Surveying and Mapping Science
BSc Honours

A world-class university in a world-famous city

UCAS code H244
3 Years
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Surveying and mapping uses state-of-the-art technology and mathematical-based analysis to study the built and natural environments.

This allows us to go beyond simply observing the world around us, to collecting and analysing data about it.

This professionally accredited degree focuses on the science, technology and maths behind map making and coordinate systems.

It spans geography, science, mathematics and ICT and will appeal to students with an interest in engineering, technology and the environment.

There is a large market for expertise in this area and graduates of this degree are in demand, with excellent employment prospects.

Highlights of this degree

Professional accreditation
This degree is accredited by:

- the Royal Institution of Chartered Surveyors (RICS) and,
- the Chartered Institution of Civil Engineering Surveyors (CICES)
- the Land Surveyors Board Malaysia

This means that you graduate with a degree that meets the standards set by the industry.

Newcastle is unique in the UK in having this dual accreditation for its geomatics degrees.

What you will study
This degree is very hands on, with plenty of opportunities to use our state-of-the-art equipment from your first year.

You are introduced to the subject area through outdoor and computer-based practical work and learn a wide range of geographic techniques such as:

- engineering surveying
- 3D laser scanning
- mobile map-making

In your final year, advanced specialist modules - like law and land use, and geohazards - prepare you for your future career.

The application of the data we collect about the world around us is huge, from using lasers to make 3D models of buildings for construction projects, to using satellite positioning to model environmental changes.

This combination of practical skills and specialist knowledge makes our graduates attractive to employers.

Our graduates work all over the world in a range of organisations, including:

- specialist land, air and offshore mapping
- government agencies
- cartographic publishers
- engineering companies

Fieldwork
You will take part in regular practicals in and around Newcastle, as well as having opportunities to attend residential field courses.

In Stage 1 you attend a residential field course in the Lake District where your task will be to map the Borrowdale Valley.

At Stage 2 you visit organisations where surveying, mapping and GIS are being used, for example, the British Antarctic Survey or British Geological Survey.

In Stage 3 you participate in an eight-day Advanced Survey fieldcourse, which will draw on study material from Stages 1 and 2 to introduce you to a real-world surveying problem. This will give you the chance to test your skills in precise monitoring, control, data capture and road design.

Strong industry links
Newcastle has strong industry links with a variety of companies in the land survey, offshore survey and GIS sectors. This is reflected in the availability of work placements and sponsorship opportunities for our students. Our annual careers fair also helps you make the most of these opportunities.

Graduates from our degree are highly sought after by industry:

- our employment and further study rate has averaged 98% over the last three years
- in 2013, graduates’ average salary was £34,000 (Destination of Leavers of Higher Education surveys 2012–13)

Facilities and support

Facilities
As a geomatics student at Newcastle, you will join a close-knit community within the School of Engineering.

All our students have access to an exceptional range of facilities, equipped with a wide range of analytical instrumentation.

You will have access to an exceptional pool of advanced industry-standard field and computer laboratory equipment including:

- 3D laser scanners
- GPS and electronic survey equipment
- satellite imagery
- state-of-the-art computer software
Support
To help you get the most out of university life, you’ll have access to a range of support, including:

- an extended induction programme to help you settle in
- a personal tutor throughout your degree
- a student mentor in your first year
- a starter pack containing key resources and essential equipment
- our highly active student society

You’ll also benefit from:

- a teambuilding field trip in North Yorkshire in your first week, to help you quickly settle in to our community
- our high level of practical and group work, which helps you get to know staff and fellow students

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.

Course Details

Modules for 2017 entry

Please note
The module and/or programme information below is for 2017 entry. Modules may be amended on an annual basis to take account of changing staff expertise, developments in the discipline, the requirements of external bodies and partners, and student feedback. Modules/programme information for 2018 entry will be published here as soon as it is available (end of May 2018).

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.

Stage 1

Compulsory modules
CEG1701 SMS Fieldcourse
CEG1702 Geographic Information Systems
CEG1703 Surveying
CEG1705 An Introduction to GNSS and its Applications
CEG1706 Principles of Remote Sensing
CEG1707 Quantitative Methods for Geomatics
CEG1711 Tutorial Study Skills for Geomatics
CEG1713 Informatics 1

You will select the following module if you have A level Mathematics at grade B or above:
ENG1001 Engineering Mathematics 1

You will select the following modules if you don’t have A level Mathematics or with A level Mathematics at grade C or below:
SFY0001 Basic Mathematics
SFY0003 Foundation Mathematics 1

Stage 2

Compulsory modules
CEG2703 Observation Processing and Analysis
CEG2704 Geographic Information Systems: Theory and Application
CEG2705 Survey Mathematics
CEG2707 Map Projections and Geodetic Datums
CEG2708 Photogrammetry and Laser Scanning 1
CEG2709 Applied Remote Sensing and Image Processing
CEG2710 GNSS Theory and Practice
Stage 2

CEG2720 Geomatics Practice and Research
CEG2721 Spatial Data Modelling and BIM
CEG2722 Informatics 2
CEG2723 Digital Data Acquisition

Stage 3

Compulsory modules
CEG3702 Advanced Survey Fieldcourse
CEG3703 Professional Practice
CEG3706 Photogrammetry and Laser Scanning II
CEG3707 Geohazards and Deformation of the Earth
CEG3709 Advanced Geodesy
CEG3710 Offshore Surveying
LAW2053 Law and Land Use
CEG3799 Individual Research Project

Optional modules
You choose a further 10 credits of modules normally from the following list:
CEG2401 Land, Traffic and Highways
CEG2718 Applied Geospatial Data Handling
CEG3401 Design of Transport Infrastructure
CEG3716 Geospatial Informatics
SUG3500 Creativity and Market Research in Science and Engineering

Teaching and assessment

Teaching methods
You usually study six modules per semester, with an average weekly timetable comprising approximately 20 contact hours. Each module involves around two one-hour lectures per week.
You also complete several field/computer practicals of around three hours each during the semester.

Assessment methods
Modules are usually assessed by a final examination, plus two to four pieces of coursework based on practical classes. You also receive informal non-assessed feedback on your progress.

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

Entry Requirements

All candidates are considered on an individual basis.

If your qualifications are not listed here, please see our additional entry requirements web pages to find out which other qualifications are considered.

The entrance requirements below apply to 2018 entry.

A Levels
ABB excluding General Studies and Critical Thinking. Preference will be given to applicants with mathematical, science-based or geography A levels. For Biology, Chemistry and Physics A levels, we require a pass in the practical element. GCSE Mathematics grade B or 6 required if not offered at A or AS level.

Scottish Qualifications
AABBB at Higher Grade including Mathematics and preferably Geography. Combinations of Highers and Advanced Highers accepted.
Scottish qualifications can be taken in more than one sitting.

International Baccalaureate
A minimum of 34 points. Standard Level Mathematics or Mathematical Studies required at grade 5 if not offered at Higher Level.

Irish Leaving Certificate
H1H1H2H2H3 at Higher Level, to include a minimum of Grade H3 in Maths.

Access Qualifications
At least 30 level 3 credits at Distinction and 15 level 3 credits at Merit. A unit in mathematical studies or quantitative methods is essential. IT, Engineering Science and geographical or environmental-related units are desirable.

Pearson BTEC Level 3 National Extended Diploma/OCR Cambridge Technical Level 3 Extended Diploma
Overall DDM, to include Mathematics Level III at Distinction grade.

Cambridge Pre-U
D3, M2, M2 in Principal Subjects. Preference will be given to applicants with mathematical, science-based or geography subjects. GCSE Mathematics grade B or 6 required if not offered at a higher level.

Extended Project Qualification
If you offer the Level 3 Extended Project Qualification in a topic relevant to the degree programme, we will vary our offer to recognise this.

PARTNERS - A Levels
BBC excluding General Studies and Critical Thinking. Preference will be given to applicants with mathematical, science-based or geography A levels. GCSE Mathematics grade B or 6 required if not offered at A or AS level.
The PARTNERS Programme is Newcastle University’s supported entry route for students from schools and
colleges in England. Find out more about the PARTNERS Programme.

PARTNERS - Pearson BTEC Level 3 National Extended Diploma/OCR Cambridge Technical Level 3 Extended Diploma
In any subject at overall DMM-MMM.
The PARTNERS Programme is Newcastle University’s supported entry route for students from schools and colleges in England. Find out more about the PARTNERS Programme.

English Language Requirements
Applicants whose first language is not English require a minimum score of IELTS 6.5 or equivalent.
If you need help to meet our English Language requirements, we can provide support with extra tuition.
Read more about UK visas and immigration requirements.

Other International Qualifications
ABB at A level is typically the minimum required for entry to an undergraduate course. You can check the equivalent grades for qualifications offered in your country.

International Foundation Programmes
If you are an international student and you do not meet the academic and English language requirements specified above, you should consider a preparation course at INTO Newcastle University, which will help to prepare you for study on this degree course.
INTO Newcastle University is based on the University campus and offers a range of courses including the International Foundation in Physical Sciences and Engineering.

Undergraduate Admissions Policy
See our Admissions Policy 2017 Entry (PDF: 109 KB).
See further policies related to admission.

Careers

Surveying and Mapping Science careers
Geomatics involves using cutting-edge technology and will appeal to those who are looking for an exciting and professional future.
As a geomatics graduate you will not only be highly proficient in a variety of specialised geomatics skills but also have other attributes that are applicable to many other professions.
Numeracy, literacy, data handling, communication, computing and research skills will stand you in good stead whatever career you decide to go into.
Graduates of our degree are highly sought after. Of our recent graduates in employment, 100% were in professional or managerial jobs. The average salary was more than £24,000 (Destinations of Leavers from Higher Education Survey 2014–15).
Our annual careers fair allows you to meet companies and organisations from across the industry. You can chat with graduates from our course, and discover the latest industry and technology trends.
For graduates who remain in geomatics, indoor and outdoor activities are both essential and you are usually working as part of a team, developing your skills in communicating with other professionals in related disciplines. You will be highly proficient in data collection, analysis, management and visualisation, as well as having a sound basis in mathematics and science principles. Other graduates may look outside the sector, and consider a wide range of careers such as computing, management consultancy, finance, teaching or the armed forces. Our graduates work in a range of organisations, including:
- specialist land, air and offshore mapping companies
- central and local government agencies
- cartographic publishers
- suppliers of computer-based mapping technology and GIS
- utility companies
- civil engineering contractors
- oil exploration multinationals
- geophysical consultants
Find out more about the career options for graduates 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. The most recent data available is for graduates who completed their course in 2014/15.
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. 94% of our 2014/15 UK/EU graduates progressed to employment or further study within six months of graduating.

Of our graduates who entered employment 85% were in a professional or managerial position.

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)

2018 entry*: Tuition fees for 2018-19 have not yet been confirmed. Some of our degrees involve additional costs which are not covered by your tuition fees.

2017 entry*: £9,250 in 2017-18 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: The maximum fee that we are permitted to charge for UK (Home) students commencing studies in 2017-18 or 2018-19 is set by the UK government. 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. Please note that the tuition fee amount you will pay may increase slightly on year on year as a result of inflation. See more information on all aspects of student finance relating to Newcastle University.

Tuition Fees (EU students)

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: The maximum fee that we are permitted to charge for UK (Home) students commencing studies in 2017-18 or 2018-19 is set by the UK government. 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 (International students)

2018 entry: £21,000 per year You will be charged tuition fees for each year of your degree programme (unless you are on a shorter exchange programme). If you spend a year on placement or studying abroad as part of your degree you may pay a reduced fee for that year. Please note that the tuition fee amount you will pay may increase slightly on year on year as a result of inflation. 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 There are also scholarships available for particular subjects.

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 There are also scholarships available for particular subjects.
Scholarships and Financial Support
(International students)

You may be eligible for an International Family Discount (IFD).
There are also scholarships available for particular subjects.

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.