F1MM-MAT Master of Science in Mathematics

PROGRAMME DETAILS
Programme Code: F1MM-MAT
Department: Mathematics
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Mathematics
Level: Postgraduate Taught

LOCATION OF STUDY
Edinburgh Y Scottish Borders N Orkney N
Dubai N Malaysia N Approved Learning Partner N
Independent Distance Learners N Collaborative Learning Partner N Other N

ASSOCIATED AWARDS
Programme Code Award Title
F1MC-MAT PGCERT Postgraduate Certificate in Mathematics
F1MD-MAT PGDIP Postgraduate Diploma in Mathematics
F1MM-MAT MSC Master of Science in Mathematics

ACCREDITATION
N/A

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

- Extensive detail and critical understanding of the core areas and issues in mathematical sciences.
- Crucial comprehension of central topics in mathematics.

Scholarship, Enquiry and Research (Research Informed Learning)

- Expertise in range of techniques in mathematics
- Extensive skills in use of computers to solve problems in mathematics

LEARNING OUTCOMES – PERSONAL ABILITIES
Industrial, Commercial and Professional Practice

- Develop critical awareness of current practices within the mathematical sciences
- Develop a capability for critically reflecting on roles and responsibilities.

Autonomy, Accountability and Working With Others

- Communicate effectively at all levels using a range of media.
- Plan and organise through self management and time management, assess issues associated with working as part of a team.
- Proficient skills in computer environments to present and communicate and problem solve

Communication, Numeracy & Information and Communications Technology
• Develop and demonstrate skills in writing and giving presentations
• Develop and demonstrate skills in computer environments to present and communicate and problem solve

APPROACHES TO TEACHING AND LEARNING

The approach in the programme is student focussed and is designed to encourage students to take responsibility for their own development and learning.

Students interaction with the material is through a number of different methods. Within the timetable courses offer traditional lecture based material and a variety of (computer) laboratory based practicals. All the courses have a measure of coursework ranging from traditional solution to mathematics problems, use of specialized software, to discursive type assignments and interpretation of mathematical results to real-life problems.

Approaches to teaching and learning are continuously reviewed with regard to the students and the subject area. Specific details are provided in the appropriate course descriptors.

EDUCATIONAL AIMS OF THE PROGRAMME

The aims of the programme are to enable students to:

• Develop detailed knowledge and understanding into the central areas of mathematics
• Cultivate skills in key areas of mathematics.
• Develop original and creative solutions to problems in the mathematical sciences
• Communicate and work effectively with peers and academic staff demonstrating appropriate levels of autonomy and responsibility
• Plan and execute a significant research project or investigation in mathematical sciences demonstrating extensive details and critical understanding of the area and context of mathematics.

ASSESSMENT POLICIES

Student performance is determined by separate elements of assessment within the programme.

Coursework assessment takes place throughout the taught component.
Assessment contains summative and formative components which enable students to achieve learning outcomes which cannot be appropriately tested in traditional examinations.

Each course will have an examination (normally two hours) and the examination mark will be combined with the coursework mark to produce a single mark for the course.

Dissertations marks will be agreed with the internal readers, external examiner and the Board of Studies.

Approaches to assessment are continually reviewed.

### PROGRAMME STRUCTURE

#### Mandatory Courses

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HWUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Semester</th>
<th>Phase</th>
<th>Course Code</th>
<th>CourseTitle</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11FM</td>
<td>Functional Analysis</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11MT</td>
<td>Modelling and Tools</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>2</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11MP</td>
<td>Partial Differential Equations</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11GM</td>
<td>Masters Project and Dissertation</td>
<td>60</td>
<td>11</td>
</tr>
</tbody>
</table>

#### Optional Courses

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HWUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Semester</th>
<th>Phase</th>
<th>Course Code</th>
<th>CourseTitle</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11AE</td>
<td>Applied Mathematics E</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11AM</td>
<td>Mathematical Ecology</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11MM</td>
<td>Optimisation</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11NC</td>
<td>Numerical ODEs</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11PE</td>
<td>Pure Mathematics E</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F21BC</td>
<td>Biologically Inspired Computation</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F71SM</td>
<td>Statistical Methods</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>2</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11AL</td>
<td>Applied Linear Algebra</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>2</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11AN</td>
<td>Mathematical Biology and Medicine</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>2</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F11AS</td>
<td>Dynamical Systems</td>
<td>15</td>
<td>11</td>
</tr>
</tbody>
</table>
### Bayesian Inference & Computational Methods
- Code: F11Bl
- Credits: 15
- Semester: 11

### Numerical Analysis (PDEs)
- Code: F11ND
- Credits: 15
- Semester: 11

### Pure Mathematics F
- Code: F11PF
- Credits: 15
- Semester: 11

### Geometry
- Code: F11PG
- Credits: 15
- Semester: 11

### Stochastic Simulation
- Code: F11SS
- Credits: 15
- Semester: 11

### Advanced Software Engineering
- Code: F21AS
- Credits: 15
- Semester: 11

### Portfolio Theory
- Code: F71PT
- Credits: 15
- Semester: 11

### Climate Change, Sustainability and Adaptation
- Code: D11CA
- Credits: 15
- Semester: 11

### Modelling and Simulation in the Life Sciences
- Code: F11MS
- Credits: 15
- Semester: 11

### Data Assimilation with Applications to Climate Change
- Code: F11DA
- Credits: 15
- Semester: 11

---

### COMPOSITION NOTES (PG)

Two mandatory courses in semester 1 + 2 options
One mandatory course in semester 2 + 3 options
Dissertation

<table>
<thead>
<tr>
<th>Mandatory Credits</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits</td>
<td>75</td>
</tr>
<tr>
<td>Elective Credits</td>
<td></td>
</tr>
<tr>
<td>Dissertation Credits</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
</tr>
</tbody>
</table>

---

### AWARDS, CREDITS AND CRITERIA (PG)

<table>
<thead>
<tr>
<th>Awards, Credits and Levels</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
</tr>
</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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Award Requirements</th>
<th>Total Course Credits</th>
<th>Overall Passes</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>8+Dissertation</td>
<td>70</td>
<td>A</td>
<td></td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C plus a Dissertation at grade A.</td>
</tr>
<tr>
<td>Master</td>
<td>8+Dissertation</td>
<td>50</td>
<td>C</td>
<td></td>
<td>Credit Weighted Average greater than or equal 50% over 8 courses at grades A-D plus a Dissertation at minimum grade C.</td>
</tr>
<tr>
<td>Diploma (Distinction)</td>
<td>8</td>
<td>70</td>
<td>A</td>
<td></td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C</td>
</tr>
<tr>
<td>Diploma</td>
<td>8</td>
<td>40</td>
<td>D</td>
<td></td>
<td>Credit Weighted Average greater than or equal 40% over 8 courses at grades A-E</td>
</tr>
<tr>
<td>Certificate</td>
<td>4</td>
<td>40</td>
<td>D</td>
<td></td>
<td>Credit Weighted Average greater than or equal 40% over 4 courses at grades A-E</td>
</tr>
</tbody>
</table>

---

### DURATION OF STUDY
F1MM-MAT Master of Science in Mathematics

<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>
</tr>
<tr>
<td>Diploma</td>
<td>9</td>
<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.

**PROGRESSION TO DISSERTATION/PROJECT**

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