



ACADEMIC SERVICES

PROGRAMME SPECIFICATION

Part 1: Basic Data			
<b>Awarding Institution</b>	University of the West of England, Bristol		
<b>Teaching Institution</b>	University of the West of England, Bristol		
<b>Delivery Location</b>	Frenchay Campus, Bristol and partner institutions (schools, colleges and other relevant educational establishments.)		
<b>Study abroad / Exchange / Credit recognition</b>			
<b>Faculty responsible for programme</b>	Faculty of Environment and Technology		
<b>Department responsible for programme</b>	Department of Engineering Design & Mathematics		
<b>Modular Scheme Title</b>			
<b>Professional Statutory or Regulatory Body Links</b>	The Office for Standards in Education (Ofsted) The National College for Teaching and Leadership (NCTL)		
<b>Highest Award Title</b>	BSc (Hons) Mathematics with Qualified Teacher Status (QTS)		
<b>Default Award Title</b>			
<b>Fall-back Award Title</b>			
<b>Interim Award Titles</b>	BSc Mathematics with Education Practice DipHE Mathematics with Education Practice CertHE Mathematics		
<b>Mode(s) of Delivery</b>	Full time with Foundation year		
<b>Codes</b>	<b>UCAS:</b>	<b>JACS:</b>	
	<b>ISIS2: G1X9</b>	<b>HESA:</b>	
<b>Relevant QAA Subject Benchmark Statements</b>	Mathematics, Statistics and Operational Research <a href="http://dera.ioe.ac.uk/23146/1/SBS-Mathematics-15.pdf">http://dera.ioe.ac.uk/23146/1/SBS-Mathematics-15.pdf</a> Education Studies <a href="http://dera.ioe.ac.uk/22213/2/SBS-education-studies-15.pdf">http://dera.ioe.ac.uk/22213/2/SBS-education-studies-15.pdf</a>		
<b>First CAP Approval Date</b>	16 November 2016	Valid from	September 2017
<b>Revision CAP Approval Date</b>	16 Jan 2018 v2	Revised with effect from	September 2018
<b>Version</b>	2		
<b>Review Date</b>			

## Part 2: Educational Aims of the Programme

The programme will produce self-reliant and independent individuals with experience of a variety of problem solving situations, both academic and professional. The principal aim of the award is to produce mathematics subject specialists who can teach at secondary level. The mathematics modules will prepare the student for the academic rigour of this discipline and the sense of enquiry required of a teacher. The delivery and assessment strategies ensure that students explore and deepen their understanding of the subject and are able to communicate their technical expertise. The collaboration with the Education Department means that these students will gain direct experience of professional practice where ethical issues of teaching with diverse cultural environments will form an essential element of the education and personal development of these individuals.

The programme is designed to be delivered in such a way as to meet the relevant statutory requirements for Initial Teacher Training (ITT). The programme is delivered in partnership between the University and a range of educational institutions and professional settings; these include schools, colleges and academies serving diverse groups of young people in the Secondary age range.

The first two years of study cover the core learning included in the BSc (Hons) Mathematics programme ensuring that students have the depth of subject knowledge for secondary education level teaching of mathematics and other graduate outcomes for highly numerate graduates. The mathematical content follows three strands Pure Mathematics, Applied Mathematics and Statistics. Students will be exposed to certain core topics, such as knowledge of number systems, sets, functions, linear algebra, numerical methods, graph theory, combinatorics and probability and will develop logical thinking, ideas of proof, problem solving and mathematical modelling. In year 3 the MSOR project module will provide the opportunity to carry out an extended mathematical investigation, further developing ideas and applications within these mathematical strands.

Mathematics education practice will start in year 2 of the programme with school placements providing the opportunity to put into practice theories of learning and reflect on this experience. At the beginning of the third year of the course, students will carry out an audit of their own mathematics subject knowledge against the subject knowledge required by the KS3 and KS4 mathematics National Curriculum and the A-level mathematics framework. These audits will inform (1) individual subject knowledge study plans for each student and (2) the content of focused mathematics subject knowledge seminars and workshops. Students' progress towards ensuring deep, secure mathematical understanding of the GCSE and A level curricula will be closely monitored by specialist mathematics education academics.

The programme provides a strong focus and preparation towards a specific graduate outcome, namely teaching while preserving the versatility and advantages that mathematics graduates hold in the graduate job market. Those who choose to enter the teaching profession will be prepared for the professional demands of that outcome and will be recommended for Qualified Teacher Status (QTS). Those who choose not to pursue a teaching career will have developed, through their exposure to practice based learning, a wide range of professional attributes that will strengthen their ability to compete in the graduate job market.

## **Part 2: Educational Aims of the Programme**

### **Programme requirements for the purposes of the Higher Education Achievement Record (HEAR)**

This programme blends academic study with practical experience and is the perfect pathway for students committed to a teaching career in secondary education. At the end of this rewarding honours degree, you will be recommended for Qualified Teacher Status (QTS). The first two years of study cover the core learning included in the BSc (Hons) Mathematics programme ensuring that students have the depth of subject knowledge for secondary education level teaching of mathematics and other graduate outcomes for highly numerate graduates. Mathematics education practice will start in year 2 of the programme with school placements providing the opportunity to put into practice theories of learning and to reflect on this experience.

### Part 3: Learning Outcomes of the Programme

The focus of the foundation year (level 0) is on the acquisition both of appropriate academic skills and relevant subject knowledge to allow students to develop and progress through levels 1, 2 and 3 in relation to knowledge and understanding, cognitive, subject specific and study skills.

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

#### A. Knowledge and Understanding (subject specific)

By the end of the programme the student should have knowledge and understanding of:

1. a range of techniques, both analytical and computational, for solving mathematical problems;
2. the foundations, language and culture of Mathematics;
3. the application of computer software to analyse and solve mathematical and statistical problems;
4. the theoretical underpinning and application of a wide range of methods for statistical analysis, design of experiments and data modelling;
5. the modelling process, applied to a variety of problems, using techniques from mathematics;
6. the national curriculum requirements and/or other specifications appropriate to the age/phase and ability of those they are trained to teach;
7. the significance and implications of the complex contextual factors relating to their training and practice.
8. the values consistent with high standards of personal and professional behavior;
9. a range of strategies for teaching; learning; assessing; monitoring pupils' progress; and managing behaviour;
10. the physical, social and intellectual development of young people and how that can impact on young people's learning at different stages of their education;
11. how to adapt teaching to meet the strengths and needs of all young people;
12. how to promote high standards of literacy, oracy and numeracy.

#### B. Intellectual Skills (generic)

By the end of the programme the student should be able 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. critically interpret solutions obtained using mathematical, statistical and operational research techniques and report conclusions in a clear and appropriate manner;
4. analyse and think critically about existing knowledge frameworks and concepts, generating new concepts and approaches.
5. engage in self-critical reflection on own learning leading to purposeful target setting;

### Part 3: Learning Outcomes of the Programme

6. critically reflect on, analyse and evaluate classroom based practice;
7. adopt a critical ethical stance in relation to justifying and evaluating practice;
8. interrogate a wide range of relevant research and literature in a range of modes;
9. demonstrate an innovative and creative approach to learning; evaluate and justify approaches to curriculum design and teaching strategies.

#### C. Subject/Professional/Practical Skills (subject specific)

By the end of the programme the student should be able to:

1. adopt different problem solving approaches from mathematical, statistical and operational research to problems that arise in a variety of contexts;
2. use mathematical language, notation and methods in the description and analysis of problems in appropriate areas of application;
3. communicate the results from mathematical or statistical investigations in a manner that is appropriate for a non-technical audience;
4. develop and implement mathematical and statistical models in a variety of contexts;
5. demonstrate through a range of professional evidence that the Teachers' Standards have been met at a level appropriate for a teacher at the point of recommendation for the award of Qualified Teacher Status, through successful completion of teaching practice in educational settings;
6. apply excellent knowledge of relevant subject and curriculum areas and relevant pedagogy in order to be an effective Secondary teacher in practice;
7. plan, teach and resource well-structured lessons and reflect systematically on the effectiveness of lessons and pedagogical approaches with a view to improving teaching;
8. demonstrate an awareness of the physical, social and intellectual development and needs or disabilities of young people and how that can impact on young people's learning at different stages of their education;
9. take practical account of diversity and promote equality and inclusion in teaching;
10. adapt teaching to meet the strengths and needs of all young people;
11. manage behaviour effectively and facilitate purposeful and safe learning environments;
12. use formative and summative assessment including the use of data to secure progress and to plan further teaching;
13. demonstrate in planning, teaching and assessing, a commitment to developing high standards of literacy, oracy and numeracy;
14. identify and work within relevant current statutory frameworks and specific agendas;
15. take responsibility for improving teaching through appropriate professional development including the use of research and professional sources in multiple contexts;
16. demonstrate consistently high standards of personal and professional conduct and maintain high standards of ethics and behaviour.

#### D. Transferable Skills and other attributes (generic)

By the end of the programme the student should be able to:

1. communicate using professional standards of English, both orally and through written technical reports;
2. take a logical and systematic approach to problem formulation, solution and decision making;

### Part 3: Learning Outcomes of the Programme

3. critically analyse, synthesise and transform information, concepts and practice, through critical reflection, enquiry, evaluation and re-conceptualisation.
4. engage confidently in academic and professional communication, including with colleagues, young people, parents and carers, and other professionals working with young people, making appropriate use of the capacities of colleagues.
5. take autonomous responsibility for continuously evaluating and improving practice through appropriate professional development and by responding to advice and feedback.
6. make effective use of ICT in personal study, planning for teaching and in classroom practice.
7. work effectively as an independent, self-motivated and self-critical learner.
8. demonstrate a commitment to collaborative and cooperative working and joint practice development in a range of educational and other settings.
9. create effective professional working relationships with colleagues; support and be proactive in leadership.
10. incorporate a critical and ethical dimension to practice.

<b>Learning Outcomes:</b>	UFMFL3-30-1	UFMFK3-30-1	UFMFPA-30-1	UFMFM3-30-1	UFMFNA-30-2	UFMFC7-30-2	UFMFF9-30-2	UTXN8M-30-2	UFMFU9-30-3	UTXGRT-30-3	UTXGRS-30-3	UTXN8N-30-3
<b>A) Knowledge and understanding of:</b>												
1. a range of techniques, both analytical and computational, for solving mathematical problems;	x	x	x	x	X	x	x					
2. the foundations, language and culture of Mathematics;	x	x	x	x	x	x	x		x			
3. the application of computer software to analyse and solve mathematical and statistical problems;		x	x		x		x					
4. the theoretical underpinning and application of a wide range of methods for statistical analysis, design of experiments and data modelling;			x		x							
5. the modelling process, applied to a variety of problems, using techniques from mathematics;		x		x	x		x		x			
6. the national curriculum requirements and/or other specifications appropriate to								x		x	x	x







### Part 3: Learning Outcomes of the Programme

1. communicate using professional standards of English, both orally and through written technical reports;	x	x	x	x	x	x	x		x			
2. take a logical and systematic approach to problem formulation, solution and decision making;	x	x	x	x	x	x	x		x			
3. critically analyse, synthesise and transform information, concepts and practice, through critical reflection, enquiry, evaluation and re-conceptualisation.	x					x	x	x		x	x	x
4. engage confidently in academic and professional communication, including with colleagues, young people, parents and carers, and other professionals working with young people, making appropriate use of the capacities of colleagues.								x		x	x	x
5. take autonomous responsibility for continuously evaluating and improving practice through appropriate professional development and by responding to advice and feedback.								x		x	x	x
6. make effective use of ICT in personal study, planning for teaching and in classroom practice.	x	x	x	x	x		x	x	x	x	x	x
7. work effectively as an independent, self-motivated and self-critical learner.	x	x	x	x	x	x	x	x	x	x	x	x
8. demonstrate a commitment to collaborative and cooperative working and joint practice development in a range of educational and other settings.		x					x	x		x	x	x
9. create effective professional working relationships with colleagues; support and be proactive in leadership.								x		x	x	x
10. incorporate a critical and ethical dimension to practice.								x		x	x	x

## Part 4: Student Learning and Student Support

### Teaching and learning 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 contact time, will enable learning outcomes to be achieved and demonstrated.

On the BSc (Hons) Mathematics with Qualified Teacher Status programme teaching is a mix of scheduled, independent and placement learning.

**Scheduled learning** includes lectures, tutorials, workshops, flipped-class sessions, group work exercises, practice-based learning, micro-teach sessions, computer practical sessions and project supervision.

**Independent learning** includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

**Placement learning:** School based placements are embedded in the delivery of the programme and therefore form a compulsory element. Students are required to spend a minimum of 120 days in schools in order to achieve qualified teacher status on the successful completion of the programme. The placements will be managed by the Education department at UWE, alongside their existing schools placement programme.

### Description of the teaching resources provided for students

In addition to the generic FET and ACE teaching and learning resources:

- The Mathematics Resource Centre providing dedicated space for students to carry out group work and to practice presentations;
- Open Learning Resources spaces in Education that provide access the education related materials;
- Computer based e-assessment: implemented in a number of first and second year modules, so that students can take regular short tests, with automated computer generated feedback;
- Specialist Mathematics & Statistics software available for home use;
- espressoMaths providing 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.

### Description of any Distinctive Features

The programme provides a strong focus and preparation towards a specific graduate outcome, namely teaching while preserving the versatility and advantages that mathematics graduates hold in the graduate job market. Recommendation of Qualified Teacher Status (QTS) on graduation means that those who choose to enter the teaching profession will be prepared for the professional demands of that outcome.

#### **Part 4: Student Learning and Student Support**

The programme offers distinctive initial teacher training through its commitment to supporting trainees' professional development as teachers, through their initial teacher education and into their newly qualified teaching year, during their early and continuing career development as career-long learners. This is achieved through a high level of individual subject-specialist support from academic tutors and through the deep and extended partnership relationships that underpin the provision. UWE Secondary subject tutors are actively involved in local and regional educational communities of practice. The new programme places further emphasis on the induction of trainees into a culture of research and professional development.

#### **Part 5: Assessment**

Delete one of the following statements as appropriate

A: Approved to [University Regulations and Procedures](#)

It is the Award Board's responsibility to determine whether the student's attainment at level 0 is sufficient to progress to level 1.

#### **Assessment Strategy**

Assessment strategy to enable the learning outcomes to be achieved and demonstrated:

A variety of assessment methods are used including closed book and partially seen examinations. E-assessment tests are used to provide frequent and rapid feedback. Coursework assignments involve both individual and group exercises. Presentations are used in project and micro-teach settings. In practice based learning settings, assessment will involve observation by an assessor and the demonstration of defined standards.

## Part 6: Programme Structure

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

ENTRY			
Year 1 (Level 0)	Compulsory Modules	Optional Modules	Interim Awards
	UFMFAG-30-0 Foundation Mechanics	None	None
	UFMFBG-30-0 Foundation Mathematics: Algebra and Calculus		
	UFMFHG-15-0 Foundation Group Project		
	UFMFGG-15-0 Foundation Mathematical Investigations		
	UFMFFG-15-0 Foundation Mathematical Structures		
	UFMFDG-15-0 Foundation Statistics		
Year 2 (Level 1)	Compulsory Modules	Optional Modules	
	UFMFL3-30-1 Sets, Functions and Linear Algebra	None	Certificate of Higher Education Mathematics  120 credits of which not less than 100 are at level 1 or above.
	UFMFK3-30-1 Calculus and Numerical Methods		
	UFMFPA-30-1 Statistical Reasoning		
UFMFM3-30-1 Modelling and Optimisation			

Year 3 (Level 2)	Compulsory Modules	Optional Modules	Interim Awards
	UFMFNA-30-2 Statistical Modelling	None	Diploma of Higher Education Mathematics with Education Practice  240 credits at which not less than 100 are at level 2 or above and 120 are at level 1 or above.
	UFMFC7-30-2 Algebra, Combinatorics and Graphs		
	UFMFF9-30-2 Mathematical Methods		
	UTXN8M-30-2  Professional Development in Secondary Education 1		

Year Out: not available

Year 4 (Level 3)	Compulsory Modules	Optional Modules	Interim Awards
	UFMFU9-30-3 Mathematics, Statistics & Operational Research Project A	None	BSc (without Hons) Mathematics with Education Practice  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
	UTXGRT-30-3 Professional Practice in Secondary Education (1)		
	UTXGRS-30-3 Professional Development in Secondary Education (2)		<b>Highest Award</b> BSc(Hons) Mathematics with Qualified Teacher Status
UTXN8N-30-3 Professional Practice in Secondary Education (2)	360 credits at appropriate level		

**GRADUATION**

Part time:  
N/A



## Part 7: Entry Requirements

The University's Standard Entry Requirements apply according to the year and point of entry.

Additional requirements:

- A standard equivalent to at least a Grade C at GCSE level in English and Mathematics and can communicate clearly and accurately in standard English.
- A high standard of skills in literacy and numeracy demonstrated through passing the nationally required ITT entry tests in literacy and numeracy.
- Suitable personal attributes, attitudes and values for teaching; and appropriate intellectual and academic capabilities to meet the requirements of the professional Teachers' Standards. This is assessed through interview as part of the selection procedure.
- Meet requirements for health and physical and mental fitness to teach.
- Successfully demonstrate suitability to work with young people having been subject to a Disclosure and Barring Service (DBS) check and/or other appropriate background check, confirmed by the University.

Tariff points as appropriate for the year of entry - up to date requirements are available through the [courses database](#).

## Part 8: Reference Points and Benchmarks

This programme has been prepared with reference to a number of external benchmarks, including the QAA (2015) Subject Benchmarks for Mathematics, Statistics & Operational Research, the QAA (2015) Subject Benchmarks Education Studies, the QAA Framework for HE Qualifications and the University's Learning & 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 and statistical subjects, while others develop particular subject areas in depth. This programme includes the same core Mathematics modules in the first two years as the BSc (Hons) Mathematics programme and thus provides that broad coverage of topics from mathematics, statistics and operational research.

The programme is compliant with the requirements for Initial Teacher Training and makes explicit reference to the professional Teachers' Standards (current version new and valid from September 2012). The programme is informed with reference to the personal and professional conduct requirements of the professional Teachers' Standards, effectively replacing the former General Teaching Council's (GTC\*, disbanded April 2011, see below) Code of Conduct.

\*From 1 April 2012, the Teaching Agency (TA), a new executive agency of the Department for Education (DfE), will be the body responsible for the following activities in England:

- The award of Qualified Teacher Status (QTS)
- The issue of induction certificates

## Part 8: Reference Points and Benchmarks

- Hearing induction appeals
- The regulation of the teaching profession

The Education Act 2011 confirms that all GTC sanctions will remain in force following the GTC's closure with the exception of reprimands.

The design and content of this programme has been informed by stakeholder consultations, including the Government Department for Education (DfE), who in conjunction with the National College for Teaching & Leadership are supporting development of undergraduate degree courses which enable students to additionally incorporate the award of qualified teacher status (QTS) part way through their degree.

UWE's strong partnership culture is recognised by Ofsted (2011) as a key strength underpinning all ITE programmes. Regular and continuous partnership interaction and feedback is central to ongoing programme delivery, development and quality assurance. The programme is designed and delivered in partnership between the university and professional placement institutions (schools, academies, colleges and other relevant educational establishments). Regular interaction with partnership colleagues and employers of qualifying trainees occurs: through regular mentor and professional tutor training sessions and annual meetings; through regular visits to placements in which trainees are placed; and through partnership colleagues' involvement in the selection of trainees.

The programme has been designed to meet the Department for Education's (DfE) ITT criteria.

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](#).

**FOR OFFICE USE ONLY**

First CAP Approval Date	16 November 2016			
Revision CAP Approval Date	16 Jan 2018	Revision CAP Approval Date	1 2	<a href="#">Link to MIA</a> <a href="#">Link to RIA (ID 4231)</a>
Next Periodic Curriculum Review due date				
Date of last Periodic Curriculum Review				