

## COURSE OUTLINE

### (1) General information

<b>FACULTY/SCHOOL</b>	Finance and Statistics		
<b>DEPARTMENT</b>	Banking and Financial Management		
<b>LEVEL OF STUDY</b>	M.Sc.		
<b>COURSE UNIT CODE</b>		<b>SEMESTER</b>	1st
<b>COURSE TITLE</b>	Portfolio Theory and Asset Pricing		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
<b>Lectures</b>	3	7,5	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
<b>COURSE TYPE</b> <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	Compulsory / Scientific Expertise / Skills Development		
<b>PREREQUISITE COURSES:</b>	-		
<b>LANGUAGE OF INSTRUCTION:</b>	Greek		
<b>LANGUAGE OF EXAMINATION/ASSESSMENT:</b>			
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	Yes (in Greek)		
<b>COURSE WEBSITE (URL)</b>	<a href="https://bankfin.unipi.gr/mathimata/theoria-chartofylakiou-kai-timologisi-perioysiakon-stoicheion">https://bankfin.unipi.gr/mathimata/theoria-chartofylakiou-kai-timologisi-perioysiakon-stoicheion</a>		

### (2) LEARNING OUTCOMES

#### **Learning Outcomes**

*The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.*

*It is necessary to consult:*

#### **APPENDIX A**

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

## **APPENDIX B**

### • *Guidelines for writing Learning Outcomes*

This course focuses on developing the theory of portfolio management and exploring its practical applications. Its goal is to analyze the construction and evaluation of asset portfolios based on their risk-expected return characteristics. In particular, it presents the main techniques of asset evaluation and allocation for a portfolio, the asset effect to the expected return and risk of a portfolio, and the computation of its investment weights. Furthermore, the modern linear pricing models of portfolio theory are thoroughly described, such as the Capital Asset Pricing Model, the Single-Index Model, and the Arbitrage Pricing Model. Finally, the basic evaluation measures of portfolio performance are presented. Numerical applications as well as a project on constructing and managing a portfolio using market data are treated by Excel.

Upon successful completion of the course, the students will be able to

- analyze and evaluate stocks and portfolios of stocks via their financial ratios and statistical criteria of their returns.
- quantify and compute the risks of an asset and a portfolio of assets.
- compute optimal portfolios of risky and/or riskless assets, subject to various optimality criteria.
- make use of Solver of Excel in order to compute numerically minimum-variance portfolios (Markowitz), the efficient frontier of portfolios, as well as the optimal weights of capital allocation subject to various investment constraints.
- interpret Capital Asset Pricing Model (CAPM) as an equilibrium pricing model.
- compute the systematic risk vs the firm-specific risk of a company, estimating the Index Model via linear regression in Excel.
- use well-diversified portfolios in order to identify and exploit arbitrage opportunities that appear in the market.
- evaluate the performance of portfolios subject to various quantitative measures.
- construct, rebalance, and evaluate the performance of optimal investment portfolios with real market data.

### General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,  
Adapting to new situations  
Decision-making  
Individual/Independent work  
Group/Team work  
Working in an international environment  
Working in an interdisciplinary environment  
Introduction of innovative research

Project planning and management  
Respect for diversity and multiculturalism  
Environmental awareness  
Social, professional and ethical responsibility and sensitivity to gender issues  
Critical thinking  
Development of free, creative and inductive thinking  
.....  
(Other.....citizenship, spiritual freedom, social awareness, altruism etc.)

- Search for, analysis and synthesis of data and information by the use of appropriate technologies.
- Adapting to new situations.
- Decision-making.
- Individual/Independent work.
- Group/Team work.
- Working in an interdisciplinary environment.
- Critical thinking.
- Development of free, creative and inductive thinking.

### (3) COURSE CONTENT

The following sections will be presented:

- Investment Decisions: Securities, Common Stocks, Preferred Stocks, Portfolio Theory, Practical Aspects, The Model of Markowitz, Goals and Constraints, Investment Mistakes.
- Security Evaluation: Evaluation Criteria, Asset Risk, Financial Ratios, Market Capitalization, Price to Earnings (P/E) Ratio, Price to Earnings – Growth (PEG) Ratio, Dividend Yield, Price to Sales (P/S) Ratio, Price to Book Value (P/BV) Ratio, Stock Selection, z-score.
- Returns: Markowitz Assumptions, Asset Returns, Dividends, Statistics, Coefficient of Variation, Covariance, Correlation Coefficient, Variance-Covariance Matrix, Correlation Matrix, Applications to Excel.

- Risk: Risk and Investments, Risk Premiums, Simple Prospects, Speculation and Gambling, Risk Aversion, Utility Values, Types of Traders, Trade-Off Between Risk and Return, Asset Risk, Portfolio Risk.
- Portfolio Optimization: Capital Allocation, One Risky Asset and One Risk-Free Asset, Investment Opportunity Set, Risk Tolerance, Indifference Curve, Diversification, Two Risky Assets, Two Risky Assets and a Risk-Free Asset, Optimal Overall Portfolio.
- The Markowitz Model: Markowitz Portfolio Selection, Minimum-Variance Portfolio Selection, Efficient Frontier in Excel, Capital Allocation and Separation Property, Capital Allocation in Excel, Optimal Portfolios Without Risk-Free Asset in Excel, Borrowing Restrictions, Borrowing and Lending.
- Capital Asset Pricing Model (CAPM): Assumptions, Equilibrium Conditions, Capital Market Line, Risk Premium of the Market Portfolio, Expected Returns on Individual Securities, The Security Market Line, Alpha.
- Single-Index & Multifactor Models: Systematic Risk vs Firm-Specific Risk, Estimating the Index Model, Linear Regression in Excel, The Index Model and Diversification, CAPM and Index Model, Realized Returns, The Expected Return – Beta Relationship, Multifactor Models.
- Arbitrage Pricing Theory (APT): Notion of Arbitrage, Arbitrage Opportunities and Profits, Well-Diversified Portfolios, Betas and Expected Returns, A Multifactor APT.
- Portfolio Performance Evaluation: Sharpe’s Ratio, Treynor’s Ratio, Jensen’s Measure, Appraisal Ratio, M<sup>2</sup> Measure.

#### (4) TEACHING METHODS--ASSESSMENT

<p><b>MODES OF DELIVERY</b> <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>Lecturing and practicing in the P/C lab of the Department.</p>
<p><b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<ul style="list-style-type: none"> <li>• Use of lecture slides via PowerPoint.</li> <li>• Use of P/C lab of the Department for collecting and analyzing real data from data bases.</li> <li>• Communication with students via e-mail.</li> </ul>

<p align="center"><b>COURSE DESIGN</b></p> <p><i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i></p> <p><i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i></p>	<b>Activity/Method</b>	<b>Semester workload</b>
	Lectures	24
	Laboratory Practice	6
	Studying	40
	Project	70
	Coursework	47,5
	<b>Total</b>	<b>187,5</b>
<p align="center"><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p>I. Written exam (50%) that includes:</p> <ul style="list-style-type: none"> <li>• Questions on theory.</li> <li>• Problem solving.</li> </ul> <p>II. Project (30%) that includes the construction and management of a portfolio with market data via Excel.</p> <p>III. Coursework (20%) that includes problem solving subject to the material taught in class.</p> <p>This is a 2,5-hour written exam. The individual evaluation grades are explicitly written next to each question.</p>	

**(5) SUGGESTED BIBLIOGRAPHY:**

<p><i>-Suggested bibliography:</i></p> <ul style="list-style-type: none"> <li>• Z. Bodie, A. Kane and A. Marcus, <i>Investments, 11<sup>th</sup> Edition</i>, McGraw-Hill, 2018.</li> <li>• Γεώργιος Π. Διακογιάννης, <i>Σύγχρονη Θεωρία Χαρτοφυλακίου, Ανάλυση &amp; Εφαρμογές</i>, Εκδόσεις Διπλογραφία, Αθήνα, 2019.</li> </ul>
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