COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS AND ACTUARIAL – FINANCIAL MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE PROGRAM		
COURSE CODE	331-3406	SEMESTER	F
COURSE TITLE	FINANCIAL MATHEMATICS II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
	3	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	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.actuar.aegean.gr/index.php/en/academics/undergraduate-programs

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The student will study the financial options, derivatives etc. and will be able to calculate a hedging strategy at a discrete time. The main objective of the course is to be able to fully understand the mathematical theory behind these products, so that it can develop the mathematical background on its own in new types of derivatives.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*

Working in an interdisciplinary environment *Production of new research ideas*	*……* *Others…* *…….*

The student will learn how to apply modern mathematical tools such as advanced probability theory, stochastic analysis, etc. It will be able to study related problems by applying these mathematical tools that will emerge in the future in the appropriate workplace.

(3) SYLLABUS

Stochastic processes in continuous time, stochastic differential equations, Girsanov theorem, complete and incomplete markets, fundamental theorems of financial mathematics, option valuation in continuous time with one underlying asset, numerical approximation of the option values, portfolio theory.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Communication with students via e-mail • Uploading course material on e-class system
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	39
Independent study	111
Course total (25 per ECTS)	*150*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Student evaluation is done in Greek through a written examination which includes short-answers questions and problem solving. For students with disabilities, evaluation takes place via oral exams.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Σύγχρονη Θεωρία Χαρτοφυλακίου, Παναγιώτης Ξυδώνας, Ιωάννης Ψαρράς, Κωνσταντίνος Ζοπουνίδης, εκδόσεις Κλειδάριθμος, 2010.

2. Χρηματοοικονομικά Μαθηματικά, Ζυμπίδης Αλέξανδρος, Οικονομικό Πανεπιστήμιο Αθηνών, 2010.
3. Εισαγωγή στα Χρηματοοικονομικά Μαθηματικά, Νικόλαος Χαλιδιάς, εκδόσεις Νέων Τεχνολογιών, 2016.

- Related academic journals:

1. Annals of Finance, http://www.springer.com/finance/journal/10436