ROYAL HOLLOWAY
University of London

PROGRAMME SPECIFICATION

This document describes the **Honours Degree programme in Geology with Science Communication**. This specification is valid for new entrants from **September 2006**.

The aims of this programme are:

- to provide a sound and extensive basis for the study of the Geological Sciences, meeting the requirements for programme accreditation by the Geological Society where appropriate and the general requirements of the subject benchmarking statement (E)
- to provide students with knowledge of the science, and equip them with discipline-specific and transferable skills (E)
- to provide students with core knowledge and a range of key skills (E)
- to offer a range of specialist courses and research projects which allow students to develop expertise and research interests in their chosen field
- to produce graduates who are equipped with knowledge and skills appropriate for careers in the Earth Sciences and other disciplines.
- To produce scientists who can communicate their science using a variety of media to a variety of audiences.

Programmes are delivered in three stages, each of which comprises one year of full-time study during which the student must follow courses to the value of four units (one unit is equivalent to 30 national credits). Teaching and learning in the programme are designed to provide graduates with a sound basis of knowledge and skills in the geological sciences and aim to cover the range of skills and knowledge required by a professional geologist. Programmes run jointly or in collaboration with other subject areas seek to provide an integrated education in relevant areas of each subject. Students studying the Science communication modules interact with scientists from other disciplines and are taught be science communication/media specialists in their own studio. In addition, the science communication/media training will provide graduates with a range of writing and presentation skill and develop team work and meeting strict deadlines. Specialist courses offered in the third year are closely informed by the active research of staff, particularly in the general areas of: Ancient and Modern Earth Systems (modern atmospheres, surface processes, palaeobiology, ancient Earth systems), Tectonics and Basins (sedimentology, mountain evolution, uplift, and erosion, numerical modelling, seismic interpretation, lithospheric and asthenospheric processes) and Geochemistry (palaeoceanography, crust-mantle evolution, plumes and ridges, volcanic arcs). Students on this programme are encouraged to emphasize in their geological choices how the earth works, the history of life and environmental issues. Their final year project considers a geological topic and may involve and media (TV/film, radio, print or web).

Further information

This document provides a summary of the main features of the programme(s), and of the outcomes which a student might reasonably be expected to achieve if full advantage is taken of the learning opportunities provided. Further information is contained in the College prospectus, the College Regulations and in various handbooks issued to students upon arrival. Whilst Royal Holloway keeps all its information for prospective applicants and students under review, programmes and the availability of individual courses are necessarily subject to change at any time, and prospective applicants are therefore advised to seek confirmation of any factors which might affect their decision to follow a specific programme. In turn, Royal Holloway will inform applicants and students as soon as is practicable of any substantial changes which might affect their studies.

Version 1.0
Dated: 05.11.2010

Learning outcomes
Teaching and learning in the programme are closely informed by the active research of staff. In general terms, the programmes provide opportunities for students to develop and demonstrate the following learning outcomes:

Knowledge and understanding of
The programme is designed to allow students to develop and demonstrate the following aspects of the Earth Sciences and Science Communication:

- the scientific, interdisciplinary study of the physical, chemical and biological processes operating on and within the Earth
- the interaction of these processes in the consideration of the Earth as a dynamic system through time, (crust-mantle processes, surface processes, biosphere, atmosphere and hydrosphere)
- the structure and composition of the Earth
- the study of geological materials (minerals, rocks, fluids)
- the use of geological maps to represent three-dimensional spatial variations and their interpretation in a temporal framework
- the techniques of investigation in the geological sciences (geophysical, geochemical, remote sensing, geological data collection and analysis)
- the evolution of life and changing environments through the study of palaeobiology, palaeoecology, palaeoenvironmental and sedimentological analysis
- geodynamic processes at the scale of local and global tectonics
- stratigraphic principles and techniques (litho-, bio-, chrono- and sequence stratigraphy)
- the application of the Earth Sciences to resource exploitation (hydrocarbons, minerals, water), civil and environmental engineering (construction, waste disposal) and environmental hazards (earthquakes, volcanic eruptions, floods, landslides)
- the social and political role of the Earth Sciences in the exploitation and conservation of geological resources
- Understand the nature of science output in a variety of media.
- Understand the hardware involved in media production and understand the strength and weaknesses of various media available to scientists who want to reach a variety of audiences.
- Become familiar with the latest display software and hardware.
- Understand the nature of scientific language.
- To develop writing, production and presentation skills.

Skills and other attributes
The programme is designed to allow students to acquire competence in intellectual and practical skills relevant to the discipline, in transferable skills of communication, numeracy, IT and teamwork, plus personal and social skills.

The development of **intellectual skills** forms the basis of all the programmes. By achieving the learning outcomes specified for each course students will be able to

- recognise and apply different theories, concepts and principles
- develop a strategy for tackling a geological problem
- collect and document different types of geological data using appropriate techniques and methodologies
- apply appropriate numerical, statistical and instrumental techniques to the analysis of geological data
- recognize applicable theories or formulate new hypotheses for the interpretation of geological information
- apply appropriate statistical and logical tests to hypotheses
- synthesise data and information to present a concise reasoned summary of results
- recognize the importance of applying professional standards in geology
- Understand the nature of the media and science communication issues.
- Understand what makes a good story and how it can be communicated to specific audiences.
- Understand how to engage the interest of an audience and to educate them and earn their support.

Practical skills in Geology may be divided into those developed in the *laboratory* and those which are *field*-based. Laboratories used by students on these programmes include classrooms where specimens and maps can be handled and geochemical analytical laboratories. *Laboratory* skills focus on:

- the description and interpretation of hand specimens of rocks and minerals
- the use of a petrological microscope in the analysis of rocks and minerals
- the identification and interpretation of fossil specimens
- the analysis and interpretation in time and space of structural and stratigraphic data presented as geological maps
- the use of appropriate techniques of analysis
- reduction and interpretation of geophysical data
- safe and effective practice in an analytical laboratory

Field training is a core element of all degree programmes. The following aspects of skills development in the field are covered in first and second year courses, and further developed in more advanced field classes:

- the recording of structural data in spatial context
- the recording of sedimentary and palaeontological in a stratigraphic context
- recording a wide variety of geological and geomorphological data in map and notebook form
- the collection of rocks, minerals, fossils and fluids in a safe, efficient and environmentally sensitive manner
- the acquisition of geophysical data
- The planning and execution of field work in a safe and considerate way, having due regard for all regulations covering health, safety and access rights; carrying out a hazard assessment.

In Science Communication there many skills development including:
Developing skills in scientific and popular writing for a variety of media.
Developing skills in learning to tell a good and effective science "story" for the print or broadcast media.
Developing skills in presentation to a live audience.
Learning to plan and execute a media production to a defined budget and timescale.
Developing skills in audience research and feedback.
Developing skills in teamwork.

There are a range of **transferable skills** that are integral to training in the geological sciences. Considerable emphasis is placed on the development of these skills to ensure that graduates of these programmes are equipped to use appropriate technology, communicate effectively and work effectively in a geological or non-geological environment. These skills may be grouped along the following lines:

- the attainment of certain standards of numeracy is essential; training is provided in dedicated courses and skills are developed through exercises integrated into all aspects of the teaching*
- the ability to use appropriate computer technology is developed in explicit training courses and as part of most aspects of the curriculum; this includes word processing, spreadsheet, database, graphical and presentation packages and communication using the internet*
- the use of libraries and the retrieval of information from diverse sources, including the world wide web, and the referencing of source material*
- the ability to assemble information, analyze and synthesize results and present them in a variety of reporting formats including short, concise written reports, longer dissertations and presentation as posters*
- the ability to present information effectively to an audience in verbal and graphical form in seminars and poster presentations*
- working in a team, setting goals by discussion, and sharing information and ideas to develop a collective outcome to a problem*

Personal and social skills are fostered in a general way as part of the degree programme. These include: personal motivation; the ability to work autonomously and with others; self-management; the ability to work towards and meet deadlines; intellectual integrity; awareness of responsibility; interest in lifelong learning; flexibility and adaptability; creativity.*

* transferable skills

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Teaching, learning and assessment

Transferable, laboratory and field skills in geology are identified within the learning outcomes of course units and summarized in a skills progression chart in the undergraduate handbook. A progression of skills development is provided through the introduction of most basic skills in the first and second years, a core course of Advanced Concepts and Techniques in Geology in the third year for single honours students, and the opportunity to apply skills to specialized areas in the third year. All skills tuition is provided by staff of the department within a geological context with the exception of first and third year information technology and library use courses which are provided by central services. Most of the teaching of techniques and skills is carried out as part of practical and field classes, with some introductory material provided in lectures. Tutorials also play an important role in helping individuals develop skills: guidance notes for personal advisers include details of appropriate skills tuition at different levels. Independent project work in the third year forms an opportunity for students to integrate a wide range of geological and transferable skills. In Science Communication, knowledge and understanding are achieved by lectures from experience specialist media staff and from practical exercises. Practical skills involve group work including camera, recording writing and editing.

Assessment of skills is mainly by coursework exercises, field and laboratory exercises, independent and teamwork assessed by reports and oral presentation, and by formal examinations. Independent field work (for example, independent mapping) and independent research projects in the third year provide opportunities to develop and integrate a wide range of discipline-specific and transferable skills and students are encouraged to regard these as an important forum for demonstrating their abilities. In Science communication assessment is from practical assessments and major communication projects. Full details of the assessments for individual courses can be obtained from the Department.

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Details of the programme structure(s)

Please note that not all courses run each year. A full list of courses including optional courses for the current academic year can be obtained from the Department.

In the **first year** students follow a core programme comprising three course units in Geology and two compulsory half course units in Science communication. These provide a broadly-based introduction to the subject, providing students with basic knowledge and understanding, discipline-specific skills, and transferable skills**. The** two compulsory half units introduce the students to Science communication.

Code	Course title	Unit value
GL1001	Introduction to Earth Sciences	1.0
GL1281	Sedimentology, Stratigraphy and Palaeontology	1.0
GL1461	Structures, Minerals and Rocks	1.0
SC1001	Media Communications	0.5
SC1002	Genres of Science Communication	0.5

In the **second year** students follow core programmes which comprise 6 half course units in Geology (taken from 8). These courses take students beyond the introductions provided in the first year, and provide a basis for the research-led specialist options in the third year. In Science Communication students take two compulsory half course units which involve case studies and independent projects.

Code	Course title	Unit value
GL2200	Regional Geology	0.5
GL2210	Stratigraphy and the History of life	0.5
GL2320	Geohazards	0.5
GL2901	Field Methods in Geology	0.5
SC2001	Media Project	0.5
SC2002	Case Study	0.5
and one from:		
GL2400	Igneous and Metamorphic Geology	0.5

GL2480	Igneous geology and Palaeontology For Environmental geology	0.5

In the **third year** students take core courses in concepts and techniques comprising a total of 1 course unit; they further have a choice of 4 from a list of up to 9 specialist courses (some restrictions on combinations apply). These courses closely reflect the research interests of members of staff. All students are also required to carry out an independent research project. The Science Communication comprises a 1 Course unit project on a geological topic using any media. Students are advised on appropriate combinations and pathways depending on their interests and possible future career paths.

Code	Course title	Unit value
GL3001	Advanced Concepts and Techniques in Geology	1.0
GL3120	Independent Project (half unit)	0.5
SC3001	Advanced Project (Science Communication)	1.0
Three from:		
GL3210	Advanced Topics in Sedimentology	0.5
GL3250	Regional Tectonic Analysis	0.5
GL3300	Hydrogeology	0.5
GL3460	Volcanology	0.5
GL3510	Planetary Geology and Geophysics	0.5
GL3750	Mineral Resources	0.5
GL3800	Advanced Micropalaeontology	0.5

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Progression and award requirements

The progression and award requirements are essentially the same across all Honours Degree programmes at Royal Holloway. Students must pass units to the value of at least three units on each stage of the programme. There are no compulsory Geology courses but the Science Communication courses are all compulsory and must be passed in order to progress to the next stage. Students are considered for the award and classified on the basis of a weighted average. This is calculated from marks gained in courses taken in stages two and three, and gives twice the weighting to marks gained in stage three. In order to qualify for the award, students must gain a weighted average of at least 35%.

Students who are registered for the BSc Geology with Science Communication, but who fail to graduate will be eligible for the award of Diploma of Higher Education if they have:

- Fulfilled the requirements to progress from the second to third stage of their degree programme.
- Passed at total of four units from the second and third years.

Please note: Students who do not pass their stage one or two Science Communication courses will fail to progress to the next stage and cannot transfer onto the BSc Geology programme automatically. This will invariably add an extra year to their studies.

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Student support and guidance

- Personal Advisers: All students are allocated a personal adviser who meets with them regularly through the programme. The personal adviser's role is to advise on academic, pastoral and welfare issues. Students may choose to be allocated a different personal adviser at any stage during the programme.
- Joint and Combined students are assigned a tutor in both departments who liaise over the tutorial programme, ensuring a balanced workload and coverage of material.
- Degree Programme coordinators and the Academic Coordinator provide a back-up system of academic, pastoral and welfare advice.
- All members of staff are available and accessible during office hours.
- Detailed student handbook and course resources, provided via the Web where appropriate.
- Representation on the Student-Staff Committee.
- Extensive supporting materials and learning resources in College and University libraries and Computer Centre.
- Dedicated departmental teaching laboratories and computing facilities.

- College Careers Service and departmental Careers Service liaison officer.
- Access to all College and University support services, including Student Counselling Service, Health Centre, Students' Union and the Education Support Office for students with special needs.

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Admission requirements

The Department's standard conditional offer is available on the Course Catalogue web page. However, the Department also has considerable flexibility in its admissions and offers policy and strongly encourages applications from non-standard applicants. Students whose first language is not English may also be asked for a qualification in English Language at an appropriate level. It may also be helpful to contact the Admissions Office for specific guidance on the entrance requirements for particular programmes.

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Further learning and career opportunities

Graduates from Earth Sciences degree programmes have successfully progressed into a wide range of professions, while some have continued onto Postgraduate studies. In addition to the services offered by the College Careers Service, the Department has strong alumni links. Links with employers are fostered through the Department's External Advisory Board. The following Masters programmes are available within the Department: MSc Petroleum Geoscience (Basin Evolution and Dynamics), MSc Petroleum Geoscience (Tectonics), MSc Environmental Diagnosis and Management, MSc Geology by Research, and there is also the relevant MSc in Quaternary Science in the Department of Geography. The degree programmes are accredited by the Geological Society of London as a pathway to professional status for graduates. For further details please refer to the Careers Service.

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Indicators of quality and standards

Royal Holloway's position as one of the UK's leading research-intensive institutions was confirmed by the results of the most recent Research Assessment Exercise (RAE 2008) conducted by the Higher Education Funding Council (HEFCE). The new scoring system for the RAE 2008 measures research quality in four categories, with the top score of 4* indicating quality that is world-leading and of the highest standards in terms of originality, significance and rigour. 60% of the College's research profile is rated as world-leading or internationally excellent outperforming the national average of 50%. The College is ranked 16th in the UK for research of 4* standard and 18th for 3* and 4* research. The Department of Earth Sciences was ranked joint 7th in the top 10 universities in the country in terms of proportion of 3* and 4* research, with 70% of its research profile being of 3* and 4* standard.

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List of programmes

All the programmes are taught entirely by staff at Royal Holloway, University of London, and lead to awards of the University of London. Programmes in Earth Sciences (with the exception of the joint degrees with Biology and Mathematics) are subject to accreditation by the Geological Society of London and the aims and outcomes reflect this. The QAA subject benchmark statements in Earth Sciences, Environmental Sciences and Environmental Studies describe the general features which one might expect from Honours Degree programmes in the subject, and can therefore be used as a point of reference when reading this document (see www.qaa.ac.uk). UCAS codes are given in parentheses (see www.ucas.ac.uk).

Combined Honours Degree programmes with Earth Sciences as a major component

BSc Geology with Science Communication (F6P4)

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