

Credit default risk

**ECTS : 3**

**Description du contenu de l'enseignement :**

1. Idiosyncratic credit risk
2. Credit portfolio risk
3. Monte Carlo simulations for credit portfolios
4. Risk contributions and portfolio management
5. Collateralized debt obligations
6. Advanced Monte Carlo simulation techniques

**Compétence à acquérir :**

- Understand the definition of single name credit default risk and how it is measured
- Understand the risk aggregation problem and be able to program a Monte Carlo simulator for credit portfolios
- Understand the risk allocation problem and be able to calculate risk contributions to portfolio measures of risk
- Understand how CDS & CDOs can be used to manage credit portfolio risk and be able to calculate their impact by Monte Carlo simulation
- Understand the concept of Monte Carlo variance reduction and be able to implement importance sampling

**Mode de contrôle des connaissances :**

- Graded project
- Class participation

**Bibliographie, lectures recommandées :**

- **Introduction to Credit Risk Modeling** (Chapman and Hall/CRC Financial Mathematics Series) 2nd Edition by Christian Bluhm, Ludger Overbeck and Christoph Wagner
- **Monte Carlo Methods in Financial Engineering** (Springer) by Paul Glasserman
- **Quantitative Risk Management** (Princeton Series in Finance) by Alexander McNeil, Rudiger Frey and Paul Embrechts

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