Mechanical Design and Manufacturing Engineering

MEng Honours

A world-class university in a world-famous city

UCAS code HH37
4 Years

www.ncl.ac.uk/ug/HH37
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Mechanical Design and Manufacturing Engineering

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This professionally accredited MEng Honours degree is similar in content to the related BEng, but includes an additional year of advanced study.

You will develop the knowledge and skills for a career in the manufacturing industry, learning how to create products that are functional, effective, innovative and user-friendly. You’ll also learn how to manufacture them appropriately and profitably.

You master the fundamentals of mechanical engineering before specialising later in your degree, with modules in:
- materials degradation
- advanced manufacturing technology
- mechanical power transmission

In your fourth year, a major industry-relevant project showcases your professional skills, including project management and application of design methodology.

Highlights of this degree

Professional accreditation
This degree is accredited by the Institution of Mechanical Engineers (IMechE).

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

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

BEng or MEng?
Our BEng and MEng degrees provide a pathway to becoming a Chartered Engineer. This is one of the most recognised international engineering qualifications.

Our four-year Master of Engineering (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.

What you will study
All of our Mechanical Engineering students study the same broad programme for the first two years covering:
- mechanical, electrical and materials engineering sciences (50%)
- engineering design and manufacturing (20%)
- engineering mathematics (18%)
- management and professional skills, such as computing and enterprise (12%)

Specialist modules
In Stage 3 (BEng and MEng) and Stage 4 (MEng only) you balance general engineering topics with specific advanced topics relevant to your particular degree. See the Course Details section for more information.

Design projects
You will complete a number of design projects throughout your degree, designed to enhance your practical experience and industry knowledge:
- small team projects based in local industry, working with leading engineering companies
- an extended piece of work to develop your professional project planning and data analysis skills
- a major industry-relevant project at Stage 3 (BEng and MEng) and Stage 4 (MEng only), to solve real-world engineering problems and to showcase your professional-level skills

Flexible degree structure
You can transfer between any of our mechanical engineering degrees up to the end of Stage 2 (second year). You must achieve the appropriate academic standard to transfer from a BEng to an MEng degree.

Boost your employability with a work placement
Apply to spend a 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.

Find out more about Work Placements.

Industry links
We have strong links with local and national companies, leading to:
- guest lectures from industry experts
- opportunities for vacation work placements and an industrial placement year
• projects based on our industrial links, giving you industry-relevant experience
• regular industrial visits to local factories and businesses
A high percentage of our teaching staff have worked in industry and/or still have contact with industry and can bring your teaching to life with real-world examples.

Facilities and support
Study at Newcastle and you will join a vibrant community in the School of Engineering.

Facilities
Our wide range of mechanical engineering laboratories include:

• labs for design-make-test projects: making and testing machines and structures
• strengths (testing) labs with machines up to 500kN & access to machines up to 8MN
• mechatronics/electronics labs for programming robots and automated devices
• bio-engineering lab for bio-materials manufacture and testing of components
• manufacturing lab with good selection of modern CNC machine tools
• composite materials lab with fire test facilities

We also provide high-quality, specialist facilities to support your studies:

• state-of-the-art CAD and CAE 3D design facilities
• He-Ion and other microscopes with resolutions down to 0.3nm
• wide range of rapid prototyping facilities for projects and research
• engine test cells, wind-tunnel and water flow channels with laser flow measurement
• Formula Student car design, build and test facilities
• gear and drive system testing machines up to 8MW capacity
• our own 1750hp main-line diesel-electric locomotive

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 will have an academic member of staff as a personal tutor throughout your degree. They can help with academic and personal issues.

Peer mentors will help you in your first year. They are fellow students who can help you settle in and answer any questions you have.

Social activities
There are a range of social activities to help you settle into our community of 600 students. For example, you can compete in the Institution of Mechanical Engineers’ Formula Student competition to develop a high performance single-seat racing car, which is then put to the test at the famous Silverstone Circuit.

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.

Singapore study option (international students)
Working with the Singapore Institute of Technology, Newcastle University offers a full-time BEng Honours degree in Mechanical Design and Manufacturing Engineering in Singapore. Find out more on the Singapore Campus’ website.

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
- EEE1006 Electrical Engineering I (for MECH)
- ENG1001 Engineering Mathematics I
- MEC1002 Materials Science I
- MEC1007 Fundamentals of Thermofluid Dynamics
- MEC1010 Design and Manufacturing I
- MEC1011 Mechanics I
- MEC1012 Mechanical Engineering Professional Skills I

Stage 2

Compulsory modules
- EEE2010 Electrical Engineering II
- ENG2001 Accounting, Finance and Law for Engineers
- ENG2012 Engineering Mathematics II and Statistical Data Analysis
- MEC2001 Materials Science II
- MEC2003 Applications of Thermofluid Dynamics
- MEC2007 Design and Manufacturing II
- MEC2008 Mechanical Engineering Professional Skills II
- MEC2009 Mechanics II

Stage 3

Compulsory modules
- CME3097 Materials Degradation and Component Life
- MEC3014 Computational Modelling
- MEC3015 Instrumentation and Drive Systems
- MEC3017 Managing Engineering Operations
- MEC3018 Design for Industry
- MEC3098 Mechanical Engineering Project
- MEC3019 Structural Optimisation and Crashworthiness

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. Find out more on about Work Placements.

You will take the following module:
- NCL3000 Careers Service Placement Year Module

Stage 4

Compulsory modules
- MEC8099 Mechanical Engineering Team Project
- MEC8026 Robotics
- MEC8028 Design for Human-Systems Integration
- MEC8029 Design of Mechanical Power Transmissions
- MEC8052 Manufacturing Materials and Processes

Teaching and assessment

Our research feeds directly into our teaching. This means you will learn about developments that are at the cutting edge of your subject area. The research grants that this work attracts help us to maintain state-of-the-art facilities which you will use in your studies.

We have research centres with internationally recognised expertise in:
- railway design (NewRail)
- gears and drive systems (Design Unit Gear Technology Centre)
- surface analysis (UK National X-Ray Photoelectron Spectroscopy Centre NEXUS)
- alternative energy (Sir Joseph Swan Centre for Energy Research)

Teaching methods

Engineering degrees are amongst the most demanding – both in terms of contact hours and content. However, employers appreciate the range of skills and motivation that our graduates display.

Over the first two years you will have around 20 timetabled hours per week: typically half lectures, one quarter
seminars and tutorials, and one quarter practical and hands-on classes. There are also industrial visits, interviews, business games, management, and a variety of projects.

In Stages 3 and 4, your timetable will allow more time for your major project work.

**Assessment methods**
You will be assessed by course work and examination.

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

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### Careers

**Mechanical design and manufacturing engineering careers**
As well as the technical and practical expertise that you gain from studying mechanical engineering, all our degrees are designed to provide you with opportunities to learn and develop skills such as analytical and problem-solving, project-working both as part of a team and on your own, communicating with others, planning and time management, and of course computer literacy, all of which are vital for the employment market.

The majority of mechanical engineering graduates wish to enter engineering-related careers in order to become professionally qualified. Popular areas are research and development, design, production, manufacturing, consultancy, contracting, purchasing and quality assurance.

Opportunities exist in a wide range of sectors, including transport and logistics, health, defence, manufacturing, automobile, renewable energy, amongst others.

In particular, the excellent analytical and problem-solving skills gained through studying mechanical engineering also make graduates equally attractive to employers in finance, business consultancy and public services.

The School liaises closely with the University’s Careers Service to support you throughout your studies. Through the excellent links forged with regional and national employers, many companies visit the campus to give presentations, attend job fairs and carry out interviews. Some employers are also actively involved in work-related course projects and modules.

Find out more about the career options for Mechanical and Systems Engineering 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.

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### Fees & Funding

#### Tuition Fees (UK students)

**2019 and 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:**

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.
Tuition Fees (UK students)
See more information on all aspects of student finance relating to Newcastle University.

Tuition Fees (EU students)
**2019 and 2020 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:**
£22,800
**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.
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 (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.
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.

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**

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.

**PARTNERS - Scottish Qualifications**

BBB at Advanced Higher including Mathematics and at least one of Physics, Chemistry or another Mathematics.

Higher Physics or Chemistry required at grade B if not offered at Advanced Higher. Two Highers at the required grade (in different subjects to those offered at Advanced Higher) may replace a third Advanced Higher.

Scottish qualifications can be taken in more than one sitting.

The PARTNERS Programme is Newcastle University’s supported entry route for students from schools and colleges in England, Scotland and Northern Ireland. Find out more about the PARTNERS Programme.

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The Armstrong Building, at the heart of campus.