

Programme Specification

BSc Data Science (NUIST-UoR Academy) NUIST-based (full-time)

For students entering Part 0 in September 2024

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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 Data Science (UoR Award) UoR-based (full-time) - 4 years
Accreditation	N/A
QAA Subject Benchmarking Group	Computing

Programme information and content

The programme aims to provide you with a comprehensive understanding of computer science by covering both theoretical and practical principles. The program covers a broad range of subjects, including the fundamentals of computer systems, programming, software engineering, and advanced computing and applications.

Through lectures and practical applications in computer labs, tutorials, and seminars, you will gain a deep understanding of computer science topics and be exposed to cutting-edge solutions and industrial collaborations. This approach combines theoretical knowledge with hands-on experience to give you a comprehensive education in computer science.

The programme also emphasizes the development of transferable skills that are essential for success in their future career. You will learn analytical and critical thinking skills that are necessary for problem-solving and decision-making. You will develop independent study skills, time management skills, and effective communication skills in both oral and written form as well as learn how to work effectively in teams, enhancing your collaboration and creativity skills.

The programme includes a foundation year (Part 0) which enables students to progress on to the undergraduate programme in BSc Data Science 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:	Part 0 helps you develop the academic language and study skills you will need for your university degree programme. This year provides opportunities to:
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	<ul style="list-style-type: none"> • understand and engage with the expectations of UK academic culture; • attain the academic reading, writing, listening, and speaking skills needed to undertake university study in English; • Understand and apply basic academic study skills, including the selection, evaluation, and use of information sources; • Develop as independent learners. <p>Studied at NUIST</p>
Part 1:	<p>Introduces you to the foundation of computer science with a set of subjects to build knowledge of computer systems, programming concepts and principles, object-oriented programming language, databases, and mathematics for computing.</p> <p>Studied at NUIST</p>
Part 2:	<p>Provides you with the core computer science modules, which enable you to further acquire CS knowledge and intellectual capability and develop analytical and problem-solving skills in producing computing solutions. You will be able to build competencies through a range of subjects such as data structures, algorithms, operating systems, computer networks, python programming language, software engineering and software systems design.</p> <p>Studied at UoR or NUIST</p>
Part 3:	<p>Gives you the opportunity to select a set of modules, which may fit to a direction leading to your career path in the computing industry or pursue a higher degree in computer science, data science, and related disciplines. A 40-credit compulsory degree project module provides you with a unique opportunity to integrate the CS knowledge and skills you have learned and to apply them in addressing practical problems and developing computing solutions.</p> <p>Studied at UoR or NUIST</p>

Programme Learning Outcomes - BSc Data Science (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:

Learning outcomes	
1	Possess a strong grounding knowledge of computer systems, computing theories and concepts, programming principles, and algorithms.
2	Possess strong programming competencies and skills across a variety of languages and paradigms.
3	Be able to apply concepts in theoretical computer science to actualise real world solutions in a variety of contexts or extensions to existing domain knowledge.

4	Describe, evaluate and apply a wide range of state-of-the-art methodologies and technologies.
5	Critically analyse, design and construct computing solutions that meet requirements based within interdisciplinary domains.
6	Apply knowledge of social, ethical, legal, and security aspects in development of software applications.
7	Apply research findings and critiques to creating fit-for-purpose and sustainable solutions.
8	Use innovative and creative approaches in problem-solving.
9	Work professionally as an individual and a team member with confidence in collaborative manner.
10	Effectively communicate over technical concepts, precisely and succinctly in professional writing and spoken narrative addressing various types of audience in an appropriate manner.

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
IF0NUP	English for Academic Purposes Project	20	0

Part 1 Modules:

Module	Name	Credits	Level
CS1CANU	Computer Systems Architecture	20	4
CS1DBNU	Databases	20	4
CS1IPNU	Imperative Programming	20	4
CS1MANU	Mathematics and Computation	20	4
CS1OPNU	Object-Oriented Programming	20	4
IL1BDNU	English for Data Scientists	20	4

Part 2 Modules:

Module	Name	Credits	Level
CS2AINU	Artificial Intelligence	20	5

CS2DANU	Data Structures and Algorithms	20	5
CS2ONNU	Operating Systems and Computer Networking	20	5
CS2PPNU	Programming in Python	20	5
CS2SDNU	Software Systems Design	20	5
CS2SENU	Software Engineering and Professional Development	20	5

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 (studied at NUIST):

Module	Name	Credits	Level
CS3IPNU	Degree Project	40	6

Students must take a further 80 credits from a set of optional modules. The list of optional modules will be available from the Programme Director.

Part 3 Modules (studied at UoR):

Module	Name	Credits	Level
CS31P	Degree Project	40	6

Students must take a further 80 credits from a set of optional modules. The list of optional modules will be available from the Programme Director.

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, lab practical, tutorials and seminars, depending on the modules students 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

N/A

Assessment

The programme will be assessed through a range of assessment types, such as written examination, written coursework assignment, set exercise, and in-class test. In addition, the programme will also be assessed in forms of dissertation, presentation and demonstration in the final year of studies. Further information is contained in the individual module descriptions.

Progression

Part 0 (Foundation Year)

In order to complete Part 0 (Foundation Year) successfully, students are required to:

- (i) obtain a mark of at least 40% in IF0NU1 and IF0NUP; and
- (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 module IF1NU3A.

Successful completion of these modules will lead to progression to Part 1 of the Data Science 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 a mark of at least 30% in CS1DBNU, CS1IPNU, CS1OPNU, CS1MANU and CS1CANU; and
- (v) 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 marks of at least 40% in individual modules amounting to at least 80 credits taken in Part 2; and
- (ii) Obtain marks of at least 30% in individual modules amounting to at least 120 credits taken in Part 2.

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.

To be eligible for Honours, students must achieve at least 40% in modules amounting to 80 credits in the final Part, including the Degree Project (CS3IPNU/CS3IP).

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

For textbooks and similar learning resources, we recommend that you budget up to £200 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.

At NUIST: There will be some additional costs if students require printing facilities at NUIST. There may also be additional costs if the 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.

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.

BSc Data Science (NUIST-UoR Academy) NUIST-based (full-time) for students entering Part 1 in session 2024/25

14 August 2023

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