**PROGRAMME DETAILS**

**Programme Code:** F2M1-SOE  
**Department:** Computer Science  
**Main Award:** MENG - Master of Engineering  
**Full Award Title:** Master of Engineering in Software Engineering  
**Level:** Undergraduate

**LOCATION OF STUDY**

| Location          | 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**

<table>
<thead>
<tr>
<th>Programme Code</th>
<th>Award</th>
<th>Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F2M1-SOE</td>
<td>MENG</td>
<td>Master of Engineering in Software Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**ACCREDITATION**

British Computer Society

**LEARNING OUTCOMES – SUBJECT MASTERY**

**Understanding, Knowledge and Cognitive Skills**

- To develop knowledge and skills in the elicitation and analysis of user requirements, design and evaluation of solutions, and the implementation and quality assurance of the chosen solution.
- To be able to develop well-structured, efficient, usable and well-documented programs.
- To know what general classes of problems are amenable to computer solution and be able to select the appropriate tools required for particular problems.
- To be able to develop an abstract model for a given problem and devise appropriate mechanized techniques to solve the problem.
- To develop the knowledge and skills required to meet the challenges of emerging technologies and methodologies.
- To be able to analyse problem spaces; develop and work with abstractions; appraise material and ideas; to apply a methodical and innovative approach to problem solving; to integrate theory and practice.

**Scholarship, Enquiry and Research (Research Informed Learning)**

- To gain an in depth understanding of the theoretical foundations of computation and its relevance to everyday computing.
- To be able to design, implement, document, verify and validate relatively large heterogeneous software systems.
- To be able to assess the quality of software systems, both in terms of their functional and non-functional properties.
- To develop knowledge of the aspects of Management required to understand the commercial and business contexts within which IT systems are used.
- To develop the entrepreneurial skills required to identify and exploit opportunities which arise as a result of technological developments and new business paradigms.
- To acquire and disseminate advanced software engineering knowledge

**LEARNING OUTCOMES – PERSONAL ABILITIES**

**Industrial, Commercial and Professional Practice**
• To maintain and update technical knowledge; to take responsibility for personal and professional development.
• To appraise the impact of computers on society and the influence of society on the development of the technology and use of computers.
• To assess aspects of the law related to computer-based information, or the role of standards in safety, quality and security, of security issues and of the BCS Codes of Practice and Conduct.

Autonomy, Accountability and Working With Others

• To undertake self-directed work; to assimilate information from multiple sources; to examine results and generate conclusions; to impart ideas effectively in visual, verbal or written form.
• To work effectively either individually or as part of a team.
• To apply subject-mastery outcomes to monitor, analyse, model, specify, design, communicate, implement, evaluate, control and plan.
• To be aware of, and be able to respond to, the social and legal implications and consequences of the use of computers.
• To apply theory to practice in the workplace.
• To deliver advanced training material to peers.

Communication, Numeracy & Information and Communications Technology

• To be able to communicate with peers, more senior colleagues and specialists. In addition, communicate using appropriate methods to a range of audiences, i.e. specialists and non-specialists.
• To be able to undertake critical evaluation/analysis of a wide range of numerical and graphical data.

APPROACHES TO TEACHING AND LEARNING

Lectures, Tutorials (practical's, laboratories), Coursework, (assignments, individual projects, group projects, essays, reports, presentations, log/journals, dissertation), Self-study are linked to lecture-based, resource-based and problem-based teaching styles, to relate with motivational, assimilative, consolidative and evaluative phases of learning.

Approaches to teaching and learning are continually reviewed and developed with the aim of matching them to the abilities and experiences of students, with regard also for the subject area. Specific details about teaching and learning methods are provided in the appropriate module descriptors.

EDUCATIONAL AIMS OF THE PROGRAMME

The educational aim is to provide students with a theoretical foundation and applied skills in Computer Science/Software Engineering in addition to other professional skills which will enable graduates to communicate clearly, work independently and co-operate effectively. The balance of skills will enable graduates to work effectively and efficiently in industry and commerce and prepare them for postgraduate study.

ASSESSMENT POLICIES

The following assessment methods are used:
Understanding, knowledge and subject specific skills are assessed through the range of methods reflected by written examinations, coursework assignments, software artefacts, group and individual projects, written reports and oral presentations. Diagnostic, formative, continuous and summative types of assessment aim to correlate with methods of assessment.

Approaches to assessment are continually reviewed. Specific details about methods of assessment are provided in the appropriate module descriptors.

### PROGRAMME STRUCTURE

#### Mandatory Courses

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F17LP</td>
<td>Logic and Proof</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27ID</td>
<td>Introduction to Interaction Design</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27PX</td>
<td>Praxis</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27SA</td>
<td>Software Development 1</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F17SC</td>
<td>Discrete Mathematics</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27CS</td>
<td>Introduction to Computer Systems</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27SB</td>
<td>Software Development 2</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>F27WD</td>
<td>Web Design and Databases</td>
<td>15</td>
<td>7</td>
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<tr>
<td>2</td>
<td>F28DA</td>
<td>Data Structures and Algorithms</td>
<td>15</td>
<td>8</td>
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<tr>
<td>2</td>
<td>F28ED</td>
<td>User-Centred Experimental Design</td>
<td>15</td>
<td>8</td>
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<td>2</td>
<td>F28PL</td>
<td>Programming Languages</td>
<td>15</td>
<td>8</td>
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<tr>
<td>2</td>
<td>F28WP</td>
<td>Web Programming</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>F17SC</td>
<td>Discrete Mathematics</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>F28DM</td>
<td>Database Management Systems</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>F28HS</td>
<td>Hardware-Software Interface</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>F28SD</td>
<td>Software Design</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>F29AI</td>
<td>Artificial Intelligence and Intelligent Agents</td>
<td>15</td>
<td>9</td>
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<tr>
<td>3</td>
<td>F29DC</td>
<td>Data Communications and Networking</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>F29FA</td>
<td>Foundations 1</td>
<td>15</td>
<td>9</td>
</tr>
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<td>3</td>
<td>F29SO</td>
<td>Software Engineering</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>SCQF Cr</td>
<td>SCQF Lvl</td>
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<tr>
<td>X  4 1 F20BC</td>
<td>Biologically Inspired Computation</td>
<td>15</td>
<td>10</td>
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<tr>
<td>X  4 1 F20CL</td>
<td>Computing in the Classroom</td>
<td>15</td>
<td>10</td>
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<tr>
<td>X  4 1 F20CN</td>
<td>Computer Network Security</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20DL</td>
<td>Data Mining and Machine Learning</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20GA</td>
<td>3D Graphics and Animation</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20IF</td>
<td>Information Systems Methodologies</td>
<td>15</td>
<td>10</td>
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<tr>
<td>X  4 1 F20RO</td>
<td>Intelligent Robotics</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20RS</td>
<td>Rigorous Methods for Software Engineering</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20SA</td>
<td>Statistical Modelling and Analysis</td>
<td>15</td>
<td>10</td>
<td></td>
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<tr>
<td>X  4 1 F20SC</td>
<td>Industrial Programming</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20AD</td>
<td>Advanced Interaction Design</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20AN</td>
<td>Advanced Network Security</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20BD</td>
<td>Big Data Management</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20CA</td>
<td>Conversational Agents and Spoken Language Processing</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20DP</td>
<td>Distributed and Parallel Technologies</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20DV</td>
<td>Data Visualisation and Analytics</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>X  4 2 F20EC</td>
<td>e-Commerce Technology</td>
<td>15</td>
<td>10</td>
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<tr>
<td>X  4 2 F20GP</td>
<td>Computer Games Programming</td>
<td>15</td>
<td>10</td>
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<tr>
<td>X  5 2 F21AD</td>
<td>Advanced Interaction Design</td>
<td>15</td>
<td>11</td>
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<tr>
<td>X  5 2 F21AN</td>
<td>Advanced Network Security</td>
<td>15</td>
<td>11</td>
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</table>
### F2M1-SOE Master of Engineering in Software Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>X 5 2 F21BD</td>
<td>Big Data Management</td>
<td>15 11</td>
</tr>
<tr>
<td>X 5 2 F21CA</td>
<td>Conversational Agents and Spoken Language Processing</td>
<td>15 11</td>
</tr>
<tr>
<td>X 5 2 F21DP</td>
<td>Distributed &amp; Parallel Technologies</td>
<td>15 11</td>
</tr>
<tr>
<td>X 5 2 F21DV</td>
<td>Data Visualisation and Analytics</td>
<td>15 11</td>
</tr>
<tr>
<td>X 5 2 F21EC</td>
<td>e-Commerce Technology</td>
<td>15 11</td>
</tr>
<tr>
<td>X 5 2 F21GP</td>
<td>Computer Games Programming</td>
<td>15 11</td>
</tr>
</tbody>
</table>

### ELECTIVES (UG)

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Mandatory Credits 1 120</th>
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</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>Mandatory Credits 2 120</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Mandatory Credits 3 120</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Mandatory Credits 4 120</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Mandatory Credits 5 120</td>
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</table>

### COMPOSITION AND STAGE NOTES (UG)

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>8 taught courses, all mandatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Credits 1 120</td>
<td></td>
</tr>
<tr>
<td>Optional Credits 1</td>
<td></td>
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<tr>
<td>Elective Credits 1</td>
<td></td>
</tr>
<tr>
<td>Total 1 120</td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td>8 taught courses, all mandatory. Direct entrants to Stage 2 and internal transfers from other degrees will be expected have an appropriate background in programming and database technology</td>
</tr>
<tr>
<td>Mandatory Credits 2 120</td>
<td></td>
</tr>
<tr>
<td>Optional Credits 2</td>
<td></td>
</tr>
<tr>
<td>Elective Credits 2</td>
<td></td>
</tr>
<tr>
<td>Total 2 120</td>
<td></td>
</tr>
<tr>
<td>Stage 3</td>
<td>8 taught courses, all mandatory. Direct entrants to Stage 3 will be expected have appropriate programming experience and background knowledge. Candidates shall pursue a group project throughout the year, which shall be synoptically assessed in conjunction with material from the associated courses (F29SO and F29PD).</td>
</tr>
<tr>
<td>Mandatory Credits 3 120</td>
<td></td>
</tr>
<tr>
<td>Optional Credits 3</td>
<td></td>
</tr>
<tr>
<td>Elective Credits 3</td>
<td></td>
</tr>
<tr>
<td>Total 3 120</td>
<td></td>
</tr>
<tr>
<td>Stage 4</td>
<td>8 taught courses, 4 mandatory and 4 optional. Students choose 2 optional courses in semester 1 and 2 optional courses in semester 2.</td>
</tr>
<tr>
<td>Mandatory Credits 4 120</td>
<td></td>
</tr>
<tr>
<td>Optional Credits 4</td>
<td></td>
</tr>
<tr>
<td>Elective Credits 4</td>
<td></td>
</tr>
<tr>
<td>Total 4 120</td>
<td></td>
</tr>
</tbody>
</table>
In any one year not all optional courses or combinations of optional courses may be offered. Guidance in course choice will be given by academic Personal Tutors.

Students must apply to take the course F20CL Computing in the Classroom prior to the end of Stage 3 to allow time for placements to be organised.

Candidates are required to undertake an individual dissertation project which shall run throughout the year (F20PA/F20PB/F20PC)

<table>
<thead>
<tr>
<th>Mandatory Credits 4</th>
<th>60</th>
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</thead>
<tbody>
<tr>
<td>Optional Credits 4</td>
<td>60</td>
</tr>
<tr>
<td>Elective Credits 4</td>
<td></td>
</tr>
<tr>
<td>Total 4</td>
<td>120</td>
</tr>
</tbody>
</table>

### Stage 5

8 taught courses, 6 mandatory and 2 optional

Students choose 2 optional courses in semester 2.

Candidates are required to undertake an industrial placement which starts before the summer and continues through to the end of Semester 1 and which shall be synoptically assessed from the associated courses (F21IA/F21IB/F21IC/F21ID).

Students cannot take a level 11 version of any level 10 course they have already taken.

The degree of MEng shall be determined by performance in:

- Stage 3, averaged over all 8 courses, at the first attempt (10%)
- Stage 4, averaged over all 5 taught courses (25%)
- the individual dissertation project in Stage 4 (25%)
- Stage 5, averaged over all 8 courses (40%)
Mandatory Credits 5  90
Optional Credits 5  30
Elective Credits 5  120

**ASSESSMENT AND PROGRESSION (UG)**

Reassessment Opportunities

1. A student who has been awarded a Grade E or a Grade F in a course may be re-assessed in that course.
2. A student shall be permitted only one re-assessment opportunity to be taken at the Resit diet of examination following the first assessment of the course.
3. A student shall not be re-assessed in any qualifying course taken in the final stage of a course of study.
4. The Progression Board may permit a student to be re-assessed in any qualifying course not taken in the final stage in order to gain credits for the course, provided that the mark or grade obtained in the first assessment of any such course is used in determining the classification of the degree to be awarded.

Progression Requirements

Part A. The minimum number of credits required to progress through each stage are as follows

<table>
<thead>
<tr>
<th>Stage</th>
<th>Credits Required</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2</td>
<td>120 credits (8 courses)</td>
<td>Software Development (F27SA), Introduction to Interaction Design (F27ID), Logic &amp; Proof (F17LP), Web Design &amp; Databases (F27WD), Introduction to Computer Systems (F27CS), Software Development 2 (F27SB) and Discrete Mathematics (F17SC)</td>
</tr>
<tr>
<td>2 to 3</td>
<td>240 credits (16 courses)</td>
<td>User-Centred Experimental Design (F28ED), Web Programming (F28WP), Data Structures &amp; Algorithms (F28DA), Database Management Systems (F28DM), Software Design (F28SD), Programming Languages (F28PL), Discrete Maths (F17SC), Hardware Software Interface (F28HS)</td>
</tr>
<tr>
<td>3 to 4</td>
<td>360 credits (24 courses) and an overall assessment average of 60% or above at the first attempt</td>
<td>6 courses including Software Engineering (F29SO) &amp; Professional Development (F29PD). Re-assessment in Stage 3 is available for credit only and not to improve overall average</td>
</tr>
<tr>
<td>4 to 5</td>
<td>480 credits (32 courses) and an overall assessment average of 60% or above at the first attempt</td>
<td>An overall assessment average of 60% or above at the first attempt</td>
</tr>
</tbody>
</table>

Part B. The minimum grade of D is required in the following courses

AWARDS, CREDITS AND LEVEL (UG)

Part A. Credit Requirements

<table>
<thead>
<tr>
<th>Level</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Masters</td>
<td>600</td>
<td>600 SCQF credits including a minimum of 120 credit at Level 11</td>
</tr>
<tr>
<td>Honours Degree (inc.MA)</td>
<td>480</td>
<td>480 SCQF credits including a minimum of 180 credit at Level 9 and 10 of which at least 90 credits at Level 10</td>
</tr>
<tr>
<td>Ordinary or General Degree</td>
<td>360</td>
<td>360 SCQF credits including a minimum of 60 credit at Level 9</td>
</tr>
<tr>
<td>Diploma of Higher Education</td>
<td>240</td>
<td>240 SCQF credits including a minimum of 90 credit at Level 8</td>
</tr>
<tr>
<td>Certificate of Higher Education</td>
<td>120</td>
<td>120 SCQF credits including a minimum of 90 credit at Level 7</td>
</tr>
</tbody>
</table>

Part B. Mark/Grade Requirements

<table>
<thead>
<tr>
<th>Level</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Masters</td>
<td>&gt;=50%</td>
<td>C</td>
<td>Credit Weighted Average &gt;=50% over all qualifying courses at Grades A-D</td>
</tr>
</tbody>
</table>
F2M1-SOE Master of Engineering in Software Engineering

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Minimum Average</th>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
</table>
| Honours Degree (inc.MA)           | >=40%           | D     | 1st: Credit Weighted Average >=70% Over all qualifying courses at grades A-D.  
                                   |                 |       | 2.1: Credit Weighted Average >=60% Over all qualifying courses at grades A-D.  
                                   |                 |       | 2.2: Credit Weighted Average >=50% Over all qualifying courses at grades A-D.  
                                   |                 |       | 3rd: Credit Weighted Average >=40% Over all qualifying courses at grades A-D.  
| Ordinary or General Degree        | >=40%           | D     | Minimum of grade D in all pre-requisite courses.                         
| Diploma of Higher Education       | >=40%           | D     | Minimum of grade D in all pre-requisite courses.                         
| Certificate of Higher Education   | >=40%           | D     | Minimum of grade D in all pre-requisite courses.                         |

### DURATION OF STUDY

<table>
<thead>
<tr>
<th>Type</th>
<th>Duration</th>
<th>Full-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Masters</td>
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<td>60</td>
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<tr>
<td>Honours Degree</td>
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<td>48</td>
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<tr>
<td>Ordinary or General Degree</td>
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<td>36</td>
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<tr>
<td>Diploma of Higher Education</td>
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<td>24</td>
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<tr>
<td>Certificate of Higher Education</td>
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<td>12</td>
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