F717-FIM Master of Science in Financial Mathematics

PROGRAMME DETAILS
Programme Code: F717-FIM
Department: Actuarial Maths & Statistics
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Financial Mathematics
Level: Postgraduate Taught

LOCATION OF STUDY
<table>
<thead>
<tr>
<th>Location</th>
<th>Study Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh</td>
<td>Y</td>
</tr>
<tr>
<td>Scottish Borders</td>
<td>N</td>
</tr>
<tr>
<td>Orkney</td>
<td>N</td>
</tr>
<tr>
<td>Dubai</td>
<td>N</td>
</tr>
<tr>
<td>Malaysia</td>
<td>N</td>
</tr>
<tr>
<td>Approved Learning Partner</td>
<td>N</td>
</tr>
<tr>
<td>Independent Distance Learners</td>
<td>N</td>
</tr>
<tr>
<td>Collaborative Learning Partner</td>
<td>Y</td>
</tr>
<tr>
<td>Other</td>
<td>N</td>
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</table>

ASSOCIATED AWARDS

<table>
<thead>
<tr>
<th>Programme Code</th>
<th>Award</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>F710-ZZZ</td>
<td>PGCERT</td>
<td>Postgraduate Certificate in Financial Mathematics</td>
</tr>
<tr>
<td>F715-FIM</td>
<td>PGDIP</td>
<td>Postgraduate Diploma in Financial Mathematics</td>
</tr>
<tr>
<td>F717-FIM</td>
<td>MSC</td>
<td>Master of Science in Financial Mathematics</td>
</tr>
</tbody>
</table>

ACCREDITIATION
N/A

LEARNING OUTCOMES – SUBJECT MASTERY

Understanding, Knowledge and Cognitive Skills

- Extensive knowledge and critical understanding of many of the principal theories and concepts of contemporary financial mathematics
- Expertise in applying many of the principal skills and techniques used in financial mathematics and some of the principal skills and techniques used in statistics and finance
- Develop problem solving skills

Scholarship, Enquiry and Research (Research Informed Learning)

- Extensive, detailed and critical understanding of the core areas and issues in financial mathematics
- Crucial comprehension of certain areas in stochastic analysis, statistics, finance and in computational mathematics
- Awareness and understanding of current issues in financial mathematics
- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of a range of theories, concepts and techniques arising in financial mathematics

LEARNING OUTCOMES – PERSONAL ABILITIES

Industrial, Commercial and Professional Practice

- Develop critical awareness of current practices within financial mathematics.
- Conceptual understanding of core areas and issues in financial mathematics and the ability to apply these to a variety of financial mathematics contexts

Autonomy, Accountability and Working With Others

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• Demonstrate the ability to learn independently
• Plan and organise through self-management and time-management
• Assess issues by working as part of a team

Communication, Numeracy & Information and Communications Technology

• Demonstrate skills in communication, with peers and other colleagues, on general and specialised topics.
• Develop and demonstrate skills in communication in writing and giving presentations
• Develop and demonstrate skills in computer environments to present and communicate and to problem solving

APPROACHES TO TEACHING AND LEARNING

The overall approach in the course is student focussed and is designed to encourage students to take responsibility for their own development and learning. It is offered in a traditional campus-based, cohort model. Students spend two days a week at Edinburgh University and three days a week at Heriot-Watt University. Some of the modules share classes with final year honours students; all such modules are of MSc level being differentiated from the corresponding undergraduate courses by assessment.

The modules offer traditional lecture-based material, laboratory based practicals as well as guided reading courses. All modules have an element of coursework ranging from solving traditional mathematics problems to discursive type assignments and applications to real-life problems.

Approaches to learning and teaching are continuously reviewed.

EDUCATIONAL AIMS OF THE PROGRAMME

The principal aims of the course are to
• provide intensive and high-quality education in a postgraduate context in a wide range of subjects in contemporary financial mathematics, including statistics, stochastic analysis, computational mathematics and finance

• enable students to develop detailed knowledge and critical understanding, and acquire a range of new skills, in central areas in financial mathematics
• enable students to communicate and work effectively with peers and academic staff, demonstrating appropriate levels of autonomy, initiative, and responsibility
• provide a challenging period of study which enables students to test themselves against standards requiring intensive work and strong commitment in a demanding postgraduate environment
• enable students to plan and execute a significant research project or investigation in financial mathematics, demonstrating extensive, detailed and critical understanding of the appropriate area

ASSESSMENT POLICIES

Student assessment is determined by a range of assessment methods. All modules have a formative assessment component. Some modules have a coursework component, which is formative by nature, to enable students to achieve learning outcomes which cannot be appropriately tested in traditional examinations. Some modules are examined synoptically. The guided reading course (Special Topics) is assessed by a mixture of written essays and presentation. Dissertation projects are double-marked. Once these marks have been produced, if they are within an acceptable range of each other (that range has been determined by the Programme Committee for the course), then both marks are forwarded to the External Examiner for consideration. If the marks difference is outside the range, then both academic markers are asked to agree on a mark. If they state that there is not enough flexibility in their marks to overcome this problem, then both marks are reported to the External Examiner. Final decisions are taken by the Board of Examiners.

PROGRAMME STRUCTURE

<table>
<thead>
<tr>
<th>Mandatory Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Code</td>
</tr>
<tr>
<td>C31FM</td>
</tr>
<tr>
<td>F71DM</td>
</tr>
<tr>
<td>F71DT</td>
</tr>
</tbody>
</table>
### Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>F71SF</td>
<td>Stochastic Analysis In Finance</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>F71TA</td>
<td>Special Topics 1</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>F71CM</td>
<td>Credit Risk Modelling</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>F71DP</td>
<td>Derivative Pricing and Financial Modelling</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>F71TB</td>
<td>Special Topics 2</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>F71FD</td>
<td>Dissertation</td>
<td>60</td>
<td>11</td>
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### Optional Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>F71SM</td>
<td>Statistical Methods</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>F71ST</td>
<td>Statistical Inference</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>C21FE</td>
<td>Financial Econometrics</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>F70SB</td>
<td>Simulation</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>F71FT</td>
<td>Financial Risk Theory</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>F71NT</td>
<td>Numerical Techniques for PDEs</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>F71OM</td>
<td>Optimisation Methods in Finance</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>F71PT</td>
<td>Portfolio Theory</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>F71SC</td>
<td>Stochastic Control and Dynamic Asset Allocation</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>F71TS</td>
<td>Time Series Analysis</td>
<td>7.5</td>
<td>11</td>
</tr>
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</table>

### COMPOSITION NOTES(PG)

Minimum/maximum taught courses worth 120/127.5 credits (97.5 mandatory & 22.5 to 30 optional) plus dissertation.

If students take more than 120 credits, they need the approval of the Programme Director.

F71SM Statistical Methods and F71ST Statistical Inference cannot be taken both as options.

F71PT Portfolio Theory and F71FT Financial Risk Theory cannot be taken both as options.
Students are given a range of dissertation choices. Students also have the opportunity to propose their own topics but such proposals are subject to the approval of the Programme Director.

<table>
<thead>
<tr>
<th>Mandatory Credits</th>
<th>97.5</th>
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<tbody>
<tr>
<td>Optional Credits</td>
<td>22.5</td>
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<tr>
<td>Elective Credits</td>
<td>0</td>
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<tr>
<td>Dissertation Credits</td>
<td>60</td>
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<td>Total</td>
<td>180</td>
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**AWARDS, CREDITS AND CRITERIA(PG)**

<table>
<thead>
<tr>
<th>Awards, Credits and Levels</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
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</thead>
<tbody>
<tr>
<td>Masters Degree</td>
<td>180</td>
<td>180 SCQF credits including a minimum of 150 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Diploma</td>
<td>120</td>
<td>120 SCQF credits including a minimum of 90 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Certificate</td>
<td>60</td>
<td>60 SCQF credits including a minimum of 40 credit at Level 11</td>
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</table>

**Award Requirements**

<table>
<thead>
<tr>
<th>Award</th>
<th>Total Course Credits</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master (Distinction)</td>
<td>At least 120 credits</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over all courses. All courses at grades A-C plus a Dissertation at grade A.</td>
</tr>
<tr>
<td>Master</td>
<td>At least 120 credits</td>
<td>50</td>
<td>C</td>
<td>Credit Weighted Average greater than or equal 50% over all courses. All courses at grades A-D with at least 75 credits at grades A-C plus a Dissertation at minimum grade C.</td>
</tr>
<tr>
<td>Diploma (Distinction)</td>
<td>At least 120 credits</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over all courses. All courses at grades A-C.</td>
</tr>
<tr>
<td>Diploma</td>
<td>At least 120 credits</td>
<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over all courses. All courses at grades A-E with at least 75 credits at grades A-D.</td>
</tr>
<tr>
<td>Certificate</td>
<td>At least 60 credits</td>
<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 60 credits at grades A-E</td>
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</tbody>
</table>

**DURATION OF STUDY**

<table>
<thead>
<tr>
<th>IN MONTHS</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>12</td>
<td>24</td>
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<tr>
<td>Diploma</td>
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<td>15</td>
</tr>
<tr>
<td>Certificate</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>
## RE-ASSESSMENT (PG)

1. A student who has been awarded a Grade E or F in a course may be re-assessed in that course. A student who has been awarded a Grade D in a course may be re-assessed in that course in order to proceed to or be eligible to receive the award of Masters.
2. A student shall be permitted only one re-assessment opportunity in a maximum of three taught courses. The opportunity for re-assessment in four or more taught courses shall be at the discretion of the Progression Board.
3. Any further re-assessment opportunities in a course will require the approval of the Postgraduate Studies Committee.
4. A student may be permitted, at the discretion of the Progression Board, to be re-assessed in the dissertation, project or other supervised research component of the course of study.
5. When Edinburgh University is the lead Institution, there will be no re-assessment opportunities.

## PROGRESSION TO DISSERTATION/PROJECT

In accordance with University Regulations, to progress to Masters level a minimum of Grade C is required.