FIN-417

Quantitative risk management

Malamud Semyon

Cursus	Sem.	Type
Financial engineering minor	H	Opt.
Financial engineering	MA1, MA3	Obl.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	**4 weekly**
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

Remark

MA3 only

Summary

This course is an introduction to quantitative risk management that covers standard statistical methods, multivariate risk factor models, non-linear dependence structures (copula models), as well as portfolio allocation and diversification.

Content

- Basics of risk management
- Standard statistical methods
- Multivariate risk factor models
- Modelling dependencies (correlation, copula)
- Dynamic EVT models
- Credit risk models
- Aggregate risk and diversification

Keywords

risk management, copula, diversification, credit risk

Learning Prerequisites

Recommended courses

- Calculus and Linear Algebra (undergraduate level)
- Statistics and Probability (first university course)
- Some knowledge of financial derivatives
- Previous experience with Matlab is very useful

Learning Outcomes

By the end of the course, the student must be able to:

- Use the main statistical tools used to model financial risk
- Conduct important volatility and credit risk models
- Identify and apply appropriate tools to describe and quantify the risk of a portfolio

Transversal skills

- Evaluate one's own performance in the team, receive and respond appropriately to feedback.

Teaching methods

- Lectures
- Homework

Assessment methods

- 30% Homework
- 70% Final Exam

Resources

Bibliography

- Quantitative Risk Management - McNeil, Frey, Embrechts (primary reference)
- An Introduction to Statistical Modeling of Extreme Values - Coles
- Analysis of Financial Times Series - Tsay
- Statistical Models - Davison

Ressources en bibliothèque

- Quantitative Risk Management / McNeil
- Analysis of Financial Times Series / Tsay
- Statistical Models / Davison
- An Introduction to Statistical Modeling of Extreme Values / Coles