

School of Physics, Astronomy and Mathematics

Title of Programme: BSc Honours Mathematics

Programme Code: EIMM

Programme Specification

This programme specification is relevant to students entering: 01 September 2015

Associate Dean of School (Academic Quality Assurance): Stephen Kane

Signature

Programme Specification BSc Honours Mathematics

This programme specification (PS) is designed for prospective students, enrolled students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the teaching, learning and assessment methods, learning outcomes and content for each module can be found in Definitive Module Documents (DMDs) and Module Guides.

Section 1

Awarding Institution/Body Teaching Institution University/partner campuses Programme accredited by Final Award	University of Hertfordshire University of Hertfordshire College Lane Campus IMA BSc Hons						
All Final Award titles	1. 2. 3. 4. 5.	Mathematics Financial Mathematics Mathematics with a Year Abroad Financial Mathematics with a Year Abroad Mathematics (Sandwich)					
FHEQ level of award UCAS code(s)	6 1. 2.	G100 BSc (Hons) Mathematics GN13 BSc (Hons) Financial Mathematics					
Language of Delivery	English						

A. Programme Rationale

The programme operates in full-time, sandwich and part-time modes to allow for the differing financial and time-constraint requirements of students, both school-leavers and mature. It offers a mathematics degree to allow students to study a range of mathematical topics and specialist degrees centred on areas with excellent career prospects.

Entry onto the programme benefits people with a variety of backgrounds: from school or college with A or AS levels; from the Foundation Year programme; with access qualifications or from overseas with suitable qualifications from their home country. It also attracts mature students with numbers fluctuating in line with the job market.

Students who have successfully completed an honours degree will have a firm foundation for postgraduate study. This is especially true for those who have chosen a specialist degree, which will naturally lead to further study in the chosen area.

Successful students are eligible for professional status through membership of the Institute of Mathematics and its Applications.

Problem-solving is at the heart of this applicable programme, with computers and software packages being used in many of the modules to help illustrate and solve more complex problems. All students are introduced to computers and a selection of relevant software packages for communicating and solving numerical problems at level 4. The level 5 has a project component on both routes and provides a further opportunity for students to practice their communication skills and develop their knowledge of the area. Students access teaching materials and carry out other administrative functions through the University's Managed Learning Environment, StudyNet.

Applications form an integral part of many of the modules and illustrate how mathematics relates to the real world.



The application of mathematical thought processes, creativity and a critical approach are required in the understanding of concepts and relationships, as well as in problem-solving activities. These feature in the understanding and construction of proofs within pure mathematics and mathematical logic; in the applications of mathematics; in financial modelling; within statistics; in the selection and use of algorithms and in the designing and building of software. Indeed, opportunities arise for creative solutions to problems in all the constituent modules of the programme.

In some of the modules a wider perspective is taken, placing the studies in context. Factors influencing model-building, interpretations and decision-taking are also referred to in relevant modules. Some examples and models used within modules are taken from spheres outside mathematics.

Communication skills are addressed directly within the programme through compulsory modules at levels 4 and 5 and are continually supported by requirements for written coursework, individual and team project work and a project component at level 5. In particular, electronic communication is introduced at the outset and is used thereafter, both in the taught modules and administratively. At level 5 students have to choose one of two modules that address professional issues relevant to a professional career. One module is aimed at career mathematicians whilst the other is tailored specifically to the teaching of mathematics in schools.

B. Educational Aims of the Programme

The programme has been devised in accordance with the University's graduate attributes of programmes of study as set out in <u>UPR TL03</u>.

Additionally this programme aims to:

- offer an education suited to the abilities and career aspirations of students which, by offering choices of study path, will help them realise their own potential to reach professional mathematician status;
- offer potential postgraduate students a platform which will enable them to embark upon further study in areas such as pure mathematics, numerical analysis, statistics, financial modelling or other related disciplines;
- offer students opportunities to specialise in areas of applicable mathematics and related subjects based on a broad foundation;
- develop competence in communicating mathematical results clearly to other experts and to nonspecialists, including the use of computers and software packages for information retrieval and presentation;
- develop the ability to approach problem-solving activities using mathematical approaches aided, where appropriate, by computer-based techniques.

In addition, for those opting to take professional training (leading to a sandwich award):

• provide a one year training placement in a suitable environment working alongside other professionals. This enhances the achievement of most of the above aims, dependent upon the character of the placement.

Additional aim for the Financial Mathematics named route:

• provide a coherent programme of study focused on financial modelling.

C. Intended Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are referenced to the QAA benchmark statements for Mathematics, Statistics and Operational Research and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008), and relate to the typical student. Additionally, the SEEC Credit Level Descriptors for Further and Higher Education 2010 have been used as a guiding framework for curriculum design.



Knowledge and Understanding of:	Teaching/learning methods & strategies	Assessment
A1- areas of fundamental importance to mathematics and its applications;	Acquisition of knowledge and understanding (A1-8) is through a combination of lectures, tutorials, practicals, coursework and project work. Additional support is	Knowledge and understanding are assessed through a combination of unseen examinations (A1-3, 7-8), assessed individual in-
A2- further areas of mathematics and its applications selected by themselves, at a level appropriate to a professional mathematician;	provided by StudyNet, the Mathematics Drop-in Centre, the student proctor and in the case of level 4, personal tutors. Throughout, the learner is encouraged to undertake independent study both to	course assignments (A1-8), assessed group in-course assignments (A1-6), workbooks (A1), class tests (A1-2), presentations (A2, 4- 6) and a final year project report (A2-5, 7-8).
A3- appropriate ways of using computers to solve problems and to communicate;	supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.	
A4- effective ways of communicating results to mathematicians and non- specialists;		
A5- time and resource management in order to meet deadlines;		
A6- the significance of science, technology and economic factors in modern society;		
A7- appropriate ways of developing computer algorithms for solving a variety of mathematical problems and methods of estimating the accuracy of results.		
All, or nearly all, of the above learning outcomes will be met by those undertaking a non-Honours Degree, but some to a lesser extent than for an Honours Degree.		
Additional LO for the Financial Mathematics named route:		
A8- appropriate ways of building and solving stochastic models for finance.		
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Intellectual skills - able to:	Teaching/learning methods & strategies	Assessment
 B1- apply their knowledge and understanding of areas of mathematics and its applications to the solution of problems in a manner appropriate to a professional mathematician; B2- use computers to solve problems in an appropriate manner; B3- be able to think logically and critically within areas appropriate to a professional mathematician; be able to use creativity and mathematical approaches in practical problem- solving activities; B4- learn independently and to continue learning; B5- have the capacity to work successfully, both as an individual and as a member of a team, by managing time and resources in order to meet deadlines. And in the case of sandwich students B6- will have obtained significant practical experience of working in a suitable environment, alongside professionals or others engaged in scientific or commercial work. 	Intellectual skills are developed throughout the programme by methods and strategies outlined in section A, above. Learning outcome B1 is developed through tutorial exercises, practical classes, coursework, teamwork and project work. The modelling process permeates the programme and requires the use of analytical skills and creative thought processes, enhancing B3. Many of the models are solved using computer techniques which are developed and used throughout the programme, thereby developing B2. Specifically, B2 is attained through practical classes, tutorials, lectures, coursework and project work and B3 is achieved through lectures, tutorials coursework and project work. Throughout, the learner is encouraged to develop intellectual skills further by independent study, thereby developing B4. The modelling process and problem solving also develop intellectual curiosity, enhancing B4. B5 is developed through individual and team project work/assignments, presentations, pacing oneself for examination periods and the final year project.	Intellectual skills are assessed through a combination of unseen examinations (B1-3), assessed individual and group in-course assignments (B1-5), workbooks (B1-3), class tests (B1, 3-5), presentations (B1-5) and a final year project report (B1- 5). B6 is assessed by written report from the student, written report from the placement organisation and the placement tutor's report.
Practical skills - able to:	Teaching/learning methods &	Assessment
C1- use computers to	strategies Practical skills are developed	Practical skills are assessed
effectively solve relevant models	through computer practical classes, associated exercises and coursework assignments.	through coursework assignments, presentations and the project report.
	to consolidate their development of practical computing skills by	

	use of personal computers available in the learning resources centre.	
Transferable skills - able to:	Teaching/learning methods & strategies	Assessment
D1present results to mathematicians and non- specialists using technology, verbally and in writing.	Transferable skills are developed through practical classes, presentations, group work, project work, coursework and in the modelling process. Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.	Transferable skills are assessed through coursework, presentations, project work and unseen examinations.

D. Programme Structures, Features, Levels, Modules, and Credits

The programme is offered in full-time (3 years), sandwich/year abroad (4 years) and part-time (5 or 6 years) modes, and leads to the award of a

- 1. BSc Hons Degree in Mathematics
- 2. BSc Hons Degree in Financial Mathematics

In addition there are non-honours degrees (BSc degrees) with the same two titles as for the BSc Honours degrees.

Entry is normally at level 4 (with suitable A-level or equivalent qualifications) but is possible at level 5 or 6 with suitable qualifications (e.g. successful completion of relevant studies at the correct level at another institution). Intake is normally semester A (September).

Professional and Statutory Regulatory Bodies

The programmes are accredited by the Institute of Mathematics and its Applications and students may apply for membership of the society.

Work-Based Learning, including Sandwich Programmes

An award in the sandwich mode is made if at least 36 weeks of approved, supervised work experience is undertaken in addition to the period required for full-time award.

Programme Structure

The programme structure and progression information below (Table 1a and 1b) is provided for the Honours award. Any interim awards are identified in Table 1b. The Programme Learning Outcomes detailed above are developed and assessed through the constituent modules. Table 2 (in section 2) identifies where each learning outcome is assessed.

Table 1a Outline Programme Structure

BSc (Hons) Mathematics

Mode of study Full time/Part time

Entry point Semester A

Level 4 BSc (Hons) Mathematics V1.7 / Bachelor's Programme Specification / January 2014 / AS © University of Hertfordshire 2014



Compulsory Modules Module Title			Module Code	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 1		41	PAM0007	30	English	50	50	0	AB
Linear Algebra and Analysis Financial and Actuarial Mathema Basic Statistics Applications of Mathematics Applications of Computing Small Group Tutorial	tics	41 41 41 41 41 41 41	PAM1003 PAM1017 BUS0075 PAM1002 PAM0023 PAM1027	30 15 15 15 15 0	English English English English English English	70 0 60 80 0 0	30 100 40 20 100 100	0 0 0 0 0	AB A B B AB
Level 5 BSc (Hons) Mathemat	tics								
Compulsory Modules Module Title	Module Code	Credit Points	Pre-req		Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 2 Professional Skills* Professional Teaching Skills* Real Analysis Differential Equations	5PAM0012 5PAM0024 5PAM0028 5PAM1002 5PAM1001	15 15 15 15 15	4PAM000 4PAM100 4PAM000	7 3 7	English English English English English	80 0 0 80 80	20 100 100 20 20	0 0 0 0	A A A B B
* Exactly one of these two	JI ANTOOT	15		/	Linglish	00	20	U	D
Optional Modules	Module Code	Credit Points	Pre-req		Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Numerical Methods Portfolio Risk Management Number Theory Algebra Mechanics Statistical Modelling	5PAM1004 5PAM0021 5PAM0030 5PAM1006 5PAM1003 5BUS0256	30 30 15 15 15 15	4PAM000 4PAM101 4PAM100 4PAM100 4PAM000 4BUS007	7 7 3 3 7 5	English English English English English English	80 60 80 80 70 60	20 40 20 20 30 40	0 0 0 0 0	AB AB A A B B
Optional sandwich year						I			I
Optional Modules	Module Code	Credit Points	Pre-req		Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Professional Placement Year Abroad	6PAM0011 6PAM0030	0 0			English English	0 0	100 100	0 0	AB AB



Level 6 BSc (Hons) Mathematics

Compulsory Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Complex Analysis	6PAM1002	15	5PAM1002	English	80	20	0	A
Investigations in Mathematics	6PAM1005	15	-	English	0	100	0	В
Optional Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Boundary Value Problems	6PAM0022	30	5PAM0012	English	80	20	0	AB
Linear Optimisation	6PAM0020	30	4PAM0007	English	80	20	0	AB
Waves and Fluids	6PAM0014	30	5PAM1003	English	60	40	0	AB
Financial Optimisation	6PAM0023	30	5PAM1004	English	80	20	0	AB
Further Algebra	6PAM1017	15	5PAM1006	English	80	20	0	А
Quantum Computing A*	6COM0247	15	4PAM0007	English	0	100	0	А
Linear Modelling	6BUS1031	15	5BUS0256	English	0	100	0	А
Quantum Computing B*	6COM0260	15	6COM0247	English	100	0	0	В
Space Dynamics	6PAM0027	15	4PAM0023	English	0	100	0	В
Multivariate Statistics	6BUS1033	15	5BUS0256	English	0	100	0	В
Nonlinear Systems	6PAM1019	15	4PAM0007	English	80	20	0	В

* only relevant to academic year 2015/2016

BSc (Hons) Financial Mathematics

Mode of study Full time/Part time

Entry point Semester A

Level 4 BSc (Hons) Financial Mathematics

			i				
Compulsory Modules Module Title	Module Code	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 1	4PAM0007	30	English	50	50	0	AB
Linear Algebra and Analysis	4PAM1003	30	English	70	30	0	AB
Financial and Actuarial Mathematics	4PAM1017	15	English	0	100	0	А
Basic Statistics	4BUS0075	15	English	60	40	0	А
Applications of Mathematics	4PAM1002	15	English	80	20	0	В
Applications of Computing	4PAM0023	15	English	0	100	0	В
Small Group Tutorial	4PAM1027	0	English	0	100	0	AB



Level 5 BSc (Hons) Financial Mathematics

Compulsory Modules Module Title Mathematical Techniques 2 Professional Skills* Professional Teaching Skills* Portfolio Risk Management Numerical Methods * Exactly one of these two	900 900 900 900 900 900 900 900	Credit Points 15 30 30	4PAM0007 4PAM1017 4PAM0007	Pelivery Delivery Euglish Euglish Euglish	08 08 08 08 08	20 20 100 40 20	0 0 0 % Practical	A A AB AB
Optional Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Number Theory Algebra Real Analysis Differential Equations Mechanics Statistical Modelling	5PAM0030 5PAM1006 5PAM1002 5PAM1001 5PAM1003 5BUS0256	15 15 15 15 15 15	4PAM1003 4PAM1003 4PAM1003 4PAM0007 4PAM0007 4BUS0075	English English English English English English	80 80 80 80 70 60	20 20 20 20 30 40	0 0 0 0 0	A A B B B B
Optional sandwich year					I			I
Optional Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Professional Placement Year Abroad	6PAM0011 6PAM0030	0 0	-	English English	0 0	100 100	0 0	AB AB
Level 6 BSc (Hons) Financia	I Mathematics	. 1				. 1		
Compulsory Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Investigations in Financial Mathematics* Financial Optimisation Mathematics of Derivatives and Option Pricing Project – (Mathematics)*	6PAM1018 6PAM0023 6PAM0009 6PAM0025	15 30 30 30	- 5PAM1004 5PAM0021 5PAM1004	English English English	0 80 80 0	100 20 20 100	0 0 0	A AB AB AB





*Students enrolled on the programme on or before the academic year 2012/13 or returning from placement in 2013/14 and 2014/15 have the option of taking 6PAM0025 instead of 6PAM1018.

Optional Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Linear Optimisation	6PAM0020	30	4PAM0007	English	80	20	0	AB
Waves and Fluids	6PAM0014	30	5PAM1003	English	60	40	0	AB
Complex Analysis	6PAM1002	15	5PAM1002	English	80	20	0	А
Further Algebra	6PAM1017	15	5PAM1006	English	80	20	0	А
Quantum Computing A*	6COM0247	15	4PAM0007	English	0	100	0	А
Linear Modelling	6BUS1031	15	5BUS0256	English	0	100	0	А
Quantum Computing B*	6COM0260	15	6COM0247	English	100	0	0	В
Space Dynamics	6PAM0027	15	4PAM0023	English	0	100	0	В
Multivariate Statistics	6BUS1033	15	5BUS0256	English	0	100	0	В
Nonlinear Systems	6PAM1019	15	4PAM0007	English	80	20	0	В
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* only relevant to academic year 2015-2016

Progression to level 5 requires a minimum of 90 credits. The maximum study rate in such an instance would be 150 credits and students would be expected to remedy any failed modules from level 4 in the first instance.

Progression to non-honours level 5 with 75 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits and students would be expected to remedy any failed modules from level 4 in the first instance

Progression to level 6 requires 210 credits. The maximum study rate in such an instance would be 150 credits and students would be expected to remedy any failed modules from level 5 in the first instance.

Progression to non-honours level 6 with 180 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits and students would be expected to remedy any failed modules from level 5 in the first instance

The award of an Honours degree in Mathematics requires 360 credit points passed with a minimum of at least 120 at level 6 including 6PAM1005 Investigation in Mathematics and 6PAM1002 Complex Analysis

The award of an Honours degree in Financial Mathematics requires 360 credit points passed with a minimum of at least 120 at level 6 including 6PAM0009 Mathematics of Derivatives and Option Pricing.

Honours classification

The University has approved structure and assessment regulations common to all programmes. Full details are provided in <u>UPR AS14</u>, Section D.



Table 1b Final and interim awards available

The programme provides the following final and interim awards:

		Available at end of
Award	Minimum requirements	Level
University Certificate	45 credit points at level 4	4
Certificate of Higher Education	120 credit points at level 4	4, 5
University Diploma	180 credit points including at least 60 at level 5	5, 6
Diploma of Higher Education Mathematics or Financial Mathematics	240 credit points including at least 120 at level 5	5, 6
BSc	300 credit points including 180 at level 6/5 of which 60 must be at level 6	6
BSc Mathematics (Sandwich) or Financial Mathematics(Sandwich)	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Minimum of a 36 week approved and supervised placement plus have must perform satisfactorily as assessed by the Professional Training Certification Panel.	6
BSc Mathematics with a Year Abroad or Financial Mathematics with a Year Abroad	300 credit points including 180 at level 6/5 of which 60 must be at level 6. With one academic year of study at an approved institution in Europe or world-wide and must perform satisfactorily as assessed by the Professional Training Certification Panel.	6
BSc (Hons)	360 credit points including 240 at level 6/5 of which 120 must be at level 6	6
BSc (Hons) Mathematics (Sandwich) or Financial Mathematics (Sandwich)	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Minimum of a 36 week approved and supervised placement plus have must perform satisfactorily as assessed by the Professional Training Certification Panel.	6
BSc (Hons) Mathematics with a Year Abroad or Financial Mathematics with a Year Abroad	360 credit points including 240 at level 6/5 of which 120 must be at level 6. With one academic year of study at an approved institution in Europe or world-wide and must perform satisfactorily as assessed by the Professional Training Certification Panel.	6

E. Support for students and their learning

Students are supported by;

- A Programme Tutor to help students understand the programme/award structure.
- A designated Student Administrator.
- Personal Tutors to provide academic and pastoral support.
- Placement Tutors to oversee students on sandwich or undertaking a year abroad.
- Project Tutors to guide students through their final year Project.
- Student representatives on programme committees.
- An induction week at the beginning of each new academic session.
- Overseas Orientation.
- English language support.
- Undergraduate bursaries.
- Module option talks, which provide students with the opportunity to receive information relating to modules on offer for the following academic year.
- Module delivery information given out at the commencement of each module.
- Computing laboratories
- Industrial Training Placements Office.



- StudyNet, a versatile on-line inter-active intranet and learning environment.
- Access to extensive digital and print collections of information resources.
- Attractive modern study environment in Learning Resources Centres.
- A substantial Student Centre that provides advice on issues such as finance, University regulations, legal matters, accommodation, international student support, etc.
- Office of Dean of Students, incorporating Chaplaincy, Counselling and Nursery.
- Medical Centre.
- A Mathematics Drop-in Centre.
- A Disabled Student Co-ordinator.
- An Equal Opportunities Officer.
- The Students' Union.
- Guided student-centred learning through the use of StudyNet.
- A Careers Service for all current students and graduates.

F. Entry requirements

The normal entry requirements for the programme are:

 280 points from minimum of two GCE/VCE A-levels (normally including GCE A-level Mathematics), or one VCE Double Award plus GCE A level Mathematics. All key skills and other tariff points counted.

or

BTEC ND/NC with 2 distinctions and a merit profile across other units, subject to interview;

plus

• GCSE English and Mathematics at grade C or above.

The programme is subject to the University's Principles, Policies, Regulations and Procedures for the Admission of Students to Undergraduate and Taught Postgraduate Programmes and will take account of University policy and guidelines for assessing accredited prior certificated learning (APCL) and accredited prior experiential learning (APEL)

If you wish to receive a copy of the latest Programme Annual Monitoring and Evaluation Report (AMER) and/or the External Examiner's Report for the programme, please email a request to aqo@herts.ac.uk



Section 2

Programme management

Relevant QAA subject benchmarking statements Date of validation/last periodic review Date of production/ last revision of PS Relevant intakes Administrative School

Mathematics, Statistics and Operational Research March 10 June 15 All students entering September 2015 School of Physics, Astronomy and Mathematics

Table 3 Course structure

Course detai	ils					
Course code)	JAC	S			
EIMM		BSc/BSc (Honours) Mathema	atics (Mathematics)	0		
Course Insta	inces					
Instances code	Intake	Stream	Instances Year	Location:	Mode of study	
MAT1S	А	Mathematics	1	Hatfield	Full-time/sandwich	
MAT2S	А	Mathematics	2	Hatfield	Full-time/sandwich	
MAT3F	А	Mathematics	3	Hatfield	Full-time	
MAT3S	А	Mathematics	3	Hatfield	Sandwich Placement/Study Abroad	
MAT4S	А	Mathematics	3	Hatfield	Sandwich	
MMP1P	А	Mathematics	1	Hatfield	Part-time	
MMP2P	А	Mathematics	2	Hatfield	Part-time	
MMP3P	A	Mathematics	3	Hatfield	Part-time	
MMP4P	A	Mathematics	4	Hatfield	Part-time	
MMP5P	A	Mathematics	5	Hatfield	Part-time	
MMP6P	А	Mathematics	6	Hatfield	Part-time	
MU2SNH	А	Mathematics	2	Hatfield	Full-time/sandwich	
MU3FNH	A	Mathematics	3	Hatfield	Full-time	
MU3SNH	А	Mathematics	3	Hatfield	Sandwich Placement/Study Abroad	
MU4SNH	А	Mathematics	4	Hatfield	Sandwich	



Course details	3							
Course code	Course description			JAC	S			
EIMM			BSc/BSc (Honours) Mathematics (Financial Mathematics)				0	
Course Instan	ces							
Instances code	Intake	Stre	am	Instances Year	Locat	tion:	Mode of study	
FM1S	А	Fina	incial Mathematics	1	Hatfie	eld	Full-time/sandwich	
FM2S	А	Fina	incial Mathematics	2	Hatfie	eld	Full-time/sandwich	
FM3F	А	Fina	incial Mathematics	3	Hatfie	eld	Full-time	
FM3S	А	Fina	incial Mathematics	3	Hatfie	eld	Sandwich Placement/Study Abroad	
FM4S	А	Fina	incial Mathematics	4	Hatfie	eld	Sandwich	
FMP1P	А	Fina	incial Mathematics	1	Hatfie	eld	Part-time	
FMP2P	А	Fina	incial Mathematics	2	Hatfie	eld	Part-time	
FMP3P	А	Fina	incial Mathematics	3	Hatfie	eld	Part-time	
FMP4P	А	Financial Mathematics 4 Hatfield		eld	Part-time			
FMP5P	А	Fina	incial Mathematics	5	Hatfie	eld	Part-time	
FMP6P	А	Fina	incial Mathematics	6	Hatfie	eld	Part-time	

The programme is managed by;

- Dean of School;
- Associate Deans of School (AQA and L&T) who have overall responsibility in Physics, Astronomy and Mathematics;
- a Programme Tutor who is responsible for the day-to-day management of the programme;
- an Admissions Tutor with specific responsibility for open days and selection;
- a Placements Tutor to assist with procurement of placements and to advise on placements;
- a designated Administrator to deal with day-to-day administration associated with the programme;
- Module Co-ordinators who are responsible for individual modules;
- A programme committee, the membership of which includes student representatives, academic staff teaching modules, Dean and Associate Dean of School and chaired by the Programme Tutor

Programme-specific assessment regulations

The programme is compliant with the University's generic assessment regulations (Structure and Assessment Regulations for Academic Programmes, <u>UPR AS14</u>) with the exception of those listed below, which have been specifically approved by the University:



Course Code	Course Instance	Award Title	Modules (child instance codes and Title)	Must be included in Award degree algorithm
EIMM	MAT3F,	BSc (Hons)	6PAM1002 Complex Analysis	yes
	MAT4S,	Mathematics	6PAM1005 Investigations in	
	MATP5P,		Mathematics	
	MATP6P			
			-	
Course	Course	Award Title	Modules (child instance	Must be included in
Code	Instance		codes and Title)	Award degree algorithm

Coue	Instance			Awaru uegree aigoritiini
EIMM	FM3F, FM4S,	BSc (Hons)	6PAM0009 Mathematics of	yes
	FMP5P, FMP6P	Financial	Derivatives and Option	
		Mathematics	Pricing	

Further points of clarification and interpretation relevant to this specific programme are given below:

- Progression from one level to the next depends on meeting the pre-requisite requirements of specific chosen modules as detailed in Table 1a to 1d and 1e above.
- To be eligible for any of the above awards a student must attain pass grades in compulsory courses listed in Table 1a to 1d.
- In the case of a Sandwich or Year Abroad award, students must also perform satisfactorily in the professional training year, as assessed by the Placement Tutor.
- The maximum length of time that a student can remain registered on the programme is: 5 years for Full-time, 6 years for Sandwich and 6 years for Part-time.

Other sources of information

- Definitive Module Documents
- Module Guides
- Student Handbook
- A-Z guide
 - http://www.studynet1.herts.ac.uk/ptl/common/support.nsf/support?ReadForm University of Hertfordshire Course website:
- University of Hertfordshire Course w http://www.herts.ac.uk/courses/
- QAA Benchmark Statement website: <u>http://www.qaa.ac.uk/AssuringStandardsAndQuality/subject-guidance/Pages/Subject-benchmark-statements.aspx</u>
- The Framework for Higher Education Qualifications in England, Wales and Northern Ireland, 2008: http://www.qaa.ac.uk/AssuringStandardsAndQuality/Qualifications/Pages/default.aspx
- SEEC Credit Level Descriptors for Further and Higher Education 2010: <u>http://www.seec.org.uk/sites/seec.org.uk/files/SEEC%20Level%20Descriptors%202010.pdf</u>
 External Quality Review report website:
- External Quality Review report website: <u>http://www.qaa.ac.uk/reviews/reports/instReports.asp?ukprn=10007147</u>
- Professional or Statutory Regulatory Body information.
- UNISTATS website: <u>http://www.unistats.com/</u>
- University of Hertfordshire Academic Quality website: (StudyNet → Staff → Department Lists → Academic Quality Office)
- Structure & Assessment Regulations Undergraduate & Taught Postgraduate Programmes, UPR AS14:
 - http://sitem.herts.ac.uk/secreg/upr/AS14.htm
- Learning and Teaching Policy and Graduate Attributes, UPR TL03: <u>http://sitem.herts.ac.uk/secreg/upr/TL03.htm</u>
- Admissions Undergraduate & Taught Postgraduate Students, UPR SA03: <u>http://sitem.herts.ac.uk/secreg/upr/SA03.htm</u>
- Academic Quality, UPR AS17: <u>http://sitem.herts.ac.uk/secreg/upr/AS17.htm</u> Index of UPRs for students:

http://sitem.herts.ac.uk/secreg/upr_azlist_info.htm

Information on Programme and Module External Examiners
 <u>http://www.studynet1.herts.ac.uk/ptl/common/studentcentre.nsf/Teaching+Documents/184A221E5</u>

 <u>EECA6B780257A5C00250BA9?OpenDocument</u>

Other information relevant to the programme

Successful Honours students will be eligible for Graduate Status (GIMA) of the Institute of Mathematics and its Applications, the professional body for Mathematics in the UK.

University policies relevant to the Programme

The University undertakes to use all reasonable endeavors to deliver, assess and administer this programme in accordance with this Programme Specification. At the same time it is recognised that it is in the nature of academic developments that changes, for example to the structure, curriculum, and assessment of a programme may be necessary in order to ensure that the programme remains up to date, in response to issues raised as a result of on-going monitoring and evaluation, and/or in order to conform to new regulatory requirements imposed by this institution, by professional or statutory bodies, or by national or governmental bodies.

The programme operates within the guidelines and policies relating to equal opportunities and environmental issues which may be agreed from time to time by the Board of Governors and/or the Academic Board of the University.

Where the programme is offered in collaboration with another institution these policies and guidelines will normally be those of the partner institution.

The programme operates in accordance with the University's Regulations Governing Studies Involving the Use of Human Subjects (<u>UPR RE01</u>) agreed from time to time by the Academic Board of the University. However, where the programme is offered in collaboration with another institution (for example through a franchise arrangement for all or part of the programme) then specific approval must be obtained from the University for the operation of the programme within ethical guidelines prepared by the partner institution. The partner institution will be responsible for all insurance liability in connection with the observance of ethical guidelines.

Signed

Date 15/6/20153

Stephen Kane Associate Dean of School (Academic Quality Assurance)

If you would like this information in an alternative format please contact: School Administration Manager: Suzanne Locke (s.f.locke@herts.ac.uk)





Table 2: Development of Programme Learning Outcomes in the Constituent Modules

This map identifies where the programme learning outcomes are assessed in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the programme aims (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own learning, personal and professional development as the programme progresses.

			Programme Learning Outcomes (as identified in section 1 and the following page)															
			Knowledge & Understanding									Inte	llectu	ual S	kills		Practical Skills	Transferable Skills
	Module Title	Module Code	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	В3	B4	B5	B6	C1	D1
	Mathematical Techniques 1	4PAM0007	Х												Х			
	Linear Algebra and Analysis	4PAM1003	Х										Х		Х			
4	Applications of Computing	4PAM0023			Х						Х	Х		Х	Х		Х	Х
vel	Basic Statistics	4BUS0075	Х								Х		Х					
Ľ	Applications of Mathematics	4PAM1002	Х								Х		Х					
	Financial and Actuarial Mathematics	4PAM1017				Х		Х		Х		Х						Х
	Small Group Tutorial	4PAM1027	Х	Х							Х		Х					
	Real Analysis	5PAM1002	Х										Х		Х			
	Algebra	5PAM1006	Х										Х		Х			
	Numerical Methods	5PAM1004	Х		Х				Х		Х							
	Portfolio Risk Management	5PAM0021				Х		Х		Х	Х						Х	
S	Statistical Modelling	5BUS0256									Х							
Vel	Number Theory	5PAM0030	Х		Х						Х		Х					
Ľ	Mechanics	5PAM1003	Х								Х		Х					
	Differential Equations	5PAM1001	Х										Х					
	Mathematical Techniques 2	5PAM0012	Х															
	Professional Skills	5PAM0024				Х									Х			Х
	Professional Teaching Skills	5PAM0028				Х									Х			Х
	Professional Placement (Placement Year)	6PAM0011				Х	Х				Х				Х	Х		Х
	Year Abroad	6PAM0030					Х							Х				Х
	Investigations in Mathematics	6PAM1005		Х		Х	Х				Х		Х	Х	Х			
	Further Algebra	6PAM1017	Х	Х									Х					
	Complex Analysis	6PAM1002		Х									Х		Х			
	Quantum Computing A	6COM0247		Х					Х				Х					
	Quantum Computing B	6COM0260		Х					Х				Х					
9	Financial Optimisation	6PAM0023		Х						Х	Х		Х				Х	
s S	Linear Optimisation	6PAM0020		Х							Х		Х					
۲	Boundary Value Problems	6PAM0022		Х					Х				Х					
	Nonlinear Systems	6PAM1019		Х									Х					
	Linear Modelling	6BUS1031			Х			Х			Х		Х		Х			
	Multivariate Statistics	6BUS1033		Х	Х			Х			Х		Х					
	Space Dynamics	6PAM0027		Х	Х	Х					Х		Х					X
	Waves and Fluids	6PAM0014		Х							Х		Х					



BSc (Hons) Financial Mathematics

Table 2: Development of Programme Learning Outcomes in the Constituent Modules

This map identifies where the programme learning outcomes are assessed in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the programme aims (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own learning, personal and professional development as the programme progresses

			Programme Learning Outcomes (as identified in section 1 and the following page)															
			Knowledge & Understanding									Intel	lectu	ual S	kills		Practical Skills	Transferable Skills
	Module Title	Module Code	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	Β4	B5	B6	C1	D1
Level 4	Mathematical Techniques 1	4PAM0007	Х												Х			
	Linear Algebra and Analysis	4PAM1003	Х										Х		Х			
	Applications of Computing	4PAM0023			Х						Х	Х		Х	Х		Х	Х
	Basic Statistics	4BUS0075	Х								Х		Х					
	Applications of Mathematics	4PAM1002	Х								Х		Х					
	Small Group Tutorial	4PAM1027	Х	Х							Х		Х					
	Financial and Actuarial Mathematics	4PAM1017				Х		Х		Х		Х						Х
	Real Analysis	5PAM1002	Х										Х		Х			
	Algebra	5PAM1006	Х										Х		Х			
	Numerical Methods	5PAM1004	Х		Х				Х		Х							
ß	Portfolio Risk Management	5PAM0021				Х		Х		Х	Х						Х	
Ve Ve	Statistical Modelling	5BUS0256									Х							
Le	Number Theory	5PAM0030	Х		Х						Х		Х					
	Mechanics	5PAM1003	Х								Х		Х					
	Differential Equations	5PAM1001	Х										Х					
	Mathematical Techniques 2	5PAM0012	Х															
	Professional Skills	5PAM0024				Х									Х			Х
	Professional Teaching Skills	5PAM0028				Х									Х			Х
	Professional Placement (Placement Year)	6PAM0011				Х	Х				Х				Х	Х		Х
	Year Abroad	6PAM0030					Х							Х				Х
	Complex Analysis	6PAM1002	_	Х									Х		Х			
	Quantum Computing A	6COM0247		Х					Х				Х					
	Quantum Computing B	6COM0260	_	Х					Х				Х					
	Financial Optimisation	6PAM0023		Х						Х	Х		Х				Х	
0	Mathematics of Derivatives and Option Pricing	6PAM0009		Х						Х	Х		Х				Х	
ē	Linear Optimisation	6PAM0020		Х							Х		Х					
è	Nonlinear Systems	6PAM1019		Х									Х					
_	Linear Modelling	6BUS1031			Х			Х			Х		Х		Х			
	Multivariate Statistics	6BUS1033		Х	Х			Х			Х		Х					
	Space Dynamics	6PAM0027		Х	Х	Х					Х		Х					X
	Investigations in Financial Mathematics	6PAM1018		Х	Х					Х	Х		Х	Х	Х			
	Further Algebra	6PAM1017	Х	Х									Х					
	Waves and Fluids	6PAM0014		Х							Х		Х					
	Project - (Mathematics)	6PAM0025		Х		Х	Х				Х		Х	Х	Х			X



Key to Programme Learning Outcomes

Knowledge and Understanding e.g.

- A1. areas of fundamental importance to mathematics and its applications;
- A2. further areas of mathematics and its applications selected by themselves, at a level appropriate to a professional mathematician;
- A3. appropriate ways of using computers to solve problems and to communicate;
- A4. effective ways of communicating results to mathematicians and non-specialists;
- A5. time and resource management in order to meet deadlines;
- A6. the significance of science, technology and economic factors in modern society;
- A7. appropriate ways of developing computer algorithms for solving a variety of mathematical problems and methods of estimating the accuracy of results;
- A8. appropriate ways of building and solving stochastic and deterministic models of financial instruments and interpreting the results.

Practical Skills

C1. use computers to effectively solve relevant models.

Intellectual Skills e.g.

- B1. apply their knowledge and understanding of areas of mathematics and its applications to the solution of problems in a manner appropriate to a professional mathematician;
- B2. use computers to solve problems in an appropriate manner;
- B3. be able to think logically and critically within areas appropriate to a professional mathematician; be able to use creativity and mathematical approaches in practical problem-solving activities;
- B4. learn independently and to continue learning;
- B5. have the capacity to work successfully, both as an individual and as a member of a team, by managing time and resources in order to meet deadlines;
- B6. will have obtained significant practical experience of working in a suitable environment, alongside professionals or others engaged in scientific or commercial work.

Transferable Skills

D1. present results to mathematicians and nonspecialists using technology, verbally and in writing.

/1.7/Main Programme Specification/ January 2014/ AS

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