COURSE OUTLINE

(1) GENERAL

SCHOOL	Finance and Statistics		
ACADEMIC UNIT	Department of Banking and Financial Management		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	XPXOM01-1	SEMESTER	6 of 8
COURSE TITLE	Financial Econometrics		

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
Lectures	4	7.5
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
PREREQUISITE COURSES:	none
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	

(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*

- Students will be acquainted with specific financial applications which require the use of econometric analysis.
- The students will learn how to use the programming language R.
- The students will learn how to determine whether an event of interest has an effect on the value of a company or an asset price.
- The students will learn how to specify and estimate probit and logit models.
- The students will learn to predict the probability of default of a borrower.
- They will learn how to simulate the returns of an investment strategy based on past historical data, as well as, to evaluate the forecasts generated from this strategy out of-sample.
- They will learn how to use the bootstrap technique to estimate the standard errors of the estimated parameter coefficients of a prediction model, to construct bootstrap confidence intervals without the use of a distribution assumption, and to conduct reliable statistical inference.
- They will learn how to estimate time-varying parameter coefficients of an asset pricing model.

- They will learn how to implement econometric tests of exuberance (explosive behavior) in asset prices (asset bubble detection).
- They will learn how to implement the variance ratio tests in order to evaluate the random walk hypothesis.
- They will learn to identify when we use a momentum strategy or a contrarian strategy based on the autocorrelation of the financial asset returns.

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
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
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Production of free, creative and inductive thinking

(3) SYLLABUS

- Bootstrap: we show how to estimate the standard errors of the estimated parameter coefficients of a prediction model, to construct bootstrap confidence intervals without the use of a distribution

assumption, and to conduct reliable statistical inference. The lectures focus on both non-parametric and parametric bootstrap methods.

- Backtesting: simulating the returns of an investment strategy based on past historical data and then evaluating the forecasts generated from this strategy out of-sample.
- Statistical test procedures to evaluate the out-of-sample forecasting performance of the prediction model. The lectures explain the nature of directional forecasting and its importance alongside conventional forecast evaluation procedures.
- Event study analysis: implementation of an econometric procedure in order to investigate the effect of an event on the stock price of a company.
- Binary Choice models: we show how to specify, estimate probit, logit and ordinal models. These models are used when the variable we want to predict is binary. We explain how to use a binary choice model to predict the probability of default of a company.
- Econometric tests of exuberance (explosive behavior) in asset prices: the objective of these tests is to detect periods in which the data generating process of a financial variable is characterized by explosive dynamics. We make use of these methods to investigate for the presence of bubbles in the stock markets, crypto-currencies, exchange rates, etc.
- Estimating models with time-varying parameters: students will code and learn methods such as rolling regressions, expanding regressions, Kalman Filters and Flexible Least squares.
- Variance Ratio tests: we make use of the random walk hypothesis to evaluate the weak efficient markets hypothesis, and consequently, whether markets are predictable or not. We apply the Variance Ratio tests to examine the random walk hypothesis. These lectures focus on various variance ratio tests: the power transformed tests of Chen and Deo (2006), the exact rank and sign-based Variance Ratio tests of Wright (2000), the subsampling method of Whang and Kim (2003), and the bootstrap test of Kim (2006).
- Investment strategies: contrarian and momentum strategies.

(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*	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	30
Laboratory practice	22
Study and analysis of bibliography	73
Course total	*1 ECTS*

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.*	The evaluation procedure will involve a written exam which will include short-answer questions, laboratory work, and problem solving.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Ηλίας Τζαβαλής, 2008. Οικονομετρία. Εκδόσεις ΟΠΑ.

JackJohnston, JohnDinardo. Οικονομετρικές μέθοδοι. Εκδόσεις Κλειδάριθμος.

Dimitrios Asteriou, Stephen G. Hall. Εφαρμοσμένη Οικονομετρία. Εκδόσεις ΠΡΟΠΟΜΠΟΣ.

JamesD. Hamilton. Time Series Analysis. Princeton University Press.