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**

<table>
<thead>
<tr>
<th>Undergraduate:</th>
<th>Yes</th>
<th>Postgraduate Taught:</th>
<th>Yes</th>
<th>Postgraduate Research:</th>
<th>No</th>
</tr>
</thead>
</table>

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
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

LOCATION AND ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>Edi</th>
<th>SBC</th>
<th>Ork</th>
<th>Dub</th>
<th>Malay</th>
<th>IDL</th>
<th>COLL</th>
<th>ALP</th>
<th>OTH</th>
<th>Method</th>
<th>Weight</th>
<th>Exam Mins</th>
<th>Type</th>
<th>Diet</th>
<th>Synoptic Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>100</td>
<td>120</td>
<td>Assessment</td>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>100</td>
<td>120</td>
<td>Reassessment</td>
<td>Semester 2</td>
<td></td>
</tr>
</tbody>
</table>

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