style-type: none">• Synchronous and Asynchronous E-Learning.• Face-to-face learning.
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USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> • Communication with students via eclass educational platform and via e-mail. • Educational material stored and presented into eclass educational platform. • Tasks with SPSS, Minitab and Mathematica. 	
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	<p>The evaluation includes written tests and tasks similar to the ones described in class.</p> <p>The course includes statistical and mathematical calculations via Mathematica, Minitab και SPSS.</p> <p>For students with disabilities, evaluation takes place via oral exams.</p>	

(5) ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

1. Martingale Methods in Financial Modelling, M. Musiela, M. Rutkowski
2. Monte Carlo Methods in Financial Engineering, P. Glasserman
3. Credit Risk Management, Zopounidis, K., Lemonakis, C.