STUDENT AND ACADEMIC SERVICES

PROGRAMME SPECIFICATION

Part 1: Basic Data	
Awarding Institution	University of the West of England, Bristol
Teaching Institution	University of the West of England, Bristol
Delivery Location	Frenchay Campus
Faculty responsible for programme	Environment and Technology
Department responsible for programme	Engineering Design and Mathematics
Modular Scheme Title	
Professional Statutory or Regulatory Body Links	This programme has been approved by the Institute of Mathematics and its Applications under its Programme Approval Scheme.
Highest Award Title	BSc (Hons) Mathematics
Default Award Title	
Interim Award Titles	BSc Mathematics Diploma of Higher Education Mathematics Certificate of Higher Education Mathematics
UWE Progression Route	
Mode(s) of Delivery	SW, Full-time
Codes	**UCAS:**	**JACS:**
	ISIS2: G900 **G900 (SW)** **G90013 (FT)**	**HESA:**
Relevant QAA Subject Benchmark Statements	Mathematics Statistics and Operational Research http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Maths07.pdf
CAP Approval Date	14/11/2012
Valid From	September 2012
Revision CAP Approval Date	November 2017	Revised with effect from	November 2017
Version	4
Review Date	September 2018

Part 2: Educational Aims of the Programme

Students graduating from this programme will use their specialist knowledge in a wide variety of professional contexts. Mathematics graduates are employed across the economy, for example in business and financial modelling, in engineering, in research organisations modelling problems in biology, physics, computer science and social science, in computing, in the development of new technologies, and as statisticians analysing large data sets for government and commercial organisations and in education.

Students are provided with a broad experience of the discipline through a number of interconnected strands or themes that are developed through the programme, such as modern applied mathematics, computational mathematics, algebra and geometry, decision modelling and applied statistics. The programme structure is flexible allowing students to specialize and choose options that support their future career direction. Students are informed about the future employment opportunities open to graduates through stand-alone employability sessions and employer talks.

The BSc (Hons) Mathematics has the following educational aims:

1. To produce graduates who are familiar with concepts and skills of Mathematics, Statistics and Operational Research that will enable them to gain employment in a number of sectors including science, technology, government and business;
2. To develop understanding of the underlying and unifying mathematical concepts that underpin the different branches of the discipline;
3. To prepare students for progression to study higher degrees in Mathematics, Statistics and Operational research;
4. To develop analytical, problem-solving transferable skills that will be valuable to graduates in any career;
5. To develop the ability to apply mathematical statistical and operational research concepts in a range of contexts;
6. To develop an understanding of the modelling process as applied to a range of problems in different contexts;
7. To develop the ability to use a range of specialised computer software to solve problems in the mathematical sciences.
8. To ensure that graduates can communicate effectively through presentations and through written reports;
9. To continue the development of those general study skills that will enable students to become independent lifelong learners;
10. To encourage the discerning use of reference material from a variety of sources.

Part 3: Learning Outcomes of the Programme

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

Learning Outcomes	Teaching, Learning and Assessment Strategies
A Knowledge and Understanding	
A Knowledge and understanding of: 1. analytical techniques used to solve problems involving linear systems; 2. analytical techniques used to solve problems involving nonlinear systems;	**Teaching/learning methods and strategies:** • The application of theory is encouraged through problems from different branches of mathematics and different applications. • Independent learning is encouraged to consolidate and broaden subject knowledge and understanding. • There are no core modules at level three. The

Part 3: Learning Outcomes of the Programme

3. analytical techniques used to solve problems involving discrete mathematical objects;

4. computational techniques for solving mathematical problems;

5. the application of computer software to analyse and solve mathematical and statistical problems;

6. programming concepts and structures for implementing numerical algorithms;

7. the theoretical underpinning and application of a wide range of methods for statistical analysis, design of experiments and data modelling;

8. the modelling process, applied to a variety of problems, using techniques from mathematics, statistics and operational research

9. the theoretical underpinning of decision modeling and operational research techniques.

10. the application of mathematical and statistical techniques to solve realistic problems drawn from a variety of application areas; e.g. biology, physics, finance, health, business, transport, social science;

acquisition of the learning outcomes is via the level one and level two core developed further through the options at levels two and three, which provide the flexibility for students to follow different paths.

- Achievement of each of the learning outcomes would be enhanced by a suitable project taken via the level three option "Mathematics, Statistics and Operational Research Project".

Acquisition of 1: Level one core "Sets, Functions and Linear Algebra", "Calculus and Numerical Methods", and "Modelling and Optimisation". Further development is provided by the level two core "Mathematical Methods" and "Algebra, Combinatorics and Graphs" and the level three options "Fluid Dynamics", "Financial Mathematics" and "Numerical Analysis".

Acquisition of 2: Level two core; "Mathematical Methods" and further developed through the level three option "Dynamical Systems".

Acquisition of 3: Level one core "Sets, Functions and Linear Algebra" followed by the level two core "Algebra, Combinatorics and Graphs", supported by the level two option "Coding Theory and Applications" and the level three option "Applied Algebra and Geometry".

Acquisition of 4: Level one core; "Calculus and Numerical Methods", and level two core; "Mathematical Methods". Further development is provided by level three options "Numerical Analysis" and "Financial Mathematics". Simulation techniques are introduced at level one in "Modelling and Optimisation" and then via options "Operational Research" at level two and "Decision Modelling" at level three.

Acquisition of 5: Level one core "Calculus and Numerical Methods", "Statistical Reasoning" and "Modelling and Optimisation" and level two core; "Mathematical Methods" and "Statistical Modelling". Further development is provided by a number of modules, notably "Operational Research", "Financial Mathematics", "Decision Modelling", "Statistical Research Methods", and "Multivariate Statistical Modelling".

Acquisition of 6: Level one core "Calculus and Numerical Methods", the level two core "Mathematical Methods" and the level three options "Numerical Analysis" and "Multivariate Statistical Modelling". Also possibility to extend skill further through "Mathematics, Statistics and Operational Research Project".

Acquisition of 7: Level one core Statistical Reasoning" and level 2 core "Statistical Modelling". Further by the level two option "Mathematical Statistics" and the level three options "Statistical Research Methods", Multivariate Statistical Modelling".

Acquisition of 8: Level one core; "Modelling and Optimisation", then developed further in all level two core modules, particularly "Statistical Modelling". Further development at

Part 3: Learning Outcomes of the Programme	
	level two via the option "Operational Research" and at level three via "Decision Modelling", "Financial Mathematics", "Fluid Dynamics" and "Multivariate Statistical Modelling".

Acquisition of 9: Level one core "Sets, Functions and Linear Algebra", "Modelling and Optimisation", and further developed at level two by the core "Algebra, Combinatorics and Graphs" and the option "Operational Research". At level three the option "Decision Modelling" provides further extension.

Acquisition of 10: Throughout the core programme applications are used to aid understanding of the theoretical concepts. At level two applications are considered in the options "Coding Theory and Applications" and "Operational Research". At level three the options "Financial Mathematics", "Fluid Dynamics", "Dynamical Systems", "Decision Modelling", "Applied Algebra and Geometry", "Statistical Research Methods", "Multivariate Statistical Modelling", and the "Mathematics, Statistics and Operational Research" project all provide exposure to mathematical and statistical application in a variety of contexts. |
| | **Assessment:**
Throughout the programme, testing of the knowledge base is via written reports, regular short tests, and through tasks taken under controlled examination conditions. Thus, all students will achieve these learning outcomes. |
| **B Intellectual Skill** | |
| B Intellectual Skill
Graduates will have the ability to:

1. think logically and use symbolic language to describe the relationships between real and abstract quantities in the context of mathematical, statistical and operational research problems;

2. communicate mathematical and statistical arguments, using appropriate notation, in a clear and precise manner

3. construct rigorous logical arguments and mathematical proofs;

4. critically interpret solutions obtained using mathematical, statistical and operational research techniques and report conclusions in a clear and appropriate manner;

5. design, implement and test simple algorithms; | **Teaching/learning methods and strategies:**

Intellectual skills are developed through tutorials and workshops that stimulate the student's analytical and problem-solving abilities and through computer practical sessions that stimulate the student's ability to design and test algorithms and apply specialist software to the solution of. Students are encouraged to discuss their work in class and, in certain core modules make informal presentations of mathematical arguments.

Acquisition of 1 and 2: Developed throughout the programme with all modules contributing to the development of these skills at different levels.

Acquisition of 3: Level one core "Sets, Functions and Linear Algebra" followed by the level two core "Algebra, Combinatorics and Graphs" ensure that students study and practice methods of proof. Further development is through the level three option "Applied Algebra and Geometry". In addition to these modules, developing the skill to construct rigorous mathematical arguments is developed throughout the core programme, in "Calculus and Numerical Methods" and "Mathematical Methods", supported by a number of option modules, notably "Complex Variables", "Coding Theory and Applications", "Dynamical Systems", "Numerical Analysis", "Financial Mathematics" and "Fluid Dynamics". |

	Acquisition of 4: Developed throughout the programme with all modules contributing to the development of this skill at different levels.
	Acquisition of 5: Initiated at level one through "Calculus and Numerical Methods", developed further at level two through "Mathematical Methods". Developed to a higher level in the level three options, "Numerical Analysis" and through a suitable project in the project option "Mathematics, Statistics and Operational Research Project". Implementing simple algorithms is also conducted in "Financial Mathematics" and "Multivariate Statistical Modelling".
	Assessment: These intellectual skills are primarily assessed in most modules through written assignments and examinations. The balance of coursework and examination varies from module to module. Independent learning is assessed through open ended assignment tasks and via a requirement in some assignments at Levels Two and Three to research a topic or to acquire new knowledge as part of the assessed activity. Students who take the project option will have the opportunity, depending on the nature of the project, to investigate, to interpret results critically, and to develop computer based systems at a deeper level, and they will clearly demonstrate the ability to learn independently.

C Subject, Professional and Practical Skills

C Subject, Professional and Practical Skills Graduates will be able to:	**Teaching/learning methods and strategies:**
1. adopt different problem solving approaches from mathematical, statistical and operational research to problems that arise in a variety of contexts;	The understanding and application of mathematical, statistical and operational research techniques to a variety of problems in the business and scientific community is a key outcome of the award.
2. use mathematical language, notation and methods in the description and analysis of problems in appropriate areas of application;	Professional and practical skills are developed through tutorials, workshops and computer practical sessions, and also through the programme of graduate development activities undertaken at each level. The mathematical theory underpinning the methods of solution and analysis is introduced in level one core and developed further through level two core. In the option modules, specialised applications are considered at levels two and three covering a broad spectrum of application areas.
3. communicate the results from mathematical or statistical investigations in a manner that is appropriate for a non technical audience;	
4. apply mathematical theory in a variety of contexts such as financial mathematics, fluid dynamics, computational mathematics, coding, mathematical biology, transport and decision modelling.	*Acquisition of 1, 2 and 3:* Developed throughout the programme with all modules contributing to the development of these skills at different levels.
5. apply statistical methods in a variety of contexts relevant to government, science and industry.	*Acquisition 4*: Knowledge of underlying theory is established at level one and extended through the level two compulsory "Mathematical Methods" and "Algebra, Combinatorics and Graphs". The level two and level three options then provide the opportunity to study application areas that utilise this knowledge.

Part 3: Learning Outcomes of the Programme	
6. develop and implement mathematical and statistical models in a variety of contexts.	*Acquisition 5:* Fundamental concepts are established at level one through Statistical Reasoning, with the development of statistical research skills undertaken at level two in "Statistical Modelling". Opportunity to develop more advanced statistical techniques and consider a wider range of applications may be obtained through the level three options "Applied Statistical Research Methods", "Multivariate Statistical Modelling" and the "Mathematics, Statistics and Operational Research Project". *Acquisition of 6*: Achieved by a wide exposure to models from different types of problem from different branches of mathematics, statistics and operational research in order to illustrate the general approach embedded in these specific examples. Modelling skills are explicitly covered in the core modules "Modelling and Optimisation" and "Statistical Modelling" and the level two option "Operational Research" and the level three option "Decision Modelling".
	Assessment: These subject, professional and practical intellectual skills are primarily assessed in most modules through written assignments and examinations. The balance of coursework and examination varies from module to module according to the extent to which these skills are covered. However, all students will study modules where they will need to demonstrate these attributes at Levels Two and Three.

D Transferable Skills and other attributes	
D Transferable Skills and other attributes Graduates will be able to 1. communicate using professional standards of English, both orally and through written technical reports; 2. demonstrate the ability to manage their own time and meet deadlines; 3. work in teams and take responsibility for individual and shared objectives; 4. use IT skills in context and to learn how to use new software tools to develop and to implement solutions; 5. take a logical and systematic approach to problem formulation, solution and decision making; 6. demonstrate the ability to learn independently; 7. to be able to critically to review available literature that is relevant to the subject	**Teaching/learning methods and strategies:** *Acquisition of 1*: is through participation in workshops, group work discussions, tutorial discussions and presentations, written reports for assessed coursework. *Acquisition of 2*: is through self-managed assessed and non-assessed practical work, preparation for tutorials and workshops, preparation for examinations and group work activities. *Acquisition of 3*: is through a group-based assignment at level 1 and group based tasks carried out as part of preparing for academic sessions and activities conducted as part of the programme of graduate development undertaken at each level. *Acquisition of 4*: is through regular computer practical work at each level with assessed work covering a broad spectrum of contexts from mathematics, statistics and operational research. *Acquisition of 5:* is through the extensive exposure throughout the programme to investigations and models from different branches of the discipline. *Acquisition of 6:* is the through the reading and assessment strategy modules, where students are encouraged and

Part 3: Learning Outcomes of the Programme	
discipline;	required to broaden their knowledge of the subject by reading more widely and to research new techniques or new applications as part of their assessed coursework. This skill is developed to a high level in those who elect to take a project at level three. *Acquisition of 7*: is through the reading and assessment strategy for modules where students are encouraged to access and review literature for discussion in tutorials and demonstrate knowledge of relevant literature in assessed coursework, particularly at level three.
	Assessment: These transferable skills assessed throughout the programme through coursework and examination. All students will study modules at Levels two and three where they will need to demonstrate these skills.

Part 4: Programme Structure:

This structure diagram demonstrates the student journey from Entry through to Graduation for a **full time student**, including:
level and credit requirements;
interim award requirements;
module diet, including compulsory and optional modules.

ENTRY		Compulsory Modules	Optional Modules	Interim Awards
	Year 1	UFMFL3-30-1 Sets, Functions and Linear Algebra UFMFK3-30-1 Calculus and Numerical Methods UFMFPA-30-1 Statistical Reasoning UFMFM3-30-1 Modelling and Optimisation	None	Certificate of Higher Education Mathematics 120 credits of which not less than 100 are at level 1 or above.

	Compulsory Modules	Optional Modules	Interim Awards
Year 2	UFMFF9-30-2 Mathematical Methods UFMFNA-30-2 Statistical Modelling UFMFC7-30-2 Algebra, Combinatorics and Graphs	*Select 30 credits from* UFMFG9-15-2 Mathematical Statistics UFMFT7-15-2 Complex Variables UFMF7A-15-2 Operational Research UFMFQ7-15-2 Coding Theory and Applications UTLGSW-15-2 Mathematics Education Practice UFMFSK-30-2 Reflection on Practice in Secondary Education (only available for students transferring from the Maths with QTS programme)	Diploma of Higher Education Mathematics 240 credits at which not less than 100 are at level 2 or above and 120 are at level 1 or above.

Level 2 BSc (Hons) Mathematics International Variant – Mathematical Sciences and Statistical Sciences and Operations Research undergraduate programmes, College of Humanities and Sciences. Virginia Commonwealth University
NOTE: STUDENTS MUST TAKE A TOTAL OF 8 (US three credit – Level 300-500) MODULES

In accordance with UWE Academic Regulations and Procedures, the modules studied at VCU will be recognised by UWE as contributing to the credit requirements of the award as accredited learning (AL), subject to the student achieving a pass in each of the VCU modules. No marks will be transferred from VCU to UWE. The assessment outcomes against the equivalent UWE modules will be pass or fail only.

VCU has suspended outward mobility to Virginia Commonwealth University from 2018/19.

Compulsory modules	Optional modules	Interim Awards:
Students must take all of the following modules • **MATH307 Multivariate Calculus** • **MATH432 Ordinary Differential Equations** • **MATH433 Partial Differential Equations** • **STAT310 Introduction to Statistical Inference** • **STAT544 Statistical Methods II**	**Students must take three modules from the following modules:** • **MATH415 Numerical Methods** • **OPER427 Deterministic Operations Research** • **MATH380 Introduction to Mathematical Biology** • **MATH401 Introduction to Abstract Algebra** • **MATH350 Introductory Combinatorics** • **MATH351 Applied Abstract Algebra** • **MATH191 Topics in Mathematics**	• Credit requirements: 240 (EQUIVALENT) – Diploma in Higher Education Other requirements None

		Compulsory Modules	Optional Modules	Interim Awards
Year 3		From 2019/20: ***Select one of the following project modules*** UFMFU9-30-3 Mathematics, Statistics and Operational Research Project A UFMFV9-15-3 Mathematics, Statistics and Operational Research Project B UFMFH9-30-3 Mathematics Education Project	***Select at most 105 credits from Mathematics Options*** UFMFUG-15-3 Financial Mathematics UFMFVG-15-3 Fluid Dynamics UFMFWG-15-3 Applied Algebra and Geometry UFMFK8-30-3 Dynamical Systems UFMFX9-30-3 Numerical Analysis UFMFY7-30-3 Decision Modelling ***Select at most 30 credits from: Statistics Options.*** UFMFK7-30-3 Applied Statistical Research Methods UFMFW9-30-3 Multivariate Statistical Modelling	BSc Mathematics 300 credits of which at least 60 must be at level 3, a further 100 at level 2 or above and a further 140 at level 1 or above **Highest Award** BSc (Hons) Mathematics 360 credits at appropriate level

Year Out: Students may elect to spend a minimum of 40 weeks working for an organisation, in a role where mathematical and statistical methods are used in the workplace. Placement Option: **Industrial Placement** UFMF89-15-3

Level 3 structure for current students for 2017/18 and 2018/19:

	Compulsory Modules	Optional Modules	Interim Awards
Year 3		***Select at most 120 credits from Mathematics Options*** UFMFUG-15-3 Financial Mathematics UFMFVG-15-3 Fluid Dynamics UFMFWG-15-3 Applied Algebra and Geometry UFMFK8-30-3 Dynamical Systems UFMFX9-30-3 Numerical Analysis UFMFY7-30-3 Decision Modelling ***Select at most 30 credits from: Statistics Options.*** UFMFK7-30-3 Applied Statistical Research Methods UFMFW9-30-3 Multivariate Statistical Modelling ***Select at most 30 credits from Project Options*** UFMFU9-30-3 Mathematics, Statistics & Operational Research Project A UFMFV9-15-3 Mathematics, Statistics & Operational Research Project B UFMFH9-30-3 Mathematics Education Project	BSc Mathematics 300 credits of which at least 60 must be at level 3, a further 100 at level 2 or above and a further 140 at level 1 or above **Highest Award** BSc(Hons) Mathematics 360 credits at appropriate level

Part 5: Entry Requirements
The University's Standard Entry Requirements apply*: The UCAS points tariff will be reviewed on a regular basis and published for new applicants. However, an applicant to this programme will typically have an A-level in mathematics at grade A or at grade B. Applicants without A-level mathematics at the appropriate grade, or an equivalent qualification, will be considered on a case-by-case basis.

Part 6: Assessment

Approved to University Regulations and Procedures

Part 7: Student Learning

Teaching, learning and assessment strategies to enable learning outcomes to be achieved and demonstrated

At UWE, Bristol there is a policy for a minimum average requirement of 12 hours/week contact time over the course of the full undergraduate programme. This contact time encompasses a range of face-to-face activities as described below. In addition, a range of other learning activities will be embedded within the programme which, together with the weekly contact time, will enable learning outcomes to be achieved and to be demonstrated.

Class Activities: The mode of delivery of a module is determined by its Module Leader, and typically involves a combination of one or more lectures, tutorials, workshops and computer practical sessions. Workshops can involve individual or group activities, with students' making informal presentations of their work. Those opting for a final year project will have the support of a project advisor.

Academic Support: Academic advice and support is the responsibility of staff delivering the module in question. Staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on matters relating to the material being taught and on its assessment.

Drop-by, one-to-one tuition is available every day through the *espressoMaths* service, which provides access to mathematics and statistics academic staff.

Peer Assisted Learning (PAL) is used to support learning at Level One. Each student has access to one PAL session per week, this session being run by a second year student who is trained as a PAL leader to assist students on problems that they face in any of the modules that they are studying.

Personal Development: Each student is allocated an academic personal tutor who will ensure student engagement with the academic programme and assist with the delivery of generic skills through a programme of graduate development. At Level One this is designed to equip students with the necessary skills and information to help them develop as effective learners and to approach their work with confidence. Level Two work is designed to help the student recognise, describe and demonstrate their academic achievements and skills in preparation for their placement year and future career prospects. At Level Three, this should help them to plan their own 'preferred future' and to present their skills, attributes and abilities in a way that will help them achieve their goals.

Pastoral Care: The University divides responsibilities for pastoral care between academic personal tutors who look after the academic well-being of students and Student Advisors who provide comprehensive, full-time student support on a range of issues including funding, academic regulations, personal and health issues. The service operates on a drop-in basis or by appointment.

Progression to Independent Study: Many modules require students to carry out independent study, such as research for projects and assignments, and a full range of facilities are available to support students in this activity. The philosophy is accordingly to offer students both guided support and opportunities for independent study. Guided support, mainly in the form of timetabled sessions, takes the form of lectures, tutorials, workshops and computer practical sessions. Students are expected to attend all sessions on their timetable.

The progression to independent study will also be assisted by the nature of the support offered in individual modules. Typically, module leaders will provide a plan for the module indicating the activities to be carried out and the forms of learning to be undertaken during the delivery of the module, with a view to encouraging students to plan ahead and to take responsibility for managing their time and

Part 7: Student Learning

resources.

Computing Facilities: The faculty offers a specialised computing facility alongside the general University provisions. A range of computer laboratories with access to Microsoft or Unix operating systems are available for students to use when not in use for teaching. An open access computer laboratory with 24 hour opening is extensively used by students for the completion of coursework activities. Specialist mathematical and software used in the programme is part of the standard build for the Faculty's computer laboratories. All specialist software used in the programme is currently available to students for home use free of charge.

Description of Distinctive Features and Support

Learning Support: The Mathematics and Statistics cluster contains staff who are active in national teaching and learning projects, working with colleagues in other universities to develop new approaches in the delivery and support of programmes in mathematics, statistics and operational research.

Distinctive features of our support to students.

- Mathematics Resource Centre that provides dedicated space for students to carry out group work and to practice presentations.
- *espressoMaths* that provides drop-by one-to-one tuition each day in the student canteen and also a web-site that provides a portal to a variety of online resources in mathematics and statistics.
- Computer based e-assessment: implemented in a number of first year modules, so that students can take regular short tests, with automated computer generated feedback.
- Provision of online materials through the university virtual learning environment including lecture recording with respect to some modules.

Employability: We recognise that many students entering this programme will not have clearly developed ideas as to their future career direction. We have therefore embedded activities within the programme delivery that are designed to support students as they develop their interests and future career plans.

- A programme of graduate development activities is delivered at each level, promoting awareness of employment opportunities open to graduates of mathematics and statistics. This programme includes development of transferable skills, researching the graduate employment market and preparing a CV. At Level Two, employers and recent graduates are invited to the University to speak to students and to encourage participation in the placement year. At Level Three we concentrate on academic achievement and future plans.
- The optional placement year provides extensive and valuable experience of the workplace.
- The department's extensive outreach programme provides opportunities for students to work with young learners in local secondary schools. The work involves learning to be part of a team, and it provides opportunities to develop leadership skills, confidence and independence.
- The final year module *Mathematics Education Project* provides a work-based learning opportunity for students who are thinking about becoming a mathematics teacher. Places are limited by the number of school placements that can be supported in a given year and so are decided by a competitive application process.

Part 8: Reference Points and Benchmarks

This programme has been prepared with reference to a number of external benchmarks, including the QAA Subject Benchmark Statements for Mathematics, Statistics and Operational Research, the QAA Framework for HE Qualifications and the University's Learning and Teaching Strategy.

The Subject Benchmark Statements for Mathematics, Statistics and Operational Research emphasises the diversity of programmes that are likely to draw upon this benchmark. It notes that some programmes give a broad coverage of a wide area of topics that fall within the scope of mathematical

Part 8: Reference Points and Benchmarks

and statistical subjects, while others develop particular subject areas in depth.

http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Maths07.pdf

The BSc Mathematics programme provides that broad coverage while allowing specialisation in the later stages of the award. While highlighting certain core topics, such as knowledge of number systems, sets, functions, linear algebra and probability, to be included in any undergraduate mathematics programme, the subject benchmark emphasises the development of logical thinking, proof, problem solving and mathematical modelling as core skills for graduate mathematicians.

The design and content of programme has been informed by employer input through our student placements, by employer participation at our graduate development and outreach events and by our research and consultancy activities.

This specification provides a concise summary of the main features of the programme and the 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 learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in module specifications, available on the University's website.

First CAP Approval Date	November 2012			
Revision CAP Approval Date		Version	1.1	
Update this row each time a change goes to CAP	31 January 2017		3	<u>Link to RIA</u> (new education module) <u>Link to RIA</u> (compulsory project modules)
	10 November 2017		4	Link to <u>RIA</u> (ID 4550)