

GO BEYOND BOUNDARIES



School of Engineering

POSTGRADUATE GUIDE

Welcome



The School of Engineering is founded on a commitment to world-changing research that pushes beyond the boundaries of traditional disciplines to tackle the most important technological, economic, environmental, and medical challenges faced by society today.

Our postgraduate programmes are accredited by various professional bodies and are designed and reviewed with the support of industry experts, giving you the assurance that they meet the highest professional engineering standards.

We embed employability firmly within our degree programmes, giving you the opportunity to gain a competitive advantage in the jobs market and to improve your earning potential.

Aberdeen is the ideal location to study engineering as it spans both conventional and renewable energy which means there are enormous opportunities for all kinds of engineers.

I look forward to welcoming you to Aberdeen and I wish you every success in your future studies.

Professor Ekaterina Pavlovskaja

Head of School of Engineering

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Advanced Chemical Engineering

MSc/PgDip/PgCert

A flexible, industry-focused programme, delivering advanced skills in chemical and process engineering for multiple industry sectors, including oil and gas, pharmaceuticals, food and environmental science.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Air and Water Pollution Control
- Applied Risk Analysis and Management
- Catalyst and Reactor Design
- Computational Fluid Dynamics
- Human Factors Engineering
- Loss of Containment
- Mathematical Optimisation
- Offshore Process Engineering
- Process Design, Layout & Materials
- Process Plant Equipment and Operations
- Safety & Risk Management
- Separation and Product Purification

OVERVIEW

The MSc in Advanced Chemical Engineering is designed for chemical engineering graduates, or graduates of related disciplines, who are looking to advance their specialist knowledge and skills and gain a higher qualification in the field of chemical and process engineering.

You will study the essential areas of chemical engineering in detail, including topics such as separation and product purification and air and water pollution control. You will also learn about catalyst and reactor design, as well as process design, layout and materials. In addition, you will choose further optional courses based on your career interests in subjects such as clean energy, process safety, management and human factors engineering.

The programme also includes an individual research project, which will further hone your independent research skills and develop your expertise in a topic related to your career aspirations.

This programme is accredited by IChemE, providing graduates with a pathway to qualification as a Chartered Chemical Engineer (MIChemE) and registration as a Chartered Engineer (CEng) or Incorporated Engineer (IEng) with the Engineering Council.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Chemical Engineering or other related engineering discipline, or equivalent. Applicants with a high 2:2 Honours degree with 2+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/adv-chem-eng/



Advanced Mechanical Engineering

MSc/PgDip/PgCert

This programme emphasises the application of computational techniques and packages to solve complex mechanical engineering problems and provide engineering graduates with the advanced understanding skills and knowledge to pursue careers in a wide range of industry sectors.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Advanced Composite Materials
- Computational Fluid Dynamics
- Engineering Risk and Reliability Analysis
- Finite Element Methods
- Fire and Explosion Engineering
- Marine and Wind Energy
- Mathematical Optimisation
- Numerical Simulation of Waves
- Project Management
- Riser Systems and Hydrodynamics
- Structural Vibrations

OVERVIEW

The MSc Advanced Mechanical Engineering is designed to equip mechanical engineering graduates, as well as graduates of related disciplines including civil, materials, chemical, and aerospace engineering, with the advanced skills and knowledge demanded by the world's leading employers in the automotive, energy, defence and manufacturing sectors.

In particular, this programme focuses on applying computational techniques and packages to solve complex engineering problems through the study of computational fluid dynamics, numerical simulation of waves, advanced composite materials, finite element methods, mathematical optimisation, and engineering risk and reliability analysis.

In addition to these core topics, you will choose from further optional courses covering topics in marine and wind energy, riser systems and hydrodynamics, fire and explosion engineering, structural vibrations and project management.

Finally, your individual research project will further hone your independent research skills

and develop your expertise in a practical topic confronting the industry today.

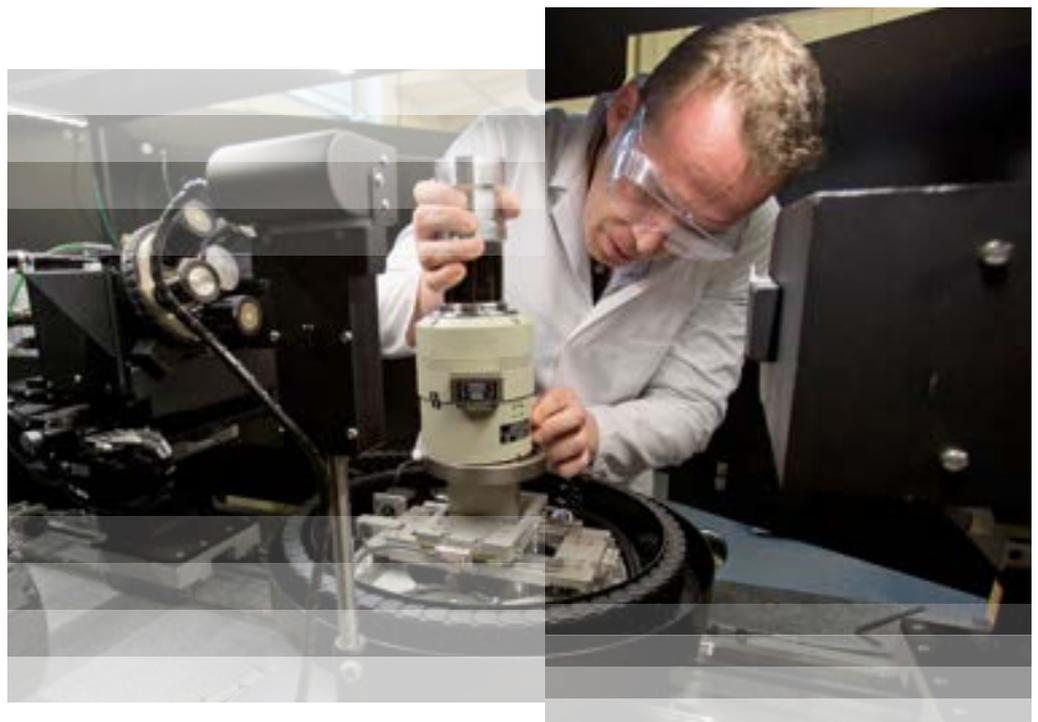
This programme is developed and reviewed by an Industry Advisory Board, made up of experienced professionals from a range of backgrounds and also holds accreditation from the Institution of Mechanical Engineers (IMechE), which means the programme is designed and delivered in accordance with IMechE's high standards and that our students are well placed to progress to achieve professional engineering status.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Mechanical, Civil, Materials, Chemical, or Aerospace Engineering. Applicants with a high 2:2 Honours degree with 2+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/advanced-mech-eng/



Advanced Structural Engineering

MSc/PgDip/PgCert

This advanced programme offers a broader range of courses compared to most structural engineering programmes, allowing you to design your course of study to suit your background and career interests and to tackle environmental, economic and social challenges far beyond the construction industry.

Learning mode:
On campus or online

Typical Duration:
MSc 12 months full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Advanced Composite Materials
- Structural Vibrations
- Offshore Structural Design
- Fire and Explosion Engineering
- Computational Fluid Dynamics
- Mathematical Optimisation
- Lightweight Structures
- Riser Systems and Hydrodynamics
- Engineering Risk and Reliability Analysis
- Finite Element Methods

OVERVIEW

Unlike most other programmes in structural engineering that focus on the construction industry, the MSc Advanced Structural Engineering at Aberdeen has been developed to ensure engineers from any background - including civil, mechanical, aerospace, automotive and energy - can contribute to the advancement of society on a global scale.

In particular, we focus on topics such as advanced composite materials, lightweight structures and engineering optimisation - skills and knowledge that are crucial for engineers interested in pursuing careers in aerospace, automotive or wind energy sectors where lightweight structures made of advanced composite materials and highly optimised for their performance play a key role.

Almost all industry sectors are experiencing a period of tremendous change with technological developments in areas such as 3D printing, robotics, artificial intelligence and machine learning. This advanced programme is designed to produce the next generation of structural engineers who can embrace these opportunities to tackle the challenges of sustainable development, climate change, pollution and waste.

Our teaching is informed by our industry partners and our research. The School of Engineering is highly regarded its research in civil engineering and has one of the best hydraulic laboratory facilities in Scotland associated with a high-level research profile. The Structures Research group in particular investigates fundamental and applied aspects of the design and analysis of structural systems, components, connections and materials, and evaluates the performance, condition and health of existing structural systems.

This programme is accredited by both the Institution of Civil Engineers (ICE) and the Institution of Mechanical Engineers, ensuring that the curriculum is designed and delivered to the highest professional standards.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Civil, Mechanical, Automotive, Aerospace, Energy or Structural Engineering. Applicants with a high 2:2 Honours degree with 2+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/adv-structural-eng/





I enjoyed taking courses such as Safety and Risk Management and Applied Risk Management which is an advanced level of the earlier mentioned course. These courses entails analysing industrial accidents, undertaking risk assessments using tools such as bow-tie diagrams, fault and event trees, HAZOP etc. I also enjoyed taking the Advanced Methods of Risk and Reliability course as it involves calculations and using software for various methods of reliability analysis and computations.

I have gained critical analysis, research and technical writing skills from all the courses I have undertook in this master's program. Assessments are given periodically to reinforce knowledge gained in the classroom which in turn has enhanced my time management skills.

I am currently on the career mentoring program organised by the University of Aberdeen where students are matched with an industry mentor to guide students through their career path. I enjoy this program and I highly recommend it as it gives clarity to students concerns such as job applications, and bridges the gap between the industry and academia.

Boluwatife Adeyemi

MSc Safety and Reliability Engineering



Biomedical Engineering

MSc/PgDip/PgCert

This programme applies the core principles and design techniques of engineering to medicine and healthcare - including the design and development of devices used for medical diagnosis, treatment or rehabilitation.

Learning mode:
On campus

Typical Duration:
MSc 12 months full-time
PgDip 9 months full-time
PgCert 4 months full-time

Start month:
September

KEY TOPICS

- Biomedical and Professional Topics in Healthcare Science
- Introduction to Engineering for Life Scientists
- Fundamentals of Engineering in Medicine
- Modelling of Biological Systems
- Rehabilitation Engineering and Biomechanics
- Research Methods for Bioengineers
- Advanced Bio-Business and the Commercialisation of Bioscience Research
- Introduction to Commercialisation and Bio-Business
- Introduction to Mobile Robotics and Bioinspiration
- Finite Element Methods
- Comparative Imaging
- Advanced Composite Materials

OVERVIEW

Rapid technological advances in areas such as 3D printing, artificial intelligence (AI), robotics, nanotechnology and virtual reality (VR) combined with ageing populations are driving rapid growth in the global medical technology industry. These exciting innovations are also opening up a wide range of career opportunities for engineers in the fields of clinical engineering, medical device development and biomedical engineering research.

On this programme, you will gain a solid foundation in medical engineering and develop your skills in the design and development of cutting-edge technologies used in medical devices and healthcare delivery.

Delivered by experts from the School of Engineering and the School of Medicine, Medical Sciences and Nutrition, this programme provides a truly interdisciplinary education in biomedical engineering within the clinical context of medical technologies. As well as studying the core topics in biomedical engineering such as medical equipment management, robotics, and

biomechanics, you will learn about the nature and origin of physiological signals, the methods by which those signals are acquired and understood, and how they are used in medical devices.

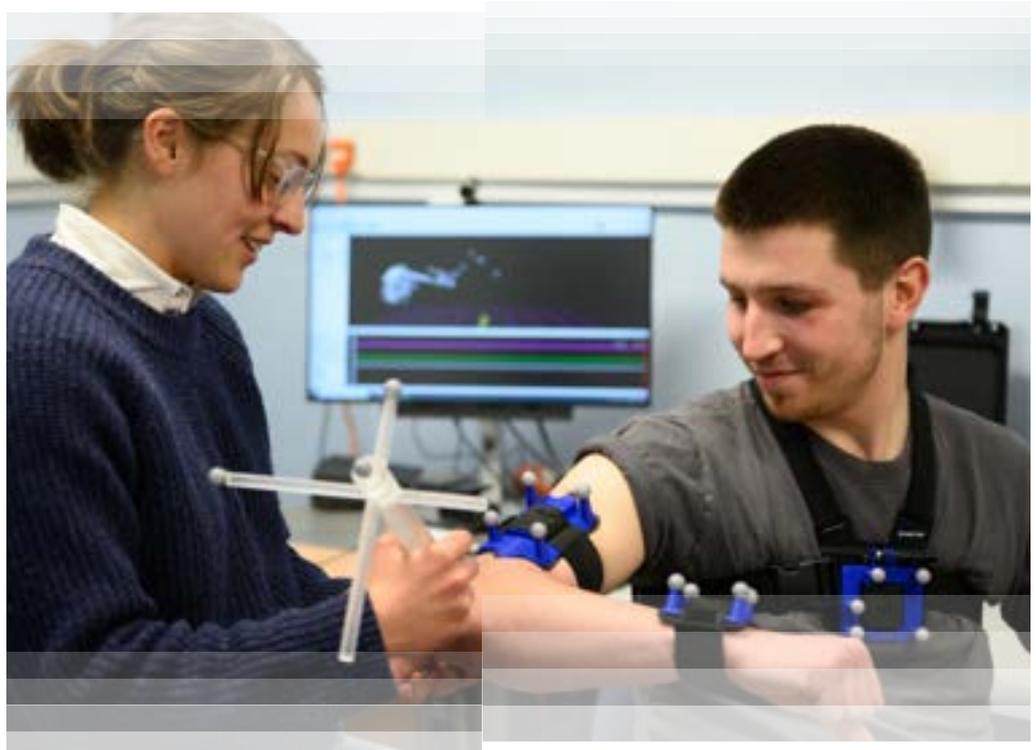
The programme culminates with your research project, which provides an opportunity to undertake independent research and apply the knowledge and skills you have acquired to a practical 'real-world' biomedical engineering challenge.

ENTRY REQUIREMENTS

We require a 2:2 (upper second class) UK Honours degree or equivalent in engineering, life sciences, medicine or physical sciences. Applicants with related degrees and significant experience in a relevant area are also encouraged to apply.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/pgt/biomed_eng/



Decommissioning

MSc/PgDip/PgCert

This programme focuses on the key technical, commercial, regulatory and environmental aspects associated with the decommissioning of energy infrastructure.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Decommissioning of Offshore Installations: Commercial Aspects
- Decommissioning of Offshore Installations: Regulatory Aspects
- Engineering Risk and Reliability Analysis
- Group Project in Comparative Assessment
- Marine Environmental Impact Assessment
- Offshore Structures and Subsea Systems
- Petroleum Economics and Project Evaluation
- Process Shut Down, Structural Decommissioning & Disposal
- Well Plugging and Abandonment

OVERVIEW

Over the next decade, around 100 platforms and 7,500 kilometres of pipeline on the United Kingdom Continental Shelf (UKCS) are forecast for decommissioning, with costs estimated to be £46 billion to 2050. As the rate of decommissioning activity increases across the UKCS and around the globe, there are also increasing commercial opportunities for UK supply chain companies both at home and abroad.

Decommissioning therefore presents both challenges and opportunities for the energy industry, as the UK government seeks to ensure the full economic recovery of hydrocarbons while also enabling the achievement of the country's net zero target by 2050.

The MSc Decommissioning is the world's first and only Masters degree in decommissioning the oil rigs, platforms, offshore structures and subsurface wells.

This programme focuses on the key aspects associated with decommissioning such as engineering, project management, business, law and health, and safety and environment and is specially designed for students from a broad range of backgrounds.

The programme includes taught courses covering the various interdisciplinary aspects of decommissioning, followed by a research project based on your particular interests or experience, which can be undertaken with an external organisation.

We welcome students from a broad range of educational and industry backgrounds, including engineering, business, law and environmental science including experienced professionals who are looking to upskill or move into the growing decommissioning sector.

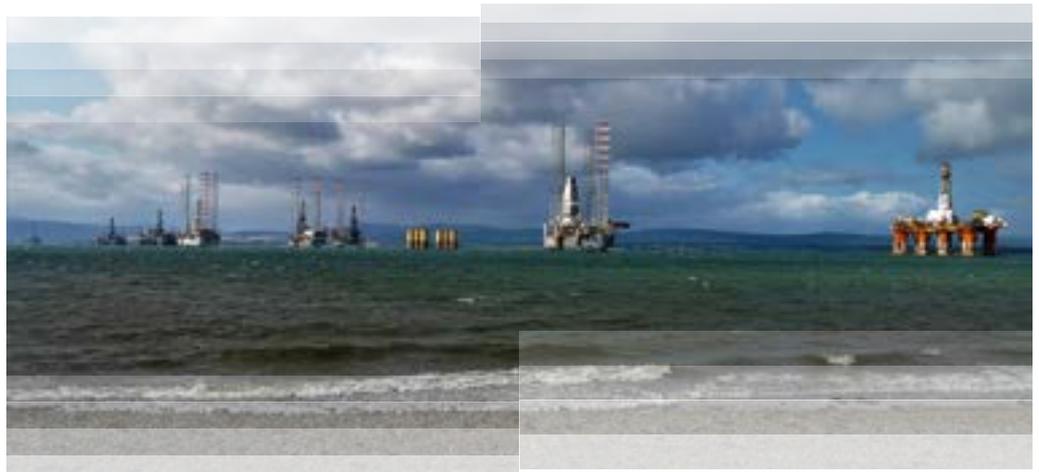
The University of Aberdeen is home to the National Decommissioning Centre. Established with support from the Scottish Government (NDC), through the Net Zero Technology Centre, the centre works in partnership with companies to develop and deploy technology that delivers cost-effective net-zero decommissioning. The programme will include a visit to the NDC, and opportunities to network with academics and stakeholders relevant to decommissioning.

ENTRY REQUIREMENTS

We require a 2:2 (upper second class) UK Honours degree or equivalent in Engineering, Geosciences, Economics, Business, Law, or other science, technology and commercial degrees. Other degree classifications will be considered if the applicant can demonstrate 3+ years of industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/decomm/



Energy Transition Systems and Technologies

MSc/PgDip/PgCert

This programme addresses the challenge of redesigning our energy infrastructure to integrate renewable energy while ensuring continued access to reliable and affordable energy at times of rapid and substantial swings in supply or demand.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Carbon Capture, Utilisation and Storage (CCUS)
- Corporate Finance and Accounting for Energy
- Economic Analysis
- Energy Conversion and Storage
- Energy from Biomass
- Energy Systems Integration
- Geothermal Energy
- Hydrogen
- Introduction to Energy Transition: Demand, Technologies and Economics
- Introduction to GIS Tools, Techniques, Cartography & Geovisualisation
- Legislation, Economics and Safety
- Marine and Wind Energy
- Renewable Energy Integration to Grid
- Solar Energy

OVERVIEW

The transition towards sustainable energy economies has gathered huge momentum in recent years. Yet, despite the substantial progress being made in renewable technologies, the transition to greener more sustainable energy continues to pose significant technological, commercial and political challenges for businesses and governments.

Energy transition engineers are faced with the challenge of redesigning our entire energy infrastructure system while ensuring continued access to reliable and affordable energy at times of rapid and substantial swings in supply or demand.

This programme is designed to address this challenge by combining a detailed knowledge of the technical and commercial aspects of Low Carbon Technologies with a broader systems-thinking approach to understanding the complex and interconnected nature of multi-energy systems.

You will learn about the latest technological innovations in areas such as wind, tidal and hydrogen, energy storage, carbon storage and biofuels and engage with the wider economic and political aspects of the energy transition.

Based in the School of Engineering, this MSc draws on much of the ground-breaking research being conducted within the Centre for Energy Transition (CET), along with expert contributions from the School of Geosciences, the School of Business and the School of Law.

Aberdeen is an exciting place to study the energy transition as the city and the region are at the forefront of the UK's net zero strategy with multiple major energy transition projects already up and running including Equinor's Hywind project, the European Offshore Wind Deployment Centre, and the new Energy Transition Zone.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering or a related field such as the natural sciences, physical sciences or mathematics. We will also consider students with business, law or geosciences backgrounds. Applicants with a 2:2 Honours degree with 5+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/energy-transition/





When searching for a suitable Masters course, I was immediately attracted to the MSc Renewable Energy Engineering offered by the University of Aberdeen. Apart from the fact that the university benefits from the vast talent pool in the energy field due to Aberdeen's leading role in the oil and gas industry, I was also attracted to this course because of its strong connection to industry.

I have not only gained knowledge of the different sources of renewable energy but also the technology of energy conversion, storage and integration to grid, as well as a general understanding of energy law and project economics.

Ma Lin

MSc Renewable Energy Engineering



Industrial Robotics

MSc/PgDip/PgCert

This programme applies fundamental principles from engineering and artificial intelligence to the understanding and development of robotics technologies for sectors as diverse as manufacturing, energy, transport, logistics and healthcare.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September

KEY TOPICS

- Industrial Robot Programming and Learning
- Introduction to Mobile Robotics and Bioinspiration
- Kinematics and Dynamics of Industrial Robot Arms
- Localisation and Mapping in the Industrial Domain
- Advanced Control Engineering
- Biomaterials for Medical Devices and Implants
- Rehabilitation Engineering and Biomechanics
- Mathematical Optimisation

OVERVIEW

Robotics is an interdisciplinary and highly dynamic field that ranges from the design of mechanical and electronic components to the development of software used to sense the environment, plan robot motions and control their execution.

Drawing on core concepts of robotics, AI, and mechatronics, you will study the emerging technologies driving the digital transformation of industry operations and develop the skills and expertise to design robotic systems using advanced algorithms.

You will benefit from hands-on learning and access to our dedicated robotics laboratory, including the Pepper robot, the Panda robot arm, soft actuators, mobile robots and swarm robotics which we use to research robotics and AI.

You will learn about the use of real-time data analysis, machine learning in industrial processes, including robot kinematics and dynamics, as well as robot programming and learning. You will also cover mobile and bioinspired robotic technologies, robot localisation and mapping and the design of swarm and soft robotic technologies.

The essential areas of control engineering and mathematical optimisation are also covered so that by the end of taught section of the

programme you will have the theoretical and practical tools to design robotic systems for multiple industry sectors such as energy, transport, food, logistics and manufacturing.

The programme concludes with your research-based dissertation project, which will allow you further develop your specialist knowledge and apply the concepts you learn throughout the programme.

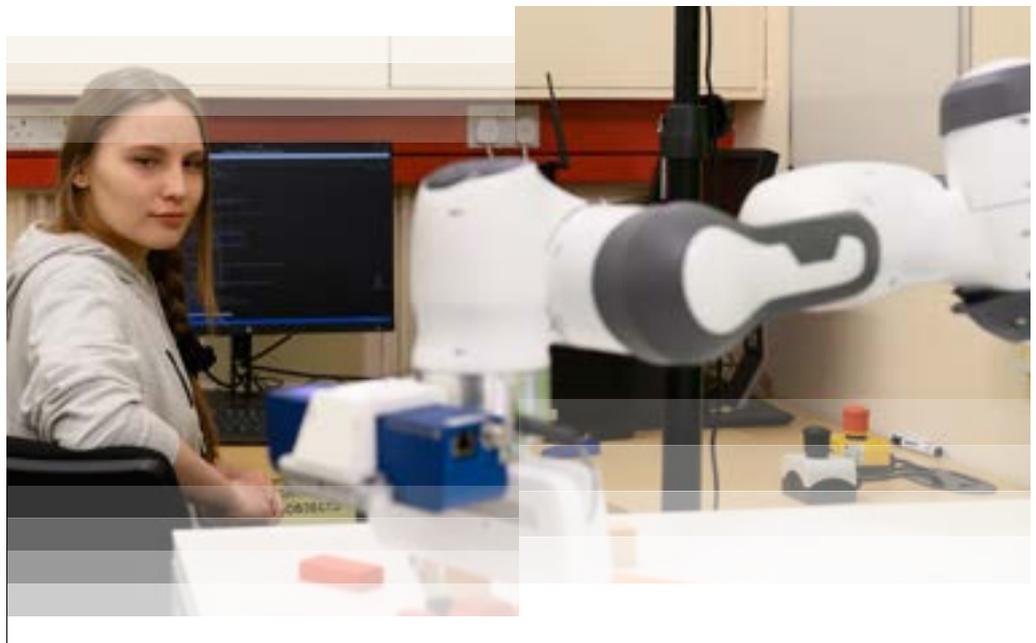
We welcome students from a broad range of academic backgrounds, including engineering, computer science or the physical or mathematical sciences, who are looking to advance their specialist knowledge and skills by gaining a higher qualification in this exciting field.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Electrical, Electronics, Mechanical, Mechatronics, Automation, Control, Computer Engineering or Computer Science. Applicants with a 2:2 Honours degree with 1+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/industrial-robotics/



Offshore Engineering

MSc/PgDip/PgCert

Aimed at both practising engineers and recent graduates, this programme is designed to equip students with the skills needed to work in a wide variety of roles in the offshore engineering sector, including oil and gas and renewables.

Learning mode:
On campus or online

Typical Duration:
MSc 12 months full-time
PgDip 9 months full-time
PgCert 4 months full-time
Online:
MSc 27 months part-time

Start month:
September or January

KEY TOPICS

- Electrical Systems for Renewable Engineering
- Engineering Risk and Reliability Analysis
- Marine and Wind Energy
- Marine Environmental Impact Assessment
- Offshore Structural Integrity
- Offshore Structures and Subsea Systems
- Pipelines and Soil Mechanics
- Renewable Energy Integration to Grid
- Subsea Construction, Inspection and Maintenance
- Subsea Control

OVERVIEW

Scotland is leading the way in developing offshore wind technology. The established offshore engineering expertise built up during a 50-year period of leadership in oil and gas has meant Aberdeen has emerged as a major hub for offshore renewables. There are currently 6 offshore wind farms in operation in Scotland, 3 of which are off the coast of Aberdeen, including Hywind, the world's first commercial wind farm using floating wind turbines.

The MSc Offshore Engineering programme draws upon the School of Engineering's strengths in both subsea engineering and renewable energy engineering, to meet the growing demand for expertise in repurposing technology associated with subsea oil and gas production and infrastructure installation for the offshore renewables industry.

The programme is therefore designed to be accessible to applicants from a wide range of engineering disciplines such as civil, petroleum or mechanical engineering, but also electrical and electronic engineers interested in a career in subsea controls.

A unique strength of the MSc Offshore Engineering programme at Aberdeen is the inclusion of courses on marine renewables and marine environment impact assessments, alongside courses on subsea construction, which

gives our graduates greater opportunities across the wider field of marine energy. This aspect of the programme appeals to engineers working within the subsea oil and gas industry, who are looking to diversify towards offshore renewable energy.

This programme holds accreditation from The Energy Institute, The Institute of Marine Engineering, Science & Technology, Institution of Civil Engineers (ICE), and Institution of Mechanical Engineers ensuring that the curriculum is designed and delivered to the highest professional standards.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in any branch of Engineering. Students with a 2:1 in Applied Mathematics or Physics may also be considered on a case-by-case basis. Those with a 2:2 Honours degree in Engineering may also be considered if they can demonstrate 3+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/offshore-engineering/



Oil & Gas Engineering

MSc/PgDip/PgCert

Delivered from the centre of the Energy Capital of Europe, this programme provides students with a theoretical and practical grounding in the key technologies to pursue careers in the upstream and downstream oil and gas industry.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Carbon Capture, Utilisation and Storage (CCUS)
- Flow Assurance
- Fundamentals of Petroleum Geoscience
- Oil and Gas Chemistry
- Project Management
- Reservoir Engineering
- Safety & Risk Management
- Well and Production Engineering

OVERVIEW

The MSc Oil and Gas Engineering is designed to create future industry leaders. The wide range of subjects taught, including engineering, geology and chemistry, ensures that you will gain a deep understanding of all the key scientific elements of the oil and gas industry and an appreciation of how these different aspects work together to deliver projects safely and efficiently.

As well as learning the principles that underpin the drilling of hydrocarbons and well production technologies (including reservoir engineering, petroleum geoscience and flow assurance) you will also learn about project management and the safety and environmental considerations involved in the oil and gas industry.

Aberdeen is known as the Energy Capital of Europe and with hundreds of energy operators and supply chain companies based in the city and surrounding region and numerous industry conferences, networking and career events taking place every year, there is simply nowhere better to gain industry exposure while studying for your energy degree.

Our industry advisory panels help ensure that the content and learning outcomes of our programmes reflect the needs of the industry while guest lectures from energy sector experts and industry-supported projects also help ensure our students' learning is in line with industry's standards.

This degree holds accreditation from the Institution of Mechanical Engineers and the Energy Institute, ensuring that the curriculum is designed and delivered to the highest professional standards.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK **Honours degree or** equivalent in Engineering or Physics. Those with a 2:2 Honours degree in Engineering may also be considered if they can demonstrate 2+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/oilgas-eng/



Petroleum Engineering

MSc/PgDip/PgCert

This programme is designed and delivered by industry experts to provide the necessary knowledge and skills required for an integrated study and evaluation of a prospect, leading to a viable oil and gas field development plan.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Enhanced Oil Recovery
- Field Development and Petroleum Economics
- Fundamentals of Petroleum Geoscience
- Petrophysics, Core Analysis and Formation Evaluation
- Reservoir Engineering
- Reservoir Simulation
- Well and Production Engineering
- Well Testing: Analysis and Design

OVERVIEW

Drawing upon a long-established track record of excellence in teaching and research, the MSc Petroleum Engineering is delivered jointly by the School of Engineering and the Department of Geology and Geophysics along with industry-based tutors covering a broad range of courses including the fundamentals of petroleum geoscience, enhanced oil recovery, reservoir simulation and well and production engineering. There is also a particular focus on formation evaluation and reservoir engineering and simulation.

The MSc Petroleum Engineering develops your skills so you are able to appraise and select the appropriate technologies for safe production recovery of hydrocarbon oil and gas and includes hands-on experience of using industry-standard simulation software in all aspects of petroleum engineering.

Aberdeen is known as the Energy Capital of Europe and with hundreds of energy operators and supply chain companies based in the city and surrounding region and numerous industry conferences, networking and career events taking place every year, there is simply nowhere better to gain industry exposure while studying for your energy degree.

Our industry advisory panels help ensure that the content and learning outcomes of our programmes reflect the needs of the industry while guest lectures from energy sector experts and industry-supported projects also help ensure our students' learning is in line with industry's standards.

This degree holds accreditation from the Institution of Mechanical Engineers and the Energy Institute, ensuring that the curriculum is designed and delivered to the highest professional standards.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering or Applied Mathematics. Those with a 2:2 Honours degree in Engineering or Applied Mathematics may also be considered if they can demonstrate 2+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/petroleum-eng/





I knew then that I wanted to play a role in the energy transition and have a positive impact on the decarbonisation of our energy systems. In order to achieve this goal I also knew that I had to expand my knowledge of what the energy transition actually involved and could offer.

Building on my mechanical engineering degree, I have gained knowledge in the physical principles of important renewable energy technologies. These were wind and marine (wave and tidal) energy, and solar PV. Aside from the engineering technologies aspects of the course, I have: developed my skills in GIS mapping; progressed my awareness of the socio-political landscape of national energy systems, especially in the UK; formed a holistic view on the economics of the energy transition in industrial, domestic, agricultural and services sectors; improved my understanding of the complexities of energy

transition problems, the solutions that are available now, and those that will become available in the future.

At the time of writing, I am heading into the research thesis phase of the MSc programme where I will be conducting an industrial project on behalf of TotalEnergies. The MSc scholarship I was awarded from TotalEnergies has opened up this opportunity to build expertise in two areas that are imperative for a successful energy transition - CCUS and Hydrogen - and I am looking forward to the experience ahead.

Lewis Kirkwood

MSc Energy Transition Systems and Technologies



Process Safety

MSc/PgDip/PgCert

This programme examines the primary technologies and operations involved in upstream oil and gas processing, with a particular focus on operational safety, risk assessment and risk management.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Applied Risk Analysis and Management
- Computational Fluid Dynamics
- Human Factors Engineering
- Loss of Containment
- Offshore Process Engineering
- Process Design, Layout & Materials
- Process Plant Equipment and Operations
- Safety & Risk Management

OVERVIEW

The School of Engineering has focused on safety-related teaching and research for over 30 years and is today established as one of the key centres for safety engineering teaching and research in the UK.

The MSc Process Safety is developed with the Institution of Chemical Engineers (IChemE) and industry to produce qualified Process Safety Engineers. On this programme, you will be exposed to the major issues and challenges facing industry today, including operational safety, risk assessment and management and develop a professional approach to managing these accordingly.

This programme is distinctive because it is designed for students with a chemical engineering background, or those with a background in Petroleum or Mechanical Engineering, with good chemical/chemistry knowledge.

A major component of the MSc Process Safety programme is understanding and managing risk. You will be introduced to the tools and processes used to identify, assess and manage risk, taking such issues as process operations and human factors into account.

Aberdeen is known as the Energy Capital of Europe and with hundreds of energy operators and supply chain companies based in the city and surrounding region and numerous industry

conferences, networking and career events taking place every year, there is simply nowhere better to gain industry exposure while studying for your energy degree.

Our industry advisory panels help ensure that the content and learning outcomes of our programmes reflect the needs of the industry while guest lectures from energy sector experts and industry-supported projects also help ensure our students' learning is in line with industry's standards.

This degree holds accreditation from the Institution of Chemical Engineers (IChemE), ensuring that the curriculum is designed and delivered to the highest professional standards.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Chemical Engineering or Mechanical or Petroleum Engineering with evidence of strength in key aspects of Chemical Engineering. Those with a 2:2 Honours degree in Engineering or Applied Mathematics may also be considered if they can demonstrate 2+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/process-safety/



Project Management

MSc/PgDip/PgCert

Learn to lead projects to success in any industry and gain a fully APM-accredited qualification in project management, studying part-time online.

Learning mode:
Online

Typical Duration:
24 months part-time

Start month:
September or January

KEY TOPICS (COMPULSORY OR OPTIONAL COURSES)

- Budgets and Financial Control
- Commercial and Contractual Issues
- Delivering Successful Projects
- Managing Project Teams
- Organisations and People
- Portfolio Project Management
- Project Management Fundamentals
- Project Planning and Control
- Quality Systems and Risk Management

OVERVIEW

Learn to deliver the financial and operational success of projects in any industry. Use this qualification to upskill, change direction or kick start your career in project management.

Studying flexibly, with no need for a career break, you'll learn from industry professionals who've been there and done it. You'll build the skills, confidence and experience you need to lead complex projects to success.

You'll train in a range of areas, including project planning, budgets and controls, quality and risk management, and commercial and contractual issues.

Join a degree that's been running successfully since 1993 as a recognised pathway for new and existing project managers. You'll have dedicated student support throughout your studies and free careers support for five years after you graduate.

ENTRY REQUIREMENTS

We require a degree in any discipline or alternative qualifications and relevant work experience in a project environment.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/degrees/project-management/



Renewable Energy Engineering

MSc/PgDip/PgCert

This programme has been specifically designed to help meet the projected growth in demand for renewable energy specialists by teaching the advanced skills needed to design, build and optimise renewable energy infrastructure.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Electrical Systems for Renewable Energy
- Geothermal and Hydro Energy
- Energy from Biomass
- Solar Energy
- Marine and Wind Energy
- Energy Conversion and Storage
- Renewable Energy Integration to Grid
- Legislation, Economics and Safety

OVERVIEW

The massive worldwide growth in renewables is creating a major skills shortage as countries rush to develop more secure and sustainable energy sources. This programme has been specifically designed to help meet the projected growth in demand for renewable energy specialists by teaching the advanced skills needed to design, build and optimise renewable energy infrastructure.

One of the main features of this programme are its breadth and technical depth in the approach to renewable energy. The courses draw heavily upon the research expertise of the School of Engineering and our industry partners to provide you with a thorough grounding in the technical and scientific aspects of renewable energy, including, marine, wind, solar, geothermal and bioenergy.

You will also gain an in-depth understanding of the challenges related to energy conversion, storage and integration to the grid and engage with the wider legal and commercial considerations involved in renewable energy.

Aberdeen is an exciting place to study renewable energy engineering as the city and surrounding region are at the forefront of the energy transition in the UK. There are several major energy transition projects already up

and running including Equinor's Hywind project and the European Offshore Wind Deployment Centre, Scotland's largest offshore wind test and demonstration facility.

With hundreds of energy companies based in Aberdeen, our programmes benefit from significant industry engagement, including industry advisory panels, guest lectures, field trips, site visits, networking and careers events, and industry-supported student projects.

This degree holds accreditation from the Institution of Engineering and Technology the Energy Institute, the Institution of Mechanical Engineers and the Institute of Marine Engineering, Science & Technology.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering, Physics, Maths or Chemistry. Those with a 2:2 Honours degree may also be considered if they can demonstrate 2+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/renewable-energy/



Robotics and Artificial Intelligence

MSc/PGDip/PGCert

Learning mode:
On-campus

Typical duration:
MSc 12 months full time
PGDip 9 months full time
PGCert 4 months full time

Start month:
September or January

KEY TOPICS

- Mobile Robotics and Bioinspiration
- Localisation and Mapping in the Industrial Domain
- Applied Artificial Intelligence
- Machine Learning
- Kinematics and Dynamics of Industrial Robot Arms
- Industrial Robot Programming and Learning
- Data Mining with Deep Learning
- Software Agents and Multi-Agent Systems

OVERVIEW

The MSc Robotics and Artificial Intelligence programme is designed for students with a background in engineering, computer science, or a related subject who are interested in pursuing a career in the rapidly growing field of robotics and AI.

The convergence of robotics and AI is revolutionising industrial automation and has led to a high demand for robotics engineers who have the knowledge and skills needed to design, develop and evaluate systems to help companies improve their processes and operations.

This master's programme covers the fundamental concepts and skills of robotics and AI including robot manipulator arms and mobile robots, bioinspiration, machine (deep) learning, simultaneous localisation and mapping (SLAM), swarm robotics, computer vision and AI. You will also gain hands-on experience through practical projects and lab work in our dedicated robotics laboratory.

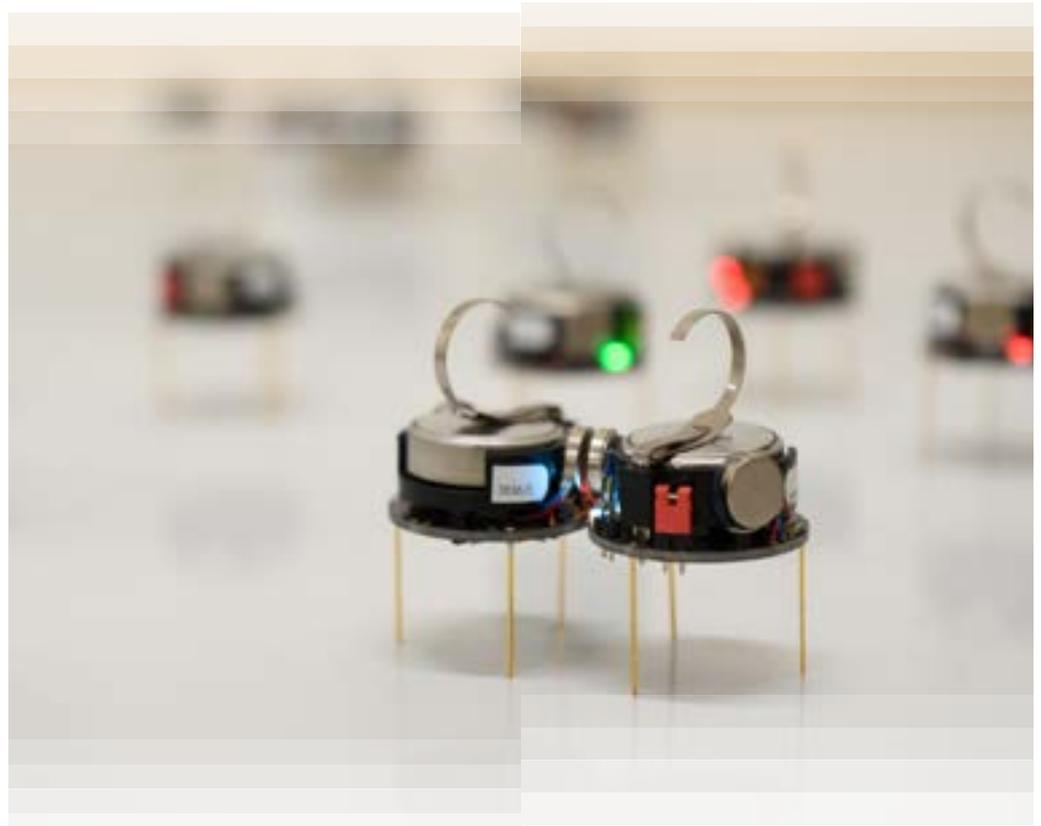
We place a particular focus on handling uncertainties in industrial processes, machine learning methodologies and algorithms, autonomous systems and the application of advances in robotics and AI to the optimisation of manufacturing and industrial operations (Industry 4.0).

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering or Computing. Applicants with a high 2:2 Honours degree with 1+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/study/postgraduate-taught/degree-programmes/1977/robotics-and-artificial-intelligence/



Safety and Reliability Engineering

MSc/PgDip/PgCert

This programme provides a thorough understanding of the concepts and tools of safety engineering, reliability engineering and loss prevention.

Learning mode:
On campus or Online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Advanced Methods for Risk and Reliability Assessment
- Applied Risk Analysis and Management
- Fire and Explosion Engineering
- Human Factors Engineering
- Offshore Structural Integrity
- Process Design, Layout & Materials
- Safety & Risk Management
- Statistics and Probability for Safety, Reliability and Quality

OVERVIEW

The MSc Safety and Reliability Engineering provides advanced education and training for graduate engineers in the areas of safety engineering, reliability engineering, and loss prevention.

There is a high demand for engineers with specialist knowledge in these areas across many industry sectors including oil and gas, nuclear, defence, transport, aerospace, manufacturing and process industries because of the legal requirements to assess and control industrial risks to people and the environment and also because of the need to create high integrity engineering systems in many industries.

Safety engineering is not a subject which is adequately covered in most undergraduate degrees, so this MSc programme brings together those topics relating to the safety and reliability of engineering products and systems, including the legislative framework, in a unified approach.

You will learn the fundamentals of safety engineering including natural and man-made hazards, safety measures, accident and failure statistics, risk management and risk assessment techniques while also developing your communication, leadership and teamwork

skills through a series of tutorials, coursework, technical reports, presentations and group projects.

The School of Engineering is a world-class centre for research and teaching in safety and reliability engineering teaching and research. You will be taught by staff from the School of Engineering as well as industrially-based safety and reliability specialists.

The MSc Safety and Reliability Engineering is accredited by the Energy Institute, the Institute of Marine Engineering, Science & Technology, the Institution of Civil Engineers (ICE) and the Institution of Mechanical Engineers.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering, Mathematics or Physics. Those with a 2:2 Honours degree may also be considered if they can demonstrate 2+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/safety-eng/



Subsea Engineering

MSc/PgDip/PgCert

The MSc Subsea Engineering combines cutting-edge teaching and research with our extensive industry links to prepare graduate engineers for technical leadership roles within the subsea industry.

Learning mode:
On campus or online

Typical Duration:
MSc 1 year full-time
PgDip 9 months full-time
PgCert 4 months full-time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Engineering Risk and Reliability Analysis
- Flow Assurance
- Offshore Structural Integrity
- Offshore Structures and Subsea Systems
- Pipelines and Soil Mechanics
- Riser Systems and Hydrodynamics
- Subsea Construction, Inspection and Maintenance
- Subsea Control

OVERVIEW

Drawing on over 40 years of subsea industry and research excellence in the North Sea basin, this programme teaches the fundamental skills and technical knowledge of the development and operation of subsea technologies and systems.

The courses on this programme cover advanced aspects of subsea engineering, from wellhead to topside structure interconnections, as well as the practical skills needed to apply sound engineering principles and analysis methods to the design and installation of subsea systems.

You will learn to use and adapt appropriate analysis tools and techniques, specialist design software and standards for design improvements and performance optimisation via industry-focused courses. In addition to gaining the necessary technical skills and knowledge for a subsea career, you will also further enhance your communication, project management and problem-solving skills through your course assignments and research project.

With 40% of all the world's subsea installations located in the North Sea, Aberdeen is recognised as Europe's leading centre for subsea development and operations. There is a cluster

of leading subsea engineering companies in Aberdeen and this programme benefits from our significant industry engagement, including industry advisory panels, guest lectures, field trips, site visits, networking and careers events, and industry-supported student projects.

This degree holds accreditation from the Institute of Marine Engineering, Science & Technology, the Institution of Civil Engineers (ICE), the Energy Institute, and the Institution of Mechanical Engineers.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering. Applicants presenting a 2:1 in Applied Mathematics or Physics may also be considered on a case-by-case basis. Those with a 2:2 Honours degree may also be considered if they can demonstrate 3+ years of relevant industry experience.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/pgt/subsea-eng/



Subsurface Energy Engineering

MSc/PGDip/PGCert

Learning mode:
On-campus or online

Typical duration:
MSc 12 months full time
PGDip 9 months full time
PGCert 4 months full time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Subsurface Transport Processes
- Near Surface and Environmental Geophysics
- Carbon Capture, Utilisation and Storage
- Geothermal and Hydro Energy
- Mineral Processing and Recycling
- Sustainable Engineering Challenges
- Simulation of Flow in Porous Media
- Energy Conversion and Storage

OVERVIEW

The subsurface has a critical role to play in addressing global warming. Not only does the subsurface provide sources of low-carbon energy, for example, geothermal, but it also enables the storage of energy, including hydrogen, and the permanent sequestration of CO₂ in geological formations such as depleted oil and gas reservoirs.

The MSc Subsurface Energy Engineering programme builds on the University of Aberdeen's long track record of teaching and research in energy, to provide advanced training in the design and use of available subsurface resources in conjunction with low-carbon energy sources for achieving a sustainable energy future.

You will learn the fundamentals of fluid transport processes in the subsurface with applications to hydrogen transportation and storage, geothermal resources and Carbon Capture, Utilisation and Storage (CCUS). Unlike other engineering programmes, we also cover the important area of sustainable mining for critical

energy transition metals, such as lithium and zinc, as well as the subsequent processing, recycling and reuse of these materials. Also, we look at sustainability tools, management systems and standards around the management of quality, environment, energy, safety and life cycle assessment.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering, Applied Mathematics, Physics or Geosciences. Applicants with a high 2:2 Honours degree with 3+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/study/postgraduate-taught/degree-programmes/1983/subsurface-energy-engineering/



Sustainable Product, Process and Energy Engineering

MSc/PGDip/PGCert

Learning mode:
On-campus or online

Typical duration:
MSc 12 months full time
PGDip 9 months full time
PGCert 4 months full time
MSc 27 months online

Start month:
September or January

KEY TOPICS

- Biorefinery for Sustainability
- Energy From Biomass
- Carbon Capture, Utilisation and Storage
- Geothermal and Hydro Energy
- Solar Energy
- Mineral Processing and Recycling
- Sustainable Engineering Challenges
- Industrial Biotechnology
- Energy Conversion and Storage

OVERVIEW

The MSc Sustainable Product, Process and Energy Engineering focuses on the use of renewable resources, in particular biomass and carbon dioxide, to produce energy, chemicals, materials and other products in a sustainable way.

Today, most of the fuels, raw materials and chemicals used to produce goods are produced using energy and feedstock from fossil fuels. This raises large questions about future sustainability, due to the finite availability of natural resources and the generation of greenhouse gasses such as CO₂.

As a result of the greater focus on sustainability amongst consumers, governments and investors, companies are urgently examining ways that they can reduce their environmental impact while protecting their profitability. To achieve this, manufacturers are increasingly looking for

engineers who have the specialist knowledge and tools to ensure that the choice of energy sources, raw materials and manufacturing processes are rigorously considered when designing and manufacturing products.

ENTRY REQUIREMENTS

We require a 2:1 (upper second class) UK Honours degree or equivalent in Engineering, Mathematics, Physics or Chemistry. Applicants with a high 2:2 Honours degree with 5+ years of relevant experience may also be considered.

FIND OUT MORE

For more information about courses, tuition fees, funding, entry requirements and careers, please see www.abdn.ac.uk/study/postgraduate-taught/degree-programmes/1982/sustainable-product-process-and-energy-engineering/



Research Opportunities

Our research degree programme provides a thorough training in a particular subject area through original exploration and experimentation. The research culminates in a thesis or dissertation which sets out the conclusions of the research undertaken.

Researchers within the School of Engineering consistently perform extremely well in the UK Government-led Research Assessment Exercise with the majority of the research activity being judged to be either world-leading or internationally excellent.

Within this environment students have the opportunity to undertake research through either full-time or part-time study, including MSc by Research, PhD or an EngD level.

Research within the School of Engineering is conducted within five research groups.

Applied Dynamics and Structures

The Applied Dynamics and Structures Research Group is a multidisciplinary Research Group conducting interlinked research in the areas of Dynamical Systems, Sustainable Structures, Renewable Energy and Energy Transition, and

Energy Systems' End of Life, in close collaboration with Centre for Applied Dynamics Research (CADR) and the National Decommissioning Centre (NDC).

Chemical Processes and Materials

The Chemical Processes and Materials Research Group has an international profile in many aspects of activity in the area of functional materials (preparation, characterisation and application) and includes research in the areas of: cementitious materials, biomaterials, magnetic/electronic materials and materials for catalysis and photocatalysis.

Electrical Systems and Electronics

The Electrical Systems and Electronics (ESE) Research Group advances fundamental knowledge in EEE and is at the forefront of developing innovative applications across the spectrum of engineering. It enjoys an international reputation



and profile, which spans the development of new semiconductor devices and laser components for holographic cameras to techniques for high power DC transmission; design of algorithms and AI techniques; Internet engineering, bioengineering and the design and control of novel robotic platforms.

Fluid Mechanics

The Fluid Mechanics Research Group covers a spectrum of research across four major areas: (1) Environmental and Industrial Fluid Mechanics; (2) Soil Mechanics; (3) Structural Mechanics; and (4) Transport Studies.

Solid Mechanics and Materials

The analytical, computational and experimental work of the Solid Mechanics and Materials group covers a wide range of advanced structural and functional materials and material systems. It is

aimed at understanding and predicting their mechanical behaviour at different lengths scales.

All areas of research in the School of Engineering are supported by modern laboratories with state-of-the-art equipment and computing facilities, the latter including major commercial engineering software.

How to Apply for a Research Degree

You can also apply to a pre-defined PhD. These are projects which the School of Engineering has identified as strong research opportunities for high calibre applicants. You can find out more information on these PhDs opportunities at www.abdn.ac.uk/study/postgraduate/phd-opportunities-205

You can also contact potential supervisors within the School of Engineering to discuss research proposals.

FIND OUT MORE

For more information about applying for a research degree programme, please see www.abdn.ac.uk/pgr/engineering/



Online Short Courses

In addition to our on campus programmes, we also offer the option to study online for a postgraduate degree. We also offer the opportunity to study a wide range of engineering short courses online.

Studying Online

Earning a Master's degree online from the School of Engineering can greatly enhance your career and open up new opportunities if you are looking to switch to a new job or a new sector. Studying online gives you the flexibility to balance your studies with your other work or family commitments. You can access lectures and other study materials when you need to, allowing you to build your own schedule and manage your time effectively.

Online Short Courses

For the most part, course hours aren't fixed, so you can set your own study hours, while some courses are 'always-on', so you can enrol and study whenever you like, 24/7. You can build qualifications, including Master's degrees, one short course at a time.

Our current online short courses include:

- Biological Wastewater Treatment and Anaerobic Digestion
- Budgets and Financial Control
- Commercial and Contractual Issues
- Delivering Successful Projects
- Electrical Systems for Renewable Energy
- Energy Conversion and Storage
- Energy From Biomass
- Energy Systems Integration
- Engineering Risk and Reliability Analysis
- Fire and Explosion Engineering
- Flow Assurance
- Geothermal and Hydro Energy
- Human Factors Engineering
- Introduction to GIS Tools



- Introduction to Offshore Decommissioning
- Legislation, Economics and Safety
- Marine and Wind Energy
- Offshore Structural Integrity
- Offshore Structures and Subsea Systems
- Oil and Gas Chemistry
- Organisations and People
- Pipelines and Soil Mechanics
- Process Design, Layout and Materials
- Process Plant Equipment and Operations
- Process Shutdown, Structural Decommissioning and Disposal
- Project Management
- Project Management Fundamentals
- Project Planning and Control
- Quality Systems and Risk Management
- Renewable Energy Integration to Grid
- Reservoir Engineering
- Reservoir Simulation
- Riser Systems and Hydrodynamics
- Safety and Risk Management
- Solar Energy
- Statistics and Probability for Safety, Reliability and Quality
- Subsea Construction, Inspection and Maintenance
- Subsea Control
- UAV Remote Sensing, Monitoring and Mapping
- Well and Production Engineering
- Well Plugging and Abandonment



FIND OUT MORE

<https://on.abdn.ac.uk/engineering-and-technology/>

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