MSc in GeoEnergy

Uses for the subsurface: Carbon Capture and Storage; Energy Storage; Radioactive Waste Disposal; Geothermal Energy; Hydrogeology (water supply)
Overview

• What is GeoEnergy?

GeoEnergy encompasses the range of energy technologies and sources that interact with the geological subsurface. This includes:

1) Established energy technologies including oil and gas extraction and unconventional production of fossil fuels;

2) The production of geothermal energy, the storage of carbon dioxide, natural gas, hydrogen or radioactive waste.

Understanding these geological controls is essential for responsible and safe utilisation of these energy related technologies in the future.

• Why Study GeoEnergy?

This MSc is aimed at geoscience students who wish to pursue a geology-related career in the future energy sector, as it transitions from fossil fuels to a low carbon economy.
Teaching Staff

Dr Mark Wilkinson
Senior Lecturer in Geological CO\textsubscript{2} Storage
Programme director

Prof Stuart Haszeldine
Professor for Carbon Capture and Storage

Dr Chris McDermott
Reader in Hydrology and Coupled Process Modelling
GeoEnergy MSc degree is made up of 180 credits:

All year courses:
- Future GeoEnergy Resources
- Project Design and Literature Analysis

Term 1 (autumn)
Compulsory Courses:
- Applied Hydrogeology
- Environmental Geochemistry

Non-Geologists:
- Geology for Earth Resources
- Hydrocarbons

Term 2 (spring)
Compulsory Courses:
- Carbon Storage and Monitoring
Geologists:
- Subsurface Reservoir Quality

Optional Courses (two out of four):
- Ore Mineralogy, Petrology & Geochemistry
- Seismic Reflection Interpretation
- Hydrogeology 2
- Nuclear Waste Management: Principles, Policies & Practice

Summer: Dissertation (60 credits)
Geoenergy MSc degree is made up of 180 credits:

Term 1 (autumn)
Compulsory Courses:
• Future GeoEnergy Resources
• Applied Hydrogeology & Near Surface Geophysics
• Environmental Geochemistry
• Project Design and Literature

Non-Geologists:
• Geology for Earth Resources
• Hydrocarbons

Term 2 (spring)
Compulsory Courses:
• Hydrogeology 2
• Carbon Storage and Monitoring

Geologists:
• Subsurface Reservoir Quality

Optional Courses (one out of four):
• Ore Mineralogy, Petrology & Geochemistry
• Seismic Reflection Interpretation
• Environmental Problems and Issues
• Nuclear Waste Management: Principles, Policies & Practice

Summer: Dissertation (60 credits)
Geology for Earth Resources

Lectures
• Introduction to Geology & Rock Types
• Geology of Sandstones, Shales and Carbonates
• Structural Geology & Plate Tectonics
• Introduction to Geophysics

Practicals
• Rock samples
• Geological maps
• Geological Techniques

Field Trip
Hydrocarbons

Lectures
• Petroleum Systems
• Drilling and Wireline Logs
• Source Rock Maturation
• Introduction to North Sea Plays

Practicals
• Basin analysis (PetroMod)
• Digital Seismic Interpretation (Petrel)
• Wireline Log Interpretation
• Hydrocarbon Volume Analysis