



Programme Specification

Mathematics [Frenchay]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Mathematics [Frenchay]

Highest award: BSc (Hons) Mathematics

Interim award: BSc Mathematics

Interim award: DipHE Mathematics

Interim award: CertHE Mathematics

Awarding institution: UWE Bristol

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: Yes

Credit recognition: No

School responsible for the programme: CATE School of Computing and Creative Technologies, College of Arts, Technology and Environment

Professional, statutory or regulatory bodies:

Institute of Mathematics and its Applications (IMA)

Modes of delivery: Full-time, Sandwich

Entry requirements: For the current entry requirements see the UWE public website.

For implementation from: 01 September 2026

Programme code: G90E00

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: Mathematics is at the heart of many of humanity's greatest achievements and it continues to have a strong and enduring impact on the world. In a crucial way, mathematics supports innovation and progress in science, technology, health, finance and economics. The motivation to study mathematics lies in the intellectual challenge of problem solving, in an appreciation of the elegance of mathematical concepts, and in the power of the discipline in its wide-ranging applications.

The programme has been designed to nurture curiosity in mathematics, to create strong subject knowledge to underpin the application of mathematics and statistics, and to ensure that students are aware of the professional and ethical environment in which mathematical scientists work.

The programme consists of three interacting strands, namely pure mathematics, applied mathematics and statistics. Students are exposed to key topics in set theory, linear algebra, calculus, computational methods, graph theory, dynamical systems, probability theory, statistical science and applied statistics. Students develop logical and abstract thinking, methods of proof, problem solving and mathematical modelling. The final year professional mathematical scientist project provides an opportunity to carry out an extended investigation, further developing ideas and applications inspired by the programme content. The final year option structure allows students to specialise in branches of the subject according to their interests, strengths and future aspirations.

As is necessary for an undergraduate programme in the mathematical sciences, the design of the curriculum facilitates access to a wide range of further study and employment possibilities. Mathematics and statistics have many real-life applications and are used to model, to predict outcomes and to inform strategic decision making in many areas, e.g., the design of industrial and environmental processes, public transport systems, communication networks, health care and finance. Because of the ever-increasing potential of large data sets and of artificial intelligence, graduate mathematicians are in high demand across a variety of public

and commercial sectors. The development of programming and IT expertise throughout the curriculum ensures that graduates will have the necessary skill set and subject knowledge to access the most important current and future employment possibilities.

The programme is also designed to support graduates seeking employment as specialist mathematical scientists working in research and development organisations that require postgraduate qualifications. The curriculum is informed by the activities of research groups, and provides the necessary rigour to progress to specialist postgraduate programmes in the mathematical sciences.

In addition to mathematical competency, the programme also develops essential professional skills that are highly valued across all career paths. Students learn to communicate complex mathematical concepts clearly to diverse audiences, through presentations, written reports, and collaborative discussions. Collaborative problem-solving is embedded throughout the curriculum, with students working in teams on challenging investigations and group projects that develop skills in constructive debate, consensus building, and multidisciplinary teamwork.

The programme also cultivates reflective thinking and professional judgement through critical evaluation of mathematical methods and their limitations, and consideration of their ethical implications. These professional skills prepare graduates to be effective communicators, collaborative team members, and thoughtful professionals who can bridge the gap between mathematical expertise and real-world applications.

Features of the programme: A placement year is optional, nonetheless, students are strongly encouraged to take up this opportunity. The University and the School provide support in preparation for the placement in a number of ways. For example, the School arranges a series of talks from former placement students and industrialists, aimed at illustrating the benefits of the placement year. Support in applying for placements is also provided through CV workshops, advertising of placement vacancies and more general information on careers and employability. Students who elect not to do a year-long placement are encouraged to gain work

experience in other ways, for example through volunteering, summer internships, and entrepreneurial schemes.

If a student opts to take a placement year, they must also take the relevant Level 6 module, while they are undertaking the placement.

Educational Aims: The aim of the programme is to develop professional mathematical scientists who are equipped with the required technical knowledge and understanding of the methodology used in a variety of application areas.

Specifically, the educational aims are for the student:

to develop a strong foundation in advanced mathematical and statistical concepts and methods, and to be able to apply their knowledge and skills in different application domains;

to work as an effective member of a team, to be a creative problem solver, and to communicate mathematical and statistical information both to technical and to non-technical audiences;

to design and to implement software solutions that enable the use of mathematical and statistical methods in solving complex problems;

to demonstrate an understanding of the competencies and social responsibilities required by a professional mathematical scientist in the workplace and in society;

to acquire the requisite academic knowledge and skills to study higher degrees in mathematics and in other numerate disciplines.

Programme Learning Outcomes:

On successful completion of this programme graduates will achieve the following learning outcomes.

Programme Learning Outcomes

- PO1. Analyse and solve real-world problems using mathematical and statistical techniques.
- PO2. Plan, conduct, and lead a mathematical enquiry in a professional and effective manner.
- PO3. Select, apply, and evaluate appropriate technology for assisting a mathematical or statistical analysis.

- PO4. Communicate any or all aspects of a mathematical or statistical investigation, altering the format or content to suit the needs of the audience.
- PO5. Reflect on the strengths, limitations, and cultural, ethical and sustainability impact of mathematical applications and mathematical employment pathways.
- PO6. Identify, describe, implement, and evaluate numerical algorithms.
- PO7. Design, execute, and evaluate statistical analyses of data.
- PO8. Define and state mathematical concepts clearly and precisely, and construct rigorous proofs.

Assessment strategy: The assessment strategy ensures fair, rigorous and authentic assessment of technical mathematical and statistical knowledge, it supports problem-based learning that integrates subject knowledge and skills, and it provides experience of the applications of mathematical sciences to a variety of real-world problems. Assessment methods are varied and make effective use of staff experience, of the versatile learning spaces, and of the programme weeks.

The assessment at each level is designed to ensure that assessment does not interrupt the programmatic flow of the students' learning experience. The load is intended to be sufficient to assess the learning outcomes of the programme and to monitor student progress. The range of assessment has been designed from a programmatic viewpoint so that it is balanced over time and in its use of space.

Innovative individual controlled-conditions assessment tasks, including open-book and partially pre-seen scenarios, are utilised throughout the programme to ensure that each student is able to construct and to communicate extended mathematical arguments, which are an essential feature of the skills required of a mathematical scientist. As a part of a balanced and varied assessment portfolio, we believe that controlled-conditions tasks are essential for maintaining programme integrity, especially in the light of increasing availability of artificial intelligence technology. Such a position is strongly endorsed by the three main professional bodies for mathematics in the UK, including the Institute of Mathematics and its Applications,

which accredits the programme. Moreover, properly supported controlled-conditions tasks, with appropriate reasonable adjustments in place for those students who require them, are one of the fairest and most equitable forms of assessment.

The three professional mathematical scientist modules play a critical role in developing skills and competencies, evidenced via individual portfolios and, in the final year, a dissertation, and in exploring the cultural and ethical issues in mathematical sciences that we believe are an essential part of a modern mathematical sciences education. The final year individual project provides the opportunity for students to specialise, to demonstrate a high level of independence and an ability to formulate problems, to communicate the results of an extended investigation, to draw appropriate conclusions, and to respond to questions about their work using appropriate technical language.

Assessment on some other modules allows students to take the role of an adviser, analyst or consultant, which is often the role taken by mathematicians and statisticians within organisations.

The types of assessment used across the programme include: controlled-conditions tasks (closed-book written tasks, partially-seen written tasks, open-book written tasks, face-to-face presentations, vivas); online e-assessment; pre-recorded presentations; computer-based modelling; reports (with various time durations); dissertation. The first and second professional mathematical scientist modules feature group work that requires the thoughtful application of mathematical and statistical knowledge in organisational contexts.

Student support: *Programme Hours*

All students are timetabled for regular programme hours throughout the teaching blocks. These programme hours take place in the Mathematics and Statistics Space and are designed as opportunities for informal interactions between students from different cohorts and members of the programme team. The interactions might be students' using the hour to work individually or in groups on module material, with helpful interventions from staff, or they might be discussions about mathematics in

more general terms, including cultural aspects and real-world applications. Staff might also respond to questions about internships, placements or postgraduate study. Topics external to the programme might also be addressed. All in all, the programme hours are a valuable part of the weekly schedule, providing support to students, feedback in all directions and a chance for students and staff to catch up with each other. Some programme hours feature a staff talk or a presentation from an alumni.

Programme Weeks

There are designated programme weeks, where the usual weekly schedule of activities is suspended across the programme. For each cohort and for each of the programme weeks, there is a designated, carefully-structured and supported activity, either individual or group-based, that is associated with an assessment task. The programme weeks also provide an opportunity for consolidation, and a space for discussions, feedback and targeted advice. Programme weeks also have staff talks, alumni presentations and input from professional services such as the library and careers teams. Thus, these weeks are providing support and encouraging development within the context of individual modules, the programme as a whole, professional skills and future directions.

Effective Use of Information Resources

Programme team members aim to use the designated teaching and learning platforms, including virtual learning environments and audio-visual resources, in an innovative, effective and user-friendly way, so that these are recognised by students as an important component of support as they move forward through the programme.

Peer-assisted Learning Sessions

Level 4 students benefit from weekly sessions at which a peer-assisted learning tutor is present. The support provided by such a tutor emerges not only via discussions of mathematical or statistical problems with a trained student from the level above, but also from advice given on general aspects of university life. Moreover, by encouraging Level 4 students to apply to be a peer-assisted learning tutor for the following year, we are supporting skills development and signposting opportunities

for professional enhancement.

espressoMaths

The espressoMaths drop-by station, in easily-accessible locations and staffed by programme team members during teaching weeks, is available to all students. An espressoMaths interaction can resolve a mathematical or statistical problem for the student in an informal setting outside their normal teaching schedule. As well as mathematical support, more general advice can also be given, e.g., on the use of resources or on study skills.

General UWE Support Systems

As a part of the general University student support landscape, each mathematics student has an academic personal tutor, who is a member of the programme team. We also contribute to providing further support by interacting effectively with student support advisers, mentors and disability service colleagues.

Part B: Programme Structure

Year 1

Full time and sandwich students must take 120 credits from the modules in Year 1.

Year 1 Compulsory Modules (Full Time and Sandwich)

Full time and sandwich students must take 120 credits from the modules in Compulsory Modules (Full Time and Sandwich).

Module Code	Module Title	Credit
UFCEU7-30-1	Probability and Statistics 2026-27	30
UFMFJV-30-1	Calculus and Numerical Techniques 2026-27	30
UFMFHV-30-1	Mathematical Structures 2026-27	30
UFMFLV-30-1	The Professional Mathematical Scientist I 2026-27	30

Year 2

Full time and sandwich students must take 120 credits from the modules in Year 2.

Year 2 Compulsory Modules (Full Time and Sandwich)

Full time and sandwich students must take 120 credits from the modules in Compulsory Modules (Full Time and Sandwich).

Module Code	Module Title	Credit
UFCEU9-30-2	The Professional Mathematical Scientist 2 2027-28	30
UFMFNV-30-2	Calculus and Numerical Analysis 2027-28	30
UFMFMV-30-2	Graphs, Algebra and Algorithms 2027-28	30
UFMFPV-30-2	Statistical Applications 2027-28	30

Year 3

Full time students must take 120 credits from the modules in Year 3.

Sandwich students must take 15 credits from the modules in Year 3.

Year 3 Compulsory Modules (Sandwich)

Sandwich students take a placement year and study UFCFE6-15-3 Professional Experience.

Module Code	Module Title	Credit
UFCFE6-15-3	Professional Experience 2028-29	15

Year 3 Compulsory Modules (Full Time)

Full time students must take 60 credits from the modules in Compulsory Modules (Full Time).

Module Code	Module Title	Credit
UFCEUA-30-3	The Professional Mathematical Scientist 3 2028-29	30
UFMFVV-30-3	Applications of Computational Mathematics 2028-29	30

Year 3 Optional Modules (Full Time) – Optional Module Group A

Full time students must take between 30 and 60 credits from the modules in Optional Modules (Full Time) – Optional Module Group A.

Module Code	Module Title	Credit
UFCEUB-30-3	Applied Dynamical Systems 2028-29	30
UFCEUE-30-3	Statistics and Data Analysis 2028-29	30

Year 3 Optional Modules (Full Time) – Optional Module Group B

Full time students must take between 0 and 30 credits from the modules in Optional Modules (Full Time) – Optional Module Group B.

Module Code	Module Title	Credit
UFCEVM-15-3	Mathematics Outreach 2028-29	15
UFMFYV-15-3	Cryptography 2028-29	15
UFMFXV-15-3	Networks 2028-29	15
UFMFUG-15-3	Financial Mathematics 2028-29	15

Year 4

Sandwich students must take 105 credits from the modules in Year 4.

Year 4 Compulsory Modules (Sandwich)

Sandwich students must take 60 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UFCEUA-30-3	The Professional Mathematical Scientist 3 2029-30	30
UFMFVV-30-3	Applications of Computational Mathematics 2029-30	30

Year 4 Optional Modules (Sandwich) – Optional Module Group A

Sandwich students must take 30 credits from the modules in Optional Modules (Sandwich) – Optional Module Group A.

Module Code	Module Title	Credit
UFCEUB-30-3	Applied Dynamical Systems 2029-30	30
UFCEUE-30-3	Statistics and Data Analysis 2029-30	30

Year 4 Optional Modules (Sandwich) – Optional Module Group B

Sandwich students must take 15 credits from the modules in Optional Modules (Sandwich) – Optional Module Group B.

Module Code	Module Title	Credit
UFMFYV-15-3	Cryptography 2029-30	15
UFMFUG-15-3	Financial Mathematics 2029-30	15
UFMFXV-15-3	Networks 2029-30	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

A graduate from this programme will be an innovative, adaptable and enterprising professional mathematical scientist who has theoretical understanding, real-world modelling skills, and who can work across disciplines. They will have not only the technical knowledge and experience to participate in key emerging industries or to continue to postgraduate study in a mathematical area, but also possess the ability to assess the human and global impact of their subject.

Part D: External Reference Points and Benchmarks

QAA UK Quality Code for Higher Education (May 2023);

QAA Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (February 2024);

QAA Subject Benchmark Statement Mathematics, Statistics and Operational Research (March 2023);

IMA Accreditation Guidance (September 2025);

UWE Strategy 2030;

Programme team experience (teaching, learning, scholarship and research).

Part E: Regulations

Approved to University Regulations and Procedures.