

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	333-2102	SEMESTER	A
COURSE TITLE	FINANCIAL MATHEMATICS		
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 who have successfully completed the course will have: <ul style="list-style-type: none">• Achieved familiarity with the basic concepts of modern finance, as these are described in the Course Contents above.• Developed their interpretational skills and a critical mind with regard to the use of mathematical models within the context of finance.• Applied a variety of concepts and techniques from previous courses• Gained a solid conceptual and technical background for any further study of financial mathematics
General Competences
Working independently Production of free, creative and inductive thinking Working in an international environment Decision-making Working in an interdisciplinary environment

(3) SYLLABUS

Interest rates, present value and compounded value, capital markets and money markets, types of securities (bonds, stocks, derivatives).
Introduction to the basic concepts and the formalism of financial mathematics: consumption, investments, arbitrage, equilibrium, Arrow-Debreu probability measures, contingent claims pricing, hedging portfolios, complete and incomplete markets, risk and return. The binomial model, the general discrete model, the Black-Scholes model.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	<ul style="list-style-type: none"> • Synchronous and Asynchronous E-Learning. • Face-to-face learning. 	
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. 	
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>Student evaluation is done in Greek through a written examination which includes short-answer questions and problem solving.</p> <p>For students with disabilities, evaluation takes place via oral exams.</p>	

(5) ATTACHED BIBLIOGRAPHY

<p>- <i>Suggested bibliography:</i></p> <ol style="list-style-type: none"> 1. Π.-Χ.Γ Βασιλείου, Στοχαστικά Χρηματοοικονομικά, Εκδόσεις Ζήτη, (2001) 2. Α. Γιαννακόπουλος, Χρηματοοικονομικά ΙΙΙ, Σημειώσεις παραδόσεων, http://www.actuar.aegean.gr/notes/finpart3.pdf 3. M. Baxter, A. Rennie, Financial Calculus, An introduction to derivative pricing, Cambridge University Press 4. M. Dothan, Prices in Financial Markets, Oxford University Press 5. S. Pliska, Introduction to Mathematical Finance, Discrete time models, Blackwell 6. R. Elliott, P.E. Kopp, Mathematics of Financial Markets, Springer 7. D. Duffie, Dynamic Asset Pricing Theory, Princeton University Press 8. T. Bjork, Arbitrage Theory in Continuous Time, Oxford University Press 9. F.E. Benth, Option Theory with Stochastic Analysis, An introduction to mathematical finance, Springer 10. D. Lamberton, B. Lapeyre, Introduction to Stochastic Calculus Applied to Finance, Chapman & Hall 11. J. Hull, Options, Futures and Other Derivatives, Prentice Hall.
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