Quality Assurance

BSc Geology

Programme Specification: Undergraduate

Information for students:
The programme specification is the definitive document summarising the structure and content of your degree programme. It is reviewed and updated every year as part of Keele’s Curriculum Annual Review and Development process. The document aims to clarify to potential and current students what you can expect from the study of the subject over the course of your programme.

<table>
<thead>
<tr>
<th>Names of programme(s):</th>
<th>BSc Geology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of study:</td>
<td>Full Time</td>
</tr>
<tr>
<td>Single Honours/Dual Honours/Major-minor:</td>
<td>Dual Honours / Major-minor</td>
</tr>
<tr>
<td>Framework of Higher Education Qualification (FHEQ) level of final award:</td>
<td>FHEQ Level 6</td>
</tr>
<tr>
<td>Duration:</td>
<td>Three Years</td>
</tr>
</tbody>
</table>

Details of professional, statutory and regulatory body (PSRB):
Major route BSc Geology and Dual Honours BSc Geology combined with a science subject (including Physical Geography) are accredited by the Geological Society of London www.geolsoc.org.uk, which is the world’s oldest Geoscience society that was founded in 1807 by Royal Charter and is the UK national society for geoscience. Students who successfully complete an accredited degree course will normally qualify for admission to Fellowship of the Society and for the award of Chartered Geologist status after a specified period of professional development and relevant experience. The courses are due for reaccreditation in 2019.

External Examiner(s):
Dr David Hodgetts (Manchester) & Prof Andy Saunders (Leicester)
www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/

1. What is the Philosophy of the Programme?

The programme aims are:

- To provide a detailed understanding of geology and allied subject within the earth sciences.
- To provide a broad-based introduction to Geology at FHEQ Level 4 that does not require previous knowledge of geology/geosciences topics, and to utilise the material covered at FHEQ Level 4 to lay the foundations for detailed study of geological concepts at FHEQ Levels 5 & 6.
- To provide an understanding of the structure and composition of the Earth and other planets.
- To provide an integrated approach to understanding the present and past interactions between the physical, chemical and biological processes operating in the Earth’s core, mantle, crust, and surface.
- To provide an appreciation of the history of the Earth over geological time scales.
• To promote an awareness of the dual context of the subject in society, as well as providing knowledge and understanding of both the exploitation and the conservation of the Earth's resources.
• To provide an appreciation of the scientific fundamentals in the geosciences and an adequate knowledge base for a career in research or industry.
• To emphasise the development of field, laboratory, presentational, writing and information technology skills to prepare graduates for independent work in their professional careers.
• To provide a fully integrated fieldwork programme, including overseas field courses.
• To provide appropriate monitoring schemes and feedback for students on their progress.
• To provide a wide choice of subject options and all-round education via an established Dual Honours and Major-Minor scheme.

The intended learning outcomes of the Programme determine what students will know, understand and be able to do, and can be described under four main headings:

a) Subject-specific knowledge and understanding:

Successful students will be able to demonstrate knowledge and understanding of:

• the terminology, nomenclature and classification of rocks, minerals, fossils and geological structures
• geological processes and how they integrate to shape the natural world at different temporal and spatial scales
• the structure and composition of the Earth and other planets
• geological time, including the principles of stratigraphy, the stratigraphic column, dating techniques, rates of Earth processes and major events in Earth history
• the evolution of life on Earth as revealed by the fossil record
• major geoscience paradigms, including Uniformitarianism, the extent of geological time and Plate Tectonics
• the need for both a multi-disciplinary and interdisciplinary approach to the development of knowledge in the geosciences
• the different components of the Earth System and how they interact to change the physical world and their impact on society
• different methods used in the observation, analysis, interpretation and representation of geological and geophysical information
• how the geology of a field study area can be used to illustrate and deepen understanding of the geological evolution of a wider region
• modern environments and processes, and use of this knowledge to interpret aspects of the geological record
• issues concerning the exploration, availability and sustainability of natural resources
• geological aspects of human impacts on the physical environment
• natural hazards and their impacts on society
• applications of Geology to the development of knowledge, wealth creation and improving quality of life.

b) Subject-specific skills:

Successful students will be able to:

• identify a wide range of igneous, sedimentary and metamorphic rocks, as well as a wide range of minerals, fossils and geological structures
• implement three-dimensional analysis with particular reference to the subsurface distribution and relationships of rocks observed at the surface
• collect and record geological and geophysical information in the field, including the production and interpretation of geological maps
• plan, design and execute an independent piece of project work in the geological sciences, including acquisition and recording of geological data in the field, followed by the processing, interpretation and presentation of this data, and the production of a final report
• make safe and effective use of a range of field equipment commonly used by the geoscience profession and develop an understanding of the scope and limitations of such equipment.
• undertake effective fieldwork with due regard for safety, risk assessment, rights of access, relevant health and safety regulations and sensitivity to the impact of investigations on the environment
• work safely in a scientific laboratory, with awareness of standard methods and procedures and with due regard for risk assessment and relevant health and safety regulations
• prepare effective maps and diagrams using a range of appropriate technologies
• employ a variety of technical and laboratory-based methods for the collection and analysis of geological and geophysical information
• combine and interpret different types of geological and geophysical evidence using quantitative and qualitative approaches
• appreciate the issues of sample selection, accuracy, precision and uncertainty during collection, recording and analysis of geoscience data in the field and laboratory
• use powers of observation, analysis and imagination to make decisions in the light of uncertainty

c) Intellectual Skills:
Successful students will be able to:
• recognise and use subject-specific theories, concepts and principles to make reasoned decisions and solve problems
• analyse, synthesise and summarise data and information critically, including prior research
• collect and integrate several lines of evidence to formulate and test hypotheses, and make critical judgements
• apply knowledge and understanding to address familiar and unfamiliar problems
• assess the merits of contrasting theories, explanations and policies
• recognise the moral and ethical issues of investigations and appreciate the need for professional codes of conduct
• develop an adaptable and flexible approach to study and work
• identify and work towards targets for personal, academic and career development
• take responsibility for their own learning and develop a habit of reflection upon that learning

d) Key or transferable skills, including employability skills:
Successful students will be able to:
• develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity
• communicate effectively to a variety of audiences in written, verbal and graphical forms
• work with numerical data using appropriate qualitative and quantitative techniques, as well as computer software packages
• work effectively with a variety of types of information technology to analyse and present information and data, as well as solve numerical problems
• use the internet as a means of communication and a source of information
• demonstrate competence in spatial awareness and observation
• conduct field and laboratory studies
• reference work in an appropriate manner
• work with information handling and retrieval systems using data from a wide range of sources
• work effectively both as an individual and as part of a group or team, recognising and respecting the viewpoints of others
• sustain motivation to work towards a goal over an extended period of time
• recognise responsibilities as a local, national and international citizen

**Keele Graduate Attributes:**

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Through full engagement in your chosen programme of study and other educational opportunities, you will have the opportunity to develop the following Keele Graduate Attributes:

1. An open and questioning approach to ideas, demonstrating curiosity, independence of thought and the ability to appreciate a range of perspectives on the natural and social worlds
2. An appreciation of the development and value of your chosen subjects of study, awareness of their contexts, the links between them, and awareness of the provisional and dynamic nature of knowledge
3. Information literacy: the ability to locate, evaluate and synthesise large amounts of frequently conflicting information, ideas and data
4. The ability creatively to solve problems using a range of different approaches and techniques, and to determine which techniques are appropriate for the issue at hand
5. An appreciation of the social, environmental and global implications of your studies and other activities, including recognition of any ethical implications
6. The ability to communicate clearly and effectively in written and verbal forms for different purposes and to a variety of audiences
7. The knowledge, skills, self-confidence and self-awareness actively to pursue your future goals
8. The ability and motivation to participate responsibly and collaboratively as an active citizen in the communities in which you live and work
9. A professional and reflective approach, including qualities of leadership, responsibility, personal integrity, empathy, care and respect for others, accountability and self-regulation
10. The flexibility to thrive in rapidly changing and uncertain external environments and to update skills and knowledge as circumstances require

- Geology is inherently interdisciplinary with the core subject combining with physics, chemistry, biology and physical geography through geophysics, geochemistry, palaeontology and surface processes.
- The future of major energy resources such as oil, gas, coal, nuclear as well as geothermal and mineral resources are central to the sustainability of the planet. Solutions to issues such as radioactive waste disposal and carbon dioxide sequestration are predominantly geological.
• Geology is, by definition, the science of the whole Earth. It is transnational and international as a discipline, inherently requiring an international perspective. All students attend at least one overseas field course with options to attend others, including undertaking their independent mapping project abroad.

• Geology is a vocational discipline with first two years of the course providing the fundamental knowledge and skills in the subject and option modules in the final year providing pathways into specific employment areas such as mining, oil industry, geophysics, geotechnical engineering, hydrogeology and micropalaeontology among others. Geology career planning and CV writing skills are embedded into one of the Level 5 modules.

Sections 1 and 3 of the Programme Specification in particular illustrate the ways in which the Keele Graduate Attributes can be achieved.

Further details of Keele’s Graduate Attributes are provided at www.keele.ac.uk/distinctive/keelegraduateattributes/

2. How is the Programme taught?

Learning and teaching methods used on the Programme vary according to the subject matter and level of the module. They include the following:
• Lectures
• Workshops
• Practical classes
• Field courses
• Individual progress interviews, including profiling/personal development planning (PDP)
• Directed reading
• Group presentations and linked discussion
• Independent study and project work
• Use of e-learning/the Keele Learning Environment (KLE)

A module typically comprises two one-hour lectures and a three-hour practical class per week. The directed reading and lecture slides available in advance on the KLE help you prepare for lectures and the practical classes reinforce concepts learned in lectures through problem solving and practical application of geological techniques. Some classes are taught in workshop format integrating both lecture and practical material. Fieldwork provides a deep, immersive learning experience that puts geological processes and their products into their four dimensional context. The independent mapping project provides the opportunity to bring together and demonstrate proficiency in all areas of geology.

The Geology academic members of staff consists of one Professor, a Professorial Fellow, a Reader, four Senior Lecturers, three Lecturers and a Postdoctoral Teaching Fellow, who between them have expertise and interests in all major areas of earth sciences as well as complementary vocational disciplines such as computing. In addition, members of the Geography and Environmental lecturing staff also contribute to the Geology degree programmes.

All academic members of staff are active researchers and many have a distinguished track record in publication, the generation of grant income, industrial collaboration and journal editorship. Several staff have particular interests in the development of geoscience education and/or have played an active role in the promotion of UK geoscience activities (e.g. via membership of Geological Society committees). Five members of staff are Fellows of the Higher Education Academy and one has an MA in Teaching and Learning. Many have professional qualifications such as Fellow of the Geological Society (F.G.S.), Chartered Geologist (C.Geol), European Geologist (EurGeol), Fellow of the Royal Astronomical Society (F.R.A.S.), as well as others. Members of staff have also won both group and individual Keele Teaching and Learning Excellence Awards.
The teaching and research profiles of the members of staff that currently deliver and support the Geology programme can be found at www.keele.ac.uk/gge/people/

Dr Nigel J. Cassidy, Reader, F.G.S., C.Geol., F.H.E.A.
Dr Stuart M. Clarke, Lecturer, F.G.S., C.Geol.
Dr Stuart S. Egan, Senior Lecturer, F.G.S., C.Geol., EurGeol.
Dr Ralf Gertisser, Senior Lecturer, F.H.E.A.
Prof. Annette Götz, Professor
Dr Ralf Halama, Lecturer
Dr Dr Michael Montenari, Lecturer, F.G.S., F.L.S.
Dr Jamie K. Pringle, Senior Lecturer, F.G.S., C.Geol., F.H.E.A.
Dr Steven L. Rogers, Teaching Fellow, F.G.S., F.H.E.A.
Dr Ian G. Stimpson, Senior Lecturer, A.R.S.M., F.G.S., F.R.A.S., F.H.E.A.
Prof. Peter Styles, Professorial Fellow, F.G.S., C.Geol, EurGeol, F.R.A.S., C.Sci, Flo.M.M.M.

3. What is the Structure of the Programme?

The Geology programme is modular in structure and must be taken in FHEQ Levels 4 and 5 in combination with another principal subject. Students may select to study Major or Minor Geology at FHEQ Level 6, or study M.Geoscience at FHEQ Levels 6 & 7 (see M.Geoscience Programme Specification for details), or continue with the Dual Honours scheme at FHEQ Level 6.

**FHEQ Level 4:** It is assumed that students have no previous geological knowledge and therefore the Programme starts from basics. The programme provides a broad-based introduction to geological topics at FHEQ Levels 4 & 5 with emphasis on the characteristics of rocks, minerals and fossils, together with the processes that govern their formation and development. The way in which rocks are deformed and how geophysics is used to discover the internal structure of the Earth are also studied. The interpretation and construction of geological maps is an essential component of the course. All modules take place over a single semester (12 weeks) and consist of two lectures and one 3-hour practical class per week. In addition, several field courses (see below) and coverage of key/employability skills are embedded within the modules.

<table>
<thead>
<tr>
<th>Modules:</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC-10054: Introduction to Mineralogy and Petrology (includes fieldwork)</td>
<td>15</td>
</tr>
<tr>
<td>ESC-10034: Geology: Time and Space (includes fieldwork)</td>
<td>15</td>
</tr>
<tr>
<td>ESC-10036: Geology: Planet Earth</td>
<td>15</td>
</tr>
<tr>
<td>ESC-10055: Introduction to Sedimentology and Palaeontology (includes fieldwork)</td>
<td>15</td>
</tr>
<tr>
<td>Other subject: Modules studied from other principal subject</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field Classes (all compulsory):</th>
<th>Duration</th>
<th>Aims and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural History Museum, London</td>
<td>1 day</td>
<td>To cover aspects of palaeontology and the curation of specimens via a ‘behind the scenes’ look at selected parts of the NHM geological collections.</td>
</tr>
<tr>
<td>Wenlock Edge, Shropshire</td>
<td>1 day</td>
<td>To cover palaeontology and palaeoecology, and structural measurements.</td>
</tr>
<tr>
<td>Ercall Quarries, Shropshire</td>
<td>1 day</td>
<td>To cover lithology identification, measuring structures and introductory geological mapping.</td>
</tr>
</tbody>
</table>
Pembrokeshire, South Wales 7 days, Residential To cover identification of lithologies, structures, fossils, etc. and make detailed notes/diagrams in field notebooks; sedimentary logging; report writing.

Llangollen, North Wales 2 days To cover basic geological mapping skills with emphasis on feature mapping techniques; identification of lithologies with emphasis on carbonate sedimentology.

**FHEQ Level 5:** During Level 5 particular attention is paid to first hand observation, recording and interpretation of geological phenomena in the field and laboratory. By the end of the level you will have been given a complete grounding in geology that will allow you to carry out your own independent studies.

<table>
<thead>
<tr>
<th>Modules:</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC-20001: Igneous and Metamorphic Petrology</td>
<td>15</td>
</tr>
<tr>
<td>ESC-20002: Reconstructing Past Environments (includes fieldwork)</td>
<td>15</td>
</tr>
<tr>
<td>ESC-20039: Advanced Structural Geology and Geological Mapping Training</td>
<td>15</td>
</tr>
<tr>
<td>ESC-20040: Geoscience Field Techniques</td>
<td>15</td>
</tr>
<tr>
<td>Other subject: Equivalent of 4 modules studied from other principal subject</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

| Field Classes (all compulsory): | |
|---|---|---|
| Destination | Duration | Aims and Objectives |
| Snowdonia, North Wales | 7 days, Residential | To cover all aspects of geological mapping, including aerial photograph interpretation, safety/hazard assessment procedures, report writing, navigation skills, etc. |
| Almeria, Southern Spain | 7 days, Residential | To integrate strands of geology studied at Levels 4 and 5, and relate them to the evolution of a major geotectonic province; teamwork; poster presentation. |
| Mam Tor, Peak District | 1 day | Sedimentary logging and palaeoenvironmental interpretation (part of module ESC-20002). |

**FHEQ Level 6:** This year starts during the summer vacation when students carry out an independent field project, which normally takes 3 weeks. During the autumn semester students prepare a dissertation based upon this field project. In addition, there is a choice of option modules/programme electives from a wide range of geological subject areas. In addition, Major Geology students can select some Physical Geography option modules. The method and approach to teaching changes emphasis from staff-centred instruction at FHEQ Levels 4 & 5 to more student-oriented activities, with components of several modules based upon independent or team-based project work. There is also a change from modules based upon pure aspects of geological study to more applied aspects. It is intended that students should select their option modules according to their interests and career aspirations. Much of the content of these Level 6 option modules is based on research at the forefront of the discipline and helps to strengthen links between teaching and research.

<table>
<thead>
<tr>
<th>Core Modules:</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ESC-30039: Independent Fieldwork Project</td>
<td>15</td>
</tr>
<tr>
<td>ESC-30038: Geological Communication Skills – Major Geology students ONLY</td>
<td>15</td>
</tr>
<tr>
<td>ESC-30030: Volcanic and Magmatic Processes - Major Geology students ONLY</td>
<td>15</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Option Modules/Programme Electives (Dual Honours students select three modules, Major Geology students select five modules):</th>
<th></th>
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<tbody>
<tr>
<td>ESC-30008: Structure and Geodynamics (includes fieldwork)</td>
<td>15</td>
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</tbody>
</table>

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**Major Geology students can select a maximum of two of the following Physical Geography approved electives:**

- ESC-30006: Glaciers and Glacial Geomorphology
- ESC-30018: Global Environmental Change
- ESC-30020: Water Resources
- ESC-30027: Coastal Environments

**Total:** 120

**Field classes:**

<table>
<thead>
<tr>
<th>Module</th>
<th>Destination</th>
<th>Duration</th>
<th>Aims and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC-30039:</td>
<td>Various</td>
<td>21 days</td>
<td>To undertake independent geological fieldwork and synthesise the results into a technical report.</td>
</tr>
<tr>
<td>ESC-30008:</td>
<td>Watchet, Somerset</td>
<td>2 days, residential</td>
<td>To study extension and inversion tectonics; to collect and analyse structural data; aerial photograph mapping and structural analysis.</td>
</tr>
<tr>
<td>ESC-30025:</td>
<td>Dee Estuary</td>
<td>1 day</td>
<td>To collect micropalaeontology specimens for SEM and TEM analysis.</td>
</tr>
<tr>
<td>ESC-30028:</td>
<td>Ecton Mine</td>
<td>1 day</td>
<td>To study ore body formation, and mining and production methods.</td>
</tr>
<tr>
<td>ESC-30033:</td>
<td>Southern Italy or Greece</td>
<td>10 days, residential</td>
<td>To study igneous and volcanic processes from field evidence.</td>
</tr>
<tr>
<td>ESC-30034:</td>
<td>North-East England</td>
<td>2 days, residential</td>
<td>To investigate the Carboniferous sedimentology and stratigraphy of the northern Pennines.</td>
</tr>
</tbody>
</table>

The table below summarises what students learn in each year of the programme, the modules in which that learning takes place, and the main ways in which students are assessed on their learning; further details are provided in individual module descriptions within the relevant FHEQ Level module catalogue available at [www.keele.ac.uk/gge/students/geology/](http://www.keele.ac.uk/gge/students/geology/).
<table>
<thead>
<tr>
<th>Level Outcome</th>
<th>Module in which this is delivered</th>
<th>Principal forms of assessment (of the Level Outcome) used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FHEQ Level 5 : Year 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Know and critically understand well-established geological principles, their development, limits of knowledge, influence on analyses and interpretations.</td>
<td>All Level 5 modules</td>
<td>Practical class worksheets and practical test; Data acquisition and interpretation, and completion of technical report based on field excursions; Two-hour unseen examination</td>
</tr>
<tr>
<td>Know the main methods of Geological enquiry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can apply underlying geological concepts and principles beyond first context.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can critically evaluate different approaches to solving geological problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can use range of key and established geological techniques for critical analysis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can communicate effectively to specialist and non-specialist audiences.</td>
<td>Advanced Structural Geology and Geological Mapping Training Geoscience Field Techniques</td>
<td>Data acquisition and interpretation (e.g. production of maps), and technical reports based on field excursions; Poster/teamwork exercise on the geology of the field course study area</td>
</tr>
<tr>
<td>Have skills to exercise personal responsibility and decision-making.</td>
<td>Advanced Structural Geology and Geological Mapping Training Geoscience Field Techniques</td>
<td>Field notebook; Data acquisition and interpretation, and report based on field excursions</td>
</tr>
<tr>
<td>Can use literature searching and literature synthesis skills</td>
<td>Geoscience Field Techniques</td>
<td>Literature review</td>
</tr>
<tr>
<td>Enhance awareness of procedures for personal career development.</td>
<td>Geoscience Field Techniques</td>
<td>Assignment on applying for a job as a geoscientist, including drafting a CV and covering letter.</td>
</tr>
<tr>
<td><strong>FHEQ Level 6 : Year 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has systematic understanding of key aspects of Geology and has acquired coherent and detailed knowledge, some at or informed by the forefront of defined aspects of subject.</td>
<td>All Level 6 modules</td>
<td>Practical class based exercises; Practical test; Production of report, including supporting materials (e.g. maps, sedimentary logs, etc.); Two hour unseen examination; Field-course related assignments.</td>
</tr>
</tbody>
</table>
some of which are at the forefront of the subject.

Can describe and comment upon particular aspects of current geological research or advanced scholarship.

Can critically evaluate geological arguments, assumptions, abstract concepts and data (may be incomplete), to make judgements, to frame questions to achieve a solution or identify a range of solutions to a problem.

Has learning skills to undertake further professional (or equivalent) training.

Can communicate information, ideas, problems, and solutions to both specialist and non-specialist audiences.

<table>
<thead>
<tr>
<th>Independent Field Project</th>
<th>Production of report, including supporting materials (e.g. maps, sedimentary logs, etc.); Poster Presentation; Individual and group-based oral presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Hazards</td>
<td></td>
</tr>
<tr>
<td>Economic Geology</td>
<td></td>
</tr>
<tr>
<td>Hydrological and Engineering Geology</td>
<td></td>
</tr>
<tr>
<td><strong>Major-Route only</strong></td>
<td></td>
</tr>
<tr>
<td>Volcanic and Magmatic Processes</td>
<td></td>
</tr>
<tr>
<td>Geological Communication Skills</td>
<td></td>
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</tbody>
</table>

Have the skills to exercise initiative and decision-making in complex and unpredictable contexts.

<table>
<thead>
<tr>
<th>Independent Field Project</th>
<th>Practical class based exercises; Production of report, including supporting materials (e.g. maps, sedimentary logs, etc.); Field-course related assignments</th>
</tr>
</thead>
</table>

Can deploy established techniques of geological analysis and enquiry to review, consolidate, extend and apply own knowledge and understanding, and to initiate and carry out projects.

<table>
<thead>
<tr>
<th>Independent Field Project</th>
<th>Production of report, including supporting materials (e.g. maps, sedimentary logs, etc.); Field-course related assignments; Field notebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration Geophysics for the Hydrocarbon Industry</td>
<td></td>
</tr>
<tr>
<td>Advanced Topics in Sedimentology</td>
<td></td>
</tr>
<tr>
<td>Hydrological and Engineering Geology</td>
<td></td>
</tr>
<tr>
<td><strong>Major-Route Only</strong></td>
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</tbody>
</table>
The exit routes from the award (e.g. Cert HE, Dip HE, BSc) and the numbers of credits needed for each of these are specified in University Regulation 1A5 www.keele.ac.uk/regulations/regulation1aafter0910/, which is the definitive version. A summary for information only is given below.

Successful completion of modules to the value of at least 120 credits at FHEQ Level 4 (Year 1) leads to a Certificate of Higher Education (Cert HE) that may be designated as an end qualification.

Successful completion of modules to the value of 240 credits, at least 120 credits at FHEQ Level 4 (Year 1) and at least 120 credits at FHEQ Level 5 (Year 2) leads to a Diploma of Higher Education (Dip HE) that may be designated as an end qualification.

Successful completion of modules to the value of at least 360 credits, including at least 120 credits at FHEQ Level 4 (Year 1), at least 120 credits at FHEQ Level 5 (Year 2) and at least 120 credits at FHEQ Level 6 (Year 3) leads to the award of a Bachelors Degree (BSc).

For BSc Dual Honours Geology you must complete at least 120 credits in both Geology and your other subject, gained over all three levels of study, with at least 30 credits at FHEQ Level 4 (Year 1), at least 45 credits at FHEQ Level 5 (Year 2) and at least 45 credits at FHEQ Level 6 (Year 3) both Geology and your other subject.

For BSc Major Honours Geology you must complete at least 225 credits in Geology accrued over all three levels of study, with at least 30 credits at each level.

For BSc Minor Honours Geology you must complete at least 90 credits in Geology, which may be taken over all three levels of study, with at least 30 credits taken at both FHEQ Level 4 (Year 1) and FHEQ Level 5 (Year 2).

4. How is the Programme assessed?

Assessment is governed by the University Regulation 8 on University Examinations and Assessments. www.keele.ac.uk/regulations/regulation8/

Assessments within the Geology programme are classified into three broad categories:

- **Formative Assessments** take place during the running of each module. These are designed to inform students of their progress in the modules taken. They are not used as a part of students' formal assessment mark for the module.

- **Summative Assessments** are used to return a formal assessment mark to Academic Services. They are normally derived from an examination at the end of the module and continuous assessment of course work throughout the module. Summative assessment marks from Levels 5 and 6 count towards the final degree score; the Level 5 marks being weighted half that of Level 6. Performance in these assessments is made known to students each semester and should be discussed with their Personal Tutor.

- **Qualifying Assessments** are assessments that have to be passed above a certain threshold mark in order to pass the whole module. These are typically core fieldwork components to a module but may include other vital topics such as understanding of field safety issues.

Most of the assessment in Geology is a combination of both formative, to provide you with feedback to improve your skills for later assessments, as well as summative, to contribute towards your overall mark, and some assessments may be qualifying as well. Some of your coursework, however, particularly in the early part of modules, may be formative only to prepare you for later summative work. Some modules are assessed via examinations and coursework, some by a combination of examination, coursework and fieldwork, others by coursework or field work alone. Full details of module assessment can be found in the module catalogues at www.keele.ac.uk/gge/students/geology
Assessment and feedback within the programme has been designed to incorporate a range of modes, to provide an effective balance between formative, summative and qualifying assessments, and to promote engagement with employability skills and subject-specific skills. Assessment of your knowledge and understanding, and skills is achieved by:

- Formative assessment in individual or small group discussions
- End of module examination
- Course work, including technical reports, literature synthesis, problem sheets
- Coursework presentations by poster or web-page
- In-class exercises and practical class tests
- Individual or group oral presentations
- Field course notebooks and geological maps
- Practical class reports
- Extended project work and dissertations

5. What are the typical admission requirements for the programme?

Admission requirements for the Geology programme are typically three A-levels at grades BBB / ABC or above (excluding General Studies / Critical Thinking). Applicants must have at least Grade B A-level in either Biology, Chemistry, Environmental Science, Geography, Geology, Maths, Physics, or a related science discipline, as well as Maths & English Language at Grade C or above at GCSE level. International Baccalaureate students require 32 points to include Higher Level Biology, Chemistry, Physics or Geography at 6 or above. Students with BTEC or Access Course qualifications should contact university admissions directly for details of admissions requirements. Accreditation of prior experience or learning is possible via negotiation with the course director depending on the nature of that experience or learning. An updated list of requirements is available in the Prospectus.

6. How are students supported on the programme?

Open Door Policy: Geology & Geoscience members of staff operate an ‘Open Door Policy’ where if we are free our office door will be open. If you want to have a chat about anything related to our courses, just knock and come in.

Personal /Geology Tutors: All students are allocated a Personal Tutor for the duration of their studies as part of the University’s Personal Tutor system. Those Geology students who are allocated a Personal Tutor from another subject are also assigned a Subject Tutor from the Geology teaching staff so that they have a contact person within the subject. The role of the Personal/Geology Tutor is to meet formally with their tutees several times a year to discuss progress and performance and to offer support and advice. Students can make arrangements to see their Personal/Geology Tutor at any time.

Assessment & Feedback: On-going formative feedback on work is provided in practical classes and on fieldwork by discussion with members of staff or postgraduate demonstrators. Feedback on formative and summative assessments is provided in many formats, as electronic or written comments (as appropriate to the type of work submitted), or verbally either as general comments to a group or individual. You can consult your Geology Tutor about feedback on your exams or consult module leaders regarding course content.

Use of e-learning/the Keele Learning Environment (KLE): All modules belonging to the Geology programmes are supported by learning materials that are accessible to students via the KLE.

Option Module Choice: General advice is given at the end of FHEQ Level 5 (Year 2) on your choice of Level 6 (and if you are undertaking M.Geoscience, Level 7) option modules. You can then talk to either your Personal/Geology Tutor and/or the Course Director about how your choice of modules would match your career aspirations.

Health and Safety: All students admitted to the course are expected to read the Geography, Geology and the Environment (GGE) Safety Handbook. Students are required to sign an agreement that they have read this Handbook, and that they will abide by the rules and regulations governing the efficient working, safety and welfare
of all members both within the University and in the field. The GGE Safety handbook can be accessed from: www.keele.ac.uk/gge/handbooks/

**Career Choice:** The Course Director is the designated careers tutor. You can consult them at any time regarding questions you might have regarding future careers. Career development skills such as CV writing and applying for jobs are embedded within one of the FHEQ Level 5 modules.

**Students with disabilities:** Students with disabilities or medical problems, who are admitted onto the Geology degree programme, will meet with a member of the University’s Disability Services department, the Geology Course Director and the GGE Disability Officer at the very start of the course in order to discuss any special requirements. Procedures will then be implemented according to the nature of the student’s disability or medical problem. These procedures can range, for example, from allowing extra examination time for students diagnosed as dyslexic, to allocating additional staff or demonstrators to field classes to help students with mobility problems.

**Further information:** It is essential that students consult the course web site at regular intervals for definitive versions of the Geology handbooks, on-line course materials, and programme and module specifications. This resource can be accessed at www.keele.ac.uk/gge/students/geology/

On-line learning and teaching materials related to individual modules are available on the Keele Learning Environment, which can be accessed from students.keele.ac.uk/ (Keele access only).

### 7. Learning Resources

The Geography, Geology and the Environment section of the School has its own building (the William Smith Building) that contains well-equipped laboratories and lecture theatres to cater for all geology/geoscience teaching. This concentration of teaching into one building enables students to identify with a specific base within the University. The foyer provides pleasant surroundings for students to meet and socialise with their peers. The Office is open continuously during the week from 9 am to 5 pm to answer student queries and deal with administrative tasks.

### 8. Other learning opportunities

**Fieldwork:** Fieldwork is an essential part of a geologist’s training and is intended to supplement and complement formal class teaching and develop the skills of observing and recording. It also establishes professional, social and cultural links outside the institution and develops an external dimension to the School’s courses. The Geology programme includes field excursions to classic geological areas within the British Isles, as well as overseas field courses to enable students to study the evolution of fundamentally different geological regimes. Due to the dual honours structure of Keele, field courses typically have to take place at weekends or during vacation time. An outline of the Geology field course programme is provided in section 3 of this document.

A substantial part of the cost of fieldwork is borne by the School including all fieldwork at FHEQ Level 4 (Year 1). The Level 4 costs comprise only a field equipment pack, consisting of compass-clinometer, hard hat, high visibility tabard, field notebook, and other essential field and safety equipment. You are, however, required to pay part of the cost of each course after Level 4. The total cost is variable and will depend on the courses and the options that you take and the level of subsidy provided to us by the university. We will let you know the exact amount payable at the beginning of the Autumn Semester. Student field course contributions are payable in three instalments across the academic year.

**Study Abroad:** You can apply to study abroad for the first or second semester of your second year. You must be in good academic standing in order to be considered and must pass all modules in your main degree subjects with a minimum average to take part. You need to apply in Semester 1 of Year 1; during Semester 1 you will have the opportunity to attend the Study Abroad Fair, information sessions and meet with Peer Advisors to gather the information that you need to select the appropriate University and make a successful application. Due to the nature of our second year Geology course, particularly fieldwork training, you will need to choose carefully the institution
you want to study at to make sure that the essential material that you would miss at Keele is covered abroad. You can find out more from the Global Education Office www.keele.ac.uk/studyabroad/keelestudentsgoingabroad/

9. Quality management and enhancement

The Geology degree programme is overseen by the Geology/Geoscience Course Management Committee, chaired by the Course Director for Geology and Geoscience. This reports to the School Learning and Teaching Committee, the Faculty Learning and Teaching Committee and ultimately the University Learning and Teaching Committee. Each module is led by a module co-ordinator.

The School of Physical and Geographical Sciences operates a range of procedures to assist the effective management and continuous enhancement of the quality of its teaching. Specific procedures that are applied to the Geology programme include:

- Student evaluation of teaching
- Peer observation of teaching
- Geology/Geoscience Staff Student Liaison Committee
- Geology Course Management Committee Annual Review of Courses as part of University’s Curriculum Annual Review and Development (CARD) process
- Annual production and review of module reports
- Mentoring and monitoring of new staff
- Provision of module specifications and a module catalogue for each module
- Teaching innovation "Away Days"

The School Learning and Teaching Committee (SLTC), in conjunction with the School Manager, are responsible for monitoring and assuring the operation of quality assurance procedures. In addition, feedback provided by External Examiners is used to ensure that academic standards are maintained in comparison to similar programmes offered at other universities. The course will be evaluated annually as part of the University’s CARD scheme to ensure that the curriculum is reviewed and, if necessary, refreshed. A report on this annual review will be submitted to the School and Faculty LTCs. Responses to specific issues raised by the External Examiner will be submitted to University Quality Assurance.

You are represented in the management of the Geology programme through the module evaluation process and the Geology/Geoscience Staff-Student Liaison Committee, which meets at least once per semester. Here issues raised by fellow students are discussed, together with the issues arising from the CARD process and the reports of the External Examiners. In addition, your input is invited, where appropriate, to inform discussions and decisions made by the Geology Course Management Committee and School Learning and Teaching Committee (e.g. programme modifications, field courses, etc.). Just prior to graduation, you are invited to discuss any issues in a meeting with our External Examiners.

The Geological Society of London has accredited the Geology Major Route and Dual Honours Geology degrees combined with another science subject (including Physical Geography). Accreditation status was awarded in 2001, followed by successful applications for reaccreditation in 2007 and 2014. The Geological Society, the world's oldest Geoscience Society, was founded in 1807 by Royal Charter and is the UK national society for geoscience. It exists to promote the geosciences and the professional interests of UK geoscientists. The main aim of the accreditation scheme is to ensure that geology/geoscience degree courses are underpinned by well-maintained internal standards that satisfy the academic requirements of Fellowship of the Society and Chartered Geologist status. Students who successfully complete an accredited degree course will normally qualify for admission to Fellowship of the Society and for the award of Chartered Geologist status after a specified period of professional development and relevant experience.
10. The principles of programme design

The content and learning outcomes of the Geology programme have been developed with reference to:

  www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718
- The Quality Assurance Agency Subject Benchmark Statement for Earth Sciences, Environmental Sciences and Environmental Studies
  www.qaa.ac.uk/publications/information-and-guidance/publication?PubID=2836
- The Geological Society Accreditation Scheme for First Degree Courses in Geoscience
  www.geolsoc.org.uk/Education-and-Careers/Universities/Degree-Accreditation
- Keele University Learning and Teaching Strategic Map 2010-2015
  www.keele.ac.uk/strategicplan/learningandteachingstrategy/
- Keele Quality Assurance and Enhancement
  www.keele.ac.uk/qa/
- Keele University Regulations and Guidance for Students and Staff
  www.keele.ac.uk/ps/governance/actcharterstatutesordinancesandregulations/universityregulations/

11. Disclaimer

The information in this Programme Specification is as accurate and up-to-date as we can make it. However, it may be necessary from time to time to vary courses, procedures and other arrangements (e.g. fieldwork) in the light of new opportunities and in response to influences from within and external to the University.

12. Programme Version History

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