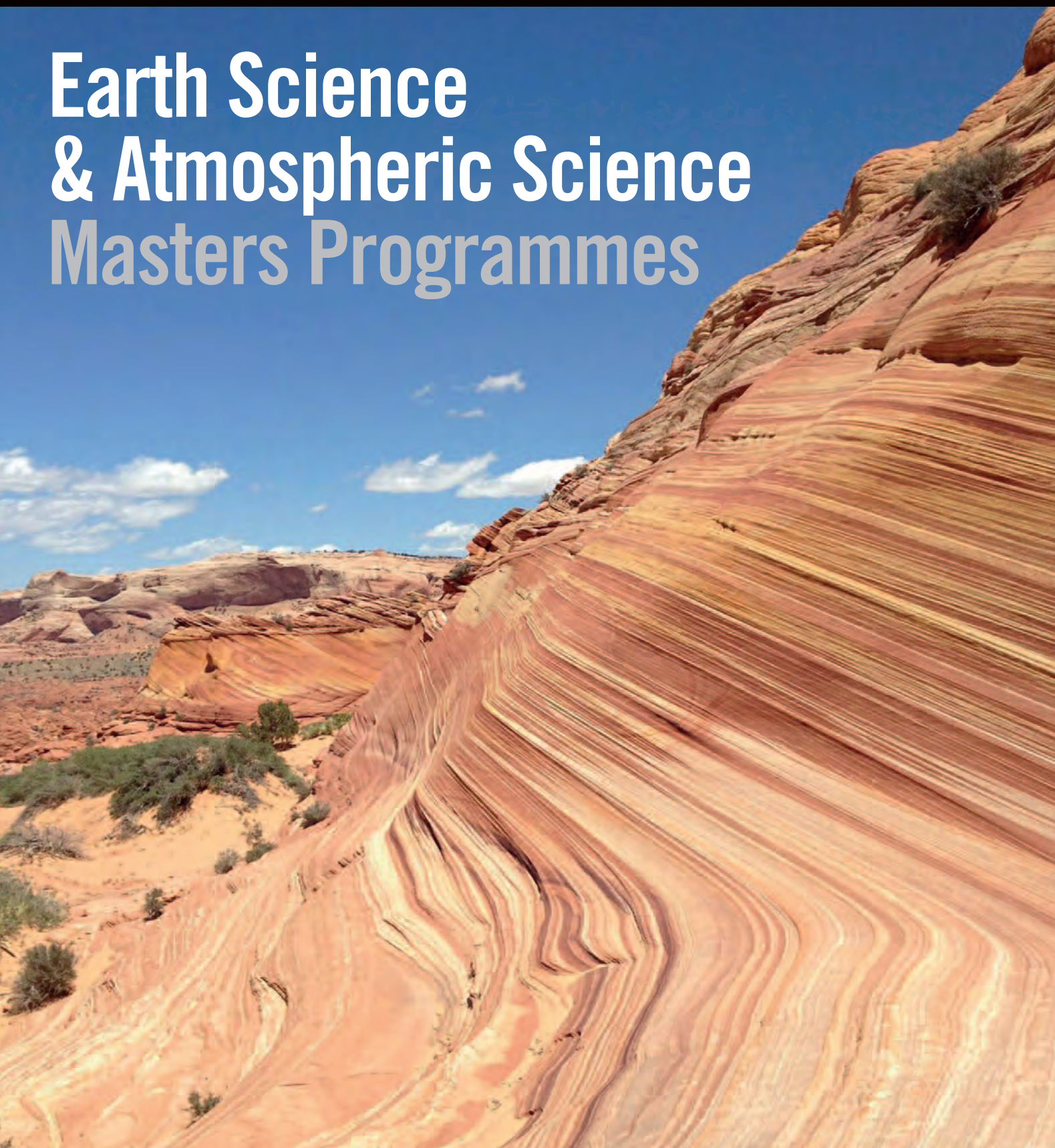
School of
Earth and Environment
FACULTY OF ENVIRONMENT

UNIVERSITY OF LEEDS

Earth Science & Atmospheric Science Masters Programmes



Studying Earth Sciences at Leeds

The School of Earth and Environment at Leeds is one of the largest and most vibrant in the country.

The School has an excellent reputation for world-class research and innovative teaching. We are ranked **second in the UK for Research Power** (Research Assessment Exercise 2008) and in the **top ten in Europe for academic reputation** in Earth Science (QS World Rankings 2014).

We offer a range of **Earth Science** vocational MSc courses as well as a Masters by Research (MRes) in **Climate and Atmospheric Science** and host national research centres in atmospheric sciences; observation and modelling of earthquakes, volcanoes and tectonics; polar observation and modelling; as well as the university's climate and geohazard services hub; and centre for integrated petroleum engineering and geoscience.

We are a multi-cultural School attracting researchers and postgraduate students across the world, connecting nationalities, expertise and experience from Eurasia, Europe, Africa, Australia and North and South America.

Excellent career prospects

- A Masters degree is often required by employers in specialist areas such as Engineering Geology, Exploration Geophysics and Structural Geology and can provide you with much better employment prospects than undergraduate studies alone.
- We have an excellent employment track record, with almost 100% of Earth Science graduates gaining relevant employment.
- All programmes include a substantial project, giving you the opportunity to work directly with industry, or within a specialist research team within the School.

Links with industry

- The industrial experience of many teaching staff as well as contributions from spinout companies helps provide context to the courses.
- We have close links with industry and you will benefit from regular visits by company representatives.

Research-led teaching

- We have one of the largest research groups of earth, environmental and social scientists in the UK and internationally.
- Our programmes are led by staff within four of the School's Research Institutes; the Earth Surface Science Institute (ESSI), the Institute of Applied Geoscience (IAG), the Institute for Climate and Atmospheric Science (ICAS) and the Institute of Geophysics and Tectonics (IGT).
- Research based learning means you will interact with staff who are at the cutting edge of research world-wide and your studies will be based on research happening now.
- You will be equipped with the knowledge, skills and experience to help you succeed.

Visit our website for further information about our School and its world-leading research groups: **www.see.leeds.ac.uk/research**

Facilities

You will be based in the state-of-the-art School of Earth and Environment building and benefit from purpose-built laboratories, dedicated MSc teaching rooms with high-end computers running industry standard software, and a 3D visualisation suite.

Substantial investment in geophysical survey equipment within the School means that you can demonstrate and practise a range of techniques effectively in the field.

You will also have access to a suite of laboratories including dedicated computer labs with state-of-the-art and industry standard software, and access to experimental laboratories with research and industry standard equipment.

International students

Leeds is ranked 1st among participating Russell Group Universities for international student satisfaction in the ISB (International Student Barometer – Autumn 2012).

Leeds welcomes international students and actively seeks to recruit students from across the world. Our courses provide you with an international standard of Masters qualification in 12 months rather than 24. We recognise that moving to a new and unknown country is a major transition and can be quite daunting. For this reason, the University of Leeds guarantees you a place in our accommodation, provides orientation sessions on arrival, ongoing support during your time at Leeds, and extra support for English language at the University's Language Centre.

For more information visit:
www.leeds.ac.uk/accommodation
www.leeds.ac.uk/international
www.leeds.ac.uk/languages

You can also obtain additional in-country assistance from our overseas representatives:
www.leeds.ac.uk/countryspecificinformation

How to apply

For more information on the courses visit the School website where you will also find details of the application process in the 'How to Apply' section:
www.see.leeds.ac.uk/masters

Alternatively, applications can be made online via the University website:
www.leeds.ac.uk/students/apply.htm

Applications are accepted year round although we recommend international students apply no later than the end of May.

Entry requirements

UK Bachelor Degree (with a classification of 2:1 or better), or equivalent qualification. Mature applicants without a first degree or with a lower degree classification may be considered on the basis of their relevant industry experience and their potential for benefiting from the programme.

A proficiency in mathematics to a good A level standard or equivalent is desirable and essential for the MSc Exploration Geophysics.

If you're not sure if your international or EU degree is equivalent to a UK degree, check our School website for details or contact the School for advice.

English language requirements

If your first language is not English, you must provide evidence of your language proficiency. This is normally in the form of a recent test certificate.

We accept IELTS and other recognised alternatives, for further details please visit:
www.see.leeds.ac.uk/elr

See also the University's Language Centre webpages: **www.leeds.ac.uk/languages**

Fees and scholarships

Fees are listed on the School website:
www.see.leeds.ac.uk/masters-fees

The School offers a number of scholarships to help towards your tuition fees. For information on these and other University of Leeds and Industry scholarships and bursaries visit:
www.see.leeds.ac.uk/scholarships

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"I was offered a job with BP during the MSc and have just started working as a geophysicist. The MSc has been invaluable so far!"

Caroline Selwood, MSc Exploration Geophysics

MSc Exploration Geophysics

Geophysics is the remote study of the Earth's interior through physical techniques – principally analysing seismic data, but also applying gravity, magnetic, radar, electrical and electromagnetic methods.

In industry, it is a key tool for resource exploration (whether for hydrocarbons, minerals, or groundwater) and for environmental and engineering site investigation.

This course will provide you with a broad range of practical skills underpinned by a scientific understanding that equips you to become a professional in the areas of exploration or engineering.

The course is industry-focused, but academically grounded and you will benefit from the contributions and expertise of a large and active geophysics research group.

Key facts

Start Date
September

Duration of MSc
12 months (full-time)

Key features

- Accredited by the Geological Society of London.
- Four-month individual research project – most in association with industry, many on placement at a company.
- Dedicated, high-spec, computer lab.
- Extensive, modern geophysical survey equipment pool.
- Established for 50 years.
- Comprehensive links with industry through sponsorship, projects, company visits and input from industry experts.
- Virtually 100% graduate employment. Geophysics is generally a well remunerated career with starting salaries of ≥£35k pa being common.
- A variety of scholarship schemes available for UK/EU students including fully funded places on the course thanks to major oil companies such as Apache, BG Group, BP, Chevron, ConocoPhillips, ION, Maersk, Nexen, Shell, TGS, TOTAL.

Modules

Six compulsory modules (including an individual research project) and either all the modules from the hydrocarbon geophysics stream or the environment/engineering geophysics stream.

Compulsory modules:
- Generic Geophysics Skills and Seismic Fundamentals
- Gravity and Magnetic Methods
- Near-Surface Geophysics
- Seismic Reflection Acquisition and Processing
- Time Series Analysis and Inverse Theory
- Individual Research Project.

Hydrocarbon geophysics stream modules:
- Petrophysics and Geophysical Reservoir Evaluation
- Seismic Reflection Interpretation and Sequence Stratigraphy
- Structure and Hydrocarbon Prospectivity of Basins.

Environmental/Engineering geophysics stream modules:
- Engineering Geology and Geophysics
- Hydrogeology and Contaminant Processes
- Seismic Reflection Interpretation and Borehole Logging.

Contact us

Visit the School website:
www.see.leeds.ac.uk/masters

Programme Manager:
Dr Roger Clark
Email: **r.a.clark@leeds.ac.uk**
Tel: **+44 (0) 113 343 5221**

> *The course is excellent, its balance is good and its material directly relevant to industry; 'world class' in its field.*
>
> **Dr Rod Graham,** External Examiner, 2006-10; Former Global Adviser, Hess

MSc in Structural Geology with Geophysics

Whereas 'petroleum geoscience' courses provide broad training in all aspects of petroleum geology, this course focuses on understanding the geology behind basin evolution and use of 3D and 4D thinking in geological contexts.

You will gain a fundamental understanding of the hydrocarbon system and an appreciation of both the geological and geophysical constraints with respect to seismic interpretation and model building, allowing you to use geophysical techniques to solve geological problems.

The course provides you with training in all aspects of applied structural geology and seismic techniques for direct entry into the hydrocarbons or mining industries, or alternatively into PhD research. As capable seismic interpreters you will be able to contribute in an industry role from day one.

Key features

- The only applied structural geology MSc in the UK.
- Excellent graduate employment rates with average starting salaries in the petroleum or mining industries of £35k.
- Research-led teaching with direct links to active applied research.
- Access to high-spec computing facilities and industry-standard software.
- Substantial amount of fieldwork that is fully integrated with class-room teaching.
- Hydrocarbon and mining module options available.
- Three-month individual research project – most in association with an exploration company where students have the opportunity to work alongside geoscience professionals in the offices of industrial partners.
- A variety of scholarship schemes available for UK/EU students including fully funded places on the course thanks to major oil companies such as BP, ConocoPhillips, Maersk Oil, Midland Valley Exploration Plc and Shell UK.

Modules

Eight compulsory modules (including an individual research project) and one of two optional modules.

Compulsory modules:
- Petrophysics and Geophysical Reservoir Evaluation
- Applied Geophysical Methods
- Seismic Reflection Interpretation and Sequence Stratigraphy
- Applied Structural Models
- Geomechanics and Fault Modelling
- Applied Geodynamics and Basin Evolution
- 3D Structure: Techniques and Visualisation
- Individual Research Project.

Optional modules:
- Ore Deposits and their Exploitation
- Reservoir Structural Geology and Hydrocarbon Prospectivity of Basins.

Key facts

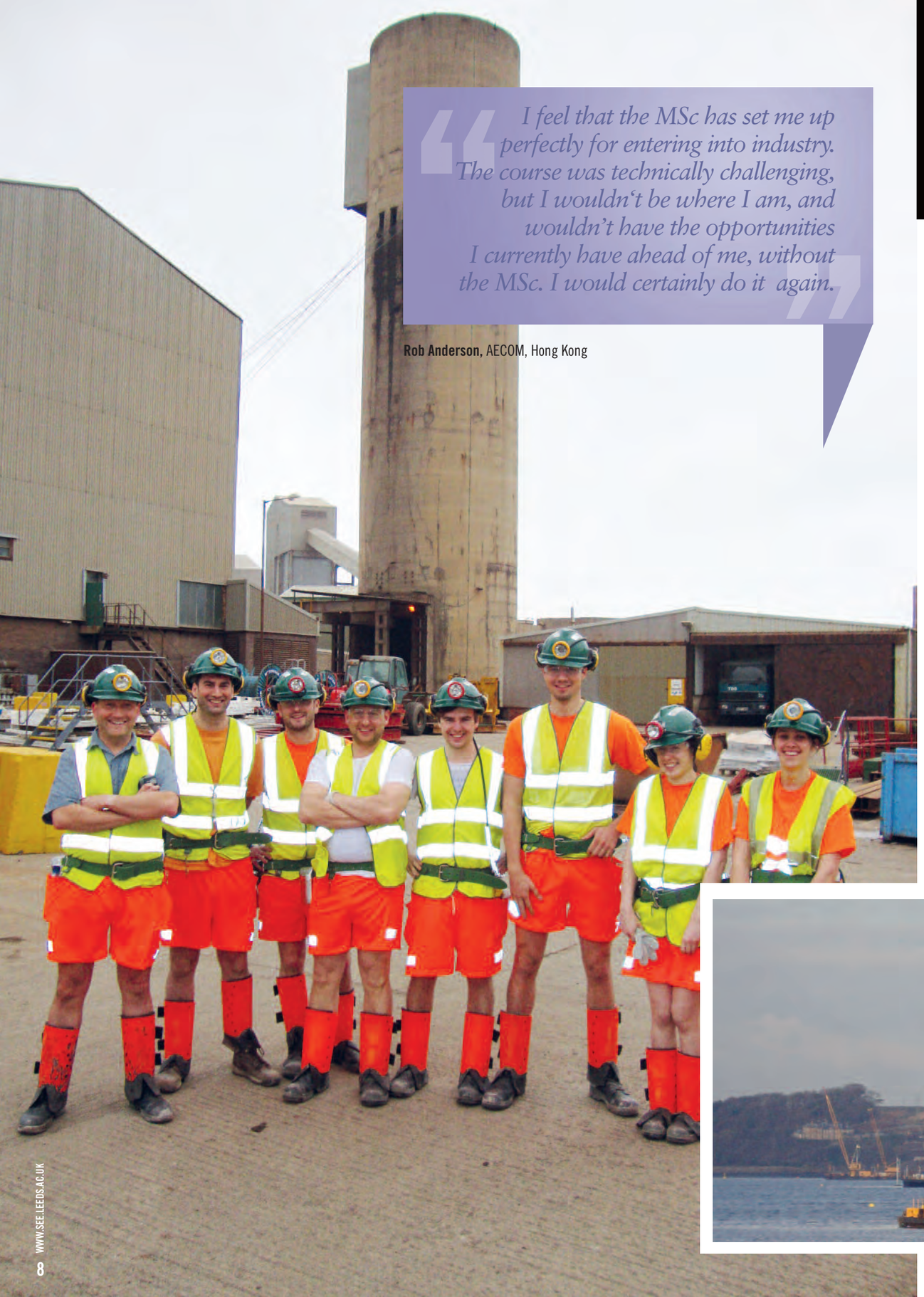
Start Date
September

Duration of MSc
12 months (full-time)

Contact us

Visit the School website:
www.see.leeds.ac.uk/masters

Programme Manager:
Dr Taija Torvela
Email: **t.m.torvela@leeds.ac.uk**
Tel: **+44 (0) 113 343 6620**



> *I feel that the MSc has set me up perfectly for entering into industry. The course was technically challenging, but I wouldn't be where I am, and wouldn't have the opportunities I currently have ahead of me, without the MSc. I would certainly do it again.*

Rob Anderson, AECOM, Hong Kong

MSc Engineering Geology

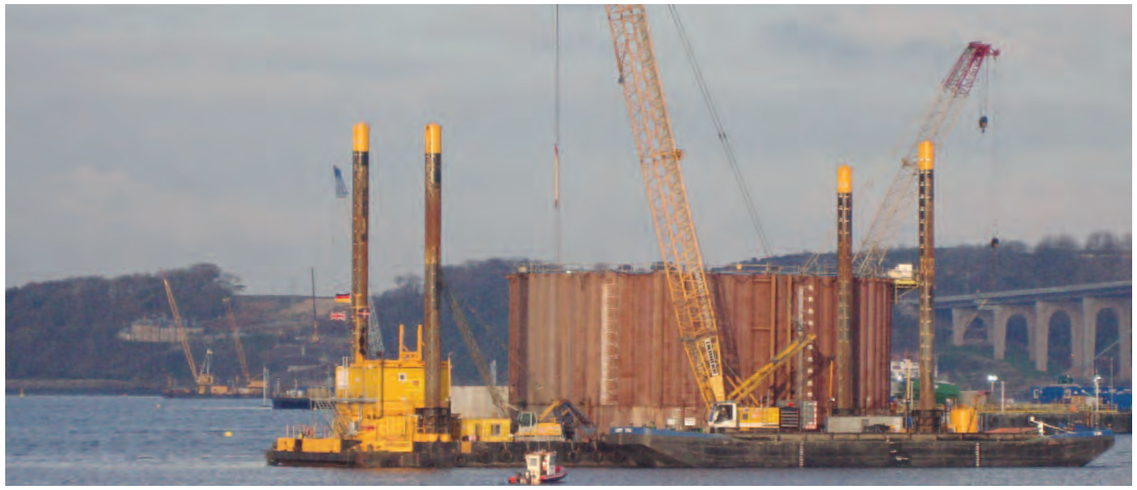
Engineering geology is the application of geological principles to Civil and Mining Engineering, and includes aspects of engineering geomorphology, Quaternary geology, contaminated land, risk analysis and geohazard management.

In our rapidly developing societies it is vital that we design and build in a manner which is safe, environmentally sensitive and cost effective. From the design of site investigations through to the assessment of major geological hazards, engineering geologists play a key role in the provision of appropriate and effective development.

This course will provide you with training in both engineering geology and related geotechnical subjects and will equip you with the knowledge and skills required to pursue a career in ground engineering.

Key features

- The course is accredited as further learning through the Institution of Civil Engineers and a European Accredited Engineering Program.
- Four-month individual dissertation project often carried out in co-operation with organisations outside the University such as consulting engineers, civil engineering contractors and local authorities.
- Close industry links including workshops, seminars and site visits.
- Research-led teaching.
- Excellent employment prospects attracting salaries between £25,000 and £60,000 p.a.
- A range of industry scholarships available for UK/EU students funded by companies such as Atkins, Halcrow, Mott MacDonald and Wardell Armstrong.



Modules

Seven compulsory modules (including an individual dissertation project).

Compulsory modules:

- Geological Models and Ground Investigation
- Hazards, Resilience and Sustainable Engineering
- Hydrogeology and Contaminant Processes
- Laboratory and Field Skills
- Rock Engineering
- Soils Engineering
- Individual Dissertation Project.

Key facts

Start Date
September

Duration of MSc
12 months (full-time)
24 months (part-time)

Contact us

Visit the School website:
www.see.leeds.ac.uk/masters

Programme Manager:
Dr Jared West
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Tel: **+44 (0) 113 343 5253**

"The MRes gave me an improved scientific grounding through lectures and assessments and also an appetite for further research through not only my dissertation project, but also involvement in the wider academic community. For instance, one invaluable experience was flying over the Sahara as part of an international science project. The breadth of experiences has successfully led me into my PhD at the University of Manchester."

Eoghan Darbyshire

MRes Climate and Atmospheric Science

This course is designed to prepare you in the physical sciences and mathematics for a research career in climate, atmospheric or environmental sciences. It bridges the gap between undergraduate studies and study for a PhD.

The course gives you an overview of physical problems in climate and atmospheric science, a sound understanding of natural processes, and the skills needed to conduct research in these subjects. There is a strong emphasis on quantitative data interpretation and physical and numerical modelling.

Applications are equally as welcome if you already have an environmental science or meteorology background; the MRes programme will continue to build upon this knowledge base.

Key features

- World-class research, teaching and laboratory facilities.
- Research-led teaching.
- UK and overseas fieldwork.
- Collaboration with external research partners such as the Met Office, British Antarctic Survey, National Centre for Atmospheric Science and international universities.
- Excellent and varied career prospects from progressing to further PhD studies to research positions in universities, government and industry.

Key facts

Start Date
September

Duration of MSc
12 months (full-time)

Contact us

Visit the School website:
www.see.leeds.ac.uk/masters

Programme Manager:
Dr Jim McQuaid
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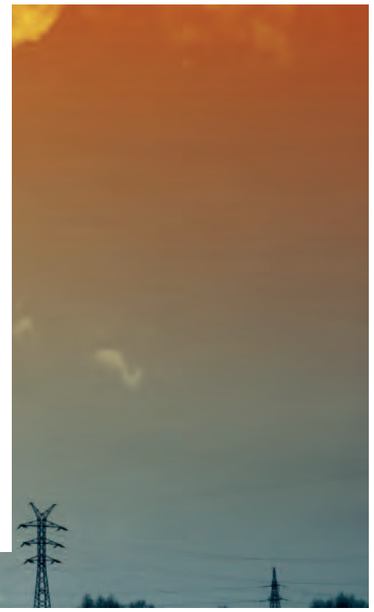
Modules

Four compulsory modules (including an individual research project).

In the 'super modules' you can choose from an expansive range of 'atmospheric' or 'climate science' options.

Compulsory modules:

- Research Skills – Introductory coursework; Atmospheric fieldwork; project proposal; seminar write-ups and presentation skills
- Quantitative Skills (Super Module) – Computer based project; coursework
- Specialist Knowledge (Super Module) – Literature Survey; Coursework
- Individual Research Project – accounts for over 60% of the course content and is often closely linked to active research programmes in the School's Institute for Climate and Atmospheric Science.



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UNIVERSITY OF LEEDS

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