COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF FINANCIAL AND MANAGEMENT ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**OI0112**	**SEMESTER**	**8**
COURSE TITLE	Derivatives and new financial products		

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	5
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*	SPECIAL BACKGROUND/SPECIALISED GENERAL KNOWLEDGE/ SKILLS DEVELOPMENT
PREREQUISITE COURSES:	FINANCIAL ANALYSIS
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://www.fme.aegean.gr/en/c/financial-risk-analysis-and-management

(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*

Financial derivative products are one of the basic tools of modern finance. In fact, within the current global volatile financial environment, financial derivatives are becoming increasingly important as can be used both for hedging and speculation. The course is addressed to undergraduate students of the Financial Engineering Track and focuses on both the structure and the operating mechanisms of the financial derivatives markets. More specifically, we present (a) the main types of financial derivatives (forwards, futures, options and swaps), (b) the various pricing techniques (e.g., mark-to-market (futures) and binomial model (options), etc.,) and their underlying ideas (eg., absence of arbitrage). Emphasis will be given on both real-world applications as well as the underlying mathematical framework. Examples stemming from risk management and speculation will be presented. More specifically, upon successful completion of the course, the students will be able to:

- Recognize the various categories of financial derivatives and fully understand their structure, basic characteristics and importance in modern Finance. Special emphasis will be given to Forward contracts, Futures contracts and Options.

- Know how the daily settlement of Futures contracts is carried out. Furthermore, to use Futures contracts for hedging purposes.
- Calculate the value and the price of Forward and Futures contracts (when the underlying asset is not paying dividends and when the underlying is paying dividends).
- Know the basic structural properties of options (both European and American) written on a stock.
- Calculate bounds for the price of options (both European and American) and realize the connection between these bounds and the absence of arbitrage. Moreover, if the above bounds are not satisfied, to know how to achieve arbitrage.
- Price European options with the Black-Scholes model.
- Price European and American options with binomial trees.

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…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas
- Criticism and self-criticism
- Production of free, creative and inductive thinking

(3) SYLLABUS

Introduction to financial derivatives. Forward and Futures contracts. The mechanism of Futures market, part I: Daily settlement (the case of Futures contract on currency, stocks and indexes). The mechanism of Futures market, part II: hedging with Futures (Long hedge, Short hedge). The mechanism of Futures market, part III: hedging with Futures (basis risk arising from different dates or/and different assets – cross hedging). Calculate the value and the price of Forward and Futures contracts (when the underlying asset does not pay/pay dividends). Options, part I: a basic introduction. Options, part II: properties of options (European and American) written on a stock. Options, part III: bounds for the price of options (European and American) + arbitrage opportunities. Pricing European options with the Black-Scholes model. Pricing European and American options with binomial trees.

(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*	**Use of ICT in teaching.** **Use of ICT in laboratory education.**
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/Laboratory practice	39
Study and analysis of the bibliography	84
Projects	18
Final exam	3
2 midterm exams	6
Course total	**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.*	Written examinations at the end of the semester, in Greek, which include questions of knowledge development and understanding of the content of the course, as well as problem solving. Final grade is calculated as: Final exam:50% Exercises: 15% Midterm exams:35%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Χρηματοοικονομικά Παράγωγα (2014). Θ. Πουφινάς και Χ. Φλώρος. Εκδόσεις Δίσιγμα.
- Εισαγωγή στα Παράγωγα Χρηματοοικονομικά Προϊόντα (2017). Π. Αγγελόπουλος. Εκδόσεις Σταμούλη.
- Βασικές Αρχές των Αγορών Συμβολαίων και Δικαιωμάτων (2017). J. Hull. Ελληνική Έκδοση, εκδόσεις Κλειδάριθμος.