PROGRAMME SPECIFICATION

KEY FACTS

<table>
<thead>
<tr>
<th>Programme name</th>
<th>Actuarial Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Award</td>
<td>MSc</td>
</tr>
<tr>
<td>School</td>
<td>Cass Business School</td>
</tr>
<tr>
<td>Department or equivalent</td>
<td>Specialist Masters Programme</td>
</tr>
<tr>
<td>Programme code</td>
<td>PSACSC</td>
</tr>
<tr>
<td>Type of study</td>
<td>Full Time</td>
</tr>
<tr>
<td>Total UK credits</td>
<td>180</td>
</tr>
<tr>
<td>Total ECTS</td>
<td>90</td>
</tr>
</tbody>
</table>

PROGRAMME SUMMARY

The MSc in Actuarial Science programme consists of two stages:

**Stage 1 (Core Technical Modules):**

Successful completion of Stage 1 requires achieving 120 credits from Core Technical modules.

You have to pass the compulsory modules:
- SMM061 Financial Mathematics (professional subject CT1 – 20 credits)
- SMM063 Probability and Mathematical Statistics (CT3 – 20 credits)
- SMM065 Contingencies (CT5 – 30 credits)

Additionally, you will need to obtain at least 50 more credits from the elective modules:
- SMM062 Finance and Financial Reporting (CT2 – 20 credits)
- SMM071 Business Economics (CT7 – 20 credits)
- SMM064 Modelling (CT4 – 30 credits)
- SMM066 Statistical Methods (CT6 – 30 credits)
- SMM068 Financial Economics (CT8 – 30 credits)

If you already have an exemption from one or more of the professional exams corresponding to compulsory modules (CT1, CT3 and CT5), either through taking a professional examination or through prior study, you may be allowed to not take this particular module as part of your MSc in Actuarial Science at Cass. In that case, you will still need to obtain the corresponding credits from different (CT) modules.

**Stage 2: Short Electives / Applied Research Project, Research Methods for Actuarial Professionals and Business Research Project (optional)**

To complete Stage 2 you need to be awarded 60 further credits from:
- SMM548 Research Methods for Actuarial Professionals (10 credits), and
- EITHER 5 short elective modules (10 credits each) OR, 1 short elective module (10 credits) and SMM527 Business Research Project (40 credits) OR, 3 short elective modules (10 credits each) and SMM799 Applied Research Project (20 credits)

Successful completion of both stage 1 and 2 leads to the award of the MSc in Actuarial Science (180 credits)

Terms 1, 2, and 3
Modules corresponding to professional subjects CT1, CT2, CT3, and CT7 are taught in term 1 and written exams are held in January. Subjects CT4, CT5, CT6, and CT6 are taught in term 2 and written exams are held in late April / early May.

Research Methods for Actuarial Professionals is taught in term 1.

Short elective modules are taught in term 3. The Applied Research Project starts in term 3 and extends to the end of August as does the Business Research Project.

The MSc in Actuarial Science is only available for study on a full-time basis.

The aims of the programme are:

1. To give you the opportunity to study the fundamentals of actuarial science, statistics, finance and economics, corresponding to subjects CT1 - CT8 of the Actuarial Profession's examinations, and to enable you to gain exemption from the equivalent professional examinations.
2. To enable students with up to four professional exemptions the opportunity to study the remaining subjects in (1).
3. To prepare you for employment in actuarial and related fields.
4. To provide you with opportunities for additional study beyond the core syllabus, to enable you to be better prepared both for practical actuarial work and also for tackling the later professional examinations.
5. To be a suitable preparation for students wishing to proceed to the MSc in Actuarial Management, and for those students wishing to pursue academic research in Actuarial Science.
6. To develop your abilities for independent research.
7. To enable you to develop your own interests in the field of actuarial science, and enable you to prepare for further professional education and for employment in actuarial professional practice or research.

Throughout the course, where possible, lecturers will emphasise the many ethical issues that arise in the context of actuarial practice. In so doing you will be encouraged to
share your views with your lecturers and with your class mates, where a diversity of opinion is to be expected and encouraged.

WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this programme, you will be expected to be able to:

Knowledge and understanding:
- Demonstrate mastery of fundamental concepts in statistics, economics, finance and investment.
- Demonstrate mastery of actuarial theory used in investment, insurance and probability modelling.
- Demonstrate a detailed and systematic knowledge of a specific area of actuarial theory or practice and the ability to apply this understanding

Skills:
- Manage time effectively to cope with intensive study.
- Demonstrate proficiency in the use of actuarial and statistical methods to solve problems in insurance and investment.
- Demonstrate advanced mathematical problem-solving skills.
- Use spreadsheets as an effective tool for data analysis and financial modelling.
- Evaluate and apply alternative approaches in the analysis of financial reports.
- Present reasoned arguments demonstrating specialised knowledge.
- Communicate effectively with academic and professional tutors in written reports.
- Develop reasoned arguments on current issues relating to actuarial theory and practice
- Evaluate research papers and professional texts to produce an independent synthesis of knowledge and ideas
- Demonstrate the ability to evaluate and synthesise information and ideas from articles in actuarial journals

Values and attitudes:
- Demonstrate awareness of the professional and public service values of the actuarial profession.

This programme has been developed in accordance with the QAA Subject Benchmark for Mathematics, Statistics and Operational Research
HOW WILL I LEARN?

The teaching and learning methods used on the programme consist of:

1. An intensive schedule of lectures
2. Additional tutorial classes in certain modules
3. Extensive private study based on approved reading, question sheets and other lecture handouts
4. Class discussion, tests and other interactive teaching methods during lectures
5. Computer laboratory-based work on software
6. Private study of professional and academic literature
7. Training in research methods
8. Meetings with a Business Research Project supervisor

The assessment methods used on the programme consist of:

1. Closed-book examinations
2. Coursework
3. Tests (both in class and online)
4. Online quizzes
5. Presentations
6. Writing research project reports

The MSc in Actuarial Science is designed and structured to allow for intellectual progression through core modules taught in terms 1 and 2. Modules taught in term 2 normally build on the knowledge and skill acquired in term 1. Term three allows for further progression by choosing specialist elective modules or a dissertation/project, where students can apply knowledge and skills acquired earlier in the programme.

A minimum of 10 teaching and learning hours (both contact and non-contact) are required for each credit awarded. The precise weighting of different types of teaching and learning depends on the modules you take and the breakdown is therefore provided within the appropriate module specifications.

Non-contact hours are for self-directed study and account for the minimum amount of time you should spend studying independently, including subject research, reading, working in groups and completing assignments and other homework.

Overall teaching and learning hours: approx 1800 hours
Contact hours: approx 258 hours

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?
Assessment and Assessment Criteria

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully, providing a mechanism by which the quality of an assessment can be measured. Grade-Related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order achieve a certain grade or mark in an assessment, providing a mechanism by which the quality of an assessment can be measured and placed within the overall set of marks.

Assessment Criteria and Grade-Related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

Feedback on assessment

Feedback will be provided in line with our Assessment and Feedback Policy and will be provided in a variety of ways throughout your course, both formally and informally, in order to support your learning.

You will normally be provided with coursework feedback within three weeks of the submission deadline or assessment date. This would normally include a provisional grade or mark. The timescale for feedback on final projects or dissertations may be longer. Examination grades will be provided once they have been agreed by an Assessment Board.

More details about the feedback you can expect from individual modules and assessments will be provided by your lecturers.

The full policy can be found at:

Assessment Regulations

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In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits. The programme is weighted according to the number of credits awarded for each module. Pass / Fail modules are excluded from this calculation.

The pass mark for each module is 50% and there are no minimum qualifying marks for individual components.
If you fail an assessment component or a module, the following will apply:

Re-Sit: you will normally be offered one re-sit attempt.

If you are successful in the re-sit, you will be awarded the credit for that module. The mark for each assessment component that is subject to a re-sit will be capped at the pass mark for the module. This capped mark will be used in the calculation of the final module mark together with the original marks for the component(s) that you passed at first attempt.

If you do not meet the pass requirements for a module and do not complete your re-sit by the date specified you will not progress and the Assessment Board will require that you be withdrawn from the programme.

If you fail to meet the requirements for the Programme, the Assessment Board will consider whether you are eligible for an Exit Award as per the table below

To be awarded a Postgraduate Diploma you need to achieve at least 120 credits from modules in terms 1, 2 and 3, which must include:

- SMM061 – Financial Mathematics (CT1 – 20 credits)
- SMM063 – Probability and Mathematical Statistics (CT3 – 20 credits)
- SMM065 – Contingencies (CT5 – 30 credits)

If you also fail to meet the requirements for the Postgraduate Diploma you may be considered for the award of Graduate Diploma. The requirements for the Graduate Diploma are the same as those for the Postgraduate Diploma, with the difference that the module pass mark is 40% rather than 50%.

If you fail to meet the requirements for the programme and are not eligible for the award of a lower qualification, the Assessment Board shall require that you withdraw from the programme.

If you would like to know more about the way in which assessment works at City, please see the full version of the Assessment Regulations at:
http://www.city.ac.uk/__data/assets/word_doc/0003/69249/s19.doc
WHAT AWARD CAN I GET?

Master’s Degree:

<table>
<thead>
<tr>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>7</td>
<td>180</td>
</tr>
</tbody>
</table>

Class | % required
--- | ---
With Distinction | 70
With Merit | 65
Without classification | 50

Postgraduate Diploma:

Students must achieve 120 credits, including SMM061, SMM063 and SMM065, with a minimum mark of 50%.

<table>
<thead>
<tr>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>7</td>
<td>120</td>
</tr>
</tbody>
</table>

Class | % required
--- | ---
With Distinction | 70
With Merit | 65
With Pass | 50

Graduate Diploma:

Students must achieve 120 credits, including SMM061, SMM063 and SMM065, with a minimum mark of 40%.

<table>
<thead>
<tr>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>7</td>
<td>120</td>
</tr>
</tbody>
</table>

Class | % required
--- | ---
With Distinction | 70
With Merit | 65
Without classification | 40

WHAT WILL I STUDY?

The modules forming part of the MSc in Actuarial Science are the following.

<table>
<thead>
<tr>
<th>Module Title</th>
<th>SITS Code</th>
<th>Module Credits</th>
<th>Core/Elective</th>
<th>Can be Compensated?</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Mathematics (Subject CT1)</td>
<td>SMM061</td>
<td>20</td>
<td>C</td>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>Probability and Mathematical</td>
<td>SMM063</td>
<td>20</td>
<td>C</td>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>Course Title</td>
<td>Code</td>
<td>ECTS</td>
<td>C</td>
<td>N</td>
<td>Year</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>--------</td>
<td>------</td>
<td>---</td>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>Statistics (Subject CT3)</td>
<td>SMM065</td>
<td>30</td>
<td>C</td>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>Contingencies (Subject CT5)</td>
<td>SMM062</td>
<td>20</td>
<td>E</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Finance and Financial Reporting (Subject CT2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Modelling (Subject CT4)</td>
<td>SMM064</td>
<td>30</td>
<td>E</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Statistical Methods (Subject CT6)</td>
<td>SMM066</td>
<td>30</td>
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<tr>
<td>Financial Economics (Subject CT8)</td>
<td>SMM068</td>
<td>30</td>
<td>E</td>
<td>N</td>
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<td>Business Economics (Subject CT7)</td>
<td>SMM071</td>
<td>20</td>
<td>E</td>
<td>N</td>
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<td>Research Methods for Actuarial Professionals</td>
<td>SMM548</td>
<td>10</td>
<td>C</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Stochastic Claims Reserving in General Insurance</td>
<td>SMM025</td>
<td>10</td>
<td>E</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Social Insurance in Emerging Markets</td>
<td>SMM925</td>
<td>10</td>
<td>E</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Introduction to Copula* Modelling</td>
<td>SMM027</td>
<td>10</td>
<td>E</td>
<td>N</td>
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<tr>
<td>Modelling and Data Analysis*</td>
<td>SMM069</td>
<td>10</td>
<td>E</td>
<td>N</td>
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<tr>
<td>Topics in Quantitative Risk Management*</td>
<td>SMM070</td>
<td>10</td>
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<td>Business Research Project</td>
<td>SMM527</td>
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<tr>
<td>Applied Research Project</td>
<td>SMM799</td>
<td>20</td>
<td>E</td>
<td>N</td>
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</table>

* These are term 3 elective modules hosted by MSc Actuarial Science and MSc Actuarial Management. In addition, a number of elective modules hosted by other degrees are available to students in Actuarial Science. Indicative titles are Hedge Funds, Credit Risk Management, Liability Insurance, Alternative Risk Transfer and Risk Securitisation, and Mergers and Acquisitions. The list and content of available term 3 elective modules may be subject to change from year to year.

**TO WHAT KIND OF CAREER MIGHT I GO ON?**

There is a continuous demand for capable postgraduate level executives in the actuarial profession. They work in fields such as; Insurance companies (life/non-life), consulting firms, government departments, banks and investment firms, teaching and research.

[http://www.cass.city.ac.uk/more-about-cass/careers-services](http://www.cass.city.ac.uk/more-about-cass/careers-services) - Careers Service

[http://www.cass.city.ac.uk/more-about-cass/alumni-services](http://www.cass.city.ac.uk/more-about-cass/alumni-services) - Alumni Service

**WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?**

Placements are not part of the programme.
WILL I GET ANY PROFESSIONAL RECOGNITION?

Accrediting Body: Actuarial Profession

Nature of Accreditation

This programme is accredited by the Actuarial Profession in the United Kingdom. The Profession appoints an Independent Examiner, who recommends students on this programme for exemptions from professional examinations, provided that they have achieved the necessary standard.

Exemptions may be awarded in relation to professional subjects CT1-CT8.

HOW DO I ENTER THE PROGRAMME?

To be accepted on to a Cass MSc degree you will need a good Bachelors degree. This usually means a UK 2.1 or above, or the equivalent from an overseas institution. Some level of previous study in the specific subject area may be required.

Applicants will need to submit two references, one of which must be an academic reference if the candidate does not have previous work experience. Previous work experience is not a requirement of our full time MSc courses.

We require all students who have not previously studied at in English to take an IELTS exam. The IELTS requirement is 7.0 with a minimum of 6.5 in writing.

There is no direct admission to the Graduate Diploma in Actuarial Science, which is a compensatory award for the students admitted to the MSc in Actuarial Science.

The MSc in Actuarial Science is only available for study on a full-time basis.

RPL/RP(E)L Requirements

Applications will be considered from candidates who already have up to four exemptions from (CT) professional subjects.

Applicants with prior exemptions in one or more of CT1, CT3 and CT5, corresponding to compulsory modules on MSc in Actuarial Science, do not have to pass those modules for which prior exemptions are held. However the corresponding number of credits needs to be obtained through passing other elective (CT) modules.