This handbook is for students commencing the programme in January 2015.

From January 2012+ the programme was restructured. Candidates who enrolled initially on the Postgraduate Diploma, prior to January 2012, should refer to earlier handbooks. The handbook published in January 2011 remains on the course website for the information of such students.

This handbook and all appendices, and the handbook published in January 2011, can be found on the course website at

https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mf-pt/course-handbook
A.5 Laptop Computers
A.6 Maths Wireless
A.7 University IT Facilities
A.8 Libraries

Appendix B: Fees
B.1 Standard Course Fees
B.2 Other Fees
B.3 Payment Terms and Conditions

Appendix C: Plagiarism

Appendix D: Proctors’ Guidance for the use of Turnitin

Appendix E: Other Useful Contacts

NOTE: FURTHER APPENDICES ARE NOT PRINTED HERE, BUT ARE AVAILABLE AS LINKS FROM THE COURSE HANDBOOK ON THE WEBSITE:
http://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mf-pt/course-handbook

Appendix F: Programme Specification
Appendix G: Maps/Locations of buildings and other facilities
Appendix H: Statement of Provision
Appendix I: Student Support, and Mathematical Institute and other University Policies
1. Introduction

This document is the Student Handbook for the MSc in Mathematical Finance, January 2015. It describes the programme, the entry requirements, syllabus, methods of assessment and administrative and other matters. It also provides details of the University’s Examination Decrees and Regulations, which are the official legislative documents governing the courses. *The information provided in this handbook supersedes all previous versions of the handbook.* This Handbook subsumes ‘Course Conventions’ which have been published separately in some previous years. Should you have any questions that are not answered in the handbook please do not hesitate to ask the Course Administrator for MSc in Mathematical Finance or other colleagues as indicated in Section 2.5.

Please note that there is much supplementary information and up-to-date course material on the course website at:

[http://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mf-pt](http://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mf-pt)

2. The Mathematical Finance Part-time Programme

2.1 Aims of the Course

The main aim of the MSc in Mathematical Finance is to develop the students’ modelling, mathematical and computational skills in applications to finance. The MSc courses cover the most important technical and quantitative aspects of finance in regular use in banks and other financial institutions, from basic material to current research. There is also material on related subjects to give students a thorough grounding in the discipline and to enable them to make intellectual links between different topics. There is a substantial transfer of technology from applied mathematics, pure mathematics, statistics, computing, physics and corporate finance.

For more information on the Aims and Intended Learning Outcomes of the MSc see Appendix F Programme Specifications.
2.2 Course Structure - Overview

**Figure 1**

**Four Core Modules**

*Module 1: Mathematical and Technical Prerequisites*
*Module 2: Black-Scholes Theory*
*Module 3: Extensions of the Black-Scholes Framework*
*Module 4: Exotic Options and Advanced Modelling Techniques*

Assessed by problem sheet assignment. (Not part of the formal examination.)

**Written Examinations**

*Covering material from the Core Modules*
Summatively assessed (part of the formal examination).

**Three Advanced Modules**
Summatively assessed (part of the formal examination).

**Dissertation**
Summatively assessed (part of the formal examination).

**POSTGRADUATE DIPLOMA in MATHEMATICAL FINANCE**
(Exceptionally, a candidate for the M.Sc. in Mathematical Finance who is unable to complete the Dissertation, may apply to be awarded the Postgraduate Diploma.)

This diagram is indicative only. Please also see Section 4 Examination Regulations and Section 5 Examination Conventions.

Advanced Modules may also be taken individually, as stand-alone courses - by students on the programme and others - upon payment of the appropriate fee. No assessment or qualification is awarded in such a case.
2.3 Organisation of the Course

The MSc is part-time, covering approximately seven terms.

The programme is run by the Mathematical Institute. It is overseen by a Supervisory Committee. Different aspects of the course are handled by different bodies, as follows:

- The Mathematical Institute has responsibility for all academic aspects of the programme, including course design, module design and delivery, examinations and assessment, supervision of projects and dissertations, and quality assurance. The Course Director(s) are academics from the Mathematical Institute.

- The Mathematical Institute provides IT facilities and infrastructure, as well as software licences and access to central University resources. It also provides library facilities and the main teaching room for the course.

- The Administrative Office for the courses is located in the Mathematical Institute; it handles all the day-to-day administration.

- The University has two Proctors: the Junior Proctor and the Senior Proctor. They are the University’s senior officials responsible for, among other things, disciplinary matters, issues of student status and conduct of examinations.

- Students must belong to a college. The college is involved in some aspects of student administration for these students; the Administrative Office can provide further information if needed.

*Your first point of contact for all queries to do with the courses should be the Administrative Office, whose contact details are given in Section 2.5.*

2.4 Academic Structure of the Course

The taught component of the course is delivered via a series of modules, each of which is a face-to-face course in Oxford, covering a different branch of finance in detail, with formal lectures, informal discussion, tutorials and hands-on workshops. Core modules are each taught over five days. Advanced modules are each taught over four days. Teaching is done by academics and, especially in the later modules, practitioners from industry. Between the modules, which are spaced approximately six weeks apart, students are given problem sheets or essay assignments related to the material of the preceding module.

Core modules are ‘formatively’ assessed, meaning that the marks for them do NOT contribute to a student’s overall mark for the degree. However, informal feedback is given after marking of core module assignments to help students to improve their examination performances, and as such, core module assignments are a central element of the course.

The summer after core modules is for examination revision.

Advanced module assignments are ‘summatively assessed’, meaning that the marks for them contribute to a student’s overall mark for the degree.

The overall structure of the course is shown in Figure 1 and is described in more detail later in the Handbook.
The dissertation is normally taken up after the last module. We anticipate that students will need at least 40-60 hours of private study per module as well as time for exam preparation, and researching and writing the dissertation. For module dates see section 3.1 below. Information on all administrative requirements, deadlines and information regarding handing in assignments is given in this Handbook.

If, for some exceptional reason, a student is unable to complete the dissertation, he/she may apply to be awarded the Postgraduate Diploma.

2.5 Key Contacts

Administrative Office
Your first point of contact for all queries to do with the courses should be the Administrative Office, whose contact details are given here.

Postal address:
Octavia KELLY (Room S0.20)
Mathematical Institute
University of Oxford
Andrew Wiles Building
Radcliffe Observatory Quarter
Woodstock Road
Oxford
OX2 6GG
Email: mathfin@maths.ox.ac.uk
Fax: +44 (0)1865 615323 (PLEASE MARK ANY FAXES FOR THE ATTENTION OF OCTAVIA KELLY)

Academic Administrator: Charlotte Turner-Smith
turner-smith@maths.ox.ac.uk; +44 (0)1865 615203

Course Administrator for the MSc in Mathematical Finance: Octavia Kelly
mathfin@maths.ox.ac.uk; +44 (0)1865 280102

Course Directors
Responsible, under the oversight of the Supervisory Committee, for all academic aspects of the course.

Course Director 2014-2015: Dr Jeff Dewynne (dewynne@maths.ox.ac.uk)

2.6 The Academic Year and Terms at Oxford University

Throughout this Handbook you will find reference to the terms of the academic year in Oxford University. For most courses in the University the academic year runs from Michaelmas Term (autumn) through Hilary Term (spring) to Trinity Term (summer), and teaching takes place within the dates for ‘full-term’. However, the MSc in Mathematical Finance starts in Hilary Term, and teaching takes place both within full term time and outside it. Dates for modules are given in section 3.1 below.

However, many University processes are described using ‘terms’, for example terms are used to define deadlines for handing in dissertations, periods for which students may
suspend or extend their studies, etc.. For students starting the MSc in January 2015 the first academic year will run as follows:

Dates for full term time 2015

Hilary Term (first term): 18 January – 14 March 2015
Trinity Term (second term): 26 April – 20 June 2015
Michaelmas Term (third term): 11 October – 5 December 2015

3. Modules

3.1 Dates of Modules 2015
If there is any change to these dates students will be notified.

For students commencing in January 2015

<table>
<thead>
<tr>
<th>Module</th>
<th>Date</th>
<th>Assignment Submission deadline (noon UK time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1</td>
<td>12-16 January 2015</td>
<td>16 February 2015</td>
</tr>
<tr>
<td>Module 2</td>
<td>2-6 March 2015</td>
<td>6 April 2015</td>
</tr>
<tr>
<td>Module 3</td>
<td>27 April – 1 May 2015</td>
<td>1 June 2015</td>
</tr>
<tr>
<td>Module 4</td>
<td>29 June – 3 July 2015</td>
<td>TBC</td>
</tr>
<tr>
<td>Exams</td>
<td>21 September 2015</td>
<td></td>
</tr>
<tr>
<td>Module 5</td>
<td>22 – 25 September 2015</td>
<td>9 November 2015</td>
</tr>
<tr>
<td>Module 6</td>
<td>1–4 December 2015</td>
<td>18 January 2016</td>
</tr>
</tbody>
</table>

For students who commenced in January 2014

<table>
<thead>
<tr>
<th>Module</th>
<th>Date</th>
<th>Assignment Submission deadline (noon UK time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 7</td>
<td>17-20 Feb 2015</td>
<td>6 April 2015</td>
</tr>
<tr>
<td>Module 8</td>
<td>21-24 Apr 2015</td>
<td>8 June 2015</td>
</tr>
<tr>
<td>COMPONENT: Mathematical Techniques</td>
<td>Derivative Pricing</td>
<td>Portfolio Theory, Asset Pricing</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>Module 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDEs, Statistics, Static Probability Theory, Brownian Motion, Ito calculus, stochastic integrals, Solving SDEs</td>
<td>Binomial model</td>
<td>Portfolio theory, utility</td>
</tr>
</tbody>
</table>

| **Module 2**                      |                   |                                |                 |               |
| Kolmogorov equations, transition densities, exit times, Martingales (discrete/continuous), Girsanov's theorem | Black-Scholes, Black-Scholes extensions, FX, basket options, Simple exotics | Finite differences I Monte Carlo I | IR concepts IR products |               |

| **Module 3**                      |                   |                                |                 |               |
| American options, hedging, Greeks, Asset pricing, Stochastic optimization |                 | Finite Differences II IR trees, numeraires etc Short rate models |               |               |

| **Module 4**                      |                   |                                |                 |               |
| Barriers, Asians, Lookbacks, Stochastic/local volatility, Pricing under Levy processes, Equity exotics |                 | Monte Carlo II LMM, HJM IR smiles/exotics |                |               |
3.2 Core Module Summaries

Components of the Core Syllabus

The core modules cover the mathematical foundations (probability, statistics, PDEs) stochastic calculus and martingale theory, portfolio theory, the Black-Scholes model and extensions, numerical methods (finite differences and Monte Carlo), interest rate modeling, stochastic optimization, exotic derivatives and stochastic volatility. Matlab is taught as a practical computing language.

Module 1: Mathematical and Technical Prerequisites

- Probability: basics, review of discrete and continuous random variables, properties, important distributions, measure theory, change of measure, convergence of random variables, limit theorems
- Statistics: review of sampling and estimation, parameter estimation, regression techniques, tests for normality, QQ plots, Bayesian techniques, elementary principal components analysis
- PDEs: parabolic partial differential equations, heat equation, link to random walks, similarity solutions, Fourier transform; qualitative properties of solutions, maximum principles, smoothness
- Introduction to Matlab: basics, plotting, implementation of elementary numerical concepts applied to finance
- Binomial trees, discrete martingales: one-period and multi-period binomial stock price models, arbitrage-pricing of options on trees
- Portfolio theory, utility: expected returns, variance and covariances, benefits of diversification, the opportunity set, efficient frontiers and the Sharpe ratio, utility, risk aversion, optimal investment, convex duality
- Stochastic calculus: Brownian motion, constructions, non-differentiability, quadratic variation, stochastic integration, construction of Ito integral and properties, the Ito formula
- SDEs: random walks in continuous time, strong and weak solutions, expectations of solutions

Module 2: Black-Scholes Theory

- The Black-Scholes model: perfect replication, risk-neutral valuation, the Black-Scholes PDE and solutions
- Extensions of Black-Scholes: discrete and continuous dividend payments; time-dependent volatility, dividends and interest rates
- Introduction to Monte Carlo: uniform random number generators, sampling non-uniform distributions, implementation of MC methods, simple variance reduction techniques, workshop
- Basic exotic options: general payoffs, options on futures, pay-later options; multi-stage
options, forward-start options, ratchets, compound options, choosers

- Multi-factor problems, quantos, FX and basket options
- Elementary stochastic differential equations, transition density functions, Feynman-Kac formula, Kolmogorov equations, exit times and hitting probabilities, Girsanov’s theorem, maximum/minimum of Brownian motion; Martingale methods in discrete and continuous time, martingale representation theorem
- Explicit and implicit finite difference schemes, implementation, accuracy and stability, Greeks and smoothing schemes; workshop
- Introduction to the term structure of interest rates, bond price equilibria, duration and convexity, caps, floors, swaps
- Overview of instruments in rates markets, interpolation of yield curves and volatility term structures, bootstrapping

**Module 3 Extensions of the Black-Scholes Framework**

- Hedging, Greeks: delta, gamma, theta; vega, rho as out-of-model hedges; less common sensitivities
- American options: early exercise, linear complementarity problem, perpetual put, free boundary formulation, smooth pasting
- Finite differences for American options: explicit methods, projected iterations, a penalty method; workshop
- Stochastic optimization: dynamic programming, continuous time stochastic control, Merton problem
- Asset pricing: equivalent measures, martingale measures, numeraires, risk-neutral pricing, market price of risk, arbitrage pricing in binomial models, completeness, trinomial trees, fundamental theorems of asset pricing in discrete and continuous time, stopping times and American options
- Interest rate trees, the role of numeraires for interest rate derivatives
- Models for the short rate, use and calibration: Vasicek, CIR, Hull-White

**Module 4 Exotic Options and Advanced Modelling Techniques**

- Barrier options: down-and-out and other barrier contracts, intermittent sampling, American digitals, reflection principle
- Further exotic options: Asians, rate and strike options, similarity reductions, discretely sampled options and jump conditions; lookbacks, continuous and discrete sampling, probabilistic methods via reflection
- Monte Carlo for exotic options: continuity corrections for discretely sampled paths for barriers and lookbacks; correlation and basket options; variance reduction; workshop
- Implied and local volatility, Shimko’s method and Dupire’s formula; stochastic volatility models
- Jump diffusion and Levy processes: Poisson and Cox process, Ito with jumps, Merton’s model; Levy processes, hedging and pricing jump-risk, characteristic functions
- Yield curve modelling, market models (HJM, LMM)
• Practicalities of pricing and hedging interest rate products; SABR; running a swaps desk; managing exotics
• Practicalities of FX and equity derivatives pricing, calibration and implementation

3.3 Advanced Modules

Please note that the course content of the advanced modules may vary from year to year. It is approved annually by the Course Supervisory Committee. Up to date descriptions will be available on the course web site, along with further course materials:

https://www1.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mf-pt/advanced-modules

PLEASE NOTE: The content of all modules is subject to minor changes. Whilst we intend to run all advanced modules advertised on the website please note that we may occasionally have to cancel a module. If we do have to cancel a module students who are registered for that module will be contacted and offered an alternative.

Registration for Advanced Modules

You will be asked by the Administrative Office to register for Advanced Modules in the summer before taking the written examination.

If you wish to attend an additional Advanced Module on a non-assessed basis, whereby that Advanced Module will not be assessed and will not contribute to your overall degree result) you may be able to do so for a fee – usually £200 (see Appendix B Fees for further details).

If you wish to withdraw from a Module for which you have registered you must notify the Administrative Office at least 10 days before the start of the Module. If you do not do so you will be charged the module fee – usually £200 (this is to cover expenses which by that stage will already have been incurred). The Administrative Office will then be able to register you for an alternative Module.

If, in exceptional circumstances, you choose not to be assessed for a module which you have attended you must notify the Administrative Office by the first working day following that Module. You will be asked to pay the fee for a non-assessed course as above, and the Administrative Office will be able to register you for an alternative assessed Module.

3.4 Student Feedback

Module Evaluation Questionnaires

You are encouraged to complete the module evaluation questionnaires which will be given to you during each module. The results will be analysed and used to inform future course design and planning.

Student Representation

Student representatives serve on the Supervisory Committee which oversees the MSc. If you would be interested in serving on this, or would like to know who your student representatives are, please contact the Administrative Office.
4: Examination Regulations

The *Examination Regulations*, usually known for obvious reasons as the "Grey Book" is the authoritative document on the regulations for the University degrees and examinations. The *Grey Book* defines the rules for admission to and progression through the programmes of study and the syllabus for examinations. The regulations are available online at:

http://www.admin.ox.ac.uk/examregs/contents.shtml

5: Examination Conventions

The ‘Examination Regulations’ (http://www.admin.ox.ac.uk/examregs/contents.shtml) govern the Master of Science (MSc) in Mathematical Finance.

These ‘Examination Conventions’ explain in detail how students will be assessed, within the framework of the Examination Regulations.

These conventions apply from January 2015 onwards. The Examiners will translate any existing letter grades into USMs when applying these conventions, and will take special care that no individual student is disadvantaged by any change which has taken place since the publication of examination conventions when they started the course.

The MSc

*The MSc contains the following mandatory programme elements.*

- Four Core Modules
- Two Written Examinations
- Three Advanced Modules
- Dissertation

Students may also be required to attend a viva voce examination if required by the Examiners.

Assessment

*Assessment Criteria*

The assessment of coursework and examinations in the programme, using the mark scheme indicated below, is based upon recognition of the following qualities:

*Knowledge and Understanding*

- Range and depth in knowledge of mathematical techniques of analysis of use in finance covered in the course
• Appropriate selection of techniques for the analysis of finance problems and a
  knowledge of the limitations and strengths of models and techniques deployed

**Argument and Reasoning**
• Command of analytical skills appropriate for the study of finance
• Logical exposition and reasoning
• Clarity, completeness and concise expression in mathematical analysis

**Presentation and Deployment**
• Clear demonstration of the benefit of mathematical analysis of finance in argument
• Clarity in written (non-mathematical) exposition
• Appropriate deployment of literature

**Markscheme**

Each programme element will be awarded a mark on the University Standardised Mark (USM) scale between 0 and 100. A USM of 50 and above represents a Pass, and a USM of 70 and above represents a Distinction.

**Criteria for USMs: written examinations**

The USM for each written examination is determined by a scaling applied to the raw marks.

70-100: Marks in this range indicate excellent skills in reasoning, and problem-solving, together with an excellent knowledge of the material, and the ability to use it in unfamiliar contexts. There will be minor errors and omissions only. USMs at the top end of the range indicate that all answers were essentially perfect.

60-69: Marks in this range indicate good or very good skills in reasoning and problem-solving, with a good or very good knowledge of much of the material. Not all parts of every question will have been answered fully or correctly.

50-59: Marks in this range indicate adequate basic skills in reasoning and problem-solving, with a sound knowledge of a reasonable part of the material. Substantial parts of some questions may have been unanswered or answered incorrectly.

45-49: Marks in this range indicate understanding of only part of the basic material and only restricted problem-solving skills. Although there may be a few good answers, the great majority of answers will contain errors in calculations and/or show incomplete understanding of the topics.

40-44: Marks in this range indicate only very limited grasp of basic material over a very restricted range of topics, but with large gaps in understanding and insufficient coverage of the material as a whole.

0-39: Marks in this range indicate inadequate grasp of the basic material. The work is likely to show major misunderstanding and confusion, and/or inaccurate calculations; the answers to most of the questions attempted are likely to be fragmentary only.

**Criteria for USMs: dissertations, project reports and module assignments**
90-100: Marks in this band indicate remarkable ability and extraordinary insights; the presentation and clarity of exposition of the work are exceptional. Dissertations in this band will be worthy of publication and will contain novel results, while assignmentss go far beyond the material of the lecture course.

80-89: Dissertations and assignments in this band are excellent, showing thorough knowledge and understanding of the topic and including the student's own original insights and interpretations. Presentation is very good. Assignments go beyond the material of the lecture course.

70-79: Dissertations and assignments in this band are very good, well thought-out pieces of work with no major deficiencies, and with no significant deficiencies in presentation or clarity of exposition. They will show a thorough understanding of the topic.

60-69: Dissertations and assignments in this band may be good pieces of work with few deficiencies in content or presentation, but not significantly extending the material covered in the course; or they may have novel elements but also suffer from deficiencies in content, understanding, structure or presentation that prevent them from being of distinction level.

50-59: Dissertations and assignments in this band are of acceptable quality but have weaknesses in content, understanding, structure or presentation.

40-49: Dissertations and assignments in this band are not of acceptable quality and have significant weaknesses in content, understanding, structure or presentation. A major revision might raise the work to above a pass level.

0-39: This band indicates unacceptably poor work, showing extremely limited understanding of the topic covered and/or unacceptably poor presentation.

Programme Elements

Core Modules

Modules 1-4 are assessed formatively i.e. feedback will be given with an indicative mark in order to assist students in improving their future performance.

Written Examinations

Two 2-hour written examinations cover the material of modules 1-4. The examination papers will consist of the following sections. Each section predominantly covers one of the components of the core module material (see table in Section 3.2 of this Handbook for details of these components) though may draw on other components of the core module material.

Paper 1
- Section A “Mathematical Techniques” (two questions)
- Section B “Portfolio Theory, Asset Pricing” (two questions)
- Section C “Interest Rates” (two questions)

Paper 2
• Section D “Derivative Pricing” (four questions)
• Section E “Numerical Methods” (two questions)

Each question is of equal value and is marked out of 25 according to a precise model solution and marking scheme approved by the Examiners. This marking is independently checked to ensure that all parts have been marked and the marks and part-marks have been correctly totalled and recorded. The ‘raw marks’ are used to construct a USM for each paper. The raw marks are scaled to arrive at USMs.

The student’s grade for Paper 1 is determined by their best answers to one question from each of Sections A, B and C. The student’s grade for Paper 2 is determined by their best answers to two questions from Section D and their best answer to one question from Section E. A mark of zero shall be awarded for any part or parts of questions that have not been answered by a candidate, but which will be required to contribute to this. The student’s overall grade in the written examination is given by the averaged USM for both papers.

Calculators are not allowed in the examination room.

Advanced Modules
Assessment for Advanced Modules will usually be based on short ‘special project reports’ or ‘assignments’, each submitted on a subject covered in the module, with the exception of module 6, which may be assessed by questions, some or all of which may be compulsory, involving numerical methods. Further requirements on presentation and submission are given in the Course Handbook.

Submitted assignments will be screened by Turnitin software which will compare them to a wide range of material (both published and unpublished) and to the work of other candidates. The Examiners will be notified of the extent of any textual matches discovered by Turnitin, and will consider, for instance, whether any text that a candidate has copied from elsewhere is properly identified and the source duly acknowledged.

Assignments for which there is not a marking scheme will be ‘double-blind’ marked independently by two examiners or assessors. Assessors are each asked to propose a USM (see below) and a range of at most 5 USMs within which they would be content for the USM to lie. The examiners will reconcile these marks to arrive at a final mark, consulting further with the initial markers as necessary. For module 6, there is a marking scheme and scripts are marked by one examiner or assessor, then checked.

Dissertation
The dissertation should not be more than 40-45 of single spaced typed sides of A4 in a font no smaller than 11 point (excluding the abstract and any appendices, figures, acknowledgements and similar pages) and must be a substantial piece of original academic work. Further requirements on presentation and submission are given in the Course Handbook.

Submitted dissertations will be screened by Turnitin software which will compare them to a wide range of material (both published and unpublished) and to the work of other candidates. The Examiners will be notified of the extent of any textual matches discovered

 Scaling is carried out in accordance with University Guidance on Examinations and Assessment at http://www.admin.ox.ac.uk/epsc/guidance
by Turnitin, and will consider, for instance, whether any text that a candidate has copied from elsewhere is properly identified and the source duly acknowledged.

Dissertations will be 'double-blind' marked independently by two examiners or assessors. Assessors are each asked to propose a USM (see below) and a range of at most 5 USMs within which they would be content for the USM to lie. The examiners will reconcile these marks to arrive at a final mark, consulting further with the initial markers as necessary.

**Final Result**

**Weighting of Assignments**

The table below shows the relative weights of the programme elements when arriving at an average USM\(^2\).

<table>
<thead>
<tr>
<th>Weighted Marks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 advanced assignments</td>
<td>1/4</td>
</tr>
<tr>
<td>Written examinations</td>
<td>1/3</td>
</tr>
<tr>
<td>Dissertation</td>
<td>5/12</td>
</tr>
</tbody>
</table>

**Conditions for a Distinction**

The examiners may award a Distinction for exceptional performance. A Distinction is awarded when a candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics; is able to use that knowledge innovatively and/or in unfamiliar contexts; and is able to produce a substantial piece of work for the dissertation.

A distinction may be awarded if all of the following conditions are satisfied:

- The average USM for the written examinations is no lower than 70;
- The average USM for advanced assignments is no lower than 70;
- The dissertation is awarded a USM no lower than 70;

Provided a candidate meet two of the above criteria for a distinction, a distinction still may be awarded in a case where a candidate has a USM for the dissertation no lower than 70 and a weighted average USM no lower than 70 and either:

- the average USM for the written examinations is lower than 70 but not lower than 60;
- or
- the average USM for the advanced modules is lower than 70 but with no USM for an individual module lower than 60.

\(^2\) The average USM for the written examinations and the average overall USM will be rounded up to the next integer if necessary.
**Conditions for Failure**

Candidates fail when they show inadequate grasp of the basic material. The work is likely to be inadequate in scope or coverage and/or to show major misunderstanding and confusion, and/or inaccurate calculations.

Automatic Failure: students will fail who

- Fail to submit any advanced assignment without dispensation, or
- Fail to attend the written examinations, or
- Fail to submit the dissertation.

Students will fail for whom two of the following apply:

- A USM lower than 50 for two or more of the advanced assignments, or
- An average USM lower than 50 for the written examinations, or
- A USM lower than 50 for the dissertation.

Students will fail for whom one of the following applies:

- A USM lower than 45 for two or more of the advanced assignments, or
- An average USM lower than 45 for the written examinations, or
- A USM lower than 45 for the dissertation.

**The Postgraduate Diploma**

Exceptionally, a candidate for the MSc in Mathematical Finance may apply to be awarded the Postgraduate Diploma in Mathematical Finance, subject to such a candidate having satisfied the criteria for that award.

*It is NOT possible to exit the course with the Diploma and then later reinstate on the MSc, complete the dissertation and receive the MSc.*

**The Postgraduate Diploma contains the following mandatory programme elements.**

<table>
<thead>
<tr>
<th>Postgraduate Diploma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four Core Modules</td>
</tr>
<tr>
<td>Two Written Examinations</td>
</tr>
<tr>
<td>Three Advanced Modules</td>
</tr>
</tbody>
</table>

Students may also be required to attend a viva voce examination if required by the Examiners.

**Final Result**

*Weighting of Assignments*

The table below shows the relative weights of the programme elements when arriving at an average USM\(^3\).

---

\(^3\) The average USM for the written examinations and the average overall USM will be rounded up to the next integer if necessary.
### Conditions for a Distinction

The examiners may award a Distinction for exceptional performance. A Distinction is awarded when a candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics; is able to use that knowledge innovatively and/or in unfamiliar contexts.

A distinction will be awarded if all of the following conditions are satisfied:

- The average USM for the written examinations is no lower than 70;
- The average USM for the advanced assignments is no lower than 70.

A distinction may also be awarded in a case where a candidate meets these conditions except that the USM for either the written examinations or the average USM for the advanced modules is lower than 70 but not lower than 60, and so long as the weighted average USM is 70 or greater overall, with no USM for any individual module lower than 60.

### Conditions for Failure

Candidates fail when they show inadequate grasp of the basic material. The work is likely to be inadequate in scope or coverage and/or to show major misunderstanding and confusion, and/or inaccurate calculations.

Automatic Failure: students will fail who

- Fail to submit the advanced assignments without dispensation, or
- Fail to attend the written examinations.

Students will fail if both the following apply:

- An average USM lower than 50 for the advanced assignments,
- An average USM lower than 50 for the written examinations.

Students will fail for whom one of the following applies:

- A USM lower than 45 for two or more of the advanced assignments, or
- An average USM lower than 45 for the written examinations.

### CATS Points

Students who successfully complete the award will be granted an MSc in Mathematical Finance, worth 180 CATS points at FHEQ Level 7 (Masters). The Postgraduate Diploma is worth 120 CATS points at FHEQ level 7 (Masters).

**NOTE: Course Requirements – attendance, other administrative requirements and deadlines**

There are strict attendance requirements, and deadlines and procedures to be followed when submitting work.

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<table>
<thead>
<tr>
<th>Written examinations</th>
<th>1/2</th>
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<tbody>
<tr>
<td>3 advanced assignments</td>
<td>1/2</td>
</tr>
</tbody>
</table>
Failure to comply with these may lead to deduction of marks or to failure of that element of the programme and consequentially the programme as a whole. For example, if an assignment is submitted after a deadline without dispensation, a marks penalty may be imposed (see the table below). Such cases will be referred by the Examiners to the Proctors to impose an appropriate penalty.

<table>
<thead>
<tr>
<th>Lateness</th>
<th>Penalty</th>
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<tbody>
<tr>
<td>Up to 4 hours</td>
<td>1%</td>
</tr>
<tr>
<td>4-24 hours</td>
<td>10%</td>
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<tr>
<td>24-48 hours</td>
<td>20%</td>
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<tr>
<td>48-72 hours</td>
<td>30%</td>
</tr>
<tr>
<td>72-96 hours</td>
<td>40%</td>
</tr>
<tr>
<td>96-101 hours</td>
<td>50%</td>
</tr>
</tbody>
</table>

Under some circumstances, students can apply for extensions for particular programme elements or can apply to suspend their studies for a period. Full details are given in sections 7.4 and 9.2 below.

5.1 Appendix to Examination Conventions – Further examination matters

Illness at time of assessed work/written examinations

If a candidate is ill during an examination or during the preparation of a piece of assessed work and wishes this to be taken into account when the work is being marked s/he must, as soon as possible, and before the work is marked, submit an application for consideration of factors affecting performance in assessments via their College Office. A doctor’s certificate, which should be obtained as soon as possible after the onset of the illness, will be required as supporting evidence. Applications made before the board of examiners has met to award marks will be considered by the board of examiners; applications made after the board of examiners has met will be considered by the Proctors and will only be sent to the board of examiners if received within three months of the exam or submission deadline, and if there are exceptional reasons for the application not being made earlier.

If a candidate is unable to complete their examination/assessment due to acute illness or some other urgent cause the Proctors may, if the work that the candidate had already submitted is of sufficient merit, authorise the examiners to act as if the candidate has completed the examination. In less severe cases candidates may be permitted to sit an examination at a later sitting, or apply for a standard Extension as described in the Course Handbook.

Plagiarism

See Appendices C and D for information on plagiarism.

If the Board of Examiners agrees that plagiarism has occurred, the procedures set out in the University’s policy on plagiarism will be followed

http://www.ox.ac.uk/students/academic/goodpractice/about/
Viva Voce Examination
Under very exceptional circumstances a viva voce examination may be required by the examiners in addition to the above, for example to determine borderline cases or the award of a distinction.

The purpose of a viva is to allow the examiners to gain additional information about a candidate’s understanding of the course material. The viva takes the form of a meeting with the examiners during which the candidate may be asked to expound on for example, their understanding of a topic on which they gave a weaker answer in an examination or submitted a weaker assignment, or to defend a dissertation.

Academic Appeals – See [http://www.ox.ac.uk/students/academic/complaints/](http://www.ox.ac.uk/students/academic/complaints/) for the University’s policy on academic appeals.

Resubmission in Part or Parts of the course
Candidates who fail overall may be permitted to resubmit some work. The Examiners will determine which part(s) of the course are to be resubmitted. Candidates who fail the written examinations may receive immediate authorisation to re-sit them, but will only be able to sit the written examinations at the next time that they are normally set. Additional teaching cannot be provided, nor different assessment employed, because any aspect of the course has changed in the interim. Titles for advanced module assignments, where applicable, may be the same as before. Where a dissertation is resubmitted, the title will not in general be changed. No penalty will be applied for resubmitted work.

Mitigating Circumstances
If you are aware of any mitigating circumstances (such as ill health) which may have affected your performance in any assessment you should submit an application for consideration of factors affecting performance in assessments via your College Office as soon as possible and before the work is marked. If you believe ill health has affected your performance you will need a doctor's certificate, obtained as soon as possible after the onset of the illness. Applications made before the board of examiners has met to award marks will be considered by the board of examiners; applications made after the board of examiners has met will be considered by the Proctors and will only be sent to the board of examiners if received within three months of the exam or submission deadline and if there are exceptional reasons for the application not being made earlier.

Role of Board of Examiners
The Board of Examiners is responsible for arranging for the written examinations, advanced module assignments and Dissertations to be assessed, and for awarding qualifications and determining results. The Examiners normally meet twice per year to consider final awards. The Examiners are assisted in marking by ‘Assessors’.

The examiners for 2014–15 are:
Prof. Christoph Reisinger (Chair)
Prof. Samuel Cohen
Dr Harry Zheng, Imperial College London
Role of External Examiners
The role of the External Examiners as defined by the University can be found in the University Education Committee’s ‘Policy and Guidance on Examinations and Assessment’ on the website at http://www.admin.ox.ac.uk/edc/qa/qualityassurancedocuments/
For this programme External Examiners usually act as arbiters rather than as first or second markers.

Roles of the the Proctors
The Proctors are responsible overall for the conduct of examinations within the University.
Specifically, they are responsible for
- investigating cases of suspected intentional plagiarism
- making decisions about non acute and acute illness for MSc students
- investigating appeals from candidates
- decisions to deduct marks or disallow work in some cases of plagiarism or in cases of unauthorised late submission.
- As far as the remit of Proctors permits, investigating allegations of inadvertent plagiarism and appeals from candidates,

6. Attendance requirements
To be awarded the MSc (or the Postgraduate Diploma) students must attend Core Modules 1-4 and three Advanced Modules.
Students must attend each Module taken for credit in its entirety. At the beginning of each Module you will be asked to sign an attendance sheet. If you are late for some reason you should contact the Administrative Office to ensure that your presence at the Module is recorded.

7. Assignments for Modules

7.1 Deadlines for submission
Deadlines for submission of all Module assignments in 2015 are given in section 3.1 above. You are advised to keep a copy of all assignments submitted.

7.2 Core Modules
Core Modules (1-4) will be assessed formatively by assignments in the form of problem sheets that will be distributed during each module. The deadline is usually four weeks plus one weekend after the module. The sheets will explain how they are to be completed. Written assignments on core modules can be hand-written, but need to be clearly legible. Assignments should be submitted to the Administrative Office may be submitted by post as hard copies, or submitted electronically as described below. The submission of core module assignments is not compulsory but is very strongly advised as non-submission
could have a very adverse effect on examination performance. It is at the discretion of the marker whether he or she marks assignments submitted after the deadline.

7.3 Advanced Modules

Advanced Modules 5, 7 and 8 will be assessed by short ‘special project’ reports or ‘assignments’. The subjects of these assignments may either be chosen from a list of suggested topics or originate from the student, but the assignment must be based on material covered in the module and have a substantial mathematical content. Module lecturers are expected to advise students on possible topics suitable for these assignments, but their suggestions should not be regarded as exhaustive.

The assignment for module 6 (Advanced numerical methods) may either follow the format of that for modules 5, 7 and 8, or it may take the form of examination-style questions involving numerical methods, some or all of which may be compulsory: student may not be able to choose a topic for the module 6 assignment. If the assignment is in the latter format, the means of assessment will be similar for that of examination papers, i.e. they are marked by a single assessor to a mark scheme and the scripts are then checked.

Reports should be typeset. The preferred typesetting system is LaTeX but Word or other word processors are acceptable. A typical report will be about ten single-spaced typed pages of A4. The report may be, for example, an expanded account of a topic covered in lectures, a review of papers in the literature, and/or a computer implementation of an algorithm. There is no requirement for substantial originality, but the report must go beyond the module notes and presentation. You are required to briefly outline the relation to the material from lectures in the introduction. It is vital to avoid plagiarism so the assignment should not constitute a concatenation of material lifted directly from other sources, and it should be adequately referenced. If a report is intended to summarise work in the literature it should offer a critique and be written as far as possible in original phraseology. Assessment will take into account how you can demonstrate an understanding of methods developed in the course and apply them in a specific (new) context. (See also Section 5 Examination Conventions.)

The report should be submitted via the online system on the Mathematical Institute website at https://www.maths.ox.ac.uk/node/add/course-work

You will need your Mathematical Institute I.T. account username and password to submit work to this site. If you have any difficulties with this username and password please email help@maths.ox.ac.uk

The website will supply you with a confirmation email (to your Mathematical Institute email account) upon submission of the assignment. If you are supplied with such an email you can be sure that your work has been successfully submitted. You should keep the email for your own records.

When you submit the work you will be required to confirm that the work is entirely your own, except where otherwise indicated, and that it has not been submitted either wholly or substantially for any other course. Submitted assignments will be screened by Turnitin software which will compare them to a wide range of material (both published and unpublished) and to the work of other candidates. The Examiners may be notified of the extent of any textual matches discovered by Turnitin, and may consider, for instance,
whether any text that a candidate has copied from elsewhere is properly identified and the source duly acknowledged.

See [http://www.ox.ac.uk/students/academic/goodpractice/about/](http://www.ox.ac.uk/students/academic/goodpractice/about/) and Appendix C for further guidance on academic good practice including referencing.

Please identify your work ONLY with your candidate number, which is same candidate number as you used for the written examinations. Please avoid the appearance of your name, or any other indication of your identity (e.g. email addresses) anywhere in the assignment.

You must submit ONE electronic file. Any subsidiary programming or other files must be included, as an appendix, within this single file. (Occasionally these instructions may vary. In such cases full details will be given to students at the time of the module.)

Following online submission, you should receive a submission ID, which you should please retain for future reference.

In the extremely unlikely event that there does seem to be some technical problem and you are concerned that your work has not been submitted please email it immediately to mathfin@maths.ox.ac.uk but please avoid submitting both online and by email as more than one submission may cause confusion as to whether the submissions are all identical, and if not, which one is intended for assessment.

If for some reason you know in advance that you will be unable to submit work electronically you may apply in advance to submit it in paper form – see Section 4 Examination Regulations for details.

### 7.4 Assignment Deadlines

The deadline for Advanced module assignments will usually be six weeks and one weekend after a module. It is considered that, as for Core Module assignments, four weeks will be sufficient time for completion of the assignment. It is therefore expected that all students will be able to submit all their assignments by the given deadlines.

In the case of some prolonged illness or other serious personal difficulty which threatens your ability to submit your assignment on time you should contact the Administrative Office at the earliest opportunity. The Proctors may be able to grant you an extension if the case is considered to be sufficiently serious. Documentary evidence, such as medical certificates, will be required and an application must be made to the Proctors Office via your college. It may take some time for such cases to be considered, and until you hear whether an extension has been granted you are advised to keep working in order to submit the work as soon as possible.

Failure to meet the deadlines will normally lead to deduction of marks and may result in failure of that element of the programme and consequentially the programme as a whole. For example, if an assignment is submitted after a deadline without dispensation, a marks penalty may be imposed.
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<td>40%</td>
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<tr>
<td>96-101 hours</td>
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Submissions whose lateness is greater than 101 hours will automatically be referred to the Proctors.

8. Dissertations

See advice on dissertation writing and a library of past dissertations with Distinctions on the course website; see also and Sections 4 and 5 in this Handbook.

8.1 Approval of Topic

A session is held outlining the principles of selecting a dissertation project. You are encouraged to make a project proposal based on your work. You will be allocated a provisional supervisor. You may consult your provisional supervisor for advice about your project proposal. You should send in your proposal as soon as possible and in any case within three weeks of the assignment submission deadline for the final advanced module on which you are being assessed. You may want to propose an ‘external’ supervisor – perhaps someone in an industrial setting. You should provide the details of this along with your project proposal.

You must make a proposal of maximum 350 words on the form on the course website. You should send this to the Administrative Office.

The description should address:
1) The research question
2) Background to area (including work already carried out in this area) and justify the need for the research
3) Proposed methods
4) Potential problems and how to overcome them
5) How your study will contribute to the field of Mathematical Finance

Project proposals and supervisors require the approval of the Course Director in consultation, where necessary, with the Examiners. Once your proposal and supervisor have been approved, you should aim to make progress on your dissertation as soon as possible.

Scope of the Dissertation: The dissertation is a work of original research. This can constitute numerical algorithms and/or developments or extensions of mathematical results. The length should be a maximum of 50 sides of single spaced A4. It should be typeset in LaTeX and have a scrupulously accurate bibliography, table of contents and acknowledgements. Figures and tables should be accurately referenced and captioned. Use of English and presentation of mathematical formulae should be correct and accurate.
Your supervisor will provide you with guidance, but ultimately it is your responsibility to ensure that your dissertation meets the required standard.

8.2 Supervision and GSS

Your project supervisor should be available for regular contact to discuss your dissertation (in many cases this will necessarily be via email, telephone, or other remote means). They will be in contact with you at least once a term. If you have an external supervisor an internal supervisor will also be appointed to help ensure that things are progressing well, to report on progress within the University’s supervision system, and to advise you both as necessary.

Supervisors use an online Graduate Supervision System to complete termly reports on progress, and it is possible (though not compulsory) for students also to submit a self-assessment of their progress each term, and to raise any concerns. You will need to go to http://www.gss.ox.ac.uk/ to do this, and will need your University ‘single sign-on’ details (see Appendix A). Reports by both supervisor and student can be viewed by the Director of Graduate Studies (Taught Courses) and relevant college staff.

8.3 Submission and Format

[See also Section 4 Examination Regulations and Section 5 Examination Conventions]

The dissertation should be submitted as a single pdf file via the online system on the Mathematical Institute website at

https://www.maths.ox.ac.uk/node/add/course-work

You will need your Mathematical Institute I.T. account username and password to submit work to this site. If you have any difficulties with this username and password please email help@maths.ox.ac.uk

The website will supply you with a confirmation email (to your Mathematical Institute email account) upon submission of the dissertation. Receipt of this email means you can be sure that your work has been successfully submitted. You should keep the email for your own records. When you submit the work you will be required to confirm that the work is entirely your own, except where otherwise indicated, and that it has not been submitted either wholly or substantially for any other course. Submitted dissertations will be screened by Turnitin software which will compare them to a wide range of material (both published and unpublished) and to the work of other candidates. The Examiners will be notified of the extent of any textual matches discovered by Turnitin, and will consider, for instance, whether any text that a candidate has copied from elsewhere is properly identified and the source duly acknowledged.

See http://www.ox.ac.uk/students/academic/goodpractice/about/ and Appendices C and D for further guidance on academic good practice including referencing.

You must submit ONE electronic file. Any subsidiary programming or other files which you wish to submit must be included, as an appendix, within this single file.

In the extremely unlikely event that there does seem to be some technical problem and you are concerned that your work has not been submitted please email it immediately to mathfin@maths.ox.ac.uk. Please only email your work if you think that it has not uploaded

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4 A member of academic staff within the University.
to the online system and not as ‘backup’: more than one submission can create confusion about whether there is more than one version of the work and hence which version is intended for assessment.

If for some reason you know in advance that you will be unable to submit work electronically you may apply in advance to submit it in paper form – see Section 4 Examination Regulations for details.

Dissertations should be typeset in LaTeX. You are strongly advised to keep a separate backup (e.g. on disk or memory stick) as you proceed, as well as a backup copy after you have submitted it.

Your candidate number should appear on the cover along with the title and the year of submission. The candidate number for your dissertation will be the same as the one you used for your exams and your Advanced module assignments. Other than your candidate number, please do not put your name or any other indication of your identity e.g. email addresses, anywhere in your dissertation.

Following submission, you may be asked to for permission to publish your dissertation either in the form in which it was submitted or in anonymised form.

8.4 Deadlines for Submission

The University's Standard Submission Deadlines are:

Michaelmas Term - 17 December,
Hilary Term - 19 April,
Trinity Term - 30 September
(if a date falls on a weekend then the deadline is the nearest Friday).
[See Section 2.6 on the Academic Year and Terms.]

Submission of the MSc dissertation will normally be at the end of the seventh term following the start of the course, (usually 19 April in the third calendar year). If a candidate has some unavoidable difficulty in meeting the deadline, say due to ill health, they may apply via their college to the Proctors for an extension. This must only be done in circumstances of the most extreme kind, and is reserved for cases of sudden and serious ill health or some other personal tragedy or catastrophe. Students must inform the Proctors via their college as soon as possible and before the submission deadline.

If a candidate wishes to submit before he/she has been enrolled on the course for a minimum of 7 terms, the candidate must provide a written explanation of the reasons, which is used to seek permission from the Education Committee for early submission.

9. Requesting more time: Suspensions and Extensions

‘Suspension’: this term refers to a period when the enrolment of a student in the university is regarded as having temporarily ceased. The student is not expected to study at all during this time, and supervision and access to university facilities, including online library
facilities, will usually be suspended. The maximum number of terms for which a student can suspend is six.

‘Extensions’: this term refers to a period of time in which a student continues to study beyond the standard course length (7 ‘active’ – non-suspended – terms). Usually students may extend for a period of no more than five terms in total.

Note: Students suspending do so in the knowledge that the course syllabus and/or assessment methods may change, and that additional teaching/alternative assessment methods cannot be provided due to the fact that they have suspended.

9.1 Suspension of Status

Suspension of Status may be granted to students whose situation makes it impossible to do any work on the course. Suspensions are associated with an unavoidable change in personal, working or other relevant circumstances not anticipated at the onset of studies that make it impossible for a student to proceed with their studies. A Suspension may only be requested for a term if a student is unable to do work on the course during that term; he/she will therefore receive no supervisory support.

Suspensions are given out in periods of University Terms.

The student’s status within the University is suspended and re-started again once conditions make it possible to resume work on the course. Students may suspend status for up to six terms in total. Students may apply for a maximum of one year at a time, but are advised to apply for a maximum of one term at a time, and applications for periods of more than one term may be rejected.

In order to apply for a Suspension of Status a student must complete the form GSO17 ‘Application for Suspension of Status’ linked from the course website, or at http://www.ox.ac.uk/students/academic/graduates/forms/ and return it to the Administrative Office by:

2 September to suspend the following Michaelmas term
19 November to suspend the following Hilary term
20 March to suspend the following Trinity term

These deadlines may be brought forward.

Students do NOT pay fees for the terms in which they have Suspended Status. Students do not have access to either College or University facilities, or to supervision of the dissertation project, during this time.

Suspensions of Status may not be applied for if a student has already completed the seven terms of study usually required for the MSc year. In these cases a student must apply for an Extension of Time (see below)

Suspension of Status requires approval by your Supervisor, your College and the Director of Graduate Studies.

Applications for suspension of status will be judged upon:

- whether the substantive argument for a change in status is associated with an unavoidable change in personal, working or other relevant circumstances not anticipated at the onset of studies;
- the likely duration of these changed circumstances;
• whether there is clear evidence of a plan to meet the requirements for completion within an agreed time period consistent with the requirements of the course;

• supporting documentary (e.g. medical) evidence where appropriate. Once an application has been approved, you will get a formal letter from the Administrative Office (copied to your college and supervisors) confirming the dates of the Suspension of Status. It can take a number of weeks for the application to be processed in full but you will be contacted by the Administrative Office as soon as possible if there is likely to be a problem with the application.

When you are returning from a suspension of status to recommence your studies it is important to complete a GSO17a ‘Return from suspension of status’ form – linked from the course website or at http://www.ox.ac.uk/students/academic/graduates/forms/ to confirm to the University that you are active again; this will trigger reactivation and/or extension of your university card and IT accounts.

9.2 Extensions of Time

Where a student is unable to complete the work within the required course timetable the student will need to seek an extension of time. This includes students who are unable to complete their dissertations within their final term of their course, by the stated deadline. Extensions are associated with an unavoidable change in personal, working or other relevant circumstances not anticipated at the onset of studies that make it impossible for a student to complete their studies in the time given. Unlike a Suspension of Status, with an Extension it is intended that the student continues to work throughout the whole period of study and will pay a fee of £500 for each term extended to cover College, University and administrative costs.

Extensions are given out in periods of University Terms. Please note that, except in exceptional circumstances, only one term’s extension will be considered at any one time. MSc students may extend only up to a point where they have followed a part-time course of instruction for at most twelve active terms. This usually means that students may extend status for no more than five terms in total.

In order to apply for an Extension a student must complete the form GSO15 ‘Application for Extension of Time’ linked from the course website, or at http://www.ox.ac.uk/students/academic/graduates/forms/ and return it to the Mathematical Finance Administrative Office by:

- 2 September to suspend the following Michaelmas term
- 19 November to suspend the following Hilary term
- 20 March to suspend the following Trinity term

These deadlines may be brought forward.

Extension of Time requires approval by your Supervisor, your College and the Director of Graduate Studies.

Applications for Extension of Time will be judged upon:

• whether the substantive argument for a change in status is associated with an unavoidable change in personal, working or other relevant circumstances not anticipated at the onset of studies

• the likely duration of these changed circumstances
• whether there is clear evidence of a plan to meet the requirements for completion within an agreed time period consistent with the requirements of the course supporting documentary (e.g. medical) evidence where appropriate.

Once an application has been approved, you will get a formal letter from the Administrative Office (copied to your College and supervisor(s)) confirming the dates of the Extension. It can take a number of weeks for the application to be processed in full but you will be contacted by the Administrative Office as soon as possible if there is likely to be a problem with the application.

10. Withdrawal

Withdrawal should be seen as the last option. Before you take the decision to withdraw, you are recommended to talk to your supervisor or the Course Director to explore alternative possibilities, such as suspension or extension.

Please note that once you have exited the course with the Diploma it is NOT possible to later reinstate on the MSc, complete the dissertation and receive the MSc.

In order to withdraw from the course you must write to the Academic Administrator to request this. Telephone instructions cannot be accepted. You are also asked to inform your College.

A refund may be due in some circumstances. Please contact the Administrative Office for further details.

See also Payment Terms and Conditions in Appendix B.

11. Graduation Ceremony

Upon successfully completing the MSc you should receive an automated email inviting you to select a date for your graduation ceremony or to opt for graduation in absentia. If you do not receive such an email, please email degree.ceremonies@admin.ox.ac.uk and copy in your college, which is responsible for the detailed arrangements of ceremonies.
Appendix A: I.T., Libraries, and other Important Matters

A.1 Student self-registration

You need to register online once a year, at the anniversary of the term in which you started the programme. You should follow the links for current students to ‘Student Self Service’ on the main University webpage https://register.it.ox.ac.uk/

You need to use your University ‘single sign-on’ username and password to do this.

Please see A.2 below.

A.2 Usernames and Passwords and Email

You will receive the following sets of usernames and passwords:

Oxford ‘single sign on’ or ‘Nexus (single sign-on)’ account (sometimes referred to as your ‘Webauth’ or ‘Oxford’ username and password) – this provides access to:

- Self-registration
- Remote library facilities
- Installation of Matlab

The username for this account will be a shortened version of the name of your college [for example, chch for Christ Church College] followed by 4 numbers e.g chch1234. The email address attached to this account will be of the form [first name].[last name]@chch.ox.ac.uk

If you experience problems with your Nexus (single sign-on) account, please contact your college and/or the university’s IT services (please see http://www.oucs.ox.ac.uk/about/contact.xml)

Mathematical Institute username and password – this provides access to:

- Online submission of assignments and dissertation
- Online module materials
- Student forum on the Mathematical Institute website

The username for this account will be based on your last name e.g. smith or smithp. The email address attached to this account will usually be [first name].[last name]@maths.ox.ac.uk.

This email address is NOT attached to your Nexus (single sign-on) account.

If you experience problems with your Mathematical Institute username and/or password, please contact the Mathematical Institute’s IT staff by email at help@maths.ox.ac.uk

Setting up email forwarding

Important information will be communicated to you by email from a variety of sources within the University, including the Mathematical Finance Administrative Office, central University departments such as the University Card Office, and your college.
If you do not intend to check these email accounts you must set up forwarding from these accounts to an email account that you do check regularly.

You need to set up forwarding BOTH from your Nexus (single sign-on) account AND from your Mathematical Institute account.

To set up forwarding from your Nexus (single sign-on) account (single sign on account):

Ensure that you have activated your single sign on account (you should have done so in order to install Matlab)

Go to

https://register.oucs.ox.ac.uk/self/Nexus (single sign-on)

to set up a ‘forward’ from this account to an email account which you will regularly use.

To set up forwarding from the Mathematical Institute account:

Please follow the instructions at:
https://www.maths.ox.ac.uk/members/it/faqs/communication/email-forwarding

A.3 Downloading Matlab

To download Matlab onto your laptop please go to
http://www.maths.ox.ac.uk/members/it/software-personal-machines/matlab and follow the instructions there.

A.4 The University Card and its purpose

When you start the programme you will be provided with a University Card by your college. The University Card is a form of ID generally recognised within the University. In practical terms it will also permit you to enter restricted areas of the Mathematical Institute and certain university libraries. It is linked to your ‘single sign-on’ (Nexus (single sign-on)) account and will therefore expire simultaneously. For this reason, if you have problems logging in to your single sign-on account, it may be helpful to approach your college before you contact the university’s IT services, as the college is responsible for renewing your university card when necessary. IT services are unable to help with your single sign-on account if you do not have a valid university card.

A.5 Laptop Computers

You are usually required to bring your own laptop, or to hire one, furnished with appropriate software, to each of the modules. You will be sent information about obtaining the required software as necessary for each module. Please ensure you have a suitable adapter to enable you to plug it in to an English 3 pin power socket.

A.6 Maths IT Facilities

To access the Maths IT facilities please go to http://www.maths.ox.ac.uk/members/it/it-facilities-access
A.7 University IT Facilities
For further information on IT facilities, including the University’s Computer Usage Rules, please see http://www.it.ox.ac.uk/want/get-started

A.8 Libraries

The Whitehead Library of the Mathematical Institute
https://www.maths.ox.ac.uk/members/library
holds material covering mathematical topics at graduate and research level, including mathematical finance. It is primarily for the use of the graduate students and academic staff of the Mathematical Institute.
The library is kept locked at all times, but on arrival at the department, your University Card will have been activated to open the library door. Reference use of the library is available to you when you are in Oxford for a course Module. Books may not be taken away from Oxford.

Contact: Ms Cathy Hunt (Librarian)
Email: library@maths.ox.ac.uk

Other libraries holding some mathematical finance material include:
The Radcliffe Science Library (RSL) is the science library of the Bodleian. For more information, see: http://www.bodleian.ox.ac.uk/science/
The Sainsbury Library in the Said Business School, see: http://www.bodleian.ox.ac.uk/business
The Bodleian Social Science Library (SSL), see: http://www.bodleian.ox.ac.uk/ssl
Further information about all Oxford Libraries can be found at: http://www.bodleian.ox.ac.uk/libraries/libraries

Bench Collection
A small collection of books is held close to the Mathematical Finance Administrative office. This is an informal collection, not part of the University libraries. Please call in to the Administrative Office (S0.160) during office hours if you wish to inspect this collection/borrow a book. The books in this collection can be borrowed whilst you are in Oxford for a course Module, but please note that books are not to be taken away from Oxford.

Resources for Mathematical Finance
Please also see the 2 handouts, which will be given to you in your induction pack, and they can also be found on the web:

1. Library Resources for Mathematical Finance: a PDF file downloadable from: https://www.maths.ox.ac.uk/members/library/other-e-resources
2. Key Business Resources:  
   [http://libguides.bodleian.ox.ac.uk/business](http://libguides.bodleian.ox.ac.uk/business),
   produced by the Sainsbury Library at the Said Business School.
Appendix B: Fees

B.1 Standard Course Fees
Fees payable are determined by year of entry onto the programme. 
*However, please note: if a student suspends during their first year, the following cohort’s fees will apply for any remaining unpaid portion of fees.*

Fees
For students commencing the programme in January 2015:

<table>
<thead>
<tr>
<th>Total fee for the MSc:</th>
<th>£27,455 (Home/EU)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£31,095 (OS)</td>
</tr>
</tbody>
</table>

65% of the fee is payable prior to commencing the MSc; 35% is payable one year later.
Of this fee, approximately £3,000 is paid by the Department to the college as the college fee.

B.2 Other Fees

Fees for attending Modules 2015
A student on the course who has already paid the full fees for that course element but who wishes to attend an additional Advanced Module at which their work will not be assessed will usually be charged £200 for such an attendance. (Occasionally it may be necessary to charge more due to increased costs associated with a particular module. If this is the case students will be advised when they ask to register.) Such registrations may usually be cancelled without a fee being incurred if the student notifies the Administrative Office in writing fourteen days before the start of the module.

Fees for Extension of Time 2015
Where a student is unable to complete the work within the required course timetable and makes (a) successful application(s) for extension of time (see Section 10.3) the expectation is that they will continue to work during this period and they will be charged £500 for each term extended.

B.3 Payment Terms and Conditions
Please see the University’s Standard Conditions of Sale and Supply at: http://www.admin.ox.ac.uk/media/global/wwwadminoxacuk/localsites/finance/documents/accountsreceivable/saleserviceconditions.pdf

For payment of course fees for the MSc in Mathematical Finance these conditions are supplemented by the Terms and Conditions given below.

Please note that it is the responsibility of all students on the Programme to ensure that these terms and conditions are followed and the Mathematical Institute receives payment as instructed. Failure to pay fees in full could result in the University withholding teaching/assessment and/or refusing to award a qualification.

The full fee schedule can be found in the student handbook and on the course website. Following satisfactory completion of the admissions process an invoice will be sent for fees for the first year of the MSc.

1. If your fees are being paid in whole or in part by a third party or parties, whether another individual, an organisation, or a trust fund, etc, then our understanding is that we will receive the appropriate fee amount from that third party on your behalf. Therefore we will invoice that third party for the appropriate amount on your behalf. However, this does
not affect in any way the fact that you are ultimately responsible to ensure that payment of all your Fees is made to the University. Payment of all invoices must be made by the date stated on the invoice, or by the first day of the course, whichever is sooner. Payment must be made in Pounds Sterling. Payments may usually be made by credit card payment, cheque payment or bank transfer (details will be sent to you with the invoice). Please note that the student/funding organisation is liable for all bank charges if sending money by BACS from overseas. 

Please quote the invoice number on all correspondence and payments.

2. Extension and other fees: If you wish to extend the period of your studies ‘extension fees’ are payable. The Course Handbook gives details. You or the third party supporting you will be invoiced for these fees. It is sometimes possible to attend additional modules on payment of a fee. Again, the Course Handbook gives details, and if you wish to attend such modules you or the third party supporting you will be invoiced.

3. Self-funded students may, in cases of hardship, contact the Course Administrators to request to pay the course fees in instalments.

4. In all cases, if the fees or instalment payments have not been made by the date(s) shown on the invoice (or – where applicable – by the first day of the course, whichever is sooner) the University may withhold teaching/assessment and/or the award of the qualification.

5. Withdrawal and refunding of fees
   - Should a student wish to withdraw from the course, the administrative office should be notified in writing at least 2 weeks before the start of the subsequent module. In such circumstances students may be entitled to a partial refund of fees.
   - If withdrawal is notified after signing the student contract, and less than 2 weeks before the start of the subsequent module, the full fee for that module becomes payable.
   - The deposit is usually non-refundable (see initial offer letter for details).
Appendix C: Plagiarism

The University’s definition of plagiarism can be found at http://www.ox.ac.uk/students/academic/goodpractice/

It is important for all students to be aware of, and to follow, good practice in the use of sources and making appropriate reference. You will need to exercise judgement in determining when reference is required, and when material may be taken to be so much a part of the “general knowledge” of your subject that formal citation would not be expected. The basis on which such judgements are made is likely to vary slightly between subject areas, as may also the style and format of making references, and your supervisor, or Course Director, will be in the best position to advise you on such matters.

By following the citation principles and practices in your subject area, you will develop a rigorous approach to academic referencing, and avoid inadvertent plagiarism. Cases of apparently deliberate plagiarism, while happily infrequent in the University, are taken extremely seriously, and where examiners suspect that this has occurred, they bring the matter to the attention of the Proctors. Your attention is drawn to the Proctor’s and Assessor’s memorandum, Section 9.5, “Conduct in Examinations”, and in particular to Sections 4 and 5 and the concluding paragraph of the section:

“4. No candidate shall present for an examination as his or her own work any part or the substance of any part of another person’s work.

5. In any written work (whether thesis, dissertation, essay, coursework, or written examinations) passages quoted or closely paraphrased from another person’s work must be identified as quotations or paraphrases, and the source of the quoted or paraphrased material must be clearly acknowledged.”

Although the University strongly encourages the use of electronic resources by students in their academic work, any attempt to draw on third-party material without proper attribution may well attract severe disciplinary sanctions. Submitted assignments and dissertations will be screened by Turnitin software which will compare them to a wide range of material (both published and unpublished), including the work of other candidates, on-line essay banks and other potential sources of material, to help reveal the extent of any copying, collusion and/or assistance from essay-writing services. The Examiners will be notified of the extent of any textual matches discovered by Turnitin, and will consider, for instance, whether any text that a candidate has copied from elsewhere is properly identified and the source duly acknowledged.

Students may take an online anti-plagiarism course. This course is linked from the above website – access is available via the Skills Portal website (www.skillsportal.ox.ac.uk). You will need to create a user account before taking an online course. Below is the University definition of what constitutes Plagiarism. All cases would be regarded as a serious disciplinary matter. Further information can be found at http://www.ox.ac.uk/students/academic/guidance/skills/plagiarism

Why does plagiarism matter?

All published and unpublished material, whether in manuscript, printed or electronic form, is covered under the term plagiarism. Collusion is another form of plagiarism involving the unauthorised collaboration of students (or others) in a piece of work. Plagiarism is a breach of academic integrity. It is a principle of intellectual honesty that all members of the
academic community should acknowledge their debt to the originators of the ideas, words, and data which form the basis for their own work. Passing off another’s work as your own is not only poor scholarship, but also means that you have failed to complete the learning process. Deliberate plagiarism is unethical and can have serious consequences for your future career.

Why should you avoid plagiarism?

You have come to university to learn to know and speak your own mind, not merely to parrot the opinions of others. At first it may seem very difficult to develop your own views, and you will probably find yourself paraphrasing the writings of others as you attempt to understand and assimilate their arguments, however, it is important that you learn to develop your own voice. You are not necessarily expected to become an original thinker, but you are expected to be an independent one - by learning to critically assess the work of others, weigh up differing arguments and draw your own conclusions. You should not avoid plagiarism for fear of disciplinary consequences, but because you aspire to produce work of the highest quality. Once you have grasped the principles of source use and citation, you should find it relatively straightforward to steer clear of plagiarism.

What to avoid

The necessity to reference applies not only to text, but also to other media, such as computer code, illustrations, graphs etc. It applies equally to published text drawn from books and journals, and to unpublished text, whether from lecture notes, theses or other students’ essays. You must also attribute text or other resources downloaded from websites. Various forms of plagiarism include:

Verbatim quotation without clear acknowledgement

Quotations must always be identified as such by the use of either quotation marks or indentation, with adequate citation. It must always be apparent to the reader which parts of your assessment are your own work and where you have drawn on someone else’s ideas and language.

Paraphrasing

Paraphrasing the work of others by altering a few words and changing their order or by closely following the structure of their argument, is plagiarism because you are deriving your words and ideas from their work without giving due acknowledgement. Even if you include a reference to the original author in your own text you are still creating a misleading impression that the paraphrased wording is entirely your own. It is better to write a brief summary of the author’s overall argument in your own words than to paraphrase particular sections of his or her writing. This will ensure you have a genuine grasp of the argument and will avoid the difficulty of paraphrasing without plagiarising. You must also properly attribute all material you derive from lectures.

Cutting and pasting from the Internet

Information derived from the Internet must be adequately referenced and included in the bibliography. It is important to evaluate carefully all material found on the Internet, as it is
less likely to have been through the same process of scholarly peer review as published sources.

**Collusion**

This can involve unauthorised collaboration between students, failure to attribute assistance received, or failure to follow regulations on group work projects. It is your responsibility to ensure that you are entirely clear about the extent of collaboration permitted, and which parts of the work must be your own.

**Inaccurate citation**

It is important to cite correctly, according to the conventions of your discipline. Additionally, you should not include anything in a footnote or bibliography that you have not actually consulted. If you cannot gain access to a primary source you must make it clear in your citation that your knowledge of the work has been derived from a secondary text (for example, Bradshaw, D. Title of Book, discussed in Wilson, E., Title of Book (London, 2004), p. 189).

**Failure to acknowledge**

You must clearly acknowledge all assistance which has contributed to the production of your work, such as advice from fellow students, laboratory technicians, and other external sources. This need not apply to the assistance provided by your tutor or supervisor, nor to ordinary proofreading, but it is necessary to acknowledge other guidance which leads to substantive changes of content or approach.

**Professional agencies**

You should neither make use of professional agencies in the production of your work nor submit material which has been written for you. It is vital to your intellectual training and development that you should undertake the research process unaided.

**Auto-plagiarism**

You must not submit work for assessment which you have already submitted (partially or in full) to fulfil the requirements of another degree course or examination, unless this is specifically provided for in the special regulations for your course.
Appendix D: Extract from the Proctors’ Guidance for the Use of Turnitin in University Examinations

Turnitin is not plagiarism-detection software. It is, according to the University’s IT Services, “an electronic text matching system that can be used to find text matches between students’ submitted work and existing electronic sources, including extensive databases of electronic articles, other student assignments, and the internet”.

Boards of examiners may wish to use Turnitin as one tool in helping to identify potential cases of plagiarism. Points of guidance for this are given below. If examiners or assessors have any concern about the content of a written exercise (or about similarities between several candidates’ work), they should discuss the matter with the Chair, who in turn should seek advice from the Proctors. An examiner or assessor should not decide to impose an academic penalty if intentional plagiarism is suspected, and examiners should not use a viva to follow up concerns. Any suspicions must be referred immediately to the Chair and thence to the Proctors. The Proctors will normally suspend a candidate’s examination while they fully investigate such cases.

The regulations relating to plagiarism and collusion can be found in the Examination Regulations, Part 19 Proctors’ Disciplinary Regulations for Candidates in Examination, sections 3 – 6.
Appendix E: Other Useful Contacts

The Residential Centre, Department for Continuing Education

The Residential Centre has 33 en-suite study bedrooms, some for twin occupation. Students wishing to stay should contact the Residential Centre stating the course on which they have registered.

For further information, or to make a booking, please contact the Booking Co-ordinator: Telephone: 01865 270362, Fax: 01865 280780, Email: res-ctr@conted.ox.ac.uk

See also Appendices accompanying this Handbook on the Course Website.