F71CM Credit Risk Modelling

COURSE DETAILS
Course Code: F71CM
Full Course Title: Credit Risk Modelling
SCQF Level: 11
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL
Undergraduate: Yes  Postgraduate Taught: Yes  Postgraduate Research: No
Additional Information:

COURSE AIMS
The aims of this module are:

• to introduce students to quantitative models for measuring and managing credit risks
• to provide students with a critical understanding of the credit risk methodology used in the financial industry
• to give students an appreciation of the regulatory framework in which the models operate

LEARNING OUTCOMES – SUBJECT MASTERY
On completion of this module the student should be able to:

• Demonstrate an understanding of the nature of credit risk
• Describe the theoretical underpinnings of models used in the financial industry
• Show a knowledge of the regulatory framework and, in particular, the Basel II regulatory capital formula
• Describe how dependence is modelled in credit portfolios
• Describe mixture models of default and derive their mathematical properties
• Describe and use methods for calculating the portfolio loss distribution
• Describe and apply statistical approaches to calibrating credit risk models
• Explain the features and uses of the most common single-name products and basket derivatives

LEARNING OUTCOMES – PERSONAL ABILITIES

• Show an appreciation of the interface between academic theory and industrial practice
• Show an appreciation of the societal role of risk management in protecting the consumer and other stakeholders
• Demonstrate the ability to learn independently and as part of a group
• Manage time, work to deadlines and prioritise workloads
• Demonstrate skills in the understanding and processing of numerical information and interpretation of statistics
• Show knowledge of appropriate software for implementing solutions
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SYLLABUS

The module covers the following topics:

- Introduction to credit risk: credit-risky instruments, defaults, ratings
- Merton's model of the default of a firm
- Common industry models (KMV, CreditMetrics, CreditRisk+)
- Modelling dependence between defaults with factor models
- Latent variable and mixture models of default
- The Basel II regulatory capital formula
- Calculating the portfolio credit loss distribution
- Large portfolio behaviour of the credit loss distribution
- Calibration and statistical inference for credit risk models
- Overview of the more common single-name and portfolio/basket credit derivatives

COURSE RELATIONSHIPS

N/A

LOCATION AND ASSESSMENT METHODS

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Re-assessment based on 100% exam, in the next academic year.