



University of
Nottingham

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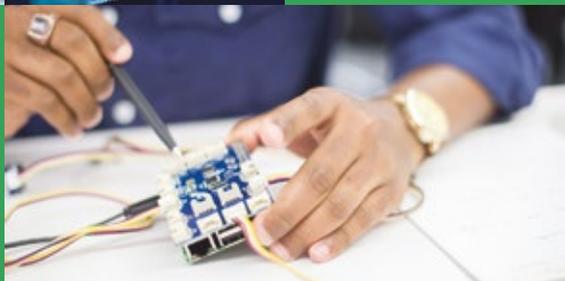
Computer Science



Program it



Connect it



nottingham.ac.uk/computerscience

Undergraduate guide 2019

Contents

Welcome	2
Why study with us?	4
Our courses	5
Study abroad	12
Industry placement	13
How will I study?	14
Careers and employability	16
How do I apply?	18
Experience it	19

**Top 10
computer
science
department**
in the UK for
research power*

* Research Excellence Framework, 2014.



**Gain
experience
in industry**

**Benefit from
up-to-date
software**



**Dedicated
computer
labs**



**Design
and create
the systems
of the future**



**2nd in
the UK
for research
environment***

* Research Excellence Framework, 2014.



**Opportunities
to study
abroad**



**Understand
and program
today's
computer
technology**

**Based on Jubilee Campus,
beautifully designed
with striking buildings,
innovative green
technology and
plenty of open spaces**



Studying computer science at Nottingham

Computer science is about representing, transforming, analysing and distributing information. In the modern world this data is everywhere, it comes from many different sources and can be used in a variety of ways.

If you want to understand how to program today's computers, and to design and implement the systems of the future, whether they are a traditional computer system, a smartphone or something completely new, then computer science at Nottingham is for you.

Research excellence

Computer science is a subject that changes at such speed. Being taught by staff who carry out research means your knowledge is up to date and relevant, and that you learn from people who are genuinely excited about what they teach. You might find yourself working on world-leading research for your third or fourth-year project, or they may inspire you to carry out your own research at postgraduate level.

Our course curriculum has been designed to be compliant with the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronic Engineers (IEEE).

Investments in the school

Along with access to university-wide facilities, computer science students will have exclusive access to the following:

- 24-hour access to dedicated computer labs with regularly updated hardware
- study space for group work in labs and common areas as well as private study areas
- a pool of Linux workstations and remote access to Linux (SuSE/CentOS) servers
- virtual servers for teaching and projects in a high availability cluster
- MSDN® access for registered students
- external remote full desktop access to the computer science teaching environment from personal mobile and desktop devices

Prior programming experience

What we are looking for when you apply for computer science is an enthusiasm for the subject and evidence of why you would do well. Programming experience is not compulsory for entry to any of our courses as our first year is designed to bring all our students to the same level of knowledge and skill.



Our courses

Degree title	UCAS code	Duration	A levels	IB
Single honours				
BSc Computer Science	G400	3 years	AAA-AAB*	34-32***
MSci Computer Science	G404	4 years	AAA-AAB*	34-32***
BSc Computer Science with Year in Industry	G407	4 years	AAA-AAB*	34-32***
MSci Computer Science including International Year	G406	4 years	AAA-AAB*	34-32***
BSc Computer Science with Artificial Intelligence	G4G7	3 years	AAA-AAB*	34-32***
MSci Computer Science with Artificial Intelligence	G4G1	4 years	AAA-AAB*	34-32***
BSc Computer Science with Artificial Intelligence with Year in Industry	G4GB	4 years	AAA-AAB*	34-32***
MSci Computer Science with Artificial Intelligence including International Year	G4GA	4 years	AAA-AAB*	34-32***
BSc Data Science	I260	3 years	AAA**	36****

* Plus 5 GCSE's at grade 5 (B), AAB if A levels include A in computer science.

** Including A in maths or A*AB (with A* in maths) or AAB (with A in maths) if this also includes an A level in computer science.

*** Including 5 in Standard or Higher Level mathematics or GCSE maths, 5 (B) or above.

**** Including 6 in maths at Higher Level.

Foundation courses

Applicants who are not eligible for direct entry to undergraduate study may be able to apply for a foundation course. Find out more at nottingham.ac.uk/foundationcourses

English language requirements

IELTS 6.5 (no less than 6.0 in any element).

For details of other English language tests and qualifications we accept, please see nottingham.ac.uk/go/alternativerrequirements

Academic English preparation

If you require additional support to take your language skills to the required level, you may be able to attend a pre-sessional course at the Centre for English Language Education, which is accredited by the British Council for the teaching of English in the UK.

Students who successfully complete the pre-sessional course to the required level can progress onto their chosen degree course without retaking IELTS or equivalent. Find out more at nottingham.ac.uk/cele

BSc | MSci Computer Science

Our computer science courses provide you with a thorough understanding of core topics in computer science – both theoretical and practical, a wide range of technical and analytical skills. You will also gain hands on experience with the numerous and fascinating applications of computer science including web and mobile applications, games, social networks, and artificial intelligence.

Year one

You will learn the key concepts and tools underpinning modern computer science. You will learn how to program in C, Java and Haskell, and study the architecture and applications of computer systems.



“The teaching style in first year allows for everyone, regardless of prior experience, to reach the same level by the second year, where it is more focused towards specialisation. Overall, my first year was an interesting and amazing experience as it was the first time I had ever been exposed to programming at university level. Stephen Sowole, BSc Computer Science”

Year two

In year two you will take part in a software engineering group project. At the same time you will study programming and the underlying theory of computation in greater depth and meet new topics, such as networks and the design of large scale systems.

Year three

In year three you will undertake modules in Computer Security and Professional Ethics in Computing. There will be a wide range of specialised optional modules you can select, including an individual research project.

Year four (MSci students)

If you opt for the four-year MSci course, you will engage with cutting-edge research and professional software development allowing you to participate in the developments in the field.

Our BSc and MSci Computer Science courses are accredited by the British Computer Society (BCS) as fully meeting the educational requirement for Chartered IT Professional registration. The BSc courses are also accredited as partially meeting the educational requirement for Chartered Engineer registration.

Typical modules

Year one	Year two	Year three	Year four (MSci only)
Core <ul style="list-style-type: none"> ■ Programming and Algorithms ■ Computer Fundamentals ■ Systems and Architecture ■ Mathematics for Computer Scientists ■ Database and Interfaces ■ Introduction to Software Engineering ■ Programming Paradigms ■ Fundamentals of Artificial Intelligence 	Core <ul style="list-style-type: none"> ■ Algorithms and Data Structures ■ Software Engineering Group Project ■ Operating Systems and Concurrency ■ Machines and their Languages ■ Software Application Development Optional <ul style="list-style-type: none"> ■ Graphical User Interfaces ■ Advanced Functional Programming ■ Introduction to Formal Reasoning ■ Introduction to Image Processing ■ Planning and Search ■ C++ Programming ■ Human Computer Interaction 	Core <ul style="list-style-type: none"> ■ Individual Dissertation Single Honours ■ Professional Ethics in Computing Optional <ul style="list-style-type: none"> ■ Computability ■ Computer Security ■ Mobile Device Programming ■ Software Quality Management ■ Knowledge Representation and Reasoning ■ Machine Learning ■ Collaboration and Communication Technologies ■ Computer Graphics ■ Autonomous Robotic Systems ■ Fuzzy Sets and Fuzzy Logic Systems ■ Development Experience ■ Industrial Experience ■ Schools Experience 	Core <p>Either:</p> <ul style="list-style-type: none"> ■ MSci Individual Research Project <p>or:</p> <ul style="list-style-type: none"> ■ MSci Group Programming Project ■ MSci Individual Programming Project Optional <ul style="list-style-type: none"> ■ Advanced Algorithms and Data Structures ■ Mixed Reality Technologies ■ Games ■ Simulation for Decision Support ■ Designing Intelligent Agents ■ Advanced Computer Communications ■ Mobile Device Programming ■ Operations Research and Modelling ■ Design Ethnography ■ Computer Vision ■ Selected Topics in Artificial Intelligence

Modules may change, for example due to curriculum developments. The above list is a sample of typical modules that we offer, not a definitive list. The most up to date information can be found on our website at nottingham.ac.uk/ugstudy/computerscience

BSc | MSci Computer Science with Artificial Intelligence

Artificial intelligence has truly started having a defining effect on society, underpinning a number of technologies such as social networks, games and self-driving cars.

This course takes the standard computer science degree and focuses on subjects which explore these ideas. You will learn about robotics, machine learning, computer vision, neural networks, and the history and future of this exciting subject.

Year one

You will be introduced to the key concepts and tools underpinning modern computer science with artificial intelligence. You will learn how to program in Java, study the architecture and applications of computer systems and will be introduced to the areas of artificial intelligence that you will focus on in later years.

Year two

In year two, you will take part in the Software Engineering Group Project, as well as being introduced to more programming languages, and Artificial Intelligence Methods.

“ This course has granted me the opportunity to develop applications and systems that not only have real world applications, but that rival the existing technologies in the field. The ability to specify what I want to build, and how I want to build it has allowed me a vast range of creative freedom within the work that I do.

Richard Davies, Computer Science with Artificial Intelligence

Year three

You will undertake core modules in computer security and professional ethics in computing. You will have a wide range of specialised optional modules to choose from including an individual research project.

Year four (MSci students)

The four-year MSci is more advanced and designed to produce high-quality graduates who show independent thought, flexibility and maturity, and who command a sound technical knowledge of computer science and artificial intelligence. You will also be exposed to research-level topics, particularly in artificial intelligence, that will allow you to appreciate, and participate in, future developments in the field.

Our BSc and MSci Computer Science with Artificial Intelligence courses are accredited by the British Computer Society (BCS) as fully meeting the educational requirement for Chartered IT Professional registration. The BSc courses are also accredited as partially meeting the educational requirement for Chartered Engineer registration.



Typical modules

Year one	Year two	Year three	Year four (MSci only)
Core <ul style="list-style-type: none"> ■ Programming and Algorithms ■ Computer Fundamentals ■ Systems and Architecture ■ Mathematics for Computer Scientists ■ Databases and Interfaces ■ Software Engineering ■ Programming Paradigms ■ Fundamentals of Artificial Intelligence 	Core <ul style="list-style-type: none"> ■ Software Engineering Group Project ■ Algorithm Correctness and Efficiency ■ Operating Systems and Concurrency ■ Languages and Computation ■ Software Maintenance Optional <ul style="list-style-type: none"> ■ Introduction to Image Processing ■ Advanced Functional Programming ■ C++ Programming ■ Introduction to Human Computer Interaction ■ Software Specification ■ Artificial Intelligence Methods ■ Distributed Systems 	Core <ul style="list-style-type: none"> ■ Professional Ethics in Computing ■ Software Specification Optional <ul style="list-style-type: none"> ■ Automated Decision Support Methodologies ■ Autonomous Robotic Systems ■ Collaboration and Communication Technologies ■ Computability ■ Computer Graphics ■ Knowledge Representation and Reasoning ■ Machine Learning ■ Software Quality Metrics ■ Individual Dissertation ■ Designing Intelligent Agents ■ Computer Vision ■ Compilers ■ Mobile Device Programming ■ Fundamentals of Information Visualisation 	Modules include: <ul style="list-style-type: none"> ■ Advanced Computer Networks ■ Advanced Algorithms and Data Structure ■ Design Ethnography ■ Mathematical Foundations of Programming ■ Simulation and Optimisation for Decision Support ■ Autonomous Robotic Systems ■ Mixed Reality Technologies ■ Data Modelling and Analysis ■ Foundations of Programming Mini-Project ■ Games ■ Software Engineering Management ■ Linear and Discrete Optimisation

Modules may change, for example due to curriculum developments. The above list is a sample of typical modules that we offer, not a definitive list. The most up to date information can be found on our website at nottingham.ac.uk/ugstudy/computerscience

BSc Data Science

Data science is a rapidly growing discipline which is already redefining the world around us. This BSc provides you with a comprehensive mathematical background and the computer science skills needed to be at the forefront of this new discipline.

Year one

The first year covers the foundations of the course incorporating both computer science and mathematics.

Year two

The second year expands on these foundations and focuses on methods for gaining insights from data. We offer opportunities for specialisation through optional modules, including topics in human computer interaction.

Year three

The final year allows you to specialise through a larger set of optional modules. Your final year project provides an opportunity to bring these skills together to address real data analysis problems in a rich and supportive environment.

Typical modules

Year one

Core

- Computer Fundamentals
- Databases and Interfaces
- Fundamentals of Artificial Intelligence
- Programming and Algorithms
- Calculus and Linear Algebra
- Probability
- Statistics
- Analytical and Computational Foundations

Year two

Core

- Algorithms, Correctness and Efficiency
- Introduction to Scientific Computation
- Probability Models and Methods
- Statistical Models and Methods

Optional

- Introduction to Human Computer Interaction
- Languages and Computation
- Software Maintenance
- Operating Systems and Concurrency
- Artificial Intelligence Methods
- Advanced Functional Programming
- Introduction to Image Processing
- C++ Programming
- Software Specification
- Distributed Systems

Year three

Core

- Machine Learning
- Optimisation

Optional

- Designing Intelligent Agents
- Knowledge Representation and Reasoning
- Stochastic Models
- Game Theory
- Coding and Cryptography
- Mathematical Finance
- Multivariate Analysis
- Computer Security
- Software Quality Metrics
- Computer Vision

Modules may change, for example due to curriculum developments. The above list is a sample of typical modules that we offer, not a definitive list. The most up to date information can be found on our website at nottingham.ac.uk/ugstudy/computerscience

Study abroad

Our four year MSci programmes offer you the opportunity to spend the third year of your course studying at one of our partner universities. These currently include Australia, Canada, Hong Kong, Ireland, Mexico or New Zealand.

Studying abroad offers you a range of personal and professional benefits. Experiencing new cultures and learning methods takes you out of your comfort zone, helping you to develop valuable skills, such as independence and resilience, which are attractive to future employers.

You will study a framework of core modules at the host school which builds on the foundation of years one and two and prepares you for the final year in Nottingham. Optional modules will allow you to benefit from the unique opportunities for study at the host school. Currently, reduced tuition fees are payable during this year.



Industry placement

Our industry placement programme is designed to allow you to expand and refine the skills you have learnt throughout studies so far. Employers involved in the programme fully support students' development and aim to provide a constructive learning environment for you to share fresh ideas and further develop your computational knowledge.

The school monitors students' progress while out on placement through visits from academic staff, and frequent submissions of a reflective log and progress reports. We offer an open-door policy so that students never need to feel distant from us.

Enhance your employability prospects and make professional contacts.

Structure

You can follow either the computer science or computer science and artificial intelligence syllabus throughout year one and two, and then begin a year in industry. On your return, you will resume your studies in year three.

Ongoing support

With a fully structured programme of events and help from the Careers and Employability Service throughout the first two years, you will have the very best chance of finding a placement and receive continued support. Dedicated staff deliver a timetable of tailored workshops and seminars for year in industry students, such as CV writing, interview and assessment centre tips, and professionalism. Drop in sessions are also available to you.

We also host recruitment fairs and invite placement providers from a range of companies. The University's MyCareer database lists upcoming placement opportunities and the school has many industry contacts.



Engaging study, incredible results

You will learn through a wide variety of activities including formal lectures, small-group tutorials, practical computer labs and, self-directed study.

Teaching

Lectures will form the backbone of your studies in the first year, when you will be taking up to six modules at any given time. Each module will typically involve around three hours of study per week, combining a mix of formal lectures and activities such as tutorials or computer labs.

Practical teaching

Practical, self-directed study will play a central role in your learning throughout your degree, particularly in relation to the group and individual projects which take place from second year.

The computer science building is ideal for this purpose, offering areas such as the hub, atrium and meeting pods. Practical programming learning takes place in one of our recently refurbished labs.

Personal tutors

You will be allocated a personal tutor to help and advise you during your time at university. Your tutor is one of your first ports of call in the school if you have any problems or questions and will offer you help, encouragement and feedback on your performance on the course.

Study support

As well as receiving support from your personal tutor we also run a Peer Mentoring Scheme where first years can get advice and support from students who excelled in their first year.

How will I be assessed?

Lecture-based modules will typically be assessed at the end of each semester. A substantial number of computer science modules have an element of practical coursework.

Experience credits

Experience credits are a new innovative way for our students to earn credits towards their degree. This optional module has been designed so we can offer students recognition of independent development.

Credits can be gained from; code written during an internship, contribution to an open source project, releasing an app, or involvement in teaching and outreach projects.



Outstanding careers support

Amplify your potential

Whether you already have a plan or need some inspiration, your Careers and Employability Service is here to help.

Academic excellence and employability go hand in hand at Nottingham. Your course, and the diverse student experiences we offer, will enable you to develop the skills and professional competencies required to thrive in the job market of the future.

We will help you explore your options, so you feel confident making choices about what you want to achieve. Our team will support you as you build your CV, search for jobs, prepare applications, practise your interview technique, and much more.

90.5% 
of undergraduates
in the school had secured
work or further study within
six months of graduation*

£28,172 
was the average starting salary
with the highest being £55,000*



Get the Advantage

The career-enhancing Nottingham Advantage Award recognises and rewards your extracurricular activities. With a choice of over 200 modules, you can hone the key skills employers are looking for. From developing your leadership skills and learning a language to public speaking and volunteering, you will leave university with demonstrable experience that sets you apart from other graduates. For further information, visit nottingham.ac.uk/careers/advantage

Recent graduate destinations include:

- software and hardware development
- financial sector
- business sector
- set up your own business
- teaching
- industrial research
- academic research

We have staff members with experience of all these options who can advise you further.



@UoNCareers



CareersUoN

How do I apply?

How to apply

All applications for undergraduate study at Nottingham, including applications by international students, must be made through UCAS.

You can apply online at ucas.com and will be notified of decisions through UCAS Track.

Your personal statement

This is the section of your UCAS form that tells us most about you, and you should make the best use of it. Be as specific and detailed as you can – we would like to see that you are a student who can work hard, be self-motivated and make the best possible use of the opportunities that our courses offer you. We would also like to hear about any skills you have gained through extracurricular activities.

Minimum entry requirements

Unless otherwise stated in individual course profiles, all UK applicants should have GCSE English grade 4 (C) as a minimum.

Alternative qualifications

In this brochure you will find our A level and International Baccalaureate entry requirements but we accept a much broader range of qualifications. For more details, visit nottingham.ac.uk/ugstudy/applying

GCSE reform

Following the reform of GCSE grading in England from A*-G to 9-1, we have adopted Ofqual's recommended equivalence. This means that GCSE grade A*=9, A=7, B=5/6 and C=4. GCSE qualifications taken outside of the UK will still be graded A* to G.

Around one-third of our UK students receive our means-tested core bursary, worth up to £2,000 a year (2018 entry figure; subject to change). For details, see nottingham.ac.uk/financialsupport

Flexible admissions policy

In recognition of our applicants' varied experience and educational pathways, we employ a flexible admissions policy. If we judge that your situation has adversely affected your achievement, then we will consider this when assessing your academic potential. Some courses may make a slightly lower offer. For more information about this policy, see nottingham.ac.uk/ugstudy/applying

Mature applicants

We encourage applications from mature applicants who have a significant gap in education. You should apply through UCAS. Find out more at nottingham.ac.uk/mature

International applicants

The University provides a range of information and advice for international applicants. If you are unable to attend an open day, we can meet you in your country at one of our overseas events or arrange an individual visit to the University. For further information please visit nottingham.ac.uk/go/international-applicants

Deferred entry

Applicants who wish to defer their entry by a year will not be at a disadvantage. Please tell us something about your plans for your gap year in your UCAS personal statement.

Equal opportunities policy

The University aims to create the conditions whereby students and staff are treated solely on the basis of their merits, abilities and potential, regardless of gender, race, colour, nationality, ethnic or national origin, age, socio-economic background, disability, religious or political beliefs, trade union membership, family circumstances, sexual orientation or other irrelevant distinction.

Experience it



Live and study abroad as part of many courses

nottingham.ac.uk/studywithus/studyabroad

Accommodation to suit every budget and personal choice

nottingham.ac.uk/accommodation



10 minutes from the city for music, food and shopping

nottingham.ac.uk/nottinghamlife

200+

student-led groups, clubs and societies at your Students' Union

su.nottingham.ac.uk



Student Service Centres on all UK campuses for support and advice

nottingham.ac.uk/student-services



One of the UK's leading universities for sport* with over 70 student sports clubs

nottingham.ac.uk/sport

* British Universities and Colleges Sports Standings, 2016-17.

Join in with the vibrant musical life on campus and in the city

nottingham.ac.uk/music/performance

Choose from **9 modern languages** to study alongside your course

nottingham.ac.uk/language-centre





University of
Nottingham

UK | CHINA | MALAYSIA

For undergraduate enquiries contact:
Student Recruitment Enquiries Centre



+44 (0)115 951 5559



nottingham.ac.uk/contact



UoNComputerScience



UoNComputerSci

nottingham.ac.uk/computerscience

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This brochure has been drafted in advance of the academic year to which it applies. Every effort has been made to ensure that the information contained in this brochure is accurate at the time of publishing, but changes (for example to course content) are likely to occur given the interval between publication and commencement of the course. It is therefore very important to check our website for any updates before you apply for the course by following nottingham.ac.uk/ugstudy. Where there is a difference between the contents of this brochure and our website, the contents of the website take precedence.