

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 2019

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

Signature



29 March 2019

A programme specification is a collection of key information about a programme of study (or course). It identifies the aims and learning outcomes of the programme, lists the modules that make up each stage (or year) of the programme, and the teaching, learning and assessment methods used by teaching staff. It also describes the structure of the programme, its progression requirements and any programme-specific regulations. This information is therefore useful to potential students to help them choose the right programme of study, to current students on the programme, and to staff teaching and administering the programme.

Summary of amendments to the programme:

Section	Amendment
All relevant sections	Module 4PAM1044 has been replaced by module 4PAM1070
All relevant sections	Module 5PAM1024 has been replaced by module 5PAM1049
All relevant sections	Module 5PAM1027 has been replaced by module 5PAM1053
All relevant sections	Module 5PAM1048 introduced. Zero credit module introducing a formal personal tutor system at level 5.
All relevant sections	Module 6PAM0014 has been replaced by module 6PAM1053
All relevant sections	Module 6PAM1026 has been replaced by module 6PAM1061
Section D / p.10	Amend module 6PAM1005 to 6PAM1021
Section D / p.10	Amend module 6PAM1002 to 6PAM1020
Section D / p.10	Amend module 6PAM0009 to 6PAM1031

If you have any queries regarding the changes please email AQO@herts.ac.uk

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	University of Hertfordshire
Teaching Institution	University of Hertfordshire
University/partner campuses	College Lane Campus
Programme accredited by	Institute of Mathematics and its Applications
Final Qualification	BSc Honours
All Final Award titles (Qualification and Subject)	BSc (Hons) Mathematics BSc (Hons) Financial Mathematics BSc (Hons) Mathematics with a Year Abroad BSc (Hons) Financial Mathematics with a Year Abroad BSc (Hons) Mathematics (Sandwich) BSc (Hons) Financial Mathematics (Sandwich) BSc (Hons) Mathematics (Sandwich) with a Year Abroad BSc (Hons) Financial Mathematics (Sandwich) with a Year Abroad
FHEQ level of award	6
UCAS code(s)	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 6 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 Canvas and 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 6. 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 take a module that addresses professional issues relevant to a professional career as a mathematician.

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 [UPR TL03](#).

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 realize 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 specialize 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 non-specialists, 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.

Additional aim for the Financial Mathematics named route:

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

In addition, for those opting to take professional training:

- 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.

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 Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014) and relate to the typical student. Additionally, the SEEC Credit Level Descriptors for Further and Higher Education (2016) have been used as a guiding framework for curriculum design.

[Knowledge and Understanding](#) | [Teaching and learning methods](#) | [Assessment strategy](#)

<p>A1- areas of fundamental importance to mathematics and its applications;</p> <p>A2- further areas of mathematics and its applications selected by themselves, at a level appropriate to a professional mathematician;</p> <p>A3- appropriate ways of using computers to solve problems and to communicate;</p> <p>A4- effective ways of communicating results to mathematicians and non-specialists;</p> <p>A5- time and resource management in order to meet deadlines;</p> <p>A6- the significance of science, technology and economic factors in modern society;</p> <p>A7- appropriate ways of developing computer algorithms for solving a variety of mathematical problems and methods of estimating the accuracy of results.</p> <p>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.</p> <p>And in the case of financial mathematics students:</p> <p>A8- appropriate ways of building and solving stochastic models for finance.</p>	<p>Acquisition of knowledge and understanding is through a combination of lectures, tutorials, practical, coursework and project work. Additional support is provided by StudyNet and Canvas, the Mathematics Drop-in Centre, the student proctor and in the case of levels 4 and 5, personal tutors.</p> <p>Throughout, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.</p>	<p>Knowledge and understanding are assessed through a combination of unseen examinations (A1-3, 7- 8), assessed individual in-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).</p>
<p>Intellectual skills</p> <p>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;</p> <p>B2- use computers to solve problems in an appropriate manner;</p> <p>B3- be able to think logically and critically within areas appropriate to a professional mathematician; be able to</p>	<p>Teaching and learning methods</p> <p>Intellectual skills are developed throughout the programme by methods and strategies outlined in section A, above.</p> <p>Throughout, the learner is encouraged to develop intellectual skills further by independent study</p>	<p>Assessment strategy</p> <p>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).</p>

<p>use creativity and mathematical approaches in practical problem-solving activities;</p> <p>B4- learn independently and to continue learning;</p> <p>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.</p> <p>And in the case of sandwich students:</p> <p>B6- will have obtained significant practical experience of working in a suitable environment, alongside professionals or others engaged in scientific or commercial work.</p> <p>And in the case of students studying abroad:</p> <p>B7- will have obtained significant practical experience of studying in a foreign country.</p>		<p>B6 is assessed by written report from the student, written report from the placement organization and the placement tutor's report.</p>
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<u>Practical skills</u>	<u>Teaching and learning methods</u>	<u>Assessment strategy</u>
<p>C1- use computers to effectively solve relevant models.</p>	<p>Practical skills are developed through computer practical classes, associated exercises and coursework assignments.</p> <p>Throughout learners are expected to consolidate their development of practical computing skills by use of personal computers available in the learning resources centre.</p>	<p>Practical skills are assessed through coursework assignments, presentations and the project report.</p>
<u>Transferable skills</u>	<u>Teaching and learning methods</u>	<u>Assessment strategy</u>
<p>D1- present results to mathematicians and non-specialists using technology, verbally and in writing.</p>	<p>Transferable skills are developed through practical classes, presentations, group work, project work, coursework and in the modelling process.</p> <p>Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.</p>	<p>Transferable skills are assessed through coursework, presentations, project work and unseen examinations.</p>

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 BSc Hons Degree in Mathematics.

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 BSc Hons Degree in Financial Mathematics.

In addition there are non-honours degrees (BSc degree) 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.

Erasmus Exchange programme

Erasmus students are permitted to study the course at level 5 and level 6 but their chosen path or modules has to be confirmed by the School.

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 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

Module Title	Module Code	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 1	4PAM1034	30	English	50	50	0	AB
Linear Algebra	4PAM1036	15	English	70	30	0	A
Financial and Actuarial Mathematics	4PAM1030	15	English	0	100	0	A
Basic Statistics	4PAM1054	15	English	60	40	0	A
Numbers and Sets	4PAM1040	15	English	80	20	0	B
Applications of Mathematics	4PAM1042	15	English	0	100	0	B
Computational Modelling	4PAM1070	15	English	0	100	0	B
Small Group Tutorial (Level 4)	4PAM1027	0	English	0	100	0	AB

Level 5 BSc (Hons) Mathematics

Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 2	5PAM1022	15	4PAM1034	English	80	20	0	A
Real Analysis	5PAM1031	15	4PAM1040	English	80	20	0	B
Differential Equations	5PAM1032	15	4PAM1034	English	80	20	0	B
Programming*	5PAM1023	15	4PAM1070	English	0	100	0	A
Professional Teaching Skills*	5PAM1025	15	-	English	0	100	0	A
Career Planning and Development	5PAM1049	0	-	English	0	100	0	A
Small Group Tutorial (Level 5)	5PAM1048	0	-	English	0	100	0	AB

*At least one of these modules

Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Programming	5PAM1023	15	4PAM1070	English	0	100	0	A
Professional Teaching Skills	5PAM1025	15	-	English	0	100	0	A
Algebra	5PAM1028	15	4PAM1040	English	80	20	0	A
Number Theory	5PAM1026	15	4PAM1040	English	70	30	0	A
Motion and Tensors	5PAM1053	15	4PAM1034	English	70	30	0	B
Numerical Methods	5PAM1029	15	4PAM1070	English	80	20	0	B
Financial Markets and Portfolio Theory	5PAM1030	15	4PAM1030	English	60	40	0	AB
Statistical Modelling	5PAM1033	15	4PAM1054	English	60	40	0	B

Optional sandwich year BSc (Hons) Mathematics

Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Professional Placement	6PAM0011	0	-	English	0	100	0	AB
Year Abroad	6PAM0030	0	-	English	0	100	0	AB
Placement with Study Abroad	6PAM1033	0	-	English	0	100	0	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	6PAM1020	15	5PAM1031	English	80	20	0	A
Investigations in Mathematics	6PAM1021	15	-	English	0	100	0	B

Optional Modules (choose 45 credits) Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Partial Differential Equations	6PAM1023	15	5PAM1032	English	80	20	0	A
Linear Optimisation	6PAM1024	15	4PAM1034	English	80	20	0	A
Further Algebra	6PAM1025	15	5PAM1028	English	50	50	0	A
Lagrangian Dynamics	6PAM1061	15	5PAM1022	English	80	20	0	B
Further Numerical Methods	6PAM1027	15	5PAM1029	English	80	20	0	B
Nonlinear Optimisation	6PAM1028	15	5PAM1022 5PAM1029	English	80	20	0	B
Combinatorics	6PAM1029	15	4PAM1040	English	80	20	0	B
Nonlinear Systems	6PAM1030	15	4PAM1034	English	80	20	0	B
Linear Modelling	6PAM1037	15	5PAM1033	English	0	100	0	A
Multivariate Statistics	6PAM1036	15	5PAM1033	English	0	100	0	B
Space Dynamics	6PAM0027	15	4PAM1070	English	0	100	0	B
Geophysical Fluid Dynamics*	6PAM1053	15	5PAM1022	English	60	40	0	B

*This module replaces the 30 credits module Waves and Fluids (6PAM0014). Student re-enrolling will need to pick two 15 credits modules to replace this one.

BSc (Hons) Financial Mathematics

Mode of study Full time/Part time

Entry point Semester A

Level 4 BSc (Hons) Financial Mathematics

Compulsory Modules Module Title	Module Code	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Mathematical Techniques 1	4PAM1034	30	English	50	50	0	AB
Linear Algebra	4PAM1036	15	English	70	30	0	A
Financial and Actuarial Mathematics	4PAM1030	15	English	0	100	0	A
Basic Statistics	4PAM1054	15	English	60	40	0	A
Numbers and Sets	4PAM1040	15	English	80	20	0	B
Applications of Mathematics	4PAM1042	15	English	0	100	0	B
Computational Modelling	4PAM1070	15	English	0	100	0	B
Small Group Tutorial (Level 4)	4PAM1027	0	English	0	100	0	AB

Level 5 BSc (Hons) Financial Mathematics

Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules								
Mathematical Techniques 2	5PAM1022	15	4PAM1034	English	80	20	0	A
Numerical Methods	5PAM1029	15	4PAM1070	English	80	20	0	B
Financial Markets and Portfolio Theory	5PAM1030	30	4PAM1034	English	60	40	0	AB
Statistical Modelling	5PAM1033	15	4PAM1030	English	60	40	0	B
Programming	5PAM1023	15	4PAM1070	English	0	100	0	A
Career Planning and Development	5PAM1049	0	-	English	0	100	0	A
Small Group Tutorial (Level 5)	5PAM1048	0	-	English	0	100	0	AB

Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Optional Modules (choose 45 credits)								
Professional Teaching Skills	5PAM1025	15	-	English	0	100	0	A
Algebra	5PAM1028	15	4PAM1040	English	80	20	0	A
Number Theory	5PAM1026	15	4PAM1040	English	70	30	0	A
Motion and Tensors	5PAM1053	15	4PAM1034	English	70	30	0	B
Differential Equations	5PAM1032	15	4PAM1034	English	80	20	0	B
Real Analysis	5PAM1031	15	4PAM1040	English	80	20	0	B

Optional sandwich year BSc (Hons) Financial Mathematics

Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Optional Modules (choose 45 credits)								
Professional Placement	6PAM0011	0	-	English	0	100	0	AB
Year Abroad	6PAM0030	0	-	English	0	100	0	AB
Placement with Study Abroad	6PAM1033	0	-	English	0	100	0	AB

Level 6 BSc (Hons) Financial Mathematics

Compulsory Modules Module Title	Module Code	Credit Points	Pre-req	Language of Delivery	% Examination	% Coursework	% Practical	Semesters
Financial Mathematics & Derivative Pricing	6PAM1031	30	5PAM1030	English	60	40	0	AB
Investigations in Financial Mathematics	6PAM1022	15	-	English	0	100	0	A
Nonlinear Optimisation	6PAM1028	15	5PAM1022 5PAM1029	English	80	20	0	B

Optional Modules (choose 45 credits) Module Titles	Module Code	Credit Points	Pre-req	Language of Delivery	% examination	% coursework	% Practical	Semesters
Partial Differential Equations	6PAM1023	15	5PAM1032	English	80	20	0	A
Linear Optimisation	6PAM1024	15	4PAM1034	English	80	20	0	A
Further Algebra	6PAM1025	15	5PAM1028	English	50	50	0	A
Lagrangian Dynamics	6PAM1061	15	5PAM1022	English	80	20	0	B
Further Numerical Methods	6PAM1027	15	5PAM1029	English	80	20	0	B
Complex Analysis	6PAM1020	15	5PAM1031	English	80	20	0	A
Combinatorics	6PAM1029	15	4PAM1040	English	80	20	0	B
Linear Modelling	6PAM1037	15	5PAM1033	English	0	100	0	A
Multivariate Statistics	6PAM1036	15	5PAM1033	English	0	100	0	B
Nonlinear Systems	6PAM1030	15	4PAM1034	English	80	20	0	B
Space Dynamics	6PAM0027	15	4PAM1070	English	0	100	0	B

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 6PAM1021 Investigation in Mathematics and 6PAM1020 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 6PAM1031 Financial Mathematics & Derivative Pricing

Honours classification

The University has approved structure and assessment regulations common to all programmes. Full details are provided in [UPR AS14](#), Section D.

Table 1b Final and interim awards available

The programme provides the following final and interim awards:

Final Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
BSc (Hons)	Mathematics	360 credit points including 240 at level 6/5 of which 120 must be at level 6	6	All programme learning outcomes (see Table 2)
BSc (Hons)	Financial Mathematics	360 credit points including 240 at level 6/5 of which 120 must be at level 6	6	All programme learning outcomes (see Table 2)
BSc (Hons)	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	All programme learning outcomes (see Table 2)
BSc (Hons)	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	All programme learning outcomes (see Table 2)
BSc (Hons)	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	All programme learning outcomes (see Table 2)
BSc (Hons)	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	All programme learning outcomes (see Table 2)
BSc (Hons)	Mathematics (Sandwich) with Study Abroad	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Minimum of an 18 week	6	All programme learning outcomes (see Table 2)

		approved and supervised placement plus half of 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.		
BSc (Hons)	Financial Mathematics (Sandwich) with Study Abroad	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Minimum of an 18 week approved and supervised placement plus half of 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	All programme learning outcomes (see Table 2)

Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
University Certificate		45 credit points at level 4	4	See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
Certificate of Higher Education		120 credit points at level 4	4, 5	See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
Diploma of Higher Education	Mathematics	240 credit points including at least 120 at level 5	5, 6	A1, A3, A4, B1, B2, B6, C1, C5, D1, D2, D3, D6
Diploma of Higher Education	Financial Mathematics	240 credit points including at least 120 at level 5	5, 6	A1, A3, A4, B1, B2, B6, C1, C5, D1, D2, D3, D6
BSc	Mathematics	300 credit points including 180 at level 6/5 of which 60 must be at level 6	6	A1, A2, A4, A6, B1, B2, B3, B5, C1, D1
BSc	Financial Mathematics	300 credit points including 180 at level 6/5 of which 60 must be at level 6	6	A1, A2, A4, A6, A8, B1, B2, B3, B5, C1, D1
BSc	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	A1, A2, A4, A5, A6, B1, B2, B3, B5, B6, C1, D1
BSc	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	6	A1, A2, A4, A5, A6, A8, B1, B2, B3, B5, B6, C1, D1

		satisfactorily as assessed by the Professional Training Certification Panel.		
BSc	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	A1, A2, A4, A5, A6, B1, B2, B3, B5, B7, C1, D1
BSc	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	A1, A2, A4, A5, A6, A8, B1, B2, B3, B5, B7, C1, D1
BSc	Mathematics (Sandwich) with Study Abroad	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Minimum of an 18 week approved and supervised placement plus half of 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	A1, A2, A4, A5, A6, B1, B2, B3, B5, B6, B7, C1, D1
BSc	Financial Mathematics (Sandwich) with Study Abroad	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Minimum of an 18 week approved and supervised placement plus half of 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	A1, A2, A4, A5, A6, A8, B1, B2, B3, B5, B6, B7, C1, D1

Programme-specific assessment regulations

The programme complies with the University's academic regulations (in particular, [UPR AS11](#), [UPR AS12/UPR AS13](#) (*delete as applicable*) and [UPR AS14](#)) with the exception of those listed below, which have been approved by the University:

Course Code	Course Instance	Award Title	Modules (child instance codes & title)	Must be included in classification algorithm?
EIMM	MAT3F MAT4S MMP5P MMP6P	BSc (Hons) Mathematics	6PAM1020 Complex Analysis 6PAM1021 Investigations in Mathematics	Yes
EIMM	FM3F FM4S FMP5P FMP6P	BSc (Hons) Financial Mathematics	6PAM1031 Financial Mathematics and Derivative Pricing	Yes

Further programme-specific regulations (requiring School-level approval) 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.
- Attendance at all scheduled learning and teaching sessions is required on this programme. To pass a module, a student must have attended 75% of the learning and teaching sessions at which attendance is required.
If attendance falls below 75% and the student has not obtained at least 30% in either coursework or examination, the student will normally be deemed to have failed the module at the first attempt and will not be permitted to undertake referred assessment in the module.
- Students who have a disability which might impact on their attendance should consult with their Disability Advisor and Programme Leader.
- Part time students decide their study paths by discussion with the Programme Leader.

And in the case of sandwich placement students:

- Students must normally satisfactorily complete all requirements of progression to the level 6 honours programme. The placement must be approved by the relevant Placement Tutor before the student is permitted to progress to the sandwich year.
- Placements will normally be a minimum of 36 weeks (including employer's statutory holidays). This will normally be in one establishment but may be split into two consecutive half-yearly placements in different establishments. Assessment of the placement year will be considered at a meeting of the appropriate Module Board of Examiners.
- Satisfactory completion of the sandwich placement is mandatory for a sandwich award; however the assessment has a credit point rating of zero and will not contribute to the honours classification. Assessment will take into account initiative and effort and will include a substantial written report.

E. Management of Programme & Support for student learning.

Management

The programme is managed and administered through:

- The Mathematics Programme Leader, who has overall responsibility for the effective operationalization of the programme and ensuring that academic standards are maintained and an effective student learning experience is provided. The Programme Leader also has overall responsibility for the quality assurance and enhancement of the programme providing advice and guidance to programme staff as appropriate.
- Three Year Tutors, one per level, as a first point of contact for students needing academic/pastoral support/advice.
- An Admissions Tutor with specific responsibility for open days and selection.
- 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 committee.
- Dean of School.
- Associate Dean (AQA).
- Associate Dean (L&T).
- A programme committee, the membership of which includes; Physics and Astrophysics Programme Leader, Mathematics Programme Leader, 4 Physics and Astrophysics Year Tutors (one each for Levels 4, 5, 6, and 7), 3 Mathematics Year Tutors (one each for Levels 4, 5, and 6), Dean of School, Associate Dean of School (AQA), Associate Dean of School (L&T), student representatives, academic staff teaching modules. This Programme Committee is jointly chaired by the Physics and Astrophysics Programme Leader and the Mathematics Programme Leader.

Support

Students are supported by:

- An induction week at the beginning of each new academic session.
- Overseas Orientation.
- English language support.
- 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 and Canvas, providing 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 Support Service.
- A Disabled Student Coordinator.
- An Equality Office.
- The Students' Union.
- Guided student-centred learning through the use of StudyNet and Canvas.
- Careers Enterprise and Employment Services.

F. Other sources of information

In addition to this Programme Specification, the University publishes guidance to registered students on the programme and its constituent modules:

- A Programme (or Student) Handbook;
- A Definitive Module Document (DMD) for each constituent module;
- A Module Guide for each constituent module.

The [Ask Herts](#) website provides information on a wide range of resources and services available at the University of Hertfordshire including academic support, accommodation, fees, funding, visas, wellbeing services and student societies.

As a condition of registration, all students of the University of Hertfordshire are required to comply with the University's rules, regulations and procedures. These are published in a series of documents called 'University Policies and Regulations' (UPRs). The University requires that all students consult these documents which are available on-line, on the UPR web site, at: <http://www.herts.ac.uk/secreg/upr/>. In particular, [UPR SA07](#) 'Regulations and Advice for Students' Particular Attention - Index' provides information on the UPRs that contain the academic regulations of particular relevance for undergraduate and taught postgraduate students.

In accordance with section 4(5) of the Higher Education and Research Act 2017 (HERA), the UK Office for Students (OfS) has registered the University of Hertfordshire in the register of English higher education providers. The Register can be viewed at: <https://www.officeforstudents.org.uk/advice-and-guidance/the-register/the-ofs-register/>. Furthermore, the OfS has judged that the University of Hertfordshire delivers consistently outstanding teaching, learning and outcomes for its students. It is of the highest quality found in the UK. Consequently, the University received a Gold award in the 2018 Teaching Excellence and Student Outcomes (TEF) exercise. This award was made in June 2018 and is valid for up to 3 years. The TEF panel's report and conclusions can be accessed at: <https://www.officeforstudents.org.uk/advice-and-guidance/teaching/tef-outcomes/#/provider/10007147>

G. Entry requirements

The normal entry requirements for the programme are:

72-168 UCAS points

To include A Level Mathematics at Grade C. Access to HE Diploma with 60 credits overall, 45 of these credits must be at Level 3. 30 of the Level 3 credits must be in Maths. IB must include Maths at HL grade 4 or above.

GCSE English and Maths at grade 4 or above.

The module 5PAM1025 may require satisfactory health clearance and DBS (Disclosure and Barring Service) clearance. Similar clearance may also be required for 6PAM0011, 6PAM0030, and 6PAM1033.

All international students are required to demonstrate an English Language capability of IELTS 6 [or TOEFL 550 (79 IBT)].

The programme is subject to the University's Principles, Policies and Regulations for the Admission of Students to Undergraduate and Taught Postgraduate Programmes (in [UPR SA03](#)), along with associated procedures. These will take account of University policy and guidelines for assessing accredited prior certificated learning (APCL) and accredited prior experiential learning (APEL).

For current entry tariff point requirements, please refer to the relevant page for the Course on the University website or on the online prospectus.

If you would like this information in an alternative format please contact: Maria Aristidou (m.aristidou@herts.ac.uk)

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

BSc (Hons) Mathematics

Table 2: Development of Intended 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								Intellectual Skills								Practical Skills								Transferable Skills							
Module Title	Module Code	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6	D7	D8
Level 4	Mathematical Techniques 1	4PAM1034	x											x																			
	Linear Algebra	4PAM1036	x									x		x																			
	Financial and Actuarial Mathematics	4PAM1030				x		x		x			x														x						
	Numbers and Sets	4PAM1040	x										x		x																		
	Applications of Mathematics	4PAM1042				x	x	x			x	x			x												x						
	Computational Modelling	4PAM1070			x						x	x		x	x					x													
	Basic Statistics	4PAM1054	x								x		x																				
Level 5	Small Group Tutorial (Level 4)	4PAM1027	x	x						x									x							x							
	Real Analysis	5PAM1031	x									x		x												x							
	Algebra	5PAM1028	x										x		x																		
	Financial Markets and Portfolio Theory	5PAM1030				x		x		x	x															x							
	Numerical Methods	5PAM1029	x		x				x		x															x							
	Statistical Modelling	5PAM1033									x															x							
	Number Theory	5PAM1026	x		x						x		x													x							
	Motion and Tensors	5PAM1053	x								x		x																				
	Differential Equations	5PAM1032	x										x																				
	Mathematical Techniques 2	5PAM1022	x																														
	Small Group Tutorial (Level 5)	5PAM1048	x	x							x									x							x						
	Professional Teaching Skills	5PAM1025				x									x												x						
	Career Planning and Development	5PAM1049				x		x							x																		
	Programming	5PAM1023			x		x		x																		x						
S&P	Professional Placement	6PAM0011				x	x			x				x	x											x							
	Year Abroad	6PAM0030				x							x				x																

Level 6	Placement with Study Abroad	6PAM1033			×	×							×			×	×																	
	Complex Analysis	6PAM1020		×									×		×																			
	Investigations in Mathematics	6PAM1021		×		×	×					×	×	×	×																	×		
	Space Dynamics	6PAM0027		×		×	×						×	×																		×		
	Partial Differential Equations	6PAM1023		×										×																				
	Linear Optimisation	6PAM1024		×										×	×																			
	Further Algebra	6PAM1025		×	×										×																			
	Lagrangian Dynamics	6PAM1061		×										×	×																			
	Further Numerical Methods	6PAM1027		×			×							×	×																			
	Nonlinear Optimisation	6PAM1028		×		×								×	×																		×	
	Combinatorics	6PAM1029		×																														
	Nonlinear Systems	6PAM1030		×	×										×																			
	Linear Modelling	6PAM1037		×	×		×							×	×																			×
Multivariate Statistics	6PAM1036		×	×		×							×	×																			×	
Geophysical Fluid Dynamics	6PAM1053		×											×	×																			

BSc (Hons) Financial Mathematics

Table 2: Development of Intended 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								Intellectual Skills								Practical Skills								Transferable Skills							
		A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6	D7	D8
Module Title	Module Code																																
Level 4	Mathematical Techniques 1	4PAM1034	x											x																			
	Linear Algebra	4PAM1036	x									x	x																				
	Financial and Actuarial Mathematics	4PAM1030				x		x		x		x															x						
	Numbers and sets	4PAM1040	x									x	x																				
	Applications of Mathematics	4PAM1042				x	x	x			x	x		x													x						
	Computational Modelling	4PAM1070			x						x	x		x	x					x													
	Basic Statistics	4PAM1054	x								x		x																				
Level 5	Small Group Tutorial (Level 4)	4PAM1027	x	x							x								x							x							
	Real Analysis	5PAM1031	x									x	x													x							
	Algebra	5PAM1028	x										x	x																			
	Financial Markets and Portfolio Theory	5PAM1030				x		x		x	x															x							
	Numerical Methods	5PAM1029	x		x				x		x																x						
	Statistical Modelling	5PAM1033									x																x						
	Number Theory	5PAM1026	x		x						x		x													x							
	Motion and Tensors	5PAM1053	x								x		x																				
	Differential Equations	5PAM1032	x										x																				
	Mathematical Techniques 2	5PAM1022	x																														
	Career Planning and Development	5PAM1049				x		x							x																		
	Small Group Tutorial (Level 5)	5PAM1048	x	x								x															x						
	Professional Teaching Skills	5PAM1025				x									x												x						
Programming	5PAM1023			x		x		x																			x						
S&P	Professional Placement	6PAM0011				x	x				x			x	x												x						
	Year Abroad	6PAM0030					x							x																			

KEY TO PROGRAMME LEARNING OUTCOMES

Knowledge and Understanding

- 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.

Intellectual Skills

- 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;
- B7. will have obtained significant practical experience of studying in a foreign country.

Practical Skills

- C1. use computers to effectively solve relevant models.

Transferable Skills

- D1. present results to mathematicians and non-specialists using technology, verbally and in writing.

Section 2

Programme management

Relevant QAA subject benchmarking statements	Mathematics, Statistics and Operational Research
Type of programme	Undergraduate
Date of validation/last periodic review	February 16
Date of production/ last revision of PS	March 2019
Relevant to level/cohort	All students entering September 2019
Administrative School	School of Physics, Astronomy and Mathematics

Table 3 Course structure

Course details		
Course code	Course description	JACS / HECoS
EIMM	BSc/BSc (Hons) Mathematics (Mathematics)	G100 / 100065

Course details		
Course code	Course description	JACS / HECoS
EIMM	BSc/BSc (Hons) Mathematics (Financial Mathematics)	G100 / 100401