

## Programme Specification

**MMath Mathematics and Meteorology**

**For students entering Part 1 in September 2016**

**UCAS Code: GFC9**

**UFMAXMTM**

**UFMAXMTMPE**

**This document sets out key information about your Programme and forms part of your Terms and Conditions with the University of Reading.**

Awarding Institution	University of Reading
Teaching Institution	University of Reading
Length of Programme	4 years
Length of Programme with placement/year abroad	MMath Mathematics and Meteorology with a Placement Year - 5 years (UCAS Code: GFC8)
Accreditation	<p>Approved by the Royal Meteorological Society as an appropriate academic training for meteorologists seeking the qualification Chartered Meteorologist.</p> <p>Accredited by the Institute of Mathematics and its applications to meet the educational requirements of the Chartered Mathematician designation.</p>

### **Programme information and content**

The programme aims to provide you with a thorough background in both mathematics and meteorology with special reference to the interdependence of the two disciplines in the modelling of the atmosphere and environmental physical science, with emphasis on the Earth's atmosphere and oceans.

Part 1:	<p>Introduces you to core skills and knowledge through a number of introductory modules designed to manage the transition from A level (or equivalent) to university level mathematics. The Foundations of Mathematics module will establish the need for proof and will enable students to construct their own formal proofs. Other compulsory Part 1 mathematics modules build on and reinforce core material from the A level syllabus and form the basis for more advanced study in later years. Part 1 also introduces you to the basic concepts and terminology of weather systems around the globe. Key concepts from physics will be applied specifically to the atmosphere and oceans to form the basis of a solid scientific study of the Earth's weather and climate.</p>
Part 2:	<p>Provides you with more advanced topics in mathematics: the modules Vector Calculus and Differential Equations will employ techniques established in Part 1 Calculus and Linear Algebra. Part 2 also provides you with an opportunity to use the skills and concepts introduced in Part 1 in order to conduct a thorough scientific investigation of how the atmosphere and oceans evolve and develop on timescales from seconds to centuries.</p>

	The placement year provides experience of working in industry, government, research or other appropriate organisations. Training takes place in the workplace, usually including attendance at Continuing Professional Development courses as well as mentoring by a line manager. Actual contact hours will vary according to the placement and employer.
Part 3:	Gives you the opportunity to undertake some project work in mathematics, or work related to the teaching of mathematics via our Peer Assisted Learning module. The choice of optional modules will allow you to express your preference for certain topics in pure or applied mathematics, and atmospheric and ocean science.
Part 4:	In Part 4 students will undertake a major piece of advanced project work alongside a mix of compulsory and optional modules covering a range of advanced topics in pure and applied mathematics, and meteorology.

### Module information

Each part comprises 120 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.

#### Part 1 Modules:

Module	Name	Credits
MA1CA	Calculus	20
MA1FM	Foundations of Mathematics	20
MA1LA	Linear Algebra	20
MT11C	Introduction to Meteorology	20
MT11D	Weather and Climate Fundamentals	20

Students must take a further 20 credits of optional modules from a list available from the Department of Mathematics and Statistics.

#### Part 2 Modules:

Module	Name	Credits	Level
MA2DE	Differential Equations	20	5
MA2RA1	Real Analysis I	20	5
MA2VC	Vector Calculus	10	5
MT24A	Atmosphere and Ocean Dynamics	20	5
MT24B	Atmospheric Physics	20	5
MT24C	Numerical Methods for Environmental Science	10	5

Students must take a further 20 credits of optional modules from a list available from the Department of Mathematics and Statistics.

**Modules during a placement year or study year (if applicable):**

Students on the 5 year version of the programme will take one 120 credit module during their placement year.

Students may be permitted to undertake a placement year between Part 2 and Part 3 of the programme. In such cases students will transfer to a 5-year programme. The placement year should not normally be shorter than nine months full-time.

If you take a year-long placement or study abroad, Part 3 as described below may be subject to variation.

**Part 3 Modules:**

Module	Name	Credits	Level
MA3RCA	Real and Complex Analysis	20	6
MT37B	General Studies	10	6
MT38A	The Global Circulation	10	6
MT38B	Climate Change	10	6

Students must select a further 70 credits of optional modules from a list available from the Department of Mathematics and Statistics, 30 credits of which must be Meteorology modules.

The selection must include a Mathematics project or a peer assisted learning module.

**Part 4 Modules:**

Module	Name	Credits	Level
MT4XA	Part 4 Project	40	7
MT4XE	Dynamics of Weather Systems	10	7

Students must select a further 70 credits of optional modules from a list available from the Department of Mathematics and Statistics, 10 credits of which must be Meteorology modules.

**Additional costs of the programme**

During your programme of study you will incur some additional costs.

For textbooks and similar learning resources, we recommend that you budget up to £100 per year, depending on your preference to have your own books rather than borrow from the library. Some books may be available second-hand, which will reduce costs. A range of resources to support your curriculum, including textbooks and electronic resources, are available through the library. Reading lists and module specific costs are listed on the individual module descriptions.

You will need an approved scientific calculator (approximate cost £12).

Costs are indicative and may vary according to optional modules chosen and are subject to inflation and other price fluctuations.

The estimates were calculated in 2016.

### **Optional modules:**

The optional modules available can vary from year to year. An indicative list of the range of optional modules for your Programme is set out in the Further Programme Information. Details of optional modules for each part, including any Additional Costs associated with the optional modules, will be made available to you prior to the beginning of the Part in which they are to be taken and you will be given an opportunity to express interest in the optional modules that you would like to take. Entry to optional modules will be at the discretion of the University and subject to availability and may be subject to pre-requisites, such as completion of another module. Although the University tries to ensure you are able to take the optional modules in which you have expressed interest this cannot be guaranteed.

### **Placement opportunities**

You may be provided with the opportunity to undertake a credit-bearing placement as part of your Programme. This will form all or part of an optional module. You will be required to find and secure a placement opportunity, with the support of the University.

### **Teaching and learning delivery:**

You will be taught through lectures, tutorials, practical classes and supervised project work.

The contact hours for your Programme will be (on average) 360 hours for Part 1, 348 hours for Part 2, 228 hours for Part 3 and 120 hours for Part 4, and will depend upon your module combination; however information about module contact hours can be located in the relevant module description.

### **Accreditation details**

The programme is accepted by the Royal Meteorological Society as fulfilling the requirements for core content under the Society's Chartered Meteorologist Accreditation Scheme.

Both the programmes of MMath Mathematics and Meteorology and MMath Mathematics and Meteorology with a Placement Year are accredited by the Institute of Mathematics and Its Applications (IMA). Accreditation guarantees that the educational requirements for the Chartered Mathematician (CMath) designation are met. When you successfully complete

the degree you can apply for Associate Membership of the IMA.

### **Assessment**

The programme will be assessed through a combination of written examinations and coursework. However, some modules are assessed only by coursework, while others are assessed solely by examination. Details are given in the relevant module descriptions.

### **Progression**

The University-wide rules relating to 'threshold performance' as follows

#### *Part 1*

- (i) obtain an overall weighted average of 40% in 120 credits
- (ii) obtain a mark of at least 30% in individual modules amounting to at least 100 credits taken in Part 1.

In order to progress from Part 1 to Part 2, a student must achieve a threshold performance; and

- (iii) obtain a weighted average of at least 40% over all compulsory modules in Mathematics at Part 1; and
- (iv) obtain a weighted average of at least 40% over all compulsory modules in Meteorology at Part 1; and
- (v) obtain a mark of at least 30% in 120 credits.

The achievement of a threshold performance at Part 1 qualifies a student for a Certificate of Higher Education if they leave the University before completing the subsequent Part.

#### *Part 2*

To gain a threshold performance at Part 2, a student shall normally be required to:

- (i) obtain a weighted average of 40% over 120 credits taken at Part 2; and
- (ii) obtain marks of at least 40% in individual modules amounting to at least 80 credits; and
- (iii) obtain marks of at least 30% in individual modules amounting to at least 120 credits, except that a mark below 30% may be condoned in no more than 20 credits of modules owned by the Department of Mathematics and Statistics.

In order to progress from Part 2 to Part 3 in the 4 year programme, a student must achieve a threshold performance; and

- (iv) obtain an overall weighted average of 50% over 120 credits taken in Part 2.

Students who fail to progress are permitted one re-sit examination in each module in which they obtain less than 50%.

For any module passed in a re-sit examination the maximum mark carried forward into the final degree classification will be the higher of (a) the first attempt mark and (b) the lower of 40 and the mark achieved in the re-examination. Students who do not meet the

requirements for progression on the MMath but gain a threshold performance at Part 2 are eligible to transfer to BSc Mathematics & Meteorology.

The achievement of a threshold performance at Part 2 qualifies a student for a Diploma of Higher Education if they leave the University before completing the subsequent Part.

In order to progress from Part 2 to Part 3 in the 5 year programme, a student must fulfil the above criteria and obtain a pass in the professional/work placement or study abroad year. Students who fail the professional/placement year transfer to the non-placement year version of the programme.

### Part 3

To gain a threshold performance at Part 3, a student shall normally be required to:  
(i) obtain a weighted average of 40% over 120 credits taken at Part 3;

Students who fail to progress are permitted one re-sit examination in each module in which they obtain less than 40%. For any module passed in a re-sit examination the maximum mark carried forward into the final degree classification will be the higher of (a) the first attempt mark and (b) the lower of 40 and the mark achieved in the re-examination. Students who do not meet the requirements for progression to Part 4 will be eligible for the award of BSc Mathematics and Meteorology, provided they have satisfied the criteria for a Bachelor's degree.

The classification for the BSc programme will be based on one third of the overall weighted average in Part 2 and two-thirds of the overall weighted average in Part 3.

### Classification

Integrated Masters' degrees

Mark	Interpretation
70% - 100%	First class
60% - 69%	Upper Second class
50% - 59%	Lower Second class
40% - 49%	Third class
39% - 0%	Fail

The weighting of the Parts/Years in the calculation of the degree classification is:

Integrated Masters programmes:

Part 2: 20%

Part 3: 30%

Part 4: 50%

Five year programmes, including professional/work placement or study abroad:

Part 2: 20%

Placement/Study Abroad Year abroad not included in the classification

Part 3: 30 %

Part 4: 50%

**For further information about your Programme please refer to the Programme Handbook and the relevant module descriptions, which are available at <http://www.reading.ac.uk/module/>. The Programme Handbook and the relevant module descriptions do not form part of your Terms and Conditions with the University of Reading.**

MMath Mathematics and Meteorology for students entering Part 1 in session 2016/17

20 October 2016

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