

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	333-0101	SEMESTER	A
COURSE TITLE	STOCHASTIC PROCESSES		
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 will successfully attend the Stochastic Process course will be able to <ul style="list-style-type: none">• Know the meaning of the martingale process and its applications• Familiarization with basic concepts such as the Wiener process and its properties. Also, familiarization with basic principles of stochastic integration, Itô processes etc. Finally, they will be prepared to attend courses such as Financial Mathematics, Actuarial Mathematics, etc.
General Competences
The student will apply advanced concepts of probability theory to many advanced phenomena such as financial problems, actuarial problems and Statistics.

(3) SYLLABUS

Advanced concepts of probability theory and stochastic processes. Martingales, Poisson process and its properties, Brown motion and its properties, stochastic integral, diffusion processes, change of measure, Lévy processes.
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(4) TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Synchronous and Asynchronous E-Learning and 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.

	<ul style="list-style-type: none"> 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 either through a written/oral examination which includes short-answer questions and problem solving or by preparing and presenting (possibly in English) a project.</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"> Brzezniak-T. Zastawniak, Basic Stochastic Processes, Springer 1999 J. Jacod - P. Protter, Probability Essentials, Springer, 2004. M. Capinski - E. Kopp, Measure, Integral and Probability, Springer, 2005. R. Ash - C. Doleans-Dade, Probability and Measure Theory, Elsevier, 2000. P. Billingsley, Probability and Measure, Wiley, 1995. Continuous Martingales and Brownian Motion, D. Revuz and M. Yor <p>- <i>Related academic journals:</i></p> <ol style="list-style-type: none"> Stochastic processes and their applications https://www.journals.elsevier.com/stochastic-processes-and-their-applications/
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