PROGRAMME SPECIFICATION

KEY FACTS

<table>
<thead>
<tr>
<th>Programme name</th>
<th>Quantitative Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Award</td>
<td>MSc</td>
</tr>
<tr>
<td>School</td>
<td>Cass Business School / Singapore Management University (SMU)</td>
</tr>
<tr>
<td>Department or equivalent</td>
<td>Specialist Masters Programme</td>
</tr>
<tr>
<td>Programme code</td>
<td>PSQFSP</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>
<tr>
<td>Partner (partnership programmes only)</td>
<td>Singapore Management University</td>
</tr>
<tr>
<td>Type of partnership</td>
<td>Joint Programme with a Degree Awarding Powers Body</td>
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</table>

PROGRAMME SUMMARY

This version of the MSc Quantitative Finance has been carefully designed together with Singapore Management University (SMU) and is jointly delivered by both Universities. It is modelled on the Cass MSc Quantitative Finance programme and prepares you to pursue successful careers in quantitative areas of finance, both in the City or for further studies at PhD level. In term 1 you will study core modules which provide you with the core knowledge about financial markets and financial instruments as well as mathematical, statistical and programming tools to pursue a career in a wider range of quantitative positions in the financial service industry. Those skills also provide you with a good foundations to pursue an academic career and continue your studies at PhD level.

You will then join the MSc Quantitative Finance programme in London in term two where you focus on more specialist quants modules which require knowledge of the basic quants skills covered in term 1 in Singapore. The term 2 core modules include Fixed Income, Risk Analysis, Numerical Methods: Applications and Econometrics of Financial Markets.

The listing of the core modules is provided here.

**Term one** – delivered at SMU
- Asset Pricing
- Derivatives
- Foundations of Econometrics
- Stochastic Modelling Methods in Finance
As well as Matlab and VBA programming
**Term two** – delivered at Cass
- Econometrics of Financial Markets
- Fixed Income
- Numerical Methods: Applications
- Risk Analysis

**Term three** – delivered at SMU

Elective study by taking elective modules to a total of 50 credits.

Elective modules will be selected from those listed by SMU and deemed to be appropriate by both schools. The focus on some specialisations relevant to quantitative finance students.

**Aims**

The aim of the programme is to produce an informed, knowledgeable, confident individual who can interact with non-specialist and work in teams. We would expect that the individual can work under pressure and has obtained the skills required to be successful in the global financial world. This contributes to the University’s strategic aim of providing high quality education which makes a significant contribution to the success of London as a world city and enhances its international scope and reputation.

Throughout the course, where possible, lecturers will emphasise the many ethical issues that arise in the context of finance, trading and generally working in the financial environment. In doing so you will be encouraged to share your views with your lecturers and with your classmates, where a diversity of opinion is to be welcomed and encouraged.

The programme aims:
- To develop a good knowledge and understanding in the statistical techniques, and methodologies used in various areas of quantitative finance such as valuating, modelling and management.
- To develop a good understanding of the importance of forecasting in the decision making process required in financial market.
- To help you in acquiring the theoretical foundations of finance and the statistical skills needed to pursue successful careers in quantitative areas of finance, including quantitative analysts, risk management, asset management, pricing financial assets or other specialist tasks.
- To help you to work in teams, to manage projects and to compile reports.
- To help you in understanding the links between the theoretical frameworks of their practical applications.
Throughout the course, where possible, lecturers will emphasise the many ethical issues that arise in the context of quantitative finance. 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:**
- have a detailed knowledge and understanding of the financial products available, their risk and returns characteristics and their use in hedging and for speculation.
- obtain the knowledge of understanding the theory and theoretical developments in the field of finance, econometrics, forecasting, asset valuation and practical applications
- have acquired a rigorous knowledge and understanding of the existing valuation models used in finance, their assumptions, their weakness, an ability to propose efficient alternatives and their applications
- understand the use and importance of statistics and forecasting in asset pricing, asset management and risk management

**Skills:**
- acquire the ability to conduct research into issues of quantitative finance, such as pricing financial assets, risk management, asset management as well as the use and applications of sophisticated statistics applied to different problems in finance.
- be able to apply the financial theory and use statistics to help us in understanding how the theory complies to data.
- be able to collect data, work with data and to be able to use specialist software in analysing data.
- gain the ability to communicate technical information to a non-specialist audience
- obtain the ability to apply the knowledge acquired in the programme to test theoretical models and to understand how the theory works in practice.
• gain the ability to advice on the use of financial securities or statistical techniques by institutional investors such as banks or asset management companies for conducting their business

• have achieved the ability to critically analyse existing valuation models and to apply sophisticated statistics in testing the validity of the models.

• gain ability to write clear, well-structured and well argued reports

• be able to work effectively in groups to manage projects.

Values and attitudes:
• Understand the relationship between risk and return

• Appreciate the importance of financial risk and ways how to measure risk and deal with it.

• Appreciate the importance of programming in quantitative finance

• Appreciate the use of statistics and mathematics in financial modelling

HOW WILL I LEARN?

Teaching and learning methods give you the opportunity to apply the knowledge and expertise to problems beyond those generally encountered. A range of teaching and learning strategies are used to help you meet the different learning outcomes and to cater for the varied backgrounds and experiences of you and your fellow students.

• Lectures and directed reading are used to help to help you achieve an understanding of the current level of knowledge in the relevant areas.

• Mini case studies, the use of specialist software package and real life exercises as well as contributions from outside speakers are used to achieve integration between theory and practice.

The assessment of the course will also support your learning:

• Coursework provides ongoing feedback on your programme.

• Tests will assess the knowledge gained.

• Examinations provide a more in-depth assessment of knowledge gained and also assess your problem solving abilities.
The MSc in Quantitative Finance 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.

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 360 hours**

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**WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?**

**Assessment and Assessment Criteria**

This programme is assessed by coursework and examinations and applies standard MSc grade related 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: https://www.city.ac.uk/__data/assets/pdf_file/0008/68921/assessment_and_feedback_policy.pdf

Assessment Regulations

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.

1. Compensation: where you fail up to a total of 20 credits at first or resit attempt (15 for a postgraduate certificate), you may be allowed compensation if:
   - Compensation is permitted for the module involved (see the “What will I Study” section of the programme specification), and
   - It can be demonstrated that you have satisfied all the Learning Outcomes of the modules in the Programme, and
   - A minimum overall mark of no more than 10% below the module pass mark has been achieved in the module to be compensated, and
   - An aggregate mark of 50% has been achieved overall.

Where you are eligible for compensation at the first attempt, this will be applied in the first instance rather than offering a resit opportunity.

If you receive a compensated pass in a module you will be awarded the credit for that module. The original component marks will be retained in the record of marks and your original mark shall be used for the purpose of your award calculation.

2. Re-Sit: where you are not eligible for compensation at the first attempt 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
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.

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](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>
<th>Class</th>
<th>% required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>7</td>
<td>180</td>
<td>With Distinction</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With Merit</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Without</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>classification</td>
<td></td>
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</tbody>
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**Postgraduate Diploma:**

You must achieve 120 credits with a minimum mark of 50%.

<table>
<thead>
<tr>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
<th>Class</th>
<th>% required</th>
</tr>
</thead>
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<tr>
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<td>120</td>
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<td>70</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>With Merit</td>
<td>65</td>
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<tr>
<td></td>
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<td>Without</td>
<td>50</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>classification</td>
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### WHAT WILL I STUDY?

As presented in the summary description of the programme, the programme is taught over three terms. You must complete five core modules in term one (delivered at Singapore Management University), four core modules in term two (delivered at Cass Business School), and five elective modules in term three (delivered at SMU).
<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>Applied Research Tools: Matlab and VBA Programming (SMU delivery)</td>
<td>SMM277</td>
<td>10</td>
<td>C</td>
<td>N</td>
<td>7</td>
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<tr>
<td>Asset Pricing (SMU delivery)</td>
<td>SMM265</td>
<td>15</td>
<td>C</td>
<td>N</td>
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<tr>
<td>Derivatives (SMU delivery)</td>
<td>SMM254</td>
<td>15</td>
<td>C</td>
<td>N</td>
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<tr>
<td>Stochastic Modelling Methods in Finance (SMU delivery)</td>
<td>SMM302</td>
<td>15</td>
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<td>7</td>
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<tr>
<td>Foundation of Econometrics (SMU delivery)</td>
<td>SMM270</td>
<td>15</td>
<td>C</td>
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<td>Fixed Income</td>
<td>SMM269</td>
<td>15</td>
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<tr>
<td>Risk Analysis</td>
<td>SMM272</td>
<td>15</td>
<td>C</td>
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<tr>
<td>Econometrics of Financial Markets</td>
<td>SMM271</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>7</td>
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<tr>
<td>Numerical Methods: Applications</td>
<td>SMM313</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>7</td>
</tr>
</tbody>
</table>

**Electives**

Credits will be allocated for elective modules. However, as these will be offered at SMU individual modules will not be added to the SITS database.

<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>
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<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>E</td>
<td></td>
<td>N</td>
<td>7</td>
</tr>
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</table>

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

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

Students from this programme have entered various careers often in quantitative roles of finance where skills covered on this programmes are required. Those companies could be large financial institutions (i.e. investment banks) or smaller specialist finance companies (i.e. hedge funds).

[http://www.cass.city.ac.uk/more-about-cass/alumni-services](http://www.cass.city.ac.uk/more-about-cass/alumni-services) - Alumni Service
**HOW DO I ENTER THE PROGRAMME?**

Admissions to the joint stream of the programme will be carried out in Singapore by the SMU admissions team and will meet the requirements of both Universities in terms of entrance criteria. The Cass MSc admissions team will work with SMU in order to ensure that the students entering the course are of an appropriate calibre.

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.

Version: 4.0
Version date: February 2017
For use from: 2017-18