Programme Specification: Undergraduate
For students starting in Academic Year 2022/2023

1.Course Summary

Name of programme & award title with UCAS code	Mathematics [G10F]
Awarding Institution	Aberystwyth University
Individual Accreditation(s)	This programme will meet the educational requirements of the Chartered Mathematician designation, awarded by the Institute of Mathematics and its Applications, when it is 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.
Final Award	Bachelor of Science
Date of Publication	September 2023
QAA Subject Benchmark	**Information provided by Department of Mathematics** Details of the QAA Benchmark statement for Mathematics, Statistics and Operational Research can be found here

How this information might change: Please read the important information at https://www.aber.ac.uk/en/study-with-us/ug-studies/terms-conditions/. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

2: Duration

Programme	Years
Mathematics [G10F]	4

3: Educational aims of the programme

Information provided by Department of Mathematics

This programme is a 3-year honours degree scheme in which almost the entire content is in Mathematics and Statistics.

The educational aims of the programme are:

- To provide students with knowledge and understanding in a range of topics in Mathematics, including topics in Statistics.
- To develop skills in the application of such knowledge and understanding to the solutions of problems in Mathematics.
- To develop the ability to transfer subject-specific skills to a range of topics in Mathematics.
- To prepare students for careers in Mathematics and Statistics and in allied professions.
- To develop analytical reasoning skills, team-working skills, information technology skills and other skills appropriate to a wide range of careers.

4: Intended learning outcomes

Information provided by Department of Mathematics

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

5: Knowledge and understanding

Information provided by Department of Mathematics

Knowledge and understanding

A1. Of fundamental concepts and techniques of calculus, algebra, geometry, analysis, mathematical modelling, probability and statistics.

A2. Of more advanced concepts in abstract algebra, real and complex analysis, numerical mathematics, fluid dynamics, probability and statistics.

A3. Of a selection of specialist topics in Mathematics and Statistics.

A4. Of software for the analysis of numerical data.

A5. Of software for supporting presentations and producing reports.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated:

Formal lectures (A1-A4), tutorials (A1-A3), examples classes (A1-A3), practical classes (A4, A5), survey group meetings (A1-A5), help-desk encounters (A1), student-initiated informal meetings with lecturers (A1-A4), coursework (A1-A4). Project consultations (A1-A5) for students who have chosen the appropriate module.

Assessment ? unseen written examinations (A1-A3), open-book practical examinations (A1-A4), Presentations (A1-A5), coursework (A1-A4), survey report (A1-A5), project report (A1-A5), if appropriate.

6: Skills and other attributes

Information provided by Department of Mathematics

10.2.1. Intellectual skills

The ability to

B1. Calculate and manipulate data obtained from, or related to, the bodies of knowledge studied.

B2. Apply a range of concepts and principles in well-defined mathematical or statistical contexts, showing judgement in the selection and application of tools and techniques.
B3. Develop and evaluate logical arguments.
B4. Abstract the essential elements of problems, formulate them in a mathematical context and obtain solutions by appropriate methods.

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Formal lectures, tutorials, examples classes, practical classes, revision workshops, help-desk encounters, project consultations, survey group meetings, student-initiated informal meetings with lecturers. Skills B1-B4 are developed in all these learning situations.

Assessment - unseen written examinations, open-book practical examinations, coursework, presentations, project/survey report. Skills B1-B4 are assessed by all these assessment methods.

10.2.2. Professional practical skills

The Ability to

C1. Present arguments and conclusions effectively and accurately.
C2. Use computer software to analyse and interpret the data.
C3. Design a survey as a member of a group and carry out the survey.
C4. Interpret data collected in a survey and write a report.
C5. Use computer software to support presentations and produce reports..

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated
Formal lectures, tutorials, examples classes, practical classes, revision workshops, help-desk encounters, survey group meetings, student-initiated informal meetings with lecturers. Project consultations where appropriate. Skill C1 is developed in all these learning situations, skills C2-C4 in practical classes and skills C3-C4 in formal lectures and survey group meetings.

Assessment – unseen written examinations (C1), open-book practical examinations (C2), presentations (C1 - C2, C5), coursework (C1 -C2), survey report (C1-C5), project report (C1 - C2, C5), if appropriate.

7: Transferable/Key skills

Information provided by Department of Mathematics

The ability to

D1. Apply general mathematical skills to the interpretation of numerical data.

D2. Work as a member of a team.

D3. Use information technology effectively to manage information.
D4. Manage time and resources effectively.
D5. Develop effective learning skills.
D6. Be aware of the need to plan for employment and of need to develop various skills for such employment.
D7 Work independently

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Skill D1 is developed in all learning environments in the Department of Mathematics and assessed by all assessment methods. Skill D2 is developed during practical classes and in survey group meetings and assessed by the survey report. Skill D3 is developed primarily in practical classes and in producing a survey report and assessed by open-book examinations, coursework and survey report. Skill D3 is also developed through the use of e-mail, which is a normal means of communication between staff and students. Skills D4 and D5 are developed in an induction course on study skills, in preparing set coursework and submitting it by given deadlines, in planning and executing a survey. Skills D4 and D5 are not explicitly assessed. Skill D6 is developed at meetings with Personal Tutors, by the Careers Development Programme and assessed by a *Curriculum Vitae* prepared by the student, at occasional recruitment meetings arranged for final-year

student in the Department of Mathematics and in other interactions with the Careers Advisory Service. Skills D4, D5 and D7 are developed by independent study for an optional project.

8: Work-based learning (where appropriate)

9: What is the structure of the programme?

Year 1 Core modules

Core (90 Credits)

Name	Module Code	Credits	Semester
Introduction to Statistics	MA00910	10	Semester 2
Mathematics Tutorial	MA01000	0	Semester 1
Mathematics Tutorial	MA01020	20	Semester 2
Foundations of Mathematics 1	MA02610	10	Semester 1
Foundations of Mathematics 2	MA03610	10	Semester 2
Introduction to Mathematical Methods for Physicists 1	PH06020	20	Semester 1
Introduction to Mathematical Methods for Physicists 2	PH06520	20	Semester 2

Year 1

Options Choose 30 credits

Name	Module Code	Credits	Semester
Spreadsheets for University Students	CS01010	10	Semester 1
Information Technology for University Students	CS01120	20	Semester 1
Introduction to Fundamentals of Physics I	PH04020	20	Semester 1
Energy and the Environment	PH19010	10	Semester 2

Year 2 Core modules

Core (100 Credits)

Name	Module Code	Credits	Semester
Coordinate and Vector Geometry	MA10110	10	Semester 1
Probability	MA10310	10	Semester 1
Algebra	MA10510	10	Semester 1
Mathematical Analysis	MA11110	10	Semester 2
Differential Equations	MA11210	10	Semester 2
Statistics	MA11310	10	Semester 2
Calculus	MP10610	10	Semester 1
Further Algebra and Calculus	MP11010	10	Semester 2
Career Planning and Skills Development	MP12910	10	Semester 2
Classical Dynamics	PM14010	10	Semester 1

Year 2

Electives Choose 20 credits, as advised by the mathematics department

Year 3 Core modules

Core (60 Credits)

Name	Module Code	Credits	Semester
Linear Algebra	MA21410	10	Semester 2
Complex Analysis	MA21510	10	Semester 2

Introduction to Numerical Analysis and its applications	MA25200	0	Semester 1
Introduction to Numerical Analysis and its applications	MA25220	20	Semester 2
Applied Statistics	MA26600	0	Semester 1
Applied Statistics	MA26620	20	Semester 2

Core (20 Credits)

Name	Module Code	Credits	Semester
Mathematical Physics	PM26020	20	Semester 1

Year 3

Options Choose 40 credits as advised by the department, subject to pre-requisites

Name	Module Code	Credits	Semester
Real Analysis	MA20110	10	Semester 1
Introduction to Abstract Algebra	MA20310	10	Semester 1
Hydrodynamics 1	MA25610	10	Semester 2
Advanced Dynamics	MA25710	10	Semester 2
Distributions and Estimation	MA26010	10	Semester 1
Dadansoddiad Real	MT20110	10	Semester 1
Hydrodynameg 1	MT25610	10	Semester 2

Final Year Core modules

Final Year

Options Choose 90 - 120 credits from the following modules. (Choose your preferred language, if applicable)

Name	Module Code	Credits	Semester
Group Theory	MA30110	10	Semester 1
Norms and Differential Equations	MA30210	10	Semester 1
Differential Geometry of Curves and Surfaces	MA30510	10	Semester 1
Graphs and Networks	MA32410	10	Semester 2
Topology	MA32610	10	Semester 1
Integral Transforms	MA33310	10	Semester 1
Partial Differential Equations	MA34110	10	Semester 1
Asymptotic Methods in Mechanics	MA34210	10	Semester 2
Hydrodynamics ii	MA34610	10	Semester 1
Mathematical Models of Biological Systems	MA34920	20	Semester 2
Topics in Biological Statistics	MA35210	10	Semester 2
Comparative Statistical Inference	MA36010	10	Semester 2
Linear Statistical Models	MA36510	10	Semester 1
Lebesgue Integration	MA37010	10	Semester 2
Probability and Stochastic Processes	MA37410	10	Semester 2
Stochastic Models in Finance	MA37810	10	Semester 1
Operator Algebra	MA38310	10	Semester 2

Project in Mathematics or Statistics	MA39910	10	Semester 1
Project in Mathematics or Statistics	MA39910	10	Semester 2
Normau a Hafaliadau Differol	MT30210	10	Semester 1
Graffiau a Rhwydweithiau	MT32410	10	Semester 2
Hafaliadau Differol Rhannol	MT34110	10	Semester 1
Dulliau Asymptotig mewn Mecaneg	MT34210	10	Semester 2
Cyflwyniad i Addysgu Mathemateg mewn Ysgol Uwchradd	MT39020	20	Semester 1
Prosiect Mewn Mathemateg neu Ystadegaeth	MT39910	10	Semester 1
Prosiect Mewn Mathemateg neu Ystadegaeth	MT39910	10	Semester 2

Electives Choose 0 - 30 credits, as advised by the mathematics department

10: University Regulations

Details of University Regulations can be found at https://www.aber.ac.uk/en/academic-registry/handbook/regulations/

11: Support for students and their learning

12: Entry Requirements

Information provided by Department of Mathematics

Details of Degree Course Requirements can be foubd by clicking this link.

Applications submitted on the basis of other qualifications and applications from mature-age candidates will be considered on an individual basis. Such applications must have a sufficient background in Mathematics to be able to cope this scheme.

Details of entry requirements for the scheme can be found at https://courses.aber.ac.uk/

13: Methods for evaluating and improving the quality and standards of teaching and learning

14: Regulation of Assessment

Academic Regulations are published as Appendix 2 of the Academic Quality Handbook: https://www.aber.ac.uk/en/aqro/handbook/app-2/

15: External Examiners

External Examiners fulfill an essential part of the Universityâ€™s Quality Assurance. Annual reports by External Examiners are considered by Faculties and Academic Board at university level.

16: Indicators of quality and standards

Information provided by Department of Mathematics

The latest Periodic Review Panel approved the quality of education in Mathematics and Statistics in the Institute of Mathematics and Physics, referring to strengths and high standards in

- the quality and appropriateness of programme design and curricula,
- the quality of teaching,
- the quality of academic support and the approachability of staff,
- the quality of student achievement,
- the quality of its examination processes and procedures.

The degree scheme in this programme was also approved by the Institute of Mathematics and its Applications in 2009/10.

The Department Quality Audit questionnaire serves as a checklist about the current requirements of the Universityâ€™s Academic Quality Handbook. The periodic Department Reviews provide an opportunity to evaluate the effectiveness of quality assurance processes and for the University to assure itself that management of quality and standards which are the responsibility of the University as a whole are being delivered successfully.Â