

Course Summary: October 9, 2023

## Electrical and Electronic Engineering with Industrial Project MEng Honours

- UCAS code: **H605**
- Full time
- 4 years

This wide-ranging, four-year MEng degree integrates a year of master's-level study and an industrial placement.

You are currently viewing course information for entry year:

Next start date:

- September 2023

### Fees (per year)

- Home: **£9250**
- International: **£26400**

### Entry requirements and offers

- A-Level: **AAB**

- IB: **34 points**

[View contextual offers](#)

#### **UCAS Institution name and code:**

- NEWC / N21

[Clearing - How to apply](#)

[Clearing - How to contact us](#)

[Clearing - live chat](#)

## Course overview

This accredited, Electrical and Electronic Engineering integrated master's degree focuses on developing your core knowledge and practical skills. You'll also explore more advanced specialist topics in your fourth year, so you're prepared for a career in this fast-paced industry.

With a focus on practical work and research-informed teaching, you'll cover the core aspects of the generation, distribution, storage, and conversion of electrical power.

You'll also have the opportunity to work on a real-world engineering project with an industry partner, so you gain an insight into the sector, develop industry contacts and enhance your CV.

While establishing a firm foundation of electrical and electronic engineering knowledge, you'll become a confident expert in more specialist topics, through optional modules such as: nano-electronic devices and national-scale electricity networks.

## BEng or MEng?

Both our BEng degree and specialist MEng degrees provide a pathway to becoming a Chartered 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.

**Your course and study experience - disclaimers and terms and conditions**

Please rest assured we make all reasonable efforts to provide you with the programmes, services and facilities described. However, it may be necessary to make changes due to significant disruption, for example in response to Covid-19.

View our [Academic experience page](#), which gives information about your Newcastle University study experience for the academic year 2022-23.

See our [terms and conditions and student complaints information](#), which gives details of circumstances that may lead to changes to programmes, modules or University services.

## Additional information

This degree allows you to explore several engineering disciplines in year one. This flexible route is taught across Civil, Electrical & Electronic and Mechanical Engineering.

You'll gain an understanding of engineering in a multidisciplinary context. You'll develop diverse skills relevant to the needs of industry and today's global challenges.

After successfully completing Stage 1, you'll have the option of transferring on to one of the accredited Civil, Electrical & Electronic or Mechanical Engineering degrees. This is subject to the degree programme regulations and capacity of the degree you are transferring to.

## Quality and ranking

### Professional accreditation and recognition

All professional accreditations are reviewed regularly by their professional body.

# Modules and learning

## Modules

The information below is intended to provide an example of what you will study.

Most degrees are divided into stages. Each stage lasts for one academic year, and you'll complete modules totalling 120 credits by the end of each stage.

Our teaching is informed by research. Course content may change periodically to reflect developments in the discipline, the requirements of external bodies and partners, and student feedback.

### **Optional module availability**

Student demand for optional modules may affect availability.

Full details of the modules on offer will be published through the [Programme Regulations and Specifications](#) ahead of each academic year.

This usually happens in May.

To find out more please [see our terms and conditions](#).

Stage 1 will provide a broad introduction to the principles of engineering. You'll get involved in practical work from day one, taking part in a hands-on interdisciplinary engineering project.

## Modules

Compulsory Modules	Credits
<a href="#">Engineering Mathematics I</a>	20
<a href="#">Sustainable Design, Creativity, and Professionalism</a>	30

Electrical and Magnetic Systems	15
Electronics and Sensors	10
Thermofluid Mechanics	15
Properties & Behaviour of Engineering Materials	15
Mechanics I	15

During Stage 2, you'll build upon your knowledge and skills, covering subjects including computer systems and microprocessors, digital electronics, and semiconductor devices and analogue electronics.

### Modules

Compulsory Modules	Credits
Project and Professional Issues	20
Signals and Communications	20
Semiconductor Devices and Analogue Electronics	20
Computer Programming and Organisation	20
Digital Electronics	10
Automatic Control Systems	10
AC Electrical Power and Conversion	10
Mathematical Modelling & Statistical Methods For Engineering	10

You'll continue to explore a wide range of topics, including areas such as electrical machines, digital signal processing, power system operation, and electronic devices.

You'll also complete an individual project and dissertation, as well as a study project focusing on a new technical area.

## Modules

Compulsory Modules	Credits
<a href="#">Individual Project and Technical Report</a>	30
<a href="#">Business and Law for Engineers</a>	10
Optional Modules	Credits
<a href="#">Digital Communication Systems</a>	20
<a href="#">Industrial Automation and Control Systems</a>	20
<a href="#">Power Electronics - Design &amp; Applications</a>	20
<a href="#">Electronic Devices and Semiconductor Technology</a>	20
<a href="#">Integrated Circuit Design and Embedded System</a>	20
<a href="#">Electrical Machines and Drives</a>	20
<a href="#">Net-Zero Energy Networks</a>	20
<a href="#">Signal Processing and Machine Learning</a>	20

In Stage 4, you'll work on a group design project, an industrial project, and complete a piece of extended coursework, where you'll design and operate a real engineering device or system.

Recent industrial projects have included protocols for electronic drive control, an electric bike, and connections for low carbon technology to the power grid, for companies such as Tridonic, Dyson, and Imagination Technologies.

## Modules

Compulsory Modules	Credits
Study project	10
Group Design Project	30
Industrial Project	40
Optional Modules	Credits
Reconfigurable Hardware Design	20
Bioelectronics	20
Low-Power VLSI Design	20
Distributed Control Systems	20
Designing sustainable electric propulsion and generation systems	20
Robust and Adaptive Control Systems	20

Some of these optional modules are only available to those that have completed certain pre-requisite modules at Stage 3.

## Information about these graphs

We base these figures and graphs on the most up-to-date information available to us. They are based on the modules chosen by our students in 2022-23.

Teaching time is made up of:

- scheduled learning and teaching activities. These are timetabled activities with a member of staff present.
- structured guided learning. These are activities developed by staff to support engagement with module learning. Students or groups of students undertake these activities without direct staff participation or supervision

## Teaching and assessment

## Teaching methods

You'll be taught through a combination of:

- lectures
- lab sessions
- tutorials
- real-world case studies

Up to 10 hours will be spent in practical sessions, working on experiments and project work in the labs.

## Assessment methods

You'll be assessed through a combination of:

- Assessments
- Assignments – written or fieldwork
- Case studies
- Coursework
- Examinations – practical or online
- Group work
- Practical sessions
- Presentations
- Projects
- Reports
- Seminar tasks/exercises

## Skills and experience

### Research skills

You'll be taught by academics who are leaders in their field, with teaching informed by our ground-breaking research.

In your final year, you'll complete an individual research project. You'll design and develop an original system or device.

### Business skills

In your second year, you will work on a group design and construction project, gaining an insight into the planning and management of technical projects and preparing you for your future.

You'll also complete a modules in accounting, finance and law for engineering.

### Practical skills

This is a practical-focused course and you'll have access to our state-of-the-art teaching laboratories, including labs for electronics, electrical power, and Intelligent Sensing Lab, and smart grids. You'll also benefit from a machines

laboratory, class 100 clean rooms, and a massive MIMO for 5G research.

## Opportunities

### Work placement

Get career ready with a work placement and leave as a confident professional in your field. You can apply to spend 9 to 12 months working in any organisation in the world, and receive University support from our dedicated team to secure your dream placement. Work placements take place between stages 3 and 4.

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

If you choose to take a work placement, it will extend your degree by a year. Placements are subject to availability.

[Find out more about work placements](#)

## Facilities and environment

### Facilities

Our Engineering courses are taught at our city-centre campus, within [the School of Engineering](#) based in the Merz Court.

You'll benefit from world-class facilities and living labs, ranging from microbiology laboratories through to at-scale engineering equipment.

Each engineering discipline has its own specialist facilities, including:

- the Millennium Laboratory – home to a wide range of facilities and experimental rigs
- Merz Court Pilot Plant Laboratory – a pilot plant with 28 experimental rigs
- BE:WISE – Europe's largest wastewater treatment research facility

- the Urban Observatory – with sensors gathering over 50 types of data across the city
- Electronics Teaching Lab – home to state-of-the-art Agilent/Keysight digital test equipment
- Clean-Room Microfabrication Lab – home to two class 100-10000 clean rooms

## 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

You'll receive comprehensive support from the moment you arrive at the University. You'll be supported by personal tutors, stage tutors, and degree tutors. You'll also benefit from the School's student buddies scheme.

## Your future

Electrical and electronic engineers are in high demand in the UK and further afield.

When you graduate, you'll have opportunities in areas such as electrical supply and distribution, power systems, transports, and electrical machinery.

Recent graduates have secured roles as graduate engineers in companies including:

- Dyson
- Siemens
- Arup
- IQHQ
- BBC
- BT

You'll also develop a wide range of transferable skills, including analytical skills, teamwork, time management, and IT skills, which are valued by employers across all sectors.

### Industry links

You'll work on real-world engineering projects set by companies we have links with, allowing you to apply your skills to real challenges faced by potential employers.

You'll also have access to guest lectures from alumni and leading companies, site visits, careers, and placements.

Our graduates go on to work in a wide range of roles, industries, and sectors. Recent graduates have secured positions in:

- ABB
- Centrica
- Satorius
- BP
- Nissan
- BAE Systems
- Ministry of Defence
- Caterpillar
- ABS Group
- Anek Lines
- Royal Navy

Engineering is a broad field with a number of different specialisms. Whichever engineering discipline you study, you'll emerge as an in-demand graduate with great career prospects.

From global careers in the oil, gas and energy, pharmaceutical, or consumer products sectors, through to marine engineering and offshore engineering. There are also opportunities in groundbreaking research and consultancy, as well as business and management.

Many of our students also progress on to further study, either within engineering or in a related field.

## Careers support

Our award-winning Careers Service is one of the largest and best in the country, and we have strong links with employers. We provide an extensive range of opportunities to all students through our ncl+ initiative.

[Visit our Careers Service website](#)

## Recognition of professional qualifications outside of the UK

From 1 January 2021 there is an update to the way professional qualifications are recognised by countries outside of the UK

[Check the government's website for more information.](#)

## Additional information

### Advice on maths and science requirements

If you don't think you will have the exact mathematics and science qualifications referred to in our entry requirements by the time you need them, you may not be sure what to do.

- If you have a maths qualification but will not have it at A Level (or equivalent) when you start your degree, you should apply for the relevant degree with Foundation Year. We may give you the opportunity to take the Newcastle University Pre-Entry Maths Course\* and the option to start in Year 1 if we think that this will be the best route for you.
- If you have A Level Maths (or equivalent) already but not at the required grade, you should contact us for advice. We may decide that you could be considered for Foundation Year entry, or it may be that this course is not the best option for you.
- If you will not have the equivalent of an A Level in the science subject (if any) required, you should apply for the relevant degree with Foundation Year.

If you are still not sure, don't worry. Whatever you apply for, our Admissions Tutors will help you decide which is the best route for you. They may, therefore, make you an offer for a different course from the one you apply for (eg Foundation Year entry instead of Year 1 entry).

\*The Newcastle University Pre-Entry Maths Course aims to provide the requisite mathematical skills and concepts needed on our engineering, maths and physics degree courses and to prepare students for the modes of learning they will encounter. The materials for the course are delivered electronically and include opportunities to practise your skills. You study the materials in your own time and, when you are ready, you book your exam with the Engineering School to which you have applied. A fee of £150 is payable at the time of booking the exam or shortly before the date set for examination.

## Find out more...

- Go online for information about our full range of degrees:  
**[www.ncl.ac.uk/undergraduate](http://www.ncl.ac.uk/undergraduate)**
- To watch videos about student life in Newcastle, visit  
**[www.ncl.ac.uk/lovenewcastle](http://www.ncl.ac.uk/lovenewcastle)**
- Visit **[www.ncl.ac.uk/tour](http://www.ncl.ac.uk/tour)** to take virtual tours of the campus and city
- Book for an Open Day to come and see us in person  
**[www.ncl.ac.uk/openday](http://www.ncl.ac.uk/openday)**
- Contact us online at **[www.ncl.ac.uk/enquiries](http://www.ncl.ac.uk/enquiries)** or phone +44 (0)191 208 3333

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**[www.ncl.ac.uk/pre-arrival/regulations](http://www.ncl.ac.uk/pre-arrival/regulations)**

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