Computer Science (Security and Resilience)  
BSc Honours

A world-class university in a world-famous city

UCAS code I190  
3 Years

www.ncl.ac.uk/ug/I190

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Computer Science (Security and Resilience)

BSc Honours
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This degree provides a firm foundation in the important field of security and resilience.

You study a broad curriculum in your first two years, developing knowledge in different aspects of computing science, and gaining skills in problem solving, program design and implementation.

In your third year, you move onto specialist topics in security and resilience, developing skills and knowledge for your future career.

Your modules focus on the design and development of dependable software systems, and include:

- cryptographies
- software verification technology

### Highlights of this degree

#### Security and Resilience

Graduates of our degrees in Security and Resilience will have particular knowledge and skills related to the development of dependable software systems.

Armed with knowledge of issues such as security mechanisms for computing, software verification techniques and tools, cryptography, and cryptographic protocols, you will be well placed for employment in technical positions in software houses and with companies designing and deploying dependable software in safety-critical industry sectors.

#### Quality and ranking

- **top 20 in the UK (Computer Science Category)** - Times/Sunday Times Good University Guide 2020
- **9th overall in the UK for research** – Research Excellence Framework 2014

#### Professional accreditation

We seek British Computer Society (BCS) accreditation for our degrees so you can be assured that you will graduate with a degree that meets the standard set by the IT industry.

BCS is the Chartered Institute for IT. Studying a BCS-accredited degree provides the foundation for a chartered IT professional, engineer or scientist.

*All professional accreditations are reviewed regularly by their professional body.*

### Flexible degree structure

You might not be sure which area of computing science you want to specialise in yet. Don't worry. At Newcastle, all Computing Science students study the same modules for the first two years, before specialising in the later years.

This gives you time to explore the subject and decide which area you want to specialise in. It also means you can transfer between our degrees up to the end of second year (although transfer from a BSc to an MComp is dependent on your academic performance).

Our MComp degrees involve an additional year of advanced study during which you follow Master’s-level modules from one of our MSc programmes. This provides you with a deeper level of knowledge that some employers will look for when recruiting.

If you are unsure whether to apply for a BSc or an MComp, please contact us for more information.

### Industry links

We have strong links with a number of organisations within the industry. Various parts of our degrees attract prizes awarded by major companies.

Local businesses approach the School to advertise small, part-time or voluntary work opportunities, giving you the chance to gain valuable work experience.

### Facilities and support

You will be part of the School of Computing, based in the Urban Sciences Building on our Newcastle Helix area of campus.

#### Facilities

Our brand new £58m building offers great facilities for our students, including:

- cyber physical systems laboratory
- decision theatre for data visualisation
- flat floor teaching facilities
- 315 PCs with a Raspberry Pi3 on every desk

The building and its surrounding area will become a living laboratory, underpinning research to make urban centres more sustainable for future generations. Research at Newcastle Helix will focus on:

- cyber physical systems
- infrastructure
- smart grids
- future of our city
- big data

#### Support

You’ll be supported by a personal tutor throughout your degree – an academic member of staff who can help with academic and personal issues.

You’ll also have access to a peer mentor in your first year – a fellow student who can help you settle in and answer any questions you have.
Social activities
Our student-led Computing Society offers a range of activities throughout the year to help you meet people on your course. Activities range from coding and gaming nights to events with key speakers from industry.

Defence Technical Undergraduate Scheme (DTUS)
Do you want to become a technical officer in the Royal Navy, British Army, RAF or Defence Engineering and Science Group when you graduate?

This degree is approved by the Defence Technical Undergraduate Scheme (DTUS).

DTUS is a sponsorship programme for students interested in a scientific, engineering or technical career in the armed forces or the Ministry of Defence.

Find out more on our Armed Forces page.

Free WiFi on campus helps you stay connected.

Course Details

Modules for 2019 entry

Please note
The module and/or programme information below is for 2019 entry. Our teaching is informed by research and modules change periodically to reflect developments in the discipline, the requirements of external bodies and partners, student feedback, or insufficient numbers of students interested (in an optional module). To find out more read our terms and conditions.

Module/programme information for 2020 entry will be published here as soon as it is available (end of May 2020).

Our degrees are divided into Stages. Each Stage lasts for an academic year and you need to complete modules totalling 120 credits by the end of each Stage. Further information, including the credit value of the module, is available in each of the module descriptions below.

Stage 1

Compulsory modules
CSC1031 Fundamentals of Computing
CSC1032 Computer Systems Design and Architectures
CSC1033 Information Storage and Retrieval
CSC1034 Programming Portfolio 1
CSC1035 Programming Portfolio 2

Stage 2

Compulsory modules
CSC2031 Security and Programming Paradigms
CSC2032 Algorithm Design and Analysis
CSC2033 Software Engineering Team Project
CSC2034 Introducing Contemporary Topics in Computing
CSC2035 Operating Systems and Networks
Work Placement Year

On completion of Stage 2 and before entering Stage 3, you may as part of your studies for the degree, spend a year in a placement with an approved organisation. If you are required to re-sit your Stage 2 assessment, you must delay the start of your placement until you have done so. Students who fail Stage 2 may not complete a placement year.

ICM0043 Intercalating Module for Computing Science Programmes

Stage 3

Compulsory modules
CSC3031 Research Methods, Tools and Techniques
CSC3032 Major Project in Computing Science
CSC3631 Cryptography
CSC3632 System and Network Security

Optional modules
You choose 30 credits from the following list:
CSC3131 Building Systems for People
CSC3231 Graphics for Games
CSC3232 Gaming Technologies and Simulations
CSC3331 Real Time and Cyber-Physical Systems
CSC3332 Programming Language Design and Verification
CSC3333 Understanding Concurrency
CSC3431 Introduction to BioDesign and Natural Computing
CSC3432 Biomedical Data Analytics
CSC3633 Reliability and Fault Tolerance
CSC3731 Human Computer Interaction: Interaction Design
CSC3732 Human Computer Interaction: Applied Innovation
CSC3831 Data Exploration
CSC3832 Predictive Analytics and Machine Learning

You may not select more than one 10 credit module. You may take modules from other Schools to a value of 20 credits, subject to the approval of the Degree Programme Director.

Assessment methods
You’ll be assessed by a range of methods including:
- course work, such as team and individual project reports, to assess your practical skills
- written and oral presentations, to assess your core transferable skills
- examinations are also used for some modules

Find out more
Visit our Teaching and Learning pages to read about the outstanding learning experience available to all students at Newcastle University.

Careers

Computer Science careers
In the present job market, computing science graduates are better placed than many others to obtain employment in a challenging and fulfilling career, and the employability of Newcastle graduates is particularly high.

Computer manufacturers and software houses, for example, recruit specialists to develop software solutions. Organisations that use computers on a large scale – such as banks, insurance companies, the electronics industry, central and local government, and management in all areas of business – also offer employment opportunities to graduates with computer skills. Companies such as Waterstons,Accenture, IBM, P&G, Deloitte, Microsoft, Sage and GSK regularly recruit our placement students and graduates.

Find out more about the career options for Computer Science from Prospects: The UK’s Official Careers Website.

What our graduates go on to do: employment and further study choices
See what our recent graduates went on to do and view graduate destinations statistics. These statistics are based on what graduates were doing on a specific date, approximately six months after graduation. Take a look at the most recent data available for our graduates.
The destination data is available in varying levels, beginning with the University and moving through Faculty and School down to individual course reports. This final level may give you some useful ideas about possible options after your course or a course you are considering.

**Careers and employability at Newcastle**

Newcastle University consistently has one of the best records for graduate employment in the UK. 96% of our 2017 UK-domiciled UG/PG graduates progressed to employment or further study within six months of graduating.

85.5% of our graduates are in graduate level employment or further study within six months of graduating.

We provide an extensive range of opportunities to all students through an initiative called ncl+. This enables you to develop personal, employability and enterprise skills and to give you the edge in the employment market after you graduate.

Our award-winning Careers Service is one of the largest and best in the country, and we have strong links with employers.

**Fees & Funding**

**Tuition Fees (UK students)**

2020 entry: £9,250

For programmes where you can spend a year on a work placement or studying abroad, you will receive a significant fee reduction for that year.

Some of our degrees involve additional costs which are not covered by your tuition fees.

**Please note:**

As a general principle, you should expect the tuition fee to increase in each subsequent academic year of your course, subject to government regulations on fee increases and in line with inflation.

See more information on all aspects of student finance relating to Newcastle University.

**Tuition Fees (EU students)**

2020 entry: £9,250

You will pay the same tuition fees as UK students for the duration of your course.

**Tuition Fees (International students)**

2020 entry*: £22,800

*Please note:

You will be charged tuition fees for each year of your degree programme (unless you are on a shorter exchange programme).

The tuition fee amount you will pay may increase slightly year on year as a result of inflation.

If you spend a year on placement or studying abroad as part of your degree you may pay a reduced fee for that year.

See more information on all aspects of student finance relating to Newcastle University.

**Scholarships and Financial Support (UK students)**

You may be eligible for one of a range of Newcastle University Scholarships in addition to government financial support.

Newcastle University Scholarships

Government financial support

**Scholarships and Financial Support (EU students)**

You may be eligible for one of a range of Newcastle University Scholarships in addition to government financial support.

Newcastle University Scholarships

Government financial support

**Scholarships and Financial Support (International students)**

We offer a range of scholarships to eligible international students:

Vice-Chancellor’s International Scholarships
Scholarships and Financial Support (International students)

Vice-Chancellor’s Excellence Scholarships
Vice-Chancellor’s Global Scholarships

We also offer International Family Discounts which are available for all international students with a close family member who has graduated from or is now studying at Newcastle University.

Newcastle University offers Sanctuary Scholarships for eligible undergraduate students (excludes MBBS and BDS students) from asylum-seeker and refugee backgrounds.

Some of our subject scholarships and sports scholarships are also available for international students.

Apply

Applying to Newcastle University through UCAS

To apply for undergraduate study at Newcastle you must use the online application system managed by the Universities and Colleges Admissions Service (UCAS).

UCAS codes for Newcastle University

- institution name - NEWC
- institution code - N21

UCAS buzzword

Ask your teacher or adviser from your school or college for the UCAS buzzword. You need the buzzword when you register on the Apply system. This makes it clear which school or college you are applying from.

All UK schools and colleges and a small number of EU and international establishments are registered with UCAS.

If you are applying independently, or are applying from a school or college which is not registered to manage applications, you will still use the Apply system. You will not need a buzzword.

Making your application

On the UCAS website you can also find out more about:

- application deadlines and other important dates
- offers and tracking your application

Application decisions and enquiries

Find out more about our admissions process and who to contact if you need help with your application.

Careers Service Placement Year

On completion of Stage 2 and before entering Stage 3, you may as part of your studies for the degree, spend a year in a placement with an approved organisation. If you are required to re-sit your Stage 2 assessment, you must delay the start of your placement until you have done so. Students who fail Stage 2 may not complete a placement year.

- ICM0043 Intercalating Module for Computing Science Programmes

Relax between lectures in our dedicated Student Common Rooms.