Special Topics in Risk Management

Course Outline
Academic Semester: 2025/26

1. General

School	**School of Finance and Statistics**		
Academic Unit	**Department of Banking and Financial Management**		
Level of Studies	**Undergraduate**		
Course Code	**ΧΡΕΘΔ01**		
Semester	**6th or 8th**		
Course Title	**Special Topics in Risk Management**		
Idependent Teaching Activities		Weekly Teaching Hours	Credits
	Lectures	**4**	**7,5**
Course Type	**Specialized and Skills Development**		
Prerequite Courses			
Language of Instruction and Examinations	**Greek**		
Is the course offered to Erasmus Students?	**No**		
Url (Eclass)	**https://eclass.unipi.gr/modules/auth/courses.php?fc=64**		

2. Learning Outcomes

Learning Outcomes

The main objective of the course is to delve into issues related to risk measurement and management.

The course focuses on four types of risk:

1. Market risk,
2. Credit risk,
3. Liquidity risk, and
4. Interest rate risk.

Moreover, the course focuses on the concept of "rational decision making under risk". What does rational behavior mean when the investor acts under uncertainty? How can we determine whether or not the investor is rational?

General Competences

- Team work

3. Syllabus

The course will be divided into 4 main sections:

Section 1: Introduction

- The importance of risk measurement and management (for a financial institution, for supervisory authorities).
- The trade-off between returns and risk.

- Volatility: Definition. Methods of measurement (imputed volatility, volatility from historical data). Distributions of Changes in Financial Variables. The Constant Volatility Assumption and other models measuring it (GARCH). Predict future volatility using these models.
- Correlations: Definitions. Measuring correlation with different models (simple, GARCH).

Section 2: Market Risk

- Individual and cumulative risk management.
- The "Greek letters". Their interpretation and measurement.
- Risk Metrics. Value-at-Risk. Definition. Its relation to Expected Shortfall. The choice of parameters to calculate VaR. Marginal VaR, Incremental VaR and Component VaR. Back-testing. Stress-testing.
- The method of historical simulation. Accuracy of the method. Extensions (observation weighting, volatility update integration, bootstrap method).
- The model building approach for VaR (model building approach). Description of the methodology. Linear model. Weaknesses of the linear model. Quadratic model. Monte Carlo simulation.

Section 3: Credit Risk

- Credit ratings (from independent houses and internal).To Z-score του Altman.
- Altman's Z-score.
- Bankruptcy probabilities based on historical data.
- Bankruptcy recovery rates.
- Differences in estimated default probabilities from historical data and bonds. Possible explanations for the differences.
- Credit VaR (description, method of calculation, calculation using Vasicek's model).
- Credit derivatives (description, function, use, valuation).

Section 4: Liquidity Risk and Interest Rate Risk

- Definition of liquidity risk.
- Problems created by liquidity risk in a credit institution.
- Exchange Agreements (Swaps).
- "Black Holes" of liquidity.
- Definition of interest rate risk.
- The relationship between interest rate risk and liquidity risk.
- Dealing with interest rate risk.

4. Teaching and Learning Methods - Evaluation

Delivery	**Face to Face**
Use of Information and Communications Technology	**Use the internet to find relationships and phenomena related to the subject of the course**

	Activity	Semester Workload
Teaching Methods	Lectures	52
	Independent Study	135,5
	Course Total	**187,5**

Student Performance Evaluation	Greek, 80% Final Exam and 20% Presentation of project in class (optional)

5. Attached Bibliography

Suggested Bibliography

Related Academic Journals