

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	6326	SEMESTER	6 th
COURSE TITLE	STSP: QUANTITATIVE RISK MANAGEMENT AND ANALYTICS		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		4	7
Workshops			
Labs			
COURSE TYPE	Elective		
PREREQUISITE COURSES:	Knowledge of topics related to Probability I and II, Stochastic Processes I, basic Statistics, and basic programming will be useful.		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat/content/special-topics-statistics-and-probability-stsp-quantitative-risk-management-and-risk		

(2) LEARNING OUTCOMES

Learning outcomes
Upon successful completion the students will: • Have a solid understanding of the concept of risk in financial and insurance markets. • Understand the fundamental probabilistic and stochastic models of risk analytics and be able • to employ them for its management Be able to develop computational tools based on the above models in the modern computational ecosystem of Python
General Competences

(3) SYLLABUS

The aim of this course is to provide an introduction to quantitative theoretical and computational methods for managing and analyzing risk. It is intended to students with a solid quantitative training and understanding of fundamental notions from probability and statistics, as well as a good computational skills, so that starting from these it will introduce that to their applications in the field of risk analytics and management.

In particular:

- The concept of risk with examples from finance and insurance – Risk mapping – Scenarios and simulation and their use in risk management.
- Short introduction to financial and insurance markets – Assets and their role in risk management
- Fundamental probabilistic and stochastic models of risk management
- Risk Measures (Use – Computation – Back testing)
- Portfolios and their role in risk management
- Model uncertainty
- Beyond financial and insurance risk (Natural and Catastrophe risk, project risk, climate risk)

The conduct of tutorials/workshops and laboratory exercises constitutes an integral part of the course's teaching.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	YES	
TEACHING METHODS	Activity	Semester workload
	Class Lectures	
	Course total	175
STUDENT PERFORMANCE EVALUATION	Written examination at the end of the semester. Information is available at eclass	

(5) ATTACHED BIBLIOGRAPHY

- A. J. McNeil, R. Frey and P. Embrechts, Quantitative Risk Management, Princeton University Press, 2015
- H. Folmer and A. Schied, Stochastic Finance, De Gruyter, 2004
- Lecture notes
- Selected papers from the current research literature.