

## Programme Specification

**BSc Mathematics and Applied Mathematics (NUIST-UoR Academy)  
NUIST-based (full-time)**

**For students entering Part 0 in September 2024**

**AFMAXAPMJJ  
UFMAXAPMJX**

**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	BSc Mathematics and Applied Mathematics (NUIST-UoR Academy) UoR-based (full-time) - 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.
QAA Subject Benchmarking Group	Mathematics, Statistics and Operational Research

### **Programme information and content**

The BSc programme aims to provide a general mathematical education with significant opportunities to specialise in particular areas of mathematics. This is achieved by providing a mix of compulsory and optional modules, some giving an overview of a broad area of mathematics and others studying a particular topic in depth, along with a range of appropriate subject-specific and transferable skills.

The programme includes a foundation year (Part 0) which enables students to progress on to the undergraduate programme in BSc Mathematics and Applied Mathematics within the NUIST-University of Reading Academy. On completion of Part 0, you will have the general academic language and study skills required to begin your degree studies through Part 1, Part 2 and Part 3.

This programme is available to students studying at the NUIST-Reading Academy, who may transfer to UoR for Parts 2 and/or 3 of their degree.

Foundation year:	<p>Part 0 helps you develop the academic language and study skills you will need for your university degree programme. This year provides opportunities to:</p> <ol style="list-style-type: none"><li>1. Understand and engage with the expectations of UK academic culture;</li><li>2. Attain the academic reading, writing, listening, and speaking skills needed to undertake university study in English;</li></ol>
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	<p>3. Understand and apply basic academic study skills, including the selection, evaluation, and use of information sources;</p> <p>4. Develop as independent learners.</p> <p>5. To study and understand foundation level mathematics in preparation for Part 1.</p> <p>Studied at NUIST.</p>
Part 1:	<p>Part 1 introduces you to core skills and knowledge through introductory modules designed to manage the transition to university level mathematics. Introductory pure mathematics in Part 1 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 high school syllabus and form the basis for more advanced study in later years.</p> <p>Studied at NUIST.</p>
Part 2:	<p>Part 2 provides you with more advanced topics in mathematics: the modules will employ techniques established in Part 1 Calculus and Linear Algebra. The concept of abstract algebra is introduced and builds on the Part 0 Foundations module. UoR-based students have the option here to explore modules in statistics, opening up Part 3 optional modules in this important area of mathematics.</p> <p>Studied at NUIST or UoR.</p>
Part 3:	<p>Part 3 gives you the opportunity to undertake some project work in mathematics or statistics. Other modules allow you to express your preference for certain topics in pure or applied mathematics.</p> <p>Studied at NUIST or UoR.</p>

**Programme Learning Outcomes - BSc Mathematics and Applied Mathematics (NUIST-UoR Academy) NUIST-based (full-time)**

During the course of the Programme, you will have the opportunity to develop a range of skills, knowledge and attributes (known as learning outcomes) For this programme, these are:

<b>Learning outcomes</b>	
1	Demonstrate logical thinking through the production of a structured argument.
2	Use skills in calculation and mathematical manipulation to solve problems in the mathematical sciences and cognate disciplines.
3	Select appropriate mathematical and statistical tools, techniques and theory to solve problems in the mathematical sciences and cognate disciplines, and critically evaluate and reflect on their appropriateness.
4	Recognise what constitutes a mathematical proof and articulate the role of the various constituent hypotheses.
5	Construct mathematical proofs to a range of propositions from the mathematical sciences.

6	Critically analyse so-called 'real world' problems and identify their essential mathematical or statistical features, and apply appropriate elements of discipline-based theory to solve these.
7	Reflect on aspects from one sub-field of the mathematical sciences and articulate how this applies to or illuminates another.
8	Plan, conduct and appropriately communicate work undertaken as part of a project.
9	Communicate, clearly and effectively, discipline-based arguments to a variety of audiences through a variety of means.
10	Identify how skills obtained in the programme can be applied outside the context of your studies.

You will be expected to engage in learning activities to achieve these Programme learning outcomes. Assessment of your modules will reflect these learning outcomes and test how far you have met the requirements for your degree.

To pass the Programme, you will be required to meet the progression or accreditation and award criteria set out below.

### Module information

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

#### Foundation modules:

Module	Name	Credits	Level
IF0NU1	English for Academic Purposes 1	60	0
IF0NU2	English for Academic Purposes 2	40	0
MA0FMANU	Foundations of Mathematical Analysis	20	0

#### Part 1 Modules:

Module	Name	Credits	Level
IL1MAMNU	English for Mathematicians	20	4
MA1CANU	Calculus	20	4
MA1LANU	Linear Algebra	20	4
MA1RA1NU	Real Analysis 1	20	4
MA1RA2NU	Real Analysis II	20	4
ST1PSNU	Probability and Statistics	20	4

#### Part 2 Modules:

##### Part 2 Modules (NUIST-based):

Module	Name	Credits	Level
MA2ALANU	Algebra	20	5
MA2DENU	Differential Equations	20	5

MA2MMPNU	Mathematical Methods and Physical Applications	20	5
MA2MMSNU	Mathematical Modelling and Professional Skills	20	5
MA2NAONU	Numerical Analysis I	20	5
ST2PSTNU	Probability and Statistical Theory	20	5

**Part 2 Modules (UoR-based):**

Module	Name	Credits	Level
MA2ALA	Algebra	20	5
MA2DE	Differential Equations	20	5
MA2MMS	Mathematical Modelling and Professional Skills	20	5
MA2RAT	Real Analysis II	20	5

Students must take a further 40 credits of optional modules from a list available from the Department of Mathematics and Statistics.

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

**Part 3 Modules:**

**Part 3 Modules (NUIST-based):**

Module	Name	Credits	Level
MA3PPRNU	Portfolio of Projects	20	6
MA3APSNU	Applied Stochastic Processes	20	6
MA3CANNU	Complex Analysis	20	6
MA3NATNU	Numerical Analysis II	20	6
MA3NTCNU	Number Theory and Cryptography	20	6
MA3PDANU	Partial Differential Equations and Applications	20	6

**Part 3 Modules (UoR-based):**

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, at least 60 credits of which must be modules taught by the Department of Mathematics and Statistics.

**Placement opportunities**

N/A

### **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.

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

In Part 0, you will be taught through classes, using a communicative approach to language learning, with an emphasis on meaning, task completion, interaction and feedback. You will also have a number of tutorials and carry out supervised project work. Modules in Part 0 are taught by Academy staff in NUIST.

For Parts 1, 2 and 3, you will be taught primarily through a mixture of lectures, tutorials, computer classes and supervised project work, depending on the modules you choose. Some modules may include group work. Modules in NUIST are taught by a combination of Academy staff and visiting staff from the University of Reading.

All modules will require significant guided independent learning.

Elements of your programme will be delivered via digital technology.

The scheduled teaching and learning activity hours and amount of technology enhanced learning activity for your programme will depend upon your module combination. In addition, you will undertake some self-scheduled teaching and learning activities, designed by and/or involving staff, which give some flexibility for you to choose when to complete them. You will also be expected to undertake guided independent study. Information about module study hours including contact hours and the amount of independent study which a student is normally expected to undertake for a module is indicated in the relevant module description.

### **Accreditation details**

These programmes 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, coursework (including class tests) and oral examinations. Further information is contained in the individual module descriptions.

## **Progression**

*Foundation Year (English requirements are subject to changes by ISLI):*

In order to complete Part 0 successfully, students are required to:

- (i) Obtain a mark of at least 40% in IF0NU1 and MA0FMANU;
- (ii) Obtain a Pass mark in IF0NU2 as specified in the module description.

Students who obtain 6.0, with no element (Speaking, Listening, Reading and Writing) below 5.5 in the IF0NU2 final test, will be deemed to have met the English language progression requirements to Part 2 and will be exempted from the mandatory Part 1 non-credit English for Academic Purposes preparatory learning module IF1NU3A.

Successful completion of these modules will lead to progression to Year 1 of the student's chosen degree programme.

The achievement of a threshold performance at Foundation Year qualifies a student for a Certificate of Completion if they leave the University before completing the subsequent Part.

### *Part 1*

To achieve a threshold performance at Part 1, a student will normally be required to:

- (i) Obtain an overall average of 40% over 120 credits taken in Part 1;
- (ii) Obtain a mark of at least 40% in individual modules amounting to not less than 80 credits taken in Part 1; and
- (iii) Obtain marks of at least 30% in modules amounting to 120 credits.

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

- (iv) Obtain 6.0 in TEEP on IF1NU3A (where taken), with no element (Speaking, Listening, Reading and Writing) below 5.5.

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.

### Transferring from a Joint Honours to a Single Honours programme

Students are able to transfer from a Joint Honours to a Single Honours programme in one of their joint subject areas at the end of Part 1, subject to fulfilling the Part 1 University Threshold Standard, achieving marks of at least 40% in at least 40 credits of modules in the subject to which they wish to transfer, and fulfilling any programme-specific progression rules for the Part 1 Single Honours Programme to which they wish to transfer.

Students who transfer from a Joint Honours to a Single Honours programme may not have taken all of the Part 1 modules listed in the Single Honours Programme Specification. The modules which they have taken will be shown on their Diploma Supplement.

### *Part 2*

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

- (i) Obtain a weighted average of 40% over 120 credits taken in Part 2; and
- (ii) Obtain marks of at least 40% in individual modules amounting to at least 80 credits taken in Part 2; 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, a student must achieve a threshold performance;

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:

Part 2: one-third

Part 3: two-thirds

The classification method is given in detail in [Section 17](#) of the Assessment Handbook.

### **Dual Awards**

Successful completion of the Programme will lead to the award of degrees by both the University of Reading and Nanjing University of Information Science and Technology.

### **Additional costs of the programme**

At NUIST: There will be some additional costs if you require printing facilities at NUIST. There may also be additional costs if your programme involves a field trip whilst at NUIST. Details of costs can be found at the NUIST help desk.

At UoR: Printing and photocopying facilities are available on campus at a cost per A4 page of £0.05 (black and white) and £0.30 (colour). Essential costs in this area will be low as most coursework will be submitted electronically.

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 £14).

Costs are indicative and may vary according to optional modules chosen and are subject to inflation and other price fluctuations. Estimates were calculated in 2023.

**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.**

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