

MSc Risk Management and Financial Engineering

This document provides a definitive record of the main features of the programme and the learning outcomes that a typical student may reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities provided. This programme specification is intended as a reference point for prospective students, current students, external examiners and academic and support staff involved in delivering the programme and enabling student development and achievement.

Programme Information

Programme Title	Risk Management and Financial Engineering			
Award(s)	MSc			
Programme Code	N34G			
Awarding Institution	Imperial College London			
Teaching Institution	Imperial College London			
Faculty	Imperial College Business School			
Department	Imperial College Business School			
Mode and Period of Study	1 calendar year full-time (12 months)			
Cohort Entry Points	Annually in September			
Relevant QAA Benchmark Statement(s) and/or other external reference points	Master's Degrees in Business and Management			
Total Credits	ECTS:	90	CATS:	180
FHEQ Level	Level 7			
EHEA Level	2 nd cycle			
External Accreditor(s)	AMBA , EQUIS , AACSB International , Professional Risk Managers' International Association (PRMIA)			

Specification Details

Student cohorts covered by specification	2016/17 entry
Person responsible for the specification	Veronica Russell, Teaching & Quality Manager
Date of introduction of programme	October 2006
Date of programme specification/revision	December 2016

Description of Programme Contents

The programme is run by Imperial College Business School and commences in September with examinations taking place at the end of each term.

Students devote the summer term and the normal summer vacation period to working on their Project. Students are assessed by an individual Applied Project of 3,000 words and a short presentation. Students on approved work placements may, with the Programme Director's approval, write a report which incorporates their learning from their placement. As an alternative to the Applied Project, students can, with permission from the Programme Director, write an individual Research Project which is an original piece of work not exceeding 10,000 words. Students who complete a Research Project will be required to take one less elective. The Research Project is particularly suited to those students wanting to do a PhD after their MSc programme.

In summary, the Programme comprises 10 taught units (7 core modules and 4 electives) and the Applied Project or 9 taught units (7 core modules, and a choice of 3 electives) and an individual Research Project.

In addition there is an on-line interactive Accounting Primer module, an Ethics & Professional Standards module and an Introduction to Finance module (all of which students must pass successfully). These modules do not, however, contribute to the calculation of the final award.

Learning Outcomes

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial College degree programme. The Graduate Attributes are available at: www.imperial.ac.uk/students/academic-support/graduate-attributes

Educational aims/objectives of the programme

The programme aims to provide quantitative and analytic skills that enable students to embark on a quant-oriented career in the financial services sector or to pursue further academic study (doctoral research).

Students who complete the programme successfully will be able to:

- Demonstrate a detailed knowledge of fundamental finance theories and models including their derivation and their use and context in the measurement and management of risk;
- Apply mathematical tools to complex financial problems relating to risk measurement, risk management and risk pricing;
- Use a range of programming tools to develop live implementations of financial models and use these implementations in practice;
- Analyse and evaluate investment decisions and data — students should be able to apply econometric theory and software to draw valid conclusions about data.

Knowledge & Understanding of:

1. The nature of risks faced by financial firms;
2. Theoretical models employed in risk management and pricing;
3. Empirical techniques for analysing risk in financial institutions;
4. The core knowledge base including the essential facts, concepts, principles and theories relevant to the chosen area of specialisation.

Skills and other attributes

Intellectual (thinking) skills – able to:

1. To formulate stochastic models for analysing risk;
2. To solve problems involving the calculation of risk measures and the valuation of securities;
3. To understand critically the assumptions in models.

Practical Skills – able to:

1. To programme financial applications;
2. To apply theoretical models in new settings;
3. To undertake analysis of time series data;
4. To demonstrate solid training in statistical inference and econometrics;
5. To apply knowledge and skills learnt on the Programme to situations in the workplace.

Transferable Skills – able to:

1. To communicate effectively in context through oral presentations, computer software, presentations and written reports;
2. To critically review evidence including its reliability, validity and significance;
3. To transfer techniques and solutions from one discipline to another;
4. To use Information and communications technology;
5. To manage resources and time effectively in order to achieve intended goals;
6. To learn independently with open-mindedness and critical enquiry;
7. To learn effectively for the purpose of continuing professional development;
8. To work effectively as a team member;
9. To identify criteria for success and evaluate his or her own performance against those criteria.

Entry Requirements

Academic Requirement	Normally a UK Honours Degree at 2:1 or equivalent in a highly quantitative discipline such as Mathematics, Engineering, Science or Economics.
Non-academic Requirements	When selecting candidates, the School uses a range of criteria: academic ability, future potential, and the commitment which students will bring to the programme.
English Language Requirement	English language test: IELTS level 7 with no element below 6.5 (or equivalent).

The programme's competency standards documents can be found requested from the Business School's Teaching & Quality Office.

Learning & Teaching Strategy	
Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> • Lectures • Practical classes • Equipment/technique demonstrations (e.g. Bloomberg, Datastream) • Seminars • Workshops • Case studies • Group work exercises • Formal presentations
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> • Pre-programme on-line modules • On-line discussion forums • On-line lecture materials • Interactive content including video and module quizzes
Project and Placement Learning Methods	<ul style="list-style-type: none"> • Work Placement Opportunity
Assessment Strategy	
Assessment Methods	<ul style="list-style-type: none"> • Essays • Continuous assessments • Written Examinations/Tests • Multiple Choice Tests • Formal Presentations • Reports • Case Studies • Participation
Academic Feedback Policy	
<p>The School aims to provide feedback to students on coursework within two weeks and to provide provisional examination grades six weeks from the examination date. With each returned coursework assignment, a written evaluation or exercise solutions will be provided. General feedback to the cohort is provided on examination performance. Students will be provided with an alpha grade. The numerical mark will only be available on completion of the programme and will be released by Registry. Grades received during the year are deemed provisional until confirmed by the External Exam Board.</p>	
Re-sit Policy	
<p>The College's Policy on Re-sits is available at: www.imperial.ac.uk/registry/exams/resit</p>	
Mitigating Circumstances Policy	
<p>The College's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/registry/exams</p>	

Programme Structure					
Full-time	Pre-session	Autumn Term	Spring Term	Summer Term	Summer Vacation
Core Modules	4	9	3	1	
Elective Modules	1	0	3 or 4*		
Projects					1
* 3 or four electives depending on whether the student chooses a Research Project or Applied Financial Report					
Assessment Dates & Deadlines					
Written Examinations		October, December, March, June			
Coursework Assessments		Continuous			
Project Deadlines		August			
Practical Assessments		N/A			
Assessment Structure- Applied Project Route					
Programme Component		ECTS	% Weighting		
Core Modules & Electives Component (6 x Core Modules, equally weighted PLUS 1 x core module, zero weighted PLUS 5 x foundation modules, zero weighted PLUS 3 x core on-line modules, zero weighted, PLUS 4 x electives, equally weighted)		83	90%		
Applied Project Component (1 x applied financial report, equally weighted)		7	10%		
Total		90	100%		
Assessment Structure- Research Report Route					
Programme Component		ECTS	% Weighting		
Core Modules & Electives Component (6 x Core Modules, equally weighted PLUS 1 x core module, zero weighted PLUS 5 x foundation modules, zero weighted PLUS 3 x core on-line modules, zero weighted, PLUS 3 x electives, equally weighted)		76	81%		
Research Report Component (1 x research report, doubly weighted)		14	19%		
Total		90	100%		

Marking Scheme

All modules are equally weighted with the exception of the Research Project which carries a double weight. The Applied Project is single weighted and must be taken together with an additional elective.

Core modules + Electives: 81%
Research Project: 19%

OR

Core modules + Electives: 90%
Applied Project: 10%

Pass

- An average of 50% or above in each of the 2 components
 - Core modules (not including September foundation and online modules)
 - Electives & Research Project/Applied Project
- At least 40% in each examination;
- At least 50% in the Research Project or Applied Project;
- A pass mark for each of the Accounting, Ethics, Introduction to Finance and VBA modules;
- A pass mark in the September foundation modules (including a Pass in the Finance Industry module and an average of 50% or above across the remaining four modules, with a minimum mark of 40% in each individual element)

Merit

- An average of 60% or above in each of the 2 components:
 1. Core module (not including September foundation and online modules)
 2. Electives & Research Project/Applied Project
- At least 40% in each examination;
- At least 60% in the Research Project or Applied Project;
- A pass mark for each of the Accounting, Ethics, Introduction to Finance and VBA modules;
- A pass mark in the September foundation modules (including a Pass in the Finance Industry module and an average of 50% or above across the remaining four modules, with a minimum mark of 40% in each individual element)

Distinction

- An average of 70% or above in each of the 2 components:
 1. Core modules (not including September foundation and online modules)
 2. Electives & Research Project/Applied Project
- At least 50% in all modules
- At least 40% in each examination
- At least 70% in the Research Project or Applied Project;
- A pass mark for each of the Accounting, Ethics, Introduction to Finance and VBA modules;
- A pass mark in the September foundation modules (including a Pass in the Finance Industry module and an average of 50% or above across the remaining four modules, with a minimum mark of 40% in each individual element)

Indicative Module List											
Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS1091	Introduction to Mathematics	Optional	10	15	0	25	Not assessed			N/A	N/A
BS1317	Plagiarism Awareness Module	Core	10	15	0	25	Not assessed			N/A	N/A
BS1094	Career & Professional Development	Core	12.5	0	0	12.5	Not assessed			N/A	N/A
BS1314	Study Skills	Core	10	15	0	25	Not assessed			N/A	N/A
	Induction	Core	7	0	0	7	Not assessed			N/A	N/A
BS1090	Accounting Primer	Core	10	15	0	25	0%	100%	0%	7	1
BS1092	Introduction to Finance	Core	10	15	0	25	0%	100%	0%	7	1
BS1305	Ethics and Professional Standards in Finance	Core	10	15	0	25	0%	100%	0%	7	1
BS1032	Application of Matlab to Finance	Core	14	36	0	50	0%	100%	0%	7	2
BS1023	Markets and Securities	Core	16	34	0	50	100%	0%	0%	7	2
BS1025	Financial Modelling	Core	16	34	0	50	100%	0%	0%	7	2
BS1034	Data Structures and Algorithms using Python	Core	16	34	0	50	0%	100%	0%	7	2
BS1026	The Finance Industry	Core	16	34	0	50	0%	100%	0%	7	2

Indicative Module List											
Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS1002	Financial Statistics	Core	38	137	0	175	85%	15%	0%	7	7
BS1016	Investments & Portfolio Management	Core	38	137	0	175	80%	20%	0%	7	7
BS1030	Risk Management and Valuation	Core	38	137	0	175	80%	20%	0%	7	7
BS1022	Stochastic Calculus for Finance	Core	38	137	0	175	80%	20%	0%	7	7
BS1031	Financial Engineering	Core	38	137	0	175	80%	20%	0%	7	7
BS1033	Empirical Finance: Methods & Applications	Core	38	137	0	175	85%	15%	0%	7	7
BS1014	VBA	Core	22	0	0	22	70%	30%	0%	7	0
BS0340	Asset Allocation & Investment Strategies	Key Elective	38	137	0	175	60%	40%	0%	7	7
BS1130	Insurance	Key Elective	29	146	0	175	50%	50%	0%	7	7
BS0302	Advanced Options Theory	Key Elective	29	146	0	175	80%	20%	0%	7	7
BS1035	Computational Finance with C++	Key Elective	27	148	0	175	50%	50%	0%	7	7
BS0318	Credit Risk	Key Elective	29	146	0	175	75%	25%	0%	7	7
BS0308	Fixed Income Securities	Key Elective	29	146	0	175	80%	20%	0%	7	7
BS0355	Banks, Regulation & Monetary Policy	Elective	29	146	0	175	60%	40%	0%	7	7

Indicative Module List											
Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS0353	Introduction to Algorithmic Trading (International Elective)	Elective	29	146	0	175	60%	40%	0%	7	7
BS0354	Topics in Fintech Innovation	Electives	29	146	0	175	60%	40%	0%	7	7
BS0343	Financial Crises & Regulation	Elective	29	146	0	175	75%	25%	0%	7	7
BS1021	Advanced Financial Statistics	Elective	29	146	0	175	85%	15%	0%	7	7
BS0309	International Finance	Elective	29	146	0	175	85%	15%	0%	7	7
BS0345	Quantitative Methods in Asset Management	Elective	29	146	0	175	50%	50%	0%	7	7
BS1105	Enterprise Risk Management	Elective	29	146	0	175	70%	30%	0%	7	7
BS0352	Big Data in Finance	Elective	29	146	0	175	50%	50%	0%	7	7
BS0324	Private Equity and Venture Capital	Elective	29	146	0	175	60%	40%	0%	7	7
BS1011	Structured Credit & Equity Products	Elective	29	146	0	175	85%	15%	0%	7	7
BS0347	Wealth Management & Alternative Investments	Elective	29	146	0	175	70%	30%	0%	7	7
BS2101	Topics in Corporate Finance	Elective	29	146	0	175	60%	40%	0%	7	7

Indicative Module List											
Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
BS0344	Macroeconomics and Finance for Practitioners (International Elective)	Elective	29	146	0	175	55%	45%	0%	7	7
BS1000	Research Project	Core Choice	0	350	0	350	0%	100%	0%	7	14
BS1020	Applied Project	Core Choice	0	175	0	175	0%	100%	0%	7	7

Supporting Information

The Programme Handbook is available at:

<http://wwwf.imperial.ac.uk/business-school/programmes/programme-information/>

The Module Handbook is made available to students via the Hub once the module commences. Module descriptions are available in the Programme Handbook (link above).

The College's entry requirements for postgraduate programmes can be found at:

www.imperial.ac.uk/study/pg/apply/requirements

The College's Quality & Enhancement Framework is available at:

www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance

The College's Academic and Examination Regulations can be found at:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>

Imperial College is an independent corporation whose legal status derives from a Royal Charter granted under Letters Patent in 1907. In 2007 a Supplemental Charter and Statutes was granted by HM Queen Elizabeth II. This Supplemental Charter, which came into force on the date of the College's Centenary, 8th July 2007, established the College as a University with the name and style of "The Imperial College of Science, Technology and Medicine".

<http://www.imperial.ac.uk/admin-services/secretariat/college-governance/charters-statutes-ordinances-and-regulations/>

Imperial College London is regulated by the Higher Education Funding Council for England (HEFCE)

<http://www.hefce.ac.uk/reg/of/>

Modifications

Withdrawal of two elective modules (BS1028 Numerical Finance and BS1029 Computational Finance with C++) and introduction of one new elective module to replace them (BS1035 Computational Finance with C++).

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Change assessment weighting of elective module (BS0352 Big Data in Finance from 60% and 40% coursework to 50% exam and 50% coursework) and the addition of an MCQ element to the exam, worth 50% of the exam overall mark

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