FIN-504 **Credit risk**

Trevisan Christopher

Cursus	Sem.	Type
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

Only for MA3

Summary

The course covers credit risk models as well as institutional features of credit derivative markets. The course covers single-name credit risk, as well as models of credit correlation and portfolio credit risk. The recent crisis and the current regulatory changes will also be discussed.

Content

1. Introduction to credit markets
2. Scoring models
3. Structural models
4. Reduced-form models
5. Empirical determinants of credit spreads
6. Credit Default Swaps (CDS)
7. Collateralized Debt Obligations (CDO)
8. Copulas, Credit Valuation Adjustment (CVA)
9. Measuring sovereign default risk

Keywords

Credit risk, bankruptcy, ratings, securitization, CDS, CDO, CVA, Structural models, Reduced-form models, Copula.

Learning Prerequisites

Required courses

- Derivatives
- Econometrics
- Introduction to finance
- Investments
- Stochastic calculus I
- Stochastic calculus II

Learning Outcomes

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

- Derive the Merton model
- Differentiate between structural and reduced-form models
- Model single name and portfolio default risk
- Explain the structure of Collateralized Debt Obligations (CDO)
- Describe three different reduced-form recovery models
- Assess / Evaluate Credit Default Swaps (CDS)
- Explain the Credit Spread Puzzle
- Implement the Gaussian Copula Model
- Assess / Evaluate Junior, Mezzanine and Senior Tranche prices
- Distinguish three extensions of the Merton model

Transversal skills

- Use both general and domain specific IT resources and tools
- Communicate effectively, being understood, including across different languages and cultures.
- Use a work methodology appropriate to the task.
- Access and evaluate appropriate sources of information.

Teaching methods

Lectures, homework

Assessment methods

40% Homework
60% Final Exam

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

Duffie and Singleton, Credit Risk: Pricing, Measurement and Management, Princeton University Press, 2003.
Lando, Credit Risk Modeling: Theory and Applications, Princeton University Press, 2004.

Ressources en bibliothèque

- Credit risk modeling : theory and applications / David Lando
- Credit Risk / Duffie