

UNIVERSITY OF YORK

POSTGRADUATE PROGRAMME REGULATIONS (for PGT programmes that will run under the new modular scheme)

This document applies to students who commence the programme(s) in:	September 2017 or February 2018				
Awarding institution	Teaching institution				
University of York	University of York				
Department(s)					
Mathematics					
Award(s) and programme title(s)			Level of qualification		
MSc in Mathematical Finance Diploma in Mathematical Finance Certificate in Mathematical Finance			Level 7 (Masters)		
Award(s) available <i>only</i> as interim awards					
None					
Admissions criteria					
<p>A good undergraduate degree equivalent to a class 2.1 of higher UK degree in a mathematically based discipline such as Chemistry, Computer Science, Engineering, Mathematics, Physics or Statistics, but those with sufficiently good mathematical background from other areas such as Biology or Economics will be considered. Computer programming competence and experience is desirable but is not essential.</p> <p>Each applicant will be assessed individually to ensure that his/her mathematical background is appropriate. Documented professional track record in quantitative/mathematical finance will be considered at par with academic credentials.</p>					
Length and status of the programme(s) and mode(s) of study					
Programme	Length (years) and status (full-time/part-time)	Start dates/months (if applicable – for programmes that have multiple intakes or start dates that differ from the usual academic year)	Mode		
			Face-to-face, campus-based	Distance learning	Other
MSc	1.5 to 3 years (flexible)	1 September 1 February		X	
Diploma	1 to 2 years (flexible)	1 September 1 February		X	
Certificate	0.5 to 1 year (flexible)	1 September 1 February		X	
Language of study		English			
Programme accreditation by Professional, Statutory or Regulatory Bodies (if applicable)					
N/A					
Educational aims of the programme(s)					
For the Masters, Diploma and Certificate:					

To train students in advanced mathematical and computational techniques (stochastic analysis, partial differential equations, numerical and statistical methods) at a level relevant to practitioners in modern finance industry.	
Additionally for the Diploma and Masters:	
To train students to read and absorb current research literature in Mathematical Finance and to develop competence in using the knowledge and technical skills acquired during the course of the programme in typical situations arising in practical contexts in finance, particularly in relation to trading in various kinds of derivative securities.	
Additionally for the Masters:	
To equip more gifted students with the knowledge and experience necessary to work in a research and development role in quantitative finance industry or to embark on a PhD programme in Mathematical Finance or related fields.	
Intended learning outcomes for the programme – and how the programme enables students to achieve and demonstrate the intended learning outcomes	
<i>This programme provides opportunities for students to develop and demonstrate knowledge and understanding qualities, skills and other attributes in the following areas:</i>	<i>The following teaching, learning and assessment methods enable students to achieve and to demonstrate the programme learning outcomes:</i>
A: Knowledge and understanding	
<p>Knowledge and understanding of: <i>For the Masters, Diploma and Certificate:</i></p> <ol style="list-style-type: none"> 1. Mathematical tools (stochastic analysis including stochastic differential equations, partial differential equations, optimisation techniques) as applied to pricing and hedging derivative financial securities, portfolio and management techniques. 2. A range of mathematical models of financial securities: stocks, bonds (including the term structure of interest rates), and derivative securities. 	<p>Learning/teaching methods and strategies (relating to numbered outcomes):</p> <ul style="list-style-type: none"> • Interactive presentations recorded on CD/DVDs in lieu of lectures in taught modules (1-5) • One-to-one synchronous online tutorials and supervisory sessions (1-5) • Individual study (1-5) • Materials disseminated via the VLE (1-5) • Discussion boards using the VLE (1-5) • Independent study module (a selection from 1-5 as per chosen topic)

<ol style="list-style-type: none"> 3. Mathematical techniques involved in pricing, hedging and analysis of derivative securities, in both discrete and continuous time market models; their relevance in modern financial practice. 4. Modern portfolio theory, efficient portfolio and risk management. 5. The most popular and efficient numerical methods and computational techniques (finite-difference, Monte Carlo) used in the solution of the mathematical problems arising in finance; the strengths and limitations of these methods as applied to practical contexts in finance. 	<p>Types/methods of assessment (relating to numbered outcomes)</p> <ul style="list-style-type: none"> • Regular practice exercises with model solutions in taught modules and oral feedback in one-to-one online tutorials (formative, 1-5) • Assessed coursework projects in taught modules (summative, 1-5) with written and oral feedback (formative, 1-5) • Recorded online viva at the end of each stage (Certificate, Diploma, Dissertation) of the programme (summative, 1-5) • Regular written and oral feedback on dissertation drafts (formative, 1-5 as per chosen topic) • Dissertation report (summative, 1-5 as per chosen topic)
B: (i) Skills – discipline related	
<p>Able to: <i>For the Masters, Diploma and Certificate:</i></p> <ol style="list-style-type: none"> 1. Price and hedge a variety of derivative securities using appropriate mathematical and numerical techniques. 2. Manage and optimise investment portfolios; manage risk using a variety of risk measures and mathematical techniques. 3. Use computing software (spreadsheets, programming languages and/or symbolic computation software) to implement solutions; develop and 	<p>Learning/teaching methods and strategies (relating to numbered outcomes):</p> <ul style="list-style-type: none"> • Interactive presentations recorded on CD/DVDs in lieu of lectures in taught modules (1-3) • One-to-one synchronous online tutorials and supervisory sessions (1-3) • Individual study (1-3) • Materials disseminated via the VLE (1-3) • Discussion boards using the VLE (1-3) • Independent study module (a selection from 1-3 as per chosen topic)

document software.	<p>Types/methods of assessment (relating to numbered outcomes)</p> <ul style="list-style-type: none"> • Regular practice exercises with model solutions in taught modules and oral feedback in one-to-one online tutorials (formative, 1-3) • Assessed coursework projects in taught modules (summative, 1-3) with written and oral feedback (formative, 1-3) • Recorded online viva at the end of each stage (Certificate, Diploma, Dissertation) of the programme (summative, 1-3) • Regular written and oral feedback on dissertation drafts (formative, 1-3 as per chosen topic) • Dissertation report (summative, 1-3 as per chosen topic)
B: (ii) Skills – transferable	
<p>Able to:</p> <p><i>For the Masters, Diploma and Certificate:</i></p> <ol style="list-style-type: none"> 1. Communicate ideas and arguments in written and oral form in a clear and rigorous manner. <p><i>Additionally for the Diploma and Masters:</i></p> <ol style="list-style-type: none"> 2. Apply and implement results in current literature in a practical context. 	<p>Learning/teaching methods and strategies (relating to numbered outcomes):</p> <ul style="list-style-type: none"> • Induction module: tasks and exercises to complete via the VLE (1) • Interactive presentations recorded on CD/DVDs in lieu of lectures in taught modules (1) • Completing exercises and coursework in taught modules (1-2) • Online vivas (1-2) • One-to-one synchronous online tutorials and supervisory sessions (1-2) • Individual study (1-2) • Materials disseminated via the VLE (1) • Discussion boards using the VLE (1-2) • Independent study module (1-2)

	<p>Types/methods of assessment (relating to numbered outcomes)</p> <ul style="list-style-type: none"> • Regular practice exercises with model solutions in taught modules and oral feedback in one-to-one online tutorials (formative, 1-2) • Assessed coursework projects in taught modules (summative, 1-2) with written and oral feedback (formative, 1-2) • Recorded online viva at the end of each stage (Certificate, Diploma, Dissertation) of the programme (summative, 1-2) • Regular written and oral feedback on dissertation drafts (formative, 1-2) • Dissertation report (summative, 1-2)
C: Experience and other attributes	
<p>Able to:</p> <p><i>For the Masters, Diploma and Certificate:</i></p> <ol style="list-style-type: none"> 1. Listen; take notes; summarise and evaluate lectures; work to deadlines; solve problems; use computers for programming, word processing and spreadsheet work. <p><i>Additionally for the Diploma and Masters:</i></p> <ol style="list-style-type: none"> 2. Study a selected topic of current interest in depth; link recent theoretical developments with modern market practice. 	<p>Learning/teaching methods and strategies (relating to numbered outcomes):</p> <ul style="list-style-type: none"> • Induction module: tasks and exercises to complete via the VLE (1) • Interactive presentations recorded on CD/DVDs in lieu of lectures in taught modules (1) • Completing exercises and coursework in taught modules (1) • Online vivas (1-2) • One-to-one synchronous online tutorials and supervisory sessions (1-2) • Individual study (1-2) • Materials disseminated via the VLE (1) • Discussion boards using the VLE (1-2) • Independent study module (1-2)

	<p>Types/methods of assessment (relating to numbered outcomes)</p> <ul style="list-style-type: none"> • Regular practice exercises with model solutions in taught modules and oral feedback in one-to-one online tutorials (formative, 1) • Assessed coursework projects in taught modules (summative, 1) with written and oral feedback (formative, 1) • Recorded online viva at the end of each stage (Certificate, Diploma, Dissertation) of the programme (summative, 1) • Regular written and oral feedback on dissertation drafts (formative, 1-2) • Dissertation report (summative, 1-2)
Relevant Quality Assurance Agency benchmark statement(s) and other relevant external reference points (e.g. National Occupational Standards, or the requirements of Professional, Statutory or Regulatory Bodies)	
n/a	
University award regulations	
<p>To be eligible for an award of the University of York a student must undertake an approved programme of study, obtain a specified number of credits (at a specified level(s)), and meet any other requirements of the award as specified in the award requirements and programme regulations, and other University regulations (e.g. payment of fees). Credit will be awarded upon passing a module's assessment(s) but some credit may be awarded where failure has been compensated by achievement in other modules. The University's award and assessment regulations specify the University's marking scheme, and rules governing progression (including rules for compensation), reassessment and award requirements. The award and assessment regulations apply to all programmes: any exceptions that relate to this programme are approved by University Teaching Committee and are recorded at the end of this document.</p>	
Departmental policies on assessment and feedback	
<p>Detailed information on assessment (including grade descriptors, marking procedures, word counts etc.) is available in the written statement of assessment which applies to this programme and the relevant module descriptions. These are available in the student handbook and on the Department's website: https://maths.york.ac.uk/intranet/Home</p>	
<p>Information on formative and summative feedback to students on their work is available in the written statement on feedback to students which applies to this programmes and the relevant module descriptions. These are available in the student handbook and on the Department's website: https://maths.york.ac.uk/intranet/Home</p>	

Diagrammatic representation of the programme structure, showing the distribution and credit value of core and option modules

Teaching activities take place during two 4-month teaching periods per annum, from 1 October to 31 January and from 15 March to 15 July. There is also a 1-month induction period for new students joining the programme in September or February (there are two intakes per year).

The Online MSc in Mathematical Finance can be followed as fast stream or standard stream. Switching between the two streams is allowed between stages (i.e. between the Certificate and Diploma and between the Diploma and Dissertation stages).

1-month induction period	Fast stream: 4-month teaching period	Fast stream: 4-month teaching period	Fast stream: 4-month teaching period
	Standard stream: two consecutive 4-month teaching periods	Standard stream: two consecutive 4-month teaching periods	Standard stream: two consecutive 4-month teaching periods
Induction Period <i>no credits</i>	Certificate Stage <i>60 credits comprising:</i>	Diploma Stage <i>60 credits comprising:</i>	Dissertation Stage <i>60 credits comprising:</i>
<ul style="list-style-type: none"> • Induction Module <i>no credit bearing (core)</i> 	<ul style="list-style-type: none"> • Mathematical Methods of Finance <i>20 credit module (core)</i> • Discrete Time Modelling and Derivative Securities <i>20 credit module (core)</i> • Portfolio Theory and Risk Management <i>20 credit module (core)</i> 	<ul style="list-style-type: none"> • Stochastic Calculus and Black-Scholes Theory <i>20 credit module (core)</i> • Numerical and Computing Techniques in Finance <i>20 credit module (core)</i> • Modelling of Bonds, Term Structure and Interest Rate Derivatives <i>20 credit module (core)</i> 	<ul style="list-style-type: none"> • Mathematical Finance Dissertation <i>60 credit module (core)</i>

Masters

Consists of the Certificate, Diploma and Dissertation stages comprising 180 credits in total.

Postgraduate Diploma

Consists of the Certificate and Diploma stages comprising 120 credits in total.

Postgraduate Certificate

Consists of the Certificate stage comprising 60 credits.

Diagrammatic representation of the timing of module assessments and reassessments, and the timing of departmental examination/progression boards

1-month induction period	Fast stream: 4-month teaching period Standard stream: two consecutive 4-month teaching periods	Fast stream: 4-month teaching period Standard stream: two consecutive 4-month teaching periods	Fast stream: 4-month teaching period Standard stream: two consecutive 4-month teaching periods
Induction Period	Certificate Stage	Diploma Stage	Dissertation Stage
N/A	<p>Continuous assessment by regular coursework during a single 4-month teaching period (fast stream) or two consecutive 4-month teaching periods (standard stream)</p> <p>Recorded online viva in the last week of Certificate stage</p> <p>Examination/progression Board via Internet conferencing as soon as possible (normally within two weeks) on completing Certificate stage</p> <p>Reassessment in the last week of the month following the end of Certificate stage or as soon as possible thereafter</p>	<p>Continuous assessment by regular coursework during a single 4-month teaching period (fast stream) or two consecutive 4-month teaching periods (standard stream)</p> <p>Recorded online viva in the last week of Diploma stage</p> <p>Examination/progression Board via Internet conferencing as soon as possible (normally within two weeks) on completing Diploma stage</p> <p>Reassessment in the last week of the month following the end of Diploma stage or as soon as possible thereafter</p>	<p>Dissertation submitted about a week before the end of Dissertation stage</p> <p>Recorded online viva in the last week of Dissertation stage</p> <p>Examination/programme Board via Internet conferencing as soon as possible (normally within two weeks) on completing Diploma stage</p> <p>Resubmission of dissertation subject to marginal fail by the end of the month following Diploma stage or as soon as possible thereafter</p>

The above timings mean there will be two examination/progression board meetings conducted via Internet conferencing per annum: In February (for all programme stages ending in January) and in July (for all programme stages ending in June).

Overview of modules

Core module table

Module title	Module code	Credit level ¹	Credit value ²	Prerequisites	Assessment rules ³	Timing (term and week) and format of main assessment ⁴	Independent Study Module? ⁵
Induction Module	N/A	N/A	None	None	N/A	N/A	No
Mathematical Methods of Finance (Online Version)	MAT000 27M	7	20	None	Normal	Continuous Assessment throughout Certificate stage Online viva at the end of Certificate stage	No
Discrete Time Modelling and Derivative Securities (Online Version)	MAT000 24M	7	20	None	Normal	Continuous Assessment throughout Certificate stage Online viva at the end of Certificate stage	No
Portfolio Theory and Risk Management (Online Version)	MAT000 33M	7	20	None	Normal	Continuous Assessment throughout Certificate stage Online viva at the end of Certificate stage	No
Stochastic Calculus and	MAT000	7	20	MAT00027M	Normal	Continuous Assessment	No

¹ The **credit level** is an indication of the module's relative intellectual demand, complexity and depth of learning and of learner autonomy. Most modules in postgraduate programmes will be at Level 7/Masters. Some modules are permitted to be at Level 6/Honours but must be marked on a pass/fail basis. See University Teaching Committee guidance for the limits on Level 6/Honours credit.

² The **credit value** gives the notional workload for the module, where 1 credit corresponds to a notional workload of 10 hours (including contact hours, private study and assessment)

³ **Special assessment rules** (requiring University Teaching Committee approval)

P/F – the module is marked on a pass/fail basis (NB pass/fail modules cannot be compensated)

NC – the module cannot be compensated

NR – there is no reassessment opportunity for this module. It must be passed at the first attempt

⁴ AuT – Autumn Term, SpT – Spring Term, SuT – Summer Term, SuVac – Summer vacation

⁵ **Independent Study Modules (ISMs)** are assessed by a dissertation or substantial project report. They cannot be compensated (NC) and are subject to reassessment rules which differ from 'taught modules'. Masters programmes should include an ISM(s) of between 60 and 100 credits. This is usually one module but may be more.

Black-Scholes Theory (Online Version)	29M			MAT00024M		throughout Diploma stage Online viva at the end of Diploma stage	
Numerical and Computing Techniques in Finance (Online Version)	MAT00031M	7	20	MAT00027M	Normal	Continuous Assessment throughout Diploma stage Online viva at the end of Diploma stage	No
Modelling of Bonds, Term Structure, and Interest Rate Derivatives (Online Version)	MAT00030M	7	20	MAT00027M MAT00024M	Normal	Continuous Assessment throughout Diploma stage Online viva at the end of Diploma stage	No
Mathematical Finance Dissertation (Online Version),	MAT00026M	7	60	MAT00027M MAT00033M MAT00024M MAT00029M MAT00031M MAT00030M	NC	Written work submitted before the end of Dissertation stage Online viva at the end of Dissertation stage	Yes

Transfers out of or into the programme	
Exceptions to University Award Regulations approved by University Teaching Committee	
Exception	Date approved
Quality and Standards	
<p>The University has a framework in place to ensure that the standards of its programmes are maintained, and the quality of the learning experience is enhanced.</p> <p>Quality assurance and enhancement processes include:</p> <ul style="list-style-type: none"> • The academic oversight of programmes within departments by a Board of Studies, which includes student representation • The oversight of programmes by external examiners, who ensure that standards at the University of York are comparable with those elsewhere in the sector • Annual monitoring and periodic review of programmes • The acquisition of feedback from students by departments. <p>More information can be obtained from the Academic Support Office: http://www.york.ac.uk/admin/aso/</p> <p>Departmental Statements on Audit and Review Procedures are available at: http://www.york.ac.uk/admin/aso/teach/deptstatements/index.htm</p>	
Date on which this programme information was updated:	August 2017
Departmental web page:	https://www.york.ac.uk/maths/
<p>Please note</p> <p>The information above provides a concise summary of the main features of the programme and learning outcomes that a typical students might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the leaning opportunities that are provided.</p> <p>Detailed information on learning outcomes, content, delivery and assessment of modules can be found in module descriptions.</p> <p>The University reserves the right to modify this overview in unforeseen circumstances, or where processes of academic development, based on feedback from staff, students, external examiners or professional bodies, requires a change to be made. Students will be notified of any substantive changes at the first available opportunity.</p>	