Programme Specification
BSc Mathematics with Computer Science
For students entering Part 1 in September 2023

UCAS Code: GG14
UFMAXCSCI
UFMAXCSCIPE
UFMAXCSCISY

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	3 years
Length of Programme with placement/year abroad	BSc Mathematics with Computer Science with Placement Year - 4 years (UCAS Code: GG41) BSc Mathematics with Computer Science with Study Year Abroad - 4 years (internal transfer only)
Accreditation	Accredited by the Institute of Mathematics and its applications to meet the educational requirements of the Chartered Mathematician designation when followed by subsequent training and experience in employment to obtain competencies to those specified by the QAA for taught masters degrees.

Programme information and content	
The programme aims to provide you with a thorough degree-level education in mathematics, with some emphasis on the computational aspects, along with topics from computer science which will support this and provide an appreciation of wider issues. It aims to produce mathematicians who have some experience of numerical techniques and an appreciation of wider computational issues.	
Part 1:	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 and statistics. 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 2:	Provides you with more advanced topics in mathematics and statistics: the module Differential Equations and Linear Models will employ techniques established in Part 1 Calculus, Linear Algebra, and Probability and Statistics. The module Real Analysis will deepen your understanding of important areas in pure mathematics while Numerical Analysis will begin to discuss how one can solve problems numerically. In computer science you will study Operating Systems and Essential Algorithms. Additional

	programing languages are also delivered to enhance your programming skills.
Placement/Study abroad year:	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. Most of your modules will be optional, allowing you to express your preference for certain topics in pure or applied mathematics, and in computer science.

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	Level
CS1FC16	Fundamentals of Computer Science	20	4
CS1PC20	Programming in C/C++	20	4
MA1CA	Calculus	20	4
MA1FM	Foundations of Mathematics	20	4
MA1LA	Linear Algebra	20	4
ST1PS	Probability and Statistics	20	4

All modules at Part 1 of the programme are compulsory.

Part 2 Modules:

Module	Name	Credits	Level
CS2DA	Data Structures and Algorithms	20	5
CS2PP	Programming in Python	20	5
MA1RA1	Real Analysis I	20	4
MA2DE	Differential Equations	20	5
MA2MMS	Mathematical Modelling and Professional Skills	20	5
MA2NAO	Numerical Analysis I	20	5

All modules at Part 2 of the programme are compulsory.

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

Students on the 4 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 4-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
MA3PPR	Portfolio of Projects	20	6

Students must take 100 credits of optional modules from a list available from the Department of Mathematics and Statistics, 40 credits of which must be Computer Science modules.

Optional modules:

The optional modules available can vary from year to year. An indicative list of the range of optional modules for your programme can be found online in the Course Catalogue. 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.

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 2022.

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) 408 hours for Part 1, 372 hours for Part 2 and 276 hours for Part 3, and will depend upon your module combination; however information about module contact hours can be located in the relevant module description.

Accreditation details

Both the programmes of BSc Computational Mathematics and BSc Computational Mathematics 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, subject to subsequent training and experience in employment to obtain equivalent competences to those specified by the Quality Assurance Agency (QAA) for taught masters degrees, 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 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 the modules MA1CA, MA1LA & MA1FM; and

(iv) obtain a weighted average of at least 40% over the modules CS1PC20 & CS1FC16; and

(v) obtain marks of at least 30% in 120 credits at Part 1.

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 **3 year programme**, a student must achieve a threshold performance

In order to progress from Part 2 to Part 3 in the **4 year programme**, a student must achieve a threshold performance and obtain a pass in the professional/workplacement or study abroad year. Students who fail the professional/placement year transfer to the non-placement year version of the programme.

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.

Classification

Bachelors' degrees
The University's honours classification scheme is based on the following:

Mark	Interpretation
70% - 100%	First class
60% - 69%	Upper Second class
50% - 59%	Lower Second class
40% - 49%	Third class
35% - 39%	Below Honours Standard
0% - 34%	Fail

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

Three year programmes:
Part 2: one-third
Part 3: two-thirds

Four year programmes, including professional/workplacement or study abroad:
Part 2: one-third
Placement/Study Abroad Year abroad not included in the classification
Part 3: two-thirds

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

BSc Mathematics with Computer Science for students entering Part 1 in session 2023/24
10 April 2024
© The University of Reading 2024