Northumbria University NEWCASTLE | Newcastle London Amsterdam

Renewable and Sustainable Energy Technologies MSc

Postgraduate | 12 months full-time | Full Time

Mechanical and Construction Engineering | City Campus, Northumbria University Newcastle | Start September 2023

Renewable and Sustainable Energy Technologies MSc

About this course

With climate change dominating news agendas and world economies committing to decarbonisation, there's never been a better time to study a Master's in renewable energy.

It is predicted that there will be over 27,000 renewable energy jobs in the UK by 2030, and the North East is rapidly becoming a renewable energy hub. Thousands of renewable energy jobs are due to be created in the region over the next few years from large renewables projects such as the UK's first gigaplant manufacturing car batteries and a £300 million plant turning waste to energy.

Beyond the North East, demand for renewable energy and sustainable solutions is growing worldwide and there is a global shortage of trained engineers to fill renewable energy jobs worldwide.

Northumbria's Renewable and Sustainable Energy Technologies MSc is a highly relevant qualification, which is accredited by the Engineering Council through the Institution of Mechanical Engineers.

This industry-focussed MSc programme covers topics such as photovoltaic, wind, thermo-mechanical energy conversion systems, hybrid renewable energy systems, energy efficiency, building energy modelling and engineering optimisation, through both lectures and practical laboratory work. You will have access to a specialist laboratory that's dedicated to power networks, wind energy, photovoltaics and battery testing for electric vehicles.

Northumbria has a well-established reputation for renewable and sustainable energy technologies, and you will be taught by staff at the forefront of their academic fields. You will also benefit from excellent technical facilities including access to industry standard software such as MATLAB and specialist workshops.

With a looming global energy crisis our MSc Renewable and Sustainable Energy programme is the perfect preparation for a career in the in-demand renewable energy sector.

Accredited by the Institution of Mechanical Engineers (IMechE) on behalf of the Engineering Council, the course meets the requirements for Further Learning for registration as a Chartered Engineer. Candidates must hold a CEng accredited BEng/BSc (Hons) undergraduate first degree to comply with full CEng registration requirements.

Modules & Learning

Our teaching methods include lectures, seminars, workshops, individual tutorials, and group projects. As this is a master's course there is a significant element of independent learning and self-motivated reflection.

You'll undertake a master's project that will hone your skills in evaluating and applying research techniques and methodologies. The topic of the project will reflect your own unique interests.

Assessments are designed to give feedback as well as to monitor your level of achievement. The assessed projects will enable you to test your skills in ways that relate to current industrial practice. Specific assessment methods include assignments, exams, technical reports and presentations.

Teaching Staff

Our teaching team includes experts from Renewable and Sustainable Energy Research Group. Their experience, combined with their on-going active research, will provide an excellent foundation for your learning.

The quality of their research has put Northumbria University among the UK's top 25% of universities for the percentage of research outputs in engineering that are ranked as world-leading or internationally excellent (Research Excellence Framework 2014).

Our reputation for quality is reflected by the range and depth of our collaborations with industry partners. Our industrial links help inform our curriculums and ensure a variety of site visits and input from practitioners via guest lectures.

Facilities

Northumbria University provides outstanding facilities for renewable and sustainable energy technologies. For example our New and Renewable Energy Laboratory is an excellent resource for research into power networks, wind energy, photovoltaics and battery testing for electric vehicles. All our facilities are backed up by a team of technicians who will give support and advice when you need it.

Technology Enhanced Learning (TEL) is embedded throughout the course with tools such as the Blackboard eLearning Portal and electronic reading lists that will guide your preparation for seminars and independent research. Our use of lecture capture software will help you revise challenging material.

To facilitate group projects there is a working space called The Hub thats well equipped for meetings and working with IT. The Zone is another area thats popular with students undertaking group work or individual study.

Research-rich Learning

Northumbria's strong research ethos is an essential aspect of how you will develop as a critical, reflective and independent thinker. With our problem-solving approach you'll acquire a wide range of research and analytical skills as you progress through the course. These skills will come together in the master's project that you'll undertake, which will require independent research and appropriate techniques of inquiry, critical

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evaluation and synthesis.

Throughout the course your learning will be directly impacted by the teaching team's active research. One of Northumbria's signature research themes is 'Future Engineering', which is about innovation in the engineering industry so that it's fit for purpose in the 21st century. We also have particular interests in smart materials and sustainable technologies.

Give your career an edge

MSc Renewable and Sustainable Technologies has been accredited by the Institution of Mechanical Engineers (IMechE) on behalf of the Engineering Council for the purposes of fully meeting the academic requirements for registration as a Chartered Engineer. Chartered status is associated with improved employability and higher salaries.

The course will equip you with the expertise to design, optimise, apply and evaluate renewable and sustainable energy technologies. Your master's project will extend your practical experience of industry-standard hardware and software tools. At the same time you'll develop transferable key skills and personal attributes that promote employability and lifelong learning.

When it comes to applying for jobs our Careers and Employment Service offers resources and support that will help you find roles matching your interests and skills. You will be able to access a range of workshops, one-to-one advice, and networking opportunities.

Your Future

By the end of this course you'll be in an excellent position to start or continue a career in renewable and sustainable energy technologies. Renewable energy production could increase by up to 1,000% by 2050 compared to 2010, according to the UN Intergovernmental Panel on Climate Change, so there will be a pressing need for well-trained professionals.

You could also undertake a postgraduate research degree such as an MPhil, PhD and Professional Doctorate. If you decide to start up your own business, it's good to know that the combined turnover of our graduates' start-up companies is higher than that of any other UK university.

Whatever you decide to do, you will have the transferable skills that employers expect from a master's graduate from Northumbria University. These include the ability to tackle complex issues through conceptualisation and undertaking research, the ability to contribute to new processes and knowledge, and the ability to formulate balanced judgements when considering incomplete or ambiguous data.

Who would this course suit?

This course is for people who want a career in renewable and sustainable energies, building on previous studies in engineering and/or science disciplines.

Entry Requirements 2022/23

Standard Entry

Applicants should normally have:

A minimum of a 2:2 honours degree in an engineering or science discipline. Other subject qualifications, equivalent professional qualifications and/or relevant work experience will be considered on an individual basis.

International applicants (apart from exempt nationalities) will need an ATAS certificate to enrol on this course. Without this certificate, a visa application will be refused. Please visit: www.gov.uk/guidance/academic-technology-approval-scheme for more information.

International qualifications:

If you have studied a non UK qualification, you can see how your qualifications compare to the standard entry criteria, by selecting the country that you received the qualification in, from our country pages. Visit www.northumbria.ac.uk/yourcountry

English language requirements:

International applicants are required to have a minimum overall IELTS (Academic) score of 6.5 with 5.5 in each component (or approved equivalent*).

*The university accepts a large number of UK and International Qualifications in place of IELTS. You can find details of acceptable tests and the required grades you will need in our English Language section. Visit www.northumbria.ac.uk/englishqualifications

*For further admissions guidance and requirements, please visit **www.northumbria.ac.uk/admissionsguidance** Please review this information before submitting your application.*

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Career Progression

Upon graduating from this programme you will be able to apply for a range of roles such as system or design engineer, project development and planning engineer, consultant and project manager. Opportunities exist in numerous planning and technology development companies, renewable energy equipment manufacturing and installation companies, energy efficiency and environmental consultancies and major power utilities, as well as private and public research and development organisations.

Module Overview

Year 1	
KB7003	Building Energy and Environmental Modelling
KB7030	Research Methods
KB7040	Sustainable Development for Engineering Practitioners
KB7042	Thermo-Mechanical Energy Conversion Systems
KB7043	Multidisciplinary Design and Engineering Optimisation
KB7045	Wind, Photovoltaic and Hybrid Renewable Energy Systems
KB7052	Research Project
KB7053	Academic Language Skills for Mechanical and Construction Engineering

Finance

Tuition Fees (UK students)

2023 entry: Full Fee £9,960

Please note that the tuition fee amount you will pay may increase slightly year on year in line with inflation and subject to government regulations.

Tuition Fees (EU students)

2023 entry: Full Fee £19,000

Please note that the tuition fee amount you will pay may increase slightly year on year in line with inflation and subject to government regulations.

Tuition Fees (International students)

2023 entry: Full Fee £19,000

Please note that the tuition fee amount you will pay may increase slightly year on year in line with inflation and subject to government regulations.

Additional Costs (All Students)

2023 entry: Occasionally field trips are arranged. Not participating will not adversely affect your course performance but if you do want to participate, you may need to contribute up to £200.

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Financial Support

Northumbria University is committed to supporting our students. We offer scholarship packages for students depending on their abilities.

You can find out more information on our individual packages at www.northumbria.ac.uk/study-at-northumbria/fees-funding/pg-fees-funding

Financial support opportunities have associated eligibility conditions, therefore it is essential applicants consider all requirements and observe the application process and deadlines.

Other Additional Costs

Accommodation Costs

Many students find that staying in University accommodation enhances their student experience, and Northumbria has a fantastic selection available for you. Visit our accommodation pages to investigate your options for living and studying in Newcastle. All costs incurred are optional and students should select the most appropriate accommodation for their needs.

Disability Support

In order to access disability or dyslexia support, students may be required to provide evidence of their disability. This evidence is often provided by an external body (for example, by a medical specialist or GP) and these external bodies may charge for providing this evidence. Also, if a disabled student is eligible for DSA funding for computer equipment, depending on their funding body, the student may be required to make a contribution of £200 towards the cost of any computer equipment. For more information about how to access disability support, contact Student Life and Wellbeing.

Healthcare Costs

Students, depending on their circumstances, may incur some charges for accessing healthcare or medication from the National Health Service. These include charges for prescriptions, charges for dental checks and treatment, and charges for other services, such as providing vaccinations or for certain types of medical evidence (for example, evidence to support a Personal Extenuating Circumstances/PEC claim at the University, if required). These charges are set and charged by NHS services, rather than by the University, and will be subject to change.

Certain applicants who apply for a UK visa will pay an Immigration Health Surchange. International students from particular countries may also be required to pay to have a tuberculosis (TB) test.

We also strongly recommend that all EU and international students take out their own insurance policy to cover costs which are not met by the National Health Service. It is your responsibility to ensure you pay for adequate insurance cover for the duration of your stay in the UK.

For more information about healthcare-related charges in the UK, you can speak to the Welfare, Immigration and Funding team based in Student Life and Well-being.

Congregation Costs

When you graduate you will be invited to attend your graduation ceremony. Free tickets will be provided to the Graduate and two guests. Congregation ceremonies also have associated costs. To take part you will be required to hire a graduation gown and cap* You may also wish to purchase a professional photograph or additional guest tickets. To give you an approximation of costs, for students graduating in 2022/23, the price of an additional guest ticket was £15.00. Please note, these are subject to availability. Please also be aware that the associated costs of graduation ceremonies are subject to review each year. **Gown hire and photography are purchased from external providers, therefore the University cannot demonstrate prices.*

Library Costs

Your University Library provides a postal service for books and journal articles which will be sent world-wide to Northumbria students who are studying part-time, by distance learning or are work based learners. Students who are placement for more than six week are eligible to use the service whilst on placement.

There is no charge for posting books out, but you will be required to pay the cost of any return postage. We recommend that items are returned by recorded delivery. You can of course, return books in person to either University Library campus.

Overdue charges apply to all library loans to encourage you to return items on time when they have been recalled for use by another reader. Loan renewal is automatic for up to four months or until another reader requests that item. Charges are entirely avoidable by returning items on time, but where incurred will vary according to loan status and the length of time an item is overdue. Overdue charges exist to ensure the Library Collection benefits the whole student community.

Library books which have been lost or damaged beyond repair will be charged at the replacement cost of the item and a non-refundable handling charge.

If you lose your University smart card there is a replacement charge of £10 to obtain a new one. This cost is waived if your smart card has been stolen and you can provide a police crime reference number.

Placement Costs

Placements in industry are a core element of many of Northumbria's courses. Whilst many of these placements are optional, some are mandatory. They offer you a great opportunity to gain hands-on experience, giving you a distinct edge in the job market. To undertake a placement, you will need to budget for any accommodation and travel charges.

Printing & Photocopying Costs

Students will receive a printing credit of £10 in 2022/23 and 2023/24*. This will provide 1,000 pages of A4 single-sided black and white printing. Any additional printing is paid for by the student.

High Quality HP Printers (available for Students in the Faculty of Arts, Design and Social Sciences only)

High Quality Printing is available in:

- Charges for High Quality Printing
- 30p: Single sided A3 print. 120gsm colotech+ paper
- 15p: Single sided A4 print. 120gsm colotech+ paper

You can top up your Print Credits Online, whenever you like. Click the Print Balance > Buy Credits button in this Student Portal or logon at www.northumbria.ac.uk/payforprinting. Print credits will show on your account in 5-10 minutes.

To print to these printers:

Use the Student Desktop PCs and Apple Macs in Squires Workshop and City Campus East School of Design to print to these printers:

- Select the 'Print Queue' - When picking the printer to use, look for the colour devices on NINGWOOD
  a) HP E85055 HQ Col Printer A3 on Ningwood
  b) HP E85055 HQ Col Printer A4 on Ningwood

Send your work to the printer and use your University Smartcard to swipe release your print.

**Newcastle and London campus only. Amsterdam endeavours to be a paperless campus and printing of submission is not required. Costs at Newcastle Campus may be subject to change for 2023/24.*

Visa Costs

International students will be required to pay visa application fees, and associated fees as required - such as the Immigration Healthcare Surcharge, Tuberculosis tests, fees to renew or extend a visa, and fees associated with appealing a visa/immigration decision. These fees are set and charged by the UK government, rather than by the University, and are subject to change. More information about these fees can be found on the UK Government's website, and information about applying for a visa to study at Northumbria can be found on our here.

Useful Links

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/general-links-folder/

Facilities

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/facilities/

Tutor Profiles

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/tutor-profiles/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/career-progression/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/pfna-accordions/

Research

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/research/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/baod/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/facilities2/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/front/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/mandl/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/research2/

www.northumbria.ac.uk/study-at-northumbria/courses/renewable-and-sustainable-energy-technologies-msc-ft-dtfrwy6/staff/