

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 2020

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

Signature



31 March 2020

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) 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 | 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 (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> |

| 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</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</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),</p> |

| | | |
|--|--|---|
| <p>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- 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>intellectual skills further by independent study.</p> | <p>class tests (B1, 3-5), presentations (B1-5) and a final year project report (B1-5).</p> <p>B6 is assessed by written report from the student, written report from the placement organization and the placement tutor's report.</p> |
|--|--|---|

| <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-</p> | <p>Transferable skills are developed through practical classes,</p> | <p>Transferable skills are assessed through</p> |

specialists using technology, verbally and in writing.

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.

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

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 4PAM1034 | English | 80 | 20 | 0 | B |
| Financial Markets and Portfolio Theory | 5PAM1030 | 30 | 4PAM1030 | English | 60 | 40 | 0 | AB |
| Statistical Modelling | 5PAM1033 | 15 | 4PAM1054 | English | 60 | 40 | 0 | B |

Optional sandwich year BSc (Hons) Mathematics

| Optional Modules (choose 45 credits) 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

| 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 |
|--|-------------|---------------|----------|----------------------|---------------|--------------|-------------|-----------|
| 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 |
|------------------------------|-------------|---------------|----------|----------------------|---------------|--------------|-------------|-----------|
| 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

| Optional Modules (choose 45 credits) 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) 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 | 6 | All programme learning outcomes (see Table 2) |

| | | | | |
|------------|--|--|---|---|
| | | placement plus have must perform satisfactorily as assessed by the Professional Training Certification Panel. | | |
| 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 approved and supervised placement plus half of one academic year of study at an approved institution in Europe or world-wide and must | 6 | All programme learning outcomes (see Table 2) |

| | | | | |
|------------|--|--|---|---|
| | | 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 | 6 | A1, A2, A4, A5, A6, B1, B2, B3, B5, B6, C1, D1 |

| | | | | |
|-----|--|---|---|--|
| | | by the Professional Training Certification Panel. | | |
| 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 satisfactorily as assessed by the Professional Training Certification Panel. | 6 | A1, A2, A4, A5, A6, A8, B1, B2, B3, B5, 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, 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](#) 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:

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: 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 | | | | | | | | | | | | | | | | | | | | | |
| Small Group Tutorial (Level 4) | 4PAM1027 | x | x | | | | | | x | | | | | | | | | x | | | | | | | | x | | | | | | | |
| Level 5 | Real Analysis | 5PAM1031 | x | | | | | | | | | x | | x | | | | | | | | | | | | | x | | | | | | |
| | Algebra | 5PAM1028 | x | | | | | | | | | x | | x | | | | | | | | | | | | | | | | | | | |
| | Financial Markets and Portfolio Theory | 5PAM1030 | | | | 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&A | Professional Placement | 6PAM0011 | | | | x | x | | x | | | | x | x | | | | | | | | | | | | | | | | | x | | |
| | Year Abroad | 6PAM0030 | | | | x | | | | | | x | | | | x | | | | | | | | | | | | | | | | | |

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 | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Career Planning and Development | 5PAM1049 | | | | x | | x | | | | | | | x | | | | | | | | | | | | | | | | | | |
| | Small Group Tutorial (Level 5) | 5PAM1048 | x | x | | | | | | | x | | | | | | | | | x | | | | | | | x | | | | | | |
| | Professional Teaching Skills | 5PAM1025 | | | | x | | | | | | | | | x | | | | | | | | | | | | x | | | | | | |
| Programming | 5PAM1023 | | | x | | x | | x | | | | | | | | | | | x | | | | | | | | | | | | | | |
| Sa | Professional Placement | 6PAM0011 | | | | x | x | | | x | | | | x | x | | | | x | | | | | | | x | | | | | | | |
| | Year Abroad | 6PAM0030 | | | | | 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 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

September 2020

Administrative School

School of Physics, Astronomy and Mathematics

Table 3 Course structure

| Course details | | |
|----------------|--|--------|
| Course code | Course description | HECOS |
| EIMM | BSc/BSc (Hons) Mathematics (Mathematics) | 100403 |

| Course details | | |
|----------------|--|--------|
| Course code | Course description | HECOS |
| EIMM | BSc/BSc (Hons) Mathematics (Financial Mathematics) | 100403 |