F2Z4-TAI Master of Science in Artificial Intelligence

PROGRAMME DETAILS
Programme Code: F2Z4-TAI
Department: Computer Science
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Artificial Intelligence
Level: Postgraduate Taught

LOCATION OF STUDY

<table>
<thead>
<tr>
<th>Location</th>
<th>Edinburgh</th>
<th>Scottish Borders</th>
<th>Orkney</th>
<th>Dubai</th>
<th>Malaysia</th>
<th>Approved Learning Partner</th>
<th>Independent Distance Learners</th>
<th>Collaborative Learning Partner</th>
<th>Other</th>
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ASSOCIATED AWARDS

<table>
<thead>
<tr>
<th>Programme Code</th>
<th>Award</th>
<th>Title</th>
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<tbody>
<tr>
<td>F2A3-ZZZ</td>
<td>PGCERT</td>
<td>Postgraduate Certificate in Computer Science</td>
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<tr>
<td>F2Z4-TAI</td>
<td>MSC</td>
<td>Master of Science in Artificial Intelligence</td>
</tr>
<tr>
<td>F2Z5-ARI</td>
<td>PGDIP</td>
<td>Postgraduate Diploma in Artificial Intelligence</td>
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ACCREDITATION

Accreditation of this MSc will be sought from the Chartered Institute of IT (a.k.a. the BCS) when next it visits us in 2020 as part of its 5 year cycle of visits.

LEARNING OUTCOMES – SUBJECT MASTERY

Understanding, Knowledge and Cognitive Skills

On completion of the programme, students will be able to demonstrate:

- Critical understanding of the principal theories, principles and concepts relating to the domain of artificial intelligence.

- Extensive, detailed and critical understanding of at least one specialist area within the domain of artificial intelligence.

- Understanding and use of a significant range of the principal skills, techniques and practices in artificial intelligence, and a range of specialised skills, research and investigation techniques, and practices informed by leading-edge research within the domain.

- A broad knowledge of the main areas of artificial intelligence, including terminology, conventions, underpinning theory, techniques and practices.

- Application-based knowledge and skills relating to the broad range of activities within the domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.

- Extensive and detailed knowledge of theories and algorithms relating to artificial intelligence, with specialist
applicative skills appropriate to the subdisciplines.

- Extensive and detailed knowledge and understanding of technologies relating to artificial intelligence, and their application, including the ability to critically analyse and review such technologies to support original and creative application development.

- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of artificial intelligence, including machine learning, web intelligence and biologically inspired models of computation.

- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of artificial intelligence, and in the design of projects and experimental models.

- Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues within the domain.

Scholarship, Enquiry and Research (Research Informed Learning)

On completion of the programme, students will be able to:

- Research skills, and the capability of critical analysis, through review and analysis of current research literature.

- An understanding of research ethics, and how to appropriately build on the work of others.

Learning Outcomes – Personal Abilities

Industrial, Commercial and Professional Practice

- Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
• Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working With Others

Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy & Information and Communications Technology

• Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.

• Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

APPROACHES TO TEACHING AND LEARNING

This programme is offered in a traditional campus-based, cohort model. Within the timetable, courses offer traditional lecture-based materials, small group tutorials and a variety of laboratory-based practicals. Students are expected to complete coursework in groups, teams and pairs, as well as individually, and courses offer a range of types of coursework for assessment, from discursive essay-style assignments to code design and generation. In some courses, team teaching approaches are adopted to provide additional support and variety, and electronic support, in the form of email lists, newsgroups and bulletin boards are widely used to disseminate information and support student communication and practice. This programme is offered in a traditional campus-based, cohort model, with a timetable devised to support full-time study. Within the timetable, courses offer traditional lecture-based materials, small group tutorials and a variety of laboratory-based practicals. Students are expected to complete coursework in groups, teams and pairs, as well as individually, and courses offer a range of types of coursework for assessment, from discursive essay-style assignments to code design and generation. In some courses, team teaching approaches are adopted to provide additional support and variety, and electronic support, in the form of email lists, newsgroups and bulletin boards are widely used to disseminate information and support student communication and practice.

EDUCATIONAL AIMS OF THE PROGRAMME
As part of the portfolio of Computer Science Postgraduate Taught Programmes, the aims of this MSc programme in AI reflect the aims of the set of PGT programmes as a whole. The aim of this 2 year MSc AI programme is to impart the skills and understanding required to develop intelligent software applications especially those involving evolutionary computation and learning. Students will acquire critical skills and knowledge in Data Mining and Machine Learning, Biologically Inspired Computation, as well as applicable skills concerning applications of Artificial Intelligence to the world wide web and (optionally) computer games.

Therefore, the aims are to enable the students to:

- Develop detailed knowledge and critical understanding of the main areas of artificial intelligence (including theories, principles and concepts).
- Develop and use a significant range of principal and specialist skills, techniques and practices in the domain.
- Critically review existing practice and develop original and creative solutions to problems within the domain.
- Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Plan and execute a significant project of research, investigation or development in a specialist area within artificial intelligence, demonstrating extensive, detailed and critical understanding of that specialism.

ASSESSMENT POLICIES

The two year MSc in Artificial Intelligence is a full-time programme comprising two stages in successive years.

Stage 1

This stage consists of 8 taught courses, some mandatory and some optional, defined in the programme structure, which the students will study over two semesters. Assessment of the taught phase is through a variety of methods including coursework and/or examination. Students must submit all elements of assessment before being permitted to progress.

- Progression to stage 2 depends on passing 8 courses at grade D or better with an 8 course average of 50% plus getting a grade C or better on F29AI and F21SF, as well as C69RP and C69RQ for entrants with a IELTS
below 6.5

- Students may retake the assessment of up to a maximum of 3 courses at the next opportunity, subject to payment of the appropriate fees to the University, and may be required to do so to obtain the necessary credits for progression or exit. Students may only resit courses for which their assessment grade is E or F (or a grade D but only if a grade C is required in order to progress to the next stage).

- Students may exit with a Graduate Certificate in Computer Science after at least 1 semester of study if they get credits for 4 courses at grade E or better with a 4 course average of 40%.

- Students not meeting either the requirements for progression or for a Graduate Certificate will not be eligible for any award.

Stage 2

This stage consist of two phases:

- A taught phase, consisting of a set of 8 taught courses, some mandatory and some optional, defined in the programme structure, which the students will study over two semesters. Assessment of the taught phase is through a variety of methods including coursework and/or examination. Students must submit all elements of assessment before being permitted to progress.

- A dissertation phase consisting of an appropriate technical research project and project dissertation report.

- Students will normally complete the taught phase, at which point progression to the dissertation phase is dependent on assessed performance as being of Masters level standard. To progress students must get grade D or better in 8 stage 2 courses, get an 8 course average of 50% and pass F21RP with a mark of at least 45%.

- A student may be reassessed in up to a maximum of 3 courses at the next opportunity, subject to payment of the appropriate fees to the University, and may be required to do so to obtain the necessary credits for completion of their programme or for progression. Students may only resit courses for which their assessment grade is E or F (or a D in order to proceed to or qualify for an MSc degree). The method of reassessment for each course is specified in the appropriate course descriptor.

- Students meeting the required standards for Postgraduate Diploma and Postgraduate Certificate in the taught phase, but not meeting the Masters standard, will not be permitted to progress to the dissertation phase. Students may be recommended to graduate with a Postgraduate Diploma or a Postgraduate Certificate at this point.
Students failing to meet the required standards for Postgraduate Diploma and Postgraduate Certificate in coursework and examination in the taught phase will not be permitted to progress to the dissertation phase, although they could be eligible for a Graduate Certificate in Computer Science.

<table>
<thead>
<tr>
<th>Mandatory Courses</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>F21SF Software Engineering Foundations</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>F27ID Introduction to Interaction Design</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>F29AI Artificial Intelligence and Intelligent Agents</td>
<td>15</td>
<td>9</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>F21AS Advanced Software Engineering</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21BC Biologically Inspired Computation</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21DL Data Mining and Machine Learning</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 2</td>
<td>F21RP Research Methods and Project Planning</td>
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<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 3</td>
<td>F21MP Masters Project and Dissertation</td>
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<table>
<thead>
<tr>
<th>Optional Courses</th>
<th>Course Code</th>
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<th>SCQF Lvl</th>
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<tbody>
<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>C69RP Research Preparation in English (1)</td>
<td>15</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>F21DF Databases and Information Systems</td>
<td>15</td>
<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 1</td>
<td>F21SA Statistical Modelling and Analysis</td>
<td>15</td>
<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>C11PA Project Management</td>
<td>15</td>
<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>C69RQ Research Preparation in English (2)</td>
<td>15</td>
<td>9</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>F20AD Advanced Interaction Design</td>
<td>15</td>
<td>10</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>F21SM Software Engineering Master Class</td>
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<tr>
<td>Edinburgh</td>
<td>X 1 2</td>
<td>F29OC Operating Systems &amp; Concurrency</td>
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<td>9</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21GA 3D Graphics and Animation</td>
<td>15</td>
<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21HR Human Robot Interaction</td>
<td>15</td>
<td>11</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21RO Intelligent Robotics</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 1</td>
<td>F21SC Industrial Programming</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 2</td>
<td>F21BD Big Data Management</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 2</td>
<td>F21CA Conversational Agents and Spoken Language Processing</td>
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<tr>
<td>Edinburgh</td>
<td>X 2 2</td>
<td>F21DV Data Visualisation and Analytics</td>
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# COMPOSITION NOTES (PG)

In stage 1 students study on 8 taught courses (4 mandatory and 4 optional) worth 15 credits each.

In Stage 2 students study on 8 taught courses (4 mandatory and 4 optional) worth 15 credits each followed by a MSc dissertation project worth 60 credits.

16 taught courses (8 mandatory and 8 optional) plus an MSc dissertation

<table>
<thead>
<tr>
<th>Mandatory Credits</th>
<th>120</th>
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<tbody>
<tr>
<td>Optional Credits</td>
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<tr>
<td>Elective Credits</td>
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<td>Dissertation Credits</td>
<td>60</td>
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<td>Total</td>
<td>300</td>
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# AWARDS, CREDITS AND CRITERIA (PG)

<table>
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<tr>
<th>Awards, Credits and Levels</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
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<tbody>
<tr>
<td>Masters Degree</td>
<td>300</td>
<td>300 SCQF credits including a minimum of 150 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Diploma</td>
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<td>120 SCQF credits including a minimum of 90 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Certificate</td>
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<td>120 SCQF credits including a minimum of 40 credit at Level 11</td>
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<table>
<thead>
<tr>
<th>Award Requirements</th>
<th>Total Course Passes</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
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</thead>
<tbody>
<tr>
<td>Master (Distinction)</td>
<td>8+Dissertation</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses in Stage 2 at grades A-C (at the 1st attempt) plus a Dissertation at grade A.</td>
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<tr>
<td>Master</td>
<td>8+Dissertation</td>
<td>50</td>
<td>C</td>
<td>Credit Weighted Average greater than or equal 50% over 8 courses in Stage 2 at grades A-D plus a Dissertation at minimum grade C.</td>
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<tr>
<td>Diploma (Distinction)</td>
<td>8</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses in Stage 2 at grades A-C (at the 1st attempt)</td>
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<tr>
<td>Diploma</td>
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<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 8 courses in Stage 2 at grades A-E</td>
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<tr>
<td>Certificate</td>
<td>4</td>
<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 4 courses in Stage 2 at grades A-E</td>
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<table>
<thead>
<tr>
<th>DURATION OF STUDY</th>
<th>Full-time</th>
<th>Part-time</th>
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<tr>
<td>Masters</td>
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<tr>
<td>Diploma</td>
<td>21</td>
<td></td>
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<tr>
<td>Certificate</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

# RE-ASSESSMENT (PG)
1. A student who has been awarded a Grade E or F in a course in stage 1 or 2 may be re-assessed in that course. A student who has been awarded a Grade D in a course in stage 2 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 in each stage. The opportunity for re-assessment in four or more taught courses in each stage 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**

Students may progress to the Dissertation if they have met the progression requirements in Stage 2 (taught course credit weighted average of 50% or better, all courses at Grade D or above and 45% or better in F21RP).