

Title of Programme: BSc (Hons) Mathematics

Programme Code: EIMM

Programme Specification

This programme specification is relevant to students entering:
01 September 2023

Associate Dean of School (Academic Quality Assurance):
Mariana Lilley



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

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).

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 (IMA)
Final Qualification	BSc (Hons)
All Final Award titles	BSc (Hons) Mathematics
(Qualification and Subject)	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 with Study Abroad and Employment Experience
	BSc (Hons) Financial Mathematics with Study Abroad and Employment Experience
FHEQ level of award	6

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 mathematics and financial mathematics degrees, allowing students to study a range of mathematical topics, and equipping them with analytical, problem-solving and numeracy skills. Mathematics and financial mathematics graduates have excellent career prospects in diverse areas including data-analytics and data-science, modelling and forecasting, consultancy, banking, accountancy, and project management.

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.

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 must take a module that addresses professional issues relevant to a professional career as a mathematician.

B. Educational Aims of the Programme

Diversity and Inclusion

Our programmes are purposefully designed to enable all students to engage meaningfully with the curriculum by being accessible and representative. We will support students to shape their learning experience, removing barriers and enabling them to succeed. The curriculum explicitly includes multiple and representative perspectives, valuing collective identities and individual diversity. Learning, teaching and assessment activities help students to understand how they can enhance outcomes both for themselves and for others. All students belong to a learning community, and during their studies we really want to hear their voices, encourage them to listen to others, and express themselves.

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.

Graduate Attributes

Our graduates will be capable and professional, creative and enterprising, and will build their social and global awareness throughout. In addition to their subject expertise and proficiency, as a University of Hertfordshire graduate, they will be:

- Professionally focused
- Globally minded
- Sustainability driven
- Digitally capable and confident
- Inclusive and collaborative
- Evidence based and ethical

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 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 (2021) have been used as a guiding framework for curriculum design.

Knowledge and Understanding	Teaching and learning methods	Assessment strategy
<p>A1. Demonstrate knowledge and understanding of areas of fundamental importance to mathematics and its applications.</p> <p>A2. Demonstrate knowledge and understanding of further areas of mathematics and its applications selected by themselves, at a level appropriate to a professional mathematician.</p> <p>A3. Demonstrate knowledge and understanding of appropriate ways of using computers to solve problems and to communicate.</p> <p>A4. Demonstrate knowledge and understanding of effective ways of communicating results to mathematicians and non-specialists.</p> <p>A5. Demonstrate knowledge and understanding of time and resource management to meet deadlines.</p> <p>A6. Demonstrate knowledge and understanding of the significance</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 Support Service, 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/learned 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), class tests (A1-2), presentations (A2, 4-6) and a final year project report (A2-5, 7-8).</p>

<p>of science, technology, and economic factors in modern society.</p> <p>A7. Demonstrate knowledge and understanding of 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. Demonstrate knowledge and understanding of financial products, financial markets, and current issues in finance.</p>		
Intellectual skills	Teaching and learning methods	Assessment strategy
<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 use creativity and mathematical approaches in practical problem-solving activities.</p> <p>B4. Learn independently and to continue learning.</p> <p>B5. Demonstrate the capacity to work successfully, both as an individual and as a member of a team, by managing time and resources to meet deadlines.</p> <p>And in the case of financial mathematics students:</p>	<p>Intellectual skills are developed through 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>Intellectual skills are assessed through a combination of unseen examinations (B1-3), assessed individual and group in-course assignments (B1-6), workbooks (B1-3), class tests (B1, 3-6), presentations (B1-6) and a final year project report (B1-6).</p>

B6. Demonstrate appropriate ways of building and solving stochastic models for finance.		
Practical skills	Teaching and learning methods	Assessment strategy
C1. Use computers to effectively solve relevant models.	<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>	Practical skills are assessed through coursework assignments, presentations, and the project report.
Transferable skills	Teaching and learning methods	Assessment strategy
D1. Present results to mathematicians and non-specialists using technology, verbally and in writing.	<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>	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 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

Accreditation by the Institute of Mathematics and its Applications (IMA) has been granted to the following awards:

- 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 with Study Abroad and Employment Experience
BSc (Hons) Financial Mathematics with Study Abroad and Employment Experience

The above awards will meet the educational requirements of the Chartered Mathematician designation when followed by subsequent training and experience in employment to obtain equivalent competences to those specified by the Quality Assurance Agency (QAA) for taught Masters degrees.

The accreditation granted is valid for undergraduates commencing the undergraduate degree courses listed above in the academic years 2020/21 to 2027/28 for the first two awards listed above, and 2019/20 to 2027/28 for the remainder.

Work-Based Learning, including Sandwich Programmes

An award in the sandwich mode is made if at least 30 weeks of approved, supervised work experience is undertaken in addition to the period required for the full-time award. This is defined in UPR AS11.

The UH Careers and Employment Service and the Department Employability Advisor provide help and support with obtaining a placement, including advising the students of placement opportunities and helping the student with their CV, cover letters, application forms and interviews or assessments. The Careers and Employment Service will also inform and guide students on the procedures and process of undertaking a placement and help them to complete the necessary documentation. Each placement student will be allocated a Visiting Tutor, a member of staff, who will visit the student at their placement (or arrange an online visit) twice during the year, once in Semester A and once in Semester B, to monitor and review their progress. The Visiting Tutor will also give help and advice to complete the student's Placement report. If the student has any problems or questions during the year, they can contact the Careers and Employment Service, the Placement Tutor, or their Visiting Tutor to request help and support.

Student Exchange programme

Incoming Exchange

N/A

Study Abroad

An award in the Year Abroad mode is made if a student has spent (and engaged with) a full academic year at an over-seas university, in addition to the period required for full-time award. The University offers student exchange with over 150 partner universities around the world, including the USA, Canada, Asia, Africa, Australia, South America, and in Europe.

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

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Title						
Introduction to Mathematical Reasoning	4PAM2004	15	0	100	0	A
Mathematical Methods	4PAM2006	15	30	70	0	A
Probability and Statistics	4PAM2008	15	0	100	0	A
Numbers and Sets	4PAM2010	15	60	40	0	A
Financial and Actuarial Mathematics	4PAM2012	15	0	100	0	B
Linear Algebra	4PAM2014	15	60	40	0	B
Applications of Calculus	4PAM2016	15	30	70	0	B
Computational Modelling	4PAM2018	15	0	100	0	B
Small Group Tutorials (Level 4)	4PAM2020	0	0	100	0	AB

Level 5

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Title						
Multivariable Calculus	5PAM2012	15	60	40	0	A
Algebra	5PAM2013	15	60	40	0	A
Real Analysis	5PAM2014	15	60	40	0	B
Differential Equations	5PAM2015	15	60	40	0	B
Career Planning and Development	5PAM2026	0	0	100	0	A
Small Group Tutorials (Level 5)	5PAM2027	0	0	100	0	AB

Select TWO 15-credit modules in Semester A, and TWO 15-credit modules in Semester B.

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Programming	5PAM2016	15	0	100	0	A
Professional Teaching Skills	5PAM2017	15	0	100	0	A
Motion and Tensors	5PAM2018	15	60	40	0	A
Number Theory	5PAM2019	15	60	40	0	A

Investment Portfolios	5PAM2020	15	50	50	0	A
Numerical Methods	5PAM2022	15	60	40	0	B
Game Theory	5PAM2023	15	60	40	0	B
Statistical Modelling	5PAM2024	15	40	60	0	B
Quantum Mechanics	5PAM2025	15	40	60	0	B

* Optional modules will not run if the number of registered students is fewer than 10.

Optional Sandwich or Study Abroad

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Professional Placement	6PAM2023	0	0	100	0	AB
Year Abroad	6PAM2024	0	0	100	0	AB
Placement with Study Abroad	6PAM2025	0	0	100	0	AB

Level 6

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Titles						
Complex Analysis	6PAM2011	15	60	40	0	0
Mathematical Project and Investigative Skills	6PAM2010	30	0	100	0	0

Select TWO 15-credit modules in Semester A, and THREE 15-credit modules in Semester B.

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Partial Differential Equations	6PAM2012	15	60	40	0	A
Linear Optimisation	6PAM2013	15	60	40	0	A
Groups and Representations	6PAM2009	15	60	40	0	A
Linear Modelling	6PAM2014	15	0	100	0	A
Lagrangian Dynamics	6PAM2015	15	60	40	0	A
Combinatorics	6PAM2016	15	60	40	0	B
Nonlinear Systems	6PAM2017	15	60	40	0	B
Nonlinear Optimisation	6PAM2018	15	60	40	0	B
Further Numerical Methods	6PAM2019	15	60	40	0	B
Multivariate Statistics	6PAM2020	15	0	100	0	B

Space Dynamics	6PAM2021	15	0	100	0	B
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* Optional modules will not run if the number of registered students is fewer than 10.

BSc (Hons) Financial Mathematics

Mode of study Full time/Part time

Entry point Semester A

Level 4

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Titles						
Introduction to Mathematical Reasoning	4PAM2004	15	0	100	0	A
Mathematical Methods	4PAM2006	15	30	70	0	A
Probability and Statistics	4PAM2008	15	0	100	0	A
Numbers and Sets	4PAM2010	15	60	40	0	A
Financial and Actuarial Mathematics	4PAM2012	15	0	100	0	B
Linear Algebra	4PAM2014	15	60	40	0	B
Applications of Calculus	4PAM2016	15	30	70	0	B
Computational Modelling	4PAM2018	15	0	100	0	B
Small Group Tutorials (Level 4)	4PAM2020	0	0	100	0	AB

Level 5

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Titles						
Multivariable Calculus	5PAM2012	15	60	40	0	A
Investment Portfolios	5PAM2020	15	50	50	0	A
Programming	5PAM2016	15	0	100	0	A
Financial Markets	5PAM2021	15	50	50	0	B
Statistical Modelling	5PAM2024	15	40	60	0	B
Numerical Methods	5PAM2022	15	60	40	0	B
Career Planning and Development	5PAM2026	0	0	100	0	A
Small Group Tutorials (Level 5)	5PAM2027	0	0	100	0	AB

Select ONE 15-credit module in Semester A, ONE 15-credit module in Semester B.

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Algebra	5PAM2013	15	60	40	0	A
Professional Teaching Skills	5PAM2017	15	0	100	0	A
Motion and Tensors	5PAM2018	15	60	40	0	A
Number Theory	5PAM2019	15	60	40	0	A
Real Analysis	5PAM2014	15	60	40	0	B
Differential Equations	5PAM2015	15	60	40	0	B
Game Theory	5PAM2023	15	60	40	0	B
Quantum Mechanics	5PAM2025	15	40	60	0	B

* Optional modules will not run if the number of registered students is fewer than 10.

Optional Sandwich or Study Abroad

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Professional Placement	6PAM2023	0	0	100	0	AB
Year Abroad	6PAM2024	0	0	100	0	AB
Placement with Study Abroad	6PAM2025	0	0	100	0	AB

Level 6

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Compulsory Modules						
Module Titles						
Financial Mathematics & Derivative Pricing	6PAM2022	30	0	100	0	AB
Mathematical Project and Investigative Skills	6PAM2010	30	0	100	0	AB

Select TWO 15-credit modules in Semester A, and TWO 15-credit modules in Semester B.

	Module Code	Credit Points	% Examination	% Coursework	% Practical	Semesters
Optional Modules*						
Module Titles						
Partial Differential Equations	6PAM2012	15	60	40	0	A
Linear Optimisation	6PAM2013	15	60	40	0	A

Groups and Representations	6PAM2009	15	60	40	0	A
Linear Modelling	6PAM2014	15	0	100	0	A
Lagrangian Dynamics	6PAM2015	15	60	40	0	A
Complex Analysis	6PAM2011	15	60	40	0	A
Combinatorics	6PAM2016	15	60	40	0	B
Nonlinear Systems	6PAM2017	15	60	40	0	B
Nonlinear Optimisation	6PAM2018	15	60	40	0	B
Further Numerical Methods	6PAM2019	15	60	40	0	B
Multivariate Statistics	6PAM2020	15	0	100	0	B
Space Dynamics	6PAM2021	15	0	100	0	B

* Optional modules will not run if the number of registered students is fewer than 10.

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 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 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.

The award of an Honours degree in Financial Mathematics requires 360 credit points passed with a minimum of at least 120 at level 6.

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	A1-A7, B1-B5, C1, D1
BSc (Hons)	Financial Mathematics	360 credit points including 240 at level 6/5 of which 120 must be at level 6.	6	A1-A8, B1-B6, C1, D1

BSc (Hons)	Mathematics (Sandwich)	360 credit points including 240 at level 6/5 of which 120 must be at level 6, plus being awarded a Pass for Professional Placement 6PAM2023.	6	A1-A7, B1-B5, C1, D1
BSc (Hons)	Financial Mathematics (Sandwich)	360 credit points including 240 at level 6/5 of which 120 must be at level 6, plus being awarded a Pass for Professional Placement 6PAM2023.	6	A1-A8, B1-B6, C1, D1
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	A1-A7, B1-B5, C1, D1
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	A1-A8, B1-B6, C1, D1
BSc (Hons)	Mathematics with Study Abroad and Employment Experience	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Minimum of a 12-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-A7, B1-B5, C1, D1
BSc (Hons)	Financial Mathematics with Study Abroad and Employment Experience	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Minimum of a 12-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-A8, B1-B6, C1, D1

Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
University Certificate	Untitled	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	Untitled	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-A7, B1, B2, B4, B5, C1, D1

Diploma of Higher Education	Financial Mathematics	240 credit points including at least 120 at level 5	5, 6	A1, A3-A7, B1, B2, B4-B6, C1, D1
BSc	Mathematics	300 credit points including 180 at level 6/5 of which 60 must be at level 6	6	A1-A7, B1-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-A8, B1-B6, C1, D1
BSc	Mathematics (Sandwich)	300 credit points including 180 at level 6/5 of which 60 must be at level 6, and include a Pass for Professional Placement 6PAM2023.	6	A1-A7, B1-B5, 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 30-week approved, and supervised placement plus have must perform satisfactorily as assessed by the Professional Training Certification Panel.	6	A1-A8, B1-B6, C1, D1
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-A7, B1-B5, C1, D1
BSc	Financial Mathematics	300 credit points including 180 at level 6/5 of which	6	A1-A8, B1-B6, C1, D1

	with a Year Abroad	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.		
BSc	Mathematics with Study Abroad and Employment Experience	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Minimum of a 12-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-A7, B1-B5, C1, D1
BSc	Financial Mathematics with Study Abroad and Employment Experience	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Minimum of a 12-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-A8, B1-B6, C1, D1

Programme-specific assessment regulations

The programme complies with the University's academic regulations (in particular, [UPR AS11](#), [UPR AS12](#) and [UPR AS14](#)).

Further programme-specific regulations (requiring School-level approval) are given below:

- Part time students decide their study paths by discussion with the Programme Leader.

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.
- 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).
- Head of Department.
- A programme committee, the membership of which includes: Mathematics Programme Leader, 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), Head of Department, student representatives, academic staff teaching modules. This Programme Committee is chaired by the Mathematics Programme Leader.

Support

Students are supported by:

- An induction week at the beginning of each new academic session.
- Personal Tutors to provide academic and pastoral support.
- Overseas Orientation.
- English language support. A Mathematics Support Service.
- 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
- A versatile on-line inter-active intranet and learning environment.
- Guided student-centred learning on Canvas module sites.
- Access to extensive digital and print collections of information resources.
- 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.
- University Disability Advisors.

- An Equality Office.
 - Careers Enterprise and Employment Services.
 - Hertfordshire Student's Union.
-

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 dedicated programme site
- A Definitive Module Document (DMD) 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/>.

G. Entry requirements

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

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).

If you would like this information in an alternative format please contact:
Hutton Hub Student Administration Services hhaq@herts.ac.uk

If you wish to receive a copy of the latest 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 delivered and 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	B1	B2	B3	B4	B5	C1	D1
Level 4	Introduction to Mathematical Reasoning	4PAM2004	x		x	x	x	x		x	x			x		x
	Mathematical Methods	4PAM2006	x											x		
	Probability and Statistics	4PAM2008	x							x		x				x
	Numbers and Sets	4PAM2010	x									x		x		
	Financial and Actuarial mathematics	4PAM2012		x		x		x			x					x
	Linear Algebra	4PAM2014	x									x		x		
	Applications of Calculus	4PAM2016	x											x		
	Computational Modelling	4PAM2018			x				x	x	x		x	x	x	
	Small Group Tutorials (Level 4)	4PAM2020	x	x						x					x	x
Level 5	Multivariable Calculus	5PAM2012	x													
	Number Theory	5PAM2019	x		x					x		x				
	Real Analysis	5PAM2014	x									x		x		x
	Differential Equations	5PAM2015	x									x				
	Programming	5PAM2016			x		x		x		x		x		x	
	Professional Teaching Skills	5PAM2017				x								x		x
	Motion and Tensors	5PAM2018		x						x		x				
	Game Theory	5PAM2023		x								x		x		
	Investment Portfolios	5PAM2020		x		x		x		x						x
	Numerical Methods	5PAM2022		x	x				x	x	x				x	
	Algebra	5PAM2013		x			x					x		x		
	Statistical Modelling	5PAM2024		x						x					x	x
	Quantum Mechanics	5PAM2025		x						x		x				
	Career Planning and Development	5PAM2026				x		x						x		
	Small Group Tutorials (Level 5)	5PAM2027	x	x						x						x
	Complex Analysis	6PAM2011	x									x		x		

Level 6	Mathematical Project and Investigative Skills	6PAM2010				×	×	×		×		×	×	×		×
	Partial Differential Equations	6PAM2012		×								×				
	Linear Optimisation	6PAM2013		×						×		×				
	Groups and Representations	6PAM2009		×								×				
	Linear Modelling	6PAM2014		×	×				×	×	×				×	
	Lagrangian Dynamics	6PAM2015		×						×		×				
	Combinatorics	6PAM2016		×			×					×				
	Nonlinear Systems	6PAM2017		×								×				
	Nonlinear Optimisation	6PAM2018		×	×					×		×			×	
	Further Numerical Methods	6PAM2019		×	×				×	×	×	×				
	Multivariate Statistics	6PAM2020		×	×				×	×	×				×	
	Space Dynamics	6PAM2021		×	×	×				×		×	×			×

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 delivered and 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	C1	D1		
Level 4	Introduction to Mathematical Reasoning	4PAM2004	x		x	x	x	x				x	x				x			
	Mathematical Methods	4PAM2006	x														x			
	Probability and Statistics	4PAM2008	x									x		x						
	Numbers and Sets	4PAM2010	x											x			x			
	Financial and Actuarial Mathematics	4PAM2012		x		x		x		x	x		x							
	Linear Algebra	4PAM2014	x											x			x			
	Applications of Calculus	4PAM2016	x														x			
	Computational Modelling	4PAM2018			x				x			x	x		x		x			
	Small Group Tutorials (Level 4)	4PAM2020	x	x								x								
Level 5	Multivariable Calculus	5PAM2012	x																	
	Number Theory	5PAM2019	x		x							x		x						
	Real Analysis	5PAM2014	x											x			x			
	Differential Equations	5PAM2015	x											x						
	Programming	5PAM2016			x		x		x				x		x					
	Professional Teaching Skills	5PAM2017				x											x			
	Motion and Tensors	5PAM2018		x								x		x						
	Game Theory	5PAM2023		x										x			x			
	Investment Portfolios	5PAM2020		x		x		x		x		x				x		x		
	Financial Markets	5PAM2021		x		x		x		x		x				x		x		
	Numerical Methods	5PAM2022		x	x				x			x	x							
	Algebra	5PAM2013		x			x							x			x			
	Statistical Modelling	5PAM2024		x								x								
	Quantum Mechanics	5PAM2025		x								x		x						
	Career Planning and Development	5PAM2026				x		x									x			
	Small Group Tutorials (Level 5)	5PAM2027	x	x								x								

Level 6	Complex Analysis	6PAM2011	x											x			x	
	Mathematical Project and Investigative Skills	6PAM2010				x	x	x		x		x		x	x	x	x	
	Partial Differential Equations	6PAM2012		x										x				
	Linear Optimisation	6PAM2013		x								x		x				
	Groups and Representations	6PAM2009		x										x				
	Linear Modelling	6PAM2014		x	x				x			x	x					
	Lagrangian Dynamics	6PAM2015		x								x		x				
	Combinatorics	6PAM2016		x			x							x				
	Nonlinear Systems	6PAM2017		x										x				
	Nonlinear Optimisation	6PAM2018		x	x							x		x				
	Further Numerical Methods	6PAM2019		x	x				x			x	x	x				
	Multivariate Statistics	6PAM2020		x	x				x			x	x					
	Space Dynamics	6PAM2021		x	x	x						x		x	x			
	Financial Mathematics & Derivative Pricing	6PAM2022		x							x	x		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 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. develop an understanding of financial products, financial markets, and current issues in finance

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 to meet deadlines;
- B6. 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.

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	September 21
Date of production/ last revision of PS	March 23
Relevant to level/cohort	Level 4 entering September 2023
Administrative School	School of Physics, Engineering & Computer Science
Language of Delivery	English

Table 4 Course structure

Course details			
Course Code	Course Description	HECOS	UCAS
EIMM	BSc (Hons) Mathematics (Mathematics)	100403	G100 BSc (Hons) Mathematics

Course details			
Course Code	Course Description	HECOS	UCAS
EIMM	BSc (Hons) Mathematics (Financial Mathematics)	100403	GN13 BSc (Hons) Financial Mathematics