Geology and Geophysics

UNIVERSITY OF
ABERDEEN

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abdn.ac.uk/geology

POSTGRADUATE
GUIDE

Welcome

The University of Aberdeen sits at the heart of the UK energy industry and is committed to providing world-class training in a wide range of energy-related degree programmes.

The School of Geosciences has unparalleled links with industry fostered over many decades. We evolve with industry, refining programme content and developing new initiatives in line with industry demand. To this end, our energy MSc programmes have remained relevant, ensuring our graduates have a long-term career in their chosen sector and discipline.

Teaching methods aim to create a close parallel to the way industry works, providing students with the teamwork and communication skills required to transition from education to employment and providing all-round preparation for a wide range of employment opportunities in a dynamic industry.

The University of Aberdeen is also home to the Centre of Energy Transition (CET) which facilitates engagement and collaboration between the University's research community and our external partners. We are particularly interested in collaborating with industry, governments, researchers, and other organisations and groups working to deliver on net-zero and other important energy-related challenges. The CET provides education, training and skills programmes, to support the transition to a green economy.

Dr David Muirhead

Head of School of Geosciences

MSc Geophysics

Developed on the back of a recognised need for qualified geophysicists within industry, this programme equips students with the skills for careers in the energy transition, hydrocarbon and minerals exploration, renewable energy, environmental sciences and associated service industries, or broader geophysics research.

Here, you will learn from experienced geophysics staff and key industry experts, delivered in world-class facilities with dedicated teaching and study space and explore the theory of geophysics and its application to a multitude of research and industry problems across a variety of scales, via a curriculum that covers the broad fundamentals and new technologies.

We place specific emphasis on students gaining hands-on experience in using industry-standard software and acquiring geophysical data with our large pool of geophysics equipment (including broadband seismometers, seismic reflection/refraction, ground penetrating radar, resistivity tomography, magnetometers and differential GPS).

What you'll study

- Earth Physics, Structure and Processes
- Near Surface & Environmental Geophysics
- Time Series Analysis and Inverse Theory
- Seismology and Earth Imaging
- Borehole Geophysics and 4d Reservoir Monitoring
- Seismic Reflection Acquisition and Processing
- Applied, Industry and Research Geophysics
- Machine Learning in Geophysics

Careers

Successful completion of this programme will open up opportunities for students with oil and gas operators and mineral exploration companies, as well as dedicated geophysics service companies related to renewable energy, and civil and environmental engineering. Two-thirds of our graduates now enjoy a geophysics industry career, with a quarter undertaking geophysics research towards a PhD or University lecturing, and the remainder are employed in the digital technology or other sectors.

Further Information

abdn.ac.uk/pgt/geophysics
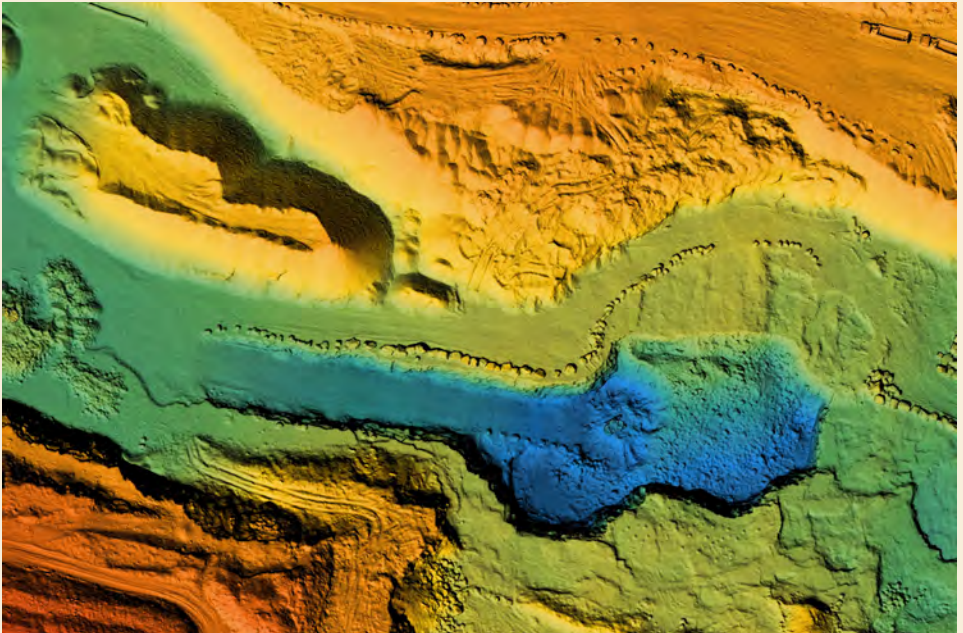
MSc Integrated Petroleum Geosciences

Running since 1973, the IPG programme is internationally regarded as one of the top vocational training pathways into the energy industry. This programme equips students with the knowledge and skills to understand the subsurface and hydrocarbons stored there.

IPG receives detailed input and support from industry, including BP, Harbour, Equinor and Shell, ensuring it remains current and relevant, particularly as the industry moves forward to a Net Zero economy.

The curriculum focuses on all aspects of upstream geoscience, from exploration, field appraisal and development, maximising recovery from mature fields, and ultimately considerations for repurposing depleted fields for carbon storage. Skills in analysing the subsurface are further developed by field work on outcrops and by hands-on experience with core logging.

Our teaching methods aim to create a close parallel to the way industry works, providing students with the teamwork and communication skills required to transition from education to employment.
IPG is supported by industry partners who provide scholarships for a select number of students each year. The close ties between the University and industry in Aberdeen allows for multiple energy companies to provide training, projects and student mentorship each year.

What you'll study

- Geophysics and Petrophysics
- Applied Sedimentology and Structural Geology
- Professional Skills Incorporating International Field Trip
- Production Geology
- Regional Exploration
- Subsurface Storage & Sequestration

Careers

Over 90% of our graduates have been employed in the oil and gas, energy and applied industries or gone straight on to funded PhD research. A large number of graduates from the programme now hold very senior roles in some of the world's major oil and gas companies.

By laying down the fundamentals in subsurface investigation, the course will also equip you with the knowledge to branch into other careers that involve examining the subsurface, including emerging geoenergies such as CCUS.

Further information

www.abdn.ac.uk/pgt/ipg

MSc Oil and Gas Enterprise Management

The MSc Oil and Gas Enterprise Management provides the essential commercial, legal and scientific skills needed to progress to senior management level positions in the international hydrocarbons industry.

Aimed at graduates from various backgrounds, including geosciences, engineering, business and law or people with relevant professional experience, this long-established interdisciplinary programme develops your business, legal and technological skills, to provide a thorough understanding of the entire oil and gas lifecycle, from exploration & production (E&P) through to commercialisation, within the broad economic and legal context of the oil and gas industry.

Teaching is delivered by industry experts, who bring with them the latest industry trends and techniques to ensure that what you learn on this programme is relevant to the needs of the upstream oil and gas industry today and further supported by input from the School of Geosciences, Business School, and School of Law.

The University's location at the heart of the oil and gas industry means students benefit from direct access to industry, not only through lectures from industry experts, but also through field trips, site visits, industry-supported projects as well as numerous other networking and careers events that take place in Aberdeen.

What you'll study

- Geoscience in Oil Exploration
- Introduction to Energy Economics
- Drilling and Well Engineering
- Management in Engineering: Production, Risk Management and Psychology
- Portfolio Optimisation
- Commercial Law and Regulatory Frameworks
- Remediation Technology for Geosciences
- Research Skills, Professional Development and Field Study

Careers

The broad base of technical, commercial and legal knowledge and skills and the industry exposure you will obtain on the programmes means that you will be for a variety of roles in the energy sector, in areas for example such as business development, consultancy, field services, process engineering and project management.

Further information

www.abdn.ac.uk/pgt/ogem

MSc Petroleum Data Management

The MSc Petroleum Data Management has been designed in partnership with industry to meet the growing demand within the oil industry for professional petroleum data managers, possessing expertise seen as critical to maximising economic recovery.

The aim of the MSc Petroleum Data Management programme is to provide education and training at postgraduate level for data managers both working in the petroleum sector or for those aspiring to work in the sector.

In particular, this programme is tailored to deal specifically with managing the physical and digital data that are used across the oil and gas industry, to understand and evaluate the subsurface and the petroleum reserves located there.

The MSc programme has been set up through a partnership between the University of Aberdeen and Common Data Access Ltd (CDA), a not-for-profit subsidiary of Oil & Gas UK, and leading multinational companies including Shell, Total and Chevron.

What you'll study

- Database Systems and Big Data
- Fundamentals of Petroleum Geoscience
- The Nature of Geological and Geographical Data
- Petroleum Data Governance
- Data Science: from Data to Insight
- Service and Project Management for Petroleum Data Managers
- Petroleum Data Quality Management
- Law, Business, Security: Petroleum Data Management

Careers

This programme has been designed with leading industry organisations to ensure that the content and teaching delivers graduates who can make a real difference in the industry. The content reflects the overall key data management activities of relevance to petroleum data managers, to provide individuals with job-ready expertise to move into the advanced data management roles that will meet the growing demand and expectations of the global oil and gas industry.

Further information

www.abdn.ac.uk/pgt/pdm

MSc Sustainable Energy Geoscience

This new MSc draws on the ground-breaking research being conducted at the University of Aberdeen in geothermal energy, carbon capture and storage, sequestration and other geoenergies to equip students with the subsurface skills required for the rapidly evolving energy sector.

Our understanding of subsurface workflows and resources is critical to many of the new clean energy technologies associated with the energy transition, such as geothermal energy, carbon capture storage and the growing demand for critical minerals needed to produce clean technologies such as wind turbines, batteries and electric vehicles.

At the heart of this programme is a focus on developing a strong technical understanding of rocks and fluids in the subsurface, and how to model, monitor and verify their presence using geophysical, petrophysical and other techniques. This knowledge is then applied to a wide range of low carbon energy solutions including sustainable mineral extraction, geothermal flow and subsurface storage.

We place a strong focus on geoscience interpretation and the high-demand skills needed for both present-day and future energy extraction and storage scenarios. In addition, you will examine the societal implications of the energy transition, including social justice, global dynamics and sustainability goals.

What you'll study
- Geophysics and Petrophysics
- Applied Sedimentology and Structural Geology
- Professional Skills Incorporating International Field Trip
- Earth's Resources
- Geothermal Flow
- Subsurface Storage & Sequestration

Careers
Energy companies are diversifying their portfolios to include low carbon energies and technologies such as offshore wind, hydrogen and carbon capture and storage. A number of large-scale low carbon projects are now underway in the UK and around the world, and projects are expected to expand as we move towards a net-zero economy. The UK government expects 220,000 positions will be required to support the energy transition in the UK over the next 10 years.

Further information
www.abdn.ac.uk/pgt/sustainable-energy-geoscience

If you would like more information on studying at the University of Aberdeen, visit abdn.ac.uk/study, email:study@abdn.ac.uk or call +44 (0)1224 272090

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