Chemical Engineering with Process Control

MEng Honours

UCAS code H830
4 Years

www.ncl.ac.uk/ug/H830

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Control engineers apply engineering principles to design, build, and manage computer-based instrumentation and control systems used in the manufacturing industry.

These help monitor chemical engineering processes involved in producing a wide range of products, and give manufacturers a competitive edge.

This professionally accredited MEng Honours degree introduces you to the state-of-the-art in industrial modern control theory.

You will gain chemical engineering knowledge alongside specialist maths and computer skills needed for careers in modern control engineering.

Highlights of this degree

Quality and ranking
At Newcastle you’ll join a School of Engineering with a long-standing reputation for teaching quality and student support.

We rank in the top 150 for Chemical Engineering in the QS World University Rankings by Subject 2019.

Professional accreditation

Accreditations
All of our degrees are accredited by:

- Institution of Chemical Engineers (IChemE)
- Institute of Measurement and Control

IChemE accreditation means employers will recognise the quality of your degree because it meets high professional standards.

BEng or MEng?
Both our BEng degree and specialist MEng degrees provide a pathway to becoming a Chartered Chemical Engineer. This is one of the most recognisable international engineering qualifications.

Our MEng degrees are a direct route to becoming a Chartered Engineer (CEng). You don’t need to study any more qualifications after your degree to work towards chartered status.

Our three-year BEng degree can also lead to Chartered Engineer status. However, you’ll need to complete further study, such as an approved Master’s degree.

Find out more

Find out more about the benefits of becoming a Chartered Engineer on the Engineering Council’s website.

Find out how to obtain Chartership through IChemE on IChemE’s Get Chartered website.

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

What you will study

Flexible degree structure
All of our Chemical Engineering degrees (except our Industry degree) cover the same study programme for the first three years. This means that transfer between our degrees (except the Industry degree) is possible up to the end of Stage 3 should you find your interests change, providing you achieve the appropriate academic standard.

Transfer to or from our Industry degree is also possible up to the end of Stage 2, providing you achieve the appropriate academic standard.

Core curriculum (first three years)
We introduce you to core engineering, maths and science principles underpinning the design of a chemical engineering process plant.

You will learn everything from controlling chemical reaction rates to using specialist computer software to solve chemical and process engineering problems.

Study topics include:

- how to perform, measure, analyse and manipulate chemical reactions
- basic types of mass, heat and momentum transfer
- the design criteria for heat exchangers and other plant equipment used in process plants

In the third year you bring all this knowledge together to design a process plant in a team.

Fourth year (MEng only)
If you are studying an MEng degree, you take specialist modules in your fourth year - see the Course Details.

Boost your employability with a work placement
Apply to spend 9 to 12 months on an optional work placement between Stages 3 and 4. You can apply to spend your placement year with any organisation and will receive University support to do so.

You’ll gain first-hand experience of working in the sector, putting your learning into practice and developing your professional expertise.

It will extend your degree by a year and is subject to availability, however it isn’t available if you’re spending a year studying abroad.

Find out more about Work Placements.
Study abroad

In your final year you complete an individual design project and substantial research project.

With the agreement of the Degree Programme Director, you can carry out a research project at one of our partner universities in Europe or worldwide. Locations include Australia and Singapore.

Facilities and support

As a chemical engineering student at Newcastle, you will join our School of Engineering.

Facilities

Facilities include:
- a state-of-the-art BioLab, providing access to a range of small scale unit operations and the latest equipment
- a recently upgraded pilot plant laboratory
- modern bench-top experimental equipment
- an interactive video teaching system
- high-specification fume cupboards for handling volatile chemicals
- two dedicated computing suites, running specialised industry-standard computer software

Support

To support you in your studies, all new students entering year 1 or year 2 will receive:
- a tablet so you can download the online learning resources you’ll need for your course (helping us to make our campus more sustainable);
- a start-up pack containing essential personal protective equipment and text books.

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.

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 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.

Please be aware that programme modules do change and therefore may differ for your year of entry.

Stage 1

Compulsory modules

CME1020 Chemistry
CME1021 Thermodynamics
CME1023 Transfer Processes
CME1025 Principles of Chemical Engineering
CME1026 Computing and Numerical Methods
CME1027 Data Analysis in Process Industries
ENG1001 Engineering Mathematics I

Stage 2

Compulsory modules

CME2022 Separation Processes 1
CME2023 Transfer Processes 2
CME2024 Reactor Engineering
CME2027 Chemistry 2
CME2028 Thermodynamics 2
CME2029 Process Measurement, Dynamics and Control
CME2030 Chemical Engineering Laboratory I
CME2031 Safety, Risk and Engineering Practice
ENG2011 Engineering Mathematics II
## Stage 3

**Compulsory modules**
- CME3008 Process Control 2
- CME3032 Process Design and Economics
- CME3033 Separation Processes 2
- CME3034 Design for Process Safety
- CME3035 Reactor Systems Engineering
- CME3036 Process and Product Engineering
- CME3039 Plant Design
- CME3040 Chemical Engineering Laboratory II

**Work Placement (optional)**
You can apply to spend 9 to 12 months on an optional work placement between Stages 3 and 4. You can apply to spend your placement year with any organisation and will receive University support to do so. It will extend your degree by a year and is subject to availability. It isn’t available if you’re spending a year studying abroad. Find out more on about Work Placements.

If you choose this option, you will take the following:
- NCL3000 Careers Service Placement Year Module

## Stage 4

**Compulsory modules**
- CME8103 Process Control 3 - Design of Robust Control Algorithms
- CME8104 Process Control 4 - Design of Digital Control Algorithms
- CME8117 MEng Research Project
- CME8120 Advanced Design Project
- EEE8013 Linear Controller Design and State Space with Matlab Applications

**Optional modules**
You select 10 credits from the following modules:
- CME8038 Sustainable Industry
- CME8107 Process Intensification
- CME8119 Advanced Transport Processes
- CME8124 Multivariate Methods

## Teaching and assessment

**Industry-informed teaching**
Newcastle students graduate fully equipped with the skills they will need thanks to our strong links with industry experts and focus on industry skills, including:

- **problem-based learning** for the first three years based around industrial case studies – excellent preparation for life as a professional engineer
- lectures delivered by **practising industry experts** covering issues surrounding safety management and environmental protection

- industry representation on our Board of Studies with direct input into our degrees
- **industry links** with over 100 chemical engineering companies, resulting in sponsorship and placement opportunities and plant visits

**Teaching methods**
We use case-study-led teaching, so your learning has real-world relevance.

Teaching is through a combination of:
- lectures
- tutorials
- seminars
- computer practice sessions
- extensive practical laboratory work
- group work on case studies and design projects

**Assessment methods**
You’ll be assessed by a range of methods depending on the modules you study, including:
- class tests
- laboratory reports
- multi-choice questions
- project reports
- oral presentations
- closed book examinations
- interviews

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

## Careers

**Chemical Engineering careers**
Chemical engineers play a crucial role in many aspects of our everyday life. They are employed across a wide range of sectors helping with the management of resources, the protection of the environment and the control of health and safety procedures, while developing and managing the processes that make the products we desire or depend on.

Our graduates are targeted by prestigious and high profile organisations from sectors including pharmaceuticals, chemicals, energy, oil and gas, water, environment, biotechnology and food and drink.

International opportunities are available for experienced graduates with an interest in working outside the UK. Past graduates have built and run plants in the Far East, operated water treatment processes in the Gulf and developed catalysts in Chicago.

Chemical Engineering is a degree that is well respected in industry and commerce. The wide scope of the training and skills you receive in your degree studies is highly valued by many different organisations and opens up opportunities in
careers ranging from ground breaking research and consultancy to business and management.

Our extensive network of industry contacts and strong partnership with the University Careers Service enables us to equip our students with the necessary skills and experience to secure challenging and rewarding graduate employment.

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

For more information on careers in chemical engineering or industrial sponsorship, contact:
The Institution of Chemical EngineersTelephone: 01788 578 214Website: www.icheme.org
Royal Academy of EngineeringTelephone: 020 7222 2688Website: www.raeng.org.uk/education

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:
Tuition fees for 2020 entry are not yet available.
2019 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:
The maximum fee that we are permitted to charge for UK students 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 (EU students)

2020 entry:
Tuition fees for 2020 entry are not yet available.
2019 entry:
£9,250 You will pay the same tuition fees as UK students for the duration of your course.
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 (International students)

2020 entry:
Tuition fees for 2020 entry are not yet available.
2019 entry*:
£22,110
*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.

Take a virtual tour at www.ncl.ac.uk/tour
Tuition Fees (International students)
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
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.
Some of our subject scholarships and sports scholarships are also available for international students.

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.

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

Our attractive campus has lots of green spaces where you can relax.