ROYAL HOLLOWAY
University of London

COURSE SPECIFICATION

This document describes the **Master of Science, Postgraduate Diploma and Postgraduate Certificate in Energy Geosciences**. This specification is valid for new entrants from **September 2020**.

The aims of the course are:

- to provide systematic understanding and knowledge of the tectonic, structural and sedimentological controls that govern sedimentary basins;
- to provide vocational training in the analytical tools and practical techniques that will enable students to understand sedimentary basins;
- to encourage a critical understanding and awareness of current issues and developments in energy geoscience;
- for students on the Petroleum Geoscience strand, to encourage a critical understanding and awareness of current issues and developments in the extraction of hydrocarbons from the subsurface;
- for students on the Renewable Georesources strand, to encourage a critical understanding and awareness of current issues and developments in deep and shallow geothermal energy, the storage of energy and greenhouse gasses in the subsurface and geologically-focussed aspects of non-geothermal renewable energy;
- to foster students' intellectual development and independent learning ability required for continuing professional and personal development;
- to provide an opportunity for students to obtain a postgraduate qualification in energy geoscience by either full-time or part-time study.

The Masters course is delivered over one year of full-time study (50 weeks) or up to five years of part-time study (260 weeks) and provides students with the knowledge and skills to address a range of energy issues that can be addressed using Geoscience.

The course draws substantially on the active research of teaching staff in the field of study and on successful completion of the course a student should have an understanding of energy geoscience at a level appropriate for a postgraduate qualification, including the ability to read and readily understand research publications in the field and to practice as an energy geoscientist, either in industry or in academia.

Further information

This document provides a summary of the main features of the course(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, courses 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 course. In turn, Royal Holloway will inform applicants and students as soon as is practicable of any substantial changes which might affect their studies.

Learning outcomes

Teaching and learning in the courses are closely informed by the active research of staff. In general terms, the course provides opportunities for students to develop and demonstrate the following learning outcomes:

Knowledge and understanding
Graduates from this course will be expected to have an extensive knowledge of:

- the tectonic and geodynamic processes that control the formation of sedimentary basins;
- the processes that control the structural and stratigraphic architecture of sedimentary basins;
- the processes that control the distribution and properties of sediments within sedimentary basins
  For the Petroleum Geoscience Stream:
- the controls on the distribution of hydrocarbons and other fluids in sedimentary basins;
- the properties of hydrocarbon reservoirs, and the implications of this for hydrocarbon production and field development.
  For the Renewable Georesources Stream
- the properties of potential subsurface stores of carbon dioxide and energy
- the properties of potential sources of geothermal energy

- graduates will also have the ability to develop a critical understanding of recent developments in these areas and the issues and controversies that are the subject of current debate.

Skills and other attributes

- Interpret seismic, well log, and core data and remote sensing imagery using techniques and software that are currently employed within the energy industry, including the use of GIS data bases;
- analyse, interpret and model geological structures;
- apply knowledge to the appraisal of subsurface resources
- design and execute original research, using appropriate methods of data collection and analysis, develop and test multiple hypotheses to explain the observations and to critically evaluate the outcomes*;
- report and communicate complex ideas in a clear and concise manner, both orally and in writing*.

* transferable skills

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Teaching, learning and assessment
Teaching and learning draws on the methods and concepts used in the study of geosciences. It is also strongly informed by the current research interests of the core teaching team in geosciences. The main methods used to develop knowledge and understanding are: formal lectures by staff, lectures by visitors from industry, practical exercises, field exercises, team work exercises and extended group projects, one- to-one discussions, student presentations and guided independent study and research for the project.

Assessment is typically by coursework assignments, reports, practical classes, oral presentations and the research project. Full details of the assessments for individual courses can be obtained from the Department .

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Details of the course structure(s)
The brief outline of the course is shown below; however, students can obtain further details from the Course Handbook. **Credits are indicated in brackets, and indicate proportional weighting towards the Masters and Postgraduate Diploma classification grade.** The course structure for the Postgraduate Diploma is as below, with the exception that students will not undertake the Independent Project (GL5011).

The full-time course lasts 50 weeks, beginning in September and consists of six mandatory taught courses (120 Credits), and the Independent Project (60 Credits). Full-time students will normally submit their research projects by mid August and make an oral and poster presentation in early September of their academic year of study, having completed their study and assessment of the other courses by late April.

All students take the following mandatory courses:

(i) GL5201: Geophysical Analysis (20 credits)
(ii) GL5301: Structural Analysis (20 credits)
(iii) GL5401: Sedimentology and Stratigraphy (20 credits)
(iv) GL5501 Reservoir Geophysics (20 credits)
(v) GL5011: Independent Project (60 credits) non-condonable

Students on the Petroleum Geosciences stream must also take

(vi) GL5101 Tectonics and Lithosphere Dynamics (20 credits)
(vii) GL5601: Petroleum Systems (20 credits)

Students on the Renewable Georesources stream must also take

(viii) GL5960 CCS and Subsurface Energy Storage (20 credits)
(ix) GL5950 Deep and Shallow Geothermal Energy (20 credits)

Part-time structure

The part-time course normally lasts two years (106 weeks), beginning in September of year one**. Part-time students will take a selection of first term and second term courses in each year of study and ideally will complete all components of three taught courses in year one and the remaining three taught courses in year 2. However, there may be instances where it is possible to defer an assessment component of a module (a particular piece of project work, for example) into the second year. Work on Independent Projects can be carried out part-time from the summer of the first year, but the project report will normally be submitted by mid-August of year 2, with an oral and poster presentation made in early September of the same year. The course of study must be agreed with the Course Director in advance.

** part time students are permitted under College regulations to complete their course of study over a period of up to 5 years. Students who are unable to complete the course within the standard 2 year timeframe should liaise with the course director to agree a time frame for completion.

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Progression and award requirements

Progression throughout the year/s is monitored through performance in oral presentations, contributions to seminar discussion and coursework.

Please note that if you hold a Tier 4 (General) Student Visa and you choose to leave (or are required to leave because of non-progression) or complete early (before the course end date stated on your CAS), then this will be reported to UKVI.

To pass the **Master's** course a student must achieve an overall weighted average of at least 50.00%, with no mark in any module which counts towards the final assessment falling below 50%. Failure marks between 40-49% can be condoned in modules which constitute up to a maximum of 40 credits, provided that the overall weighted average is at least 50.00%, but a failure mark (i.e. below 50%) in the dissertation cannot be condoned.

The Master's degree with Merit may be awarded if a student achieves an overall weighted average of 60.00% or above.

The Master's degree with Distinction may be awarded if a student achieves an overall weighted average of 70.00%.

The **Postgraduate Diploma** may be awarded if a student achieves an overall weighted average of at least 50.00%Failure marks in the region 40-49% are not usually condoned for the award of a Postgraduate Diploma, but if they are, such condoned fails would be in modules which do not constitute more than 40 credits.

The **Postgraduate Certificate** may be awarded if a student achieves an overall weighted average of at least 50.00%, with no mark in any taught course which counts towards the final assessment falling below 50%. Failure marks in the region 40-49% will not be condoned for the award of a Postgraduate Certificate.

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Student support and guidance

- The Course Directors act as Personal Advisors and meet with the students on a regular basis to advise on academic, pastoral and welfare issues.
- The Head of Department, module coordinators, tutors and project supervisors provide a back-up system of academic, pastoral and welfare advice.
- A departmental induction course is provided in the first week for all new postgraduate students, this provides safety briefings and an introduction to departmental and College facilities.
- Meetings can be arranged with any member of staff during office hours.
- MSc students are represented on the Staff-Student Committee.
- Students will be provided with a detailed PG handbook and course booklets.
- Extensive supporting materials and learning resources are available in College and University libraries, as well as the Computer Centre.
- Dedicated departmental teaching laboratories and computing facilities are provided.
- Postgraduate students can take part in social events organized by the New Lyell Geological Society, and there are regular, informal social and careers events in the Department.
- There is a College Careers and Employability Service and Departmental Employability Lead officer.
- Students have access to all College and University support services, including Student Counselling Service, Health Centre, Students' Union and students with additional learning needs also have access to Disability and Dyslexia Services.

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Admission requirements

For details of admissions requirements please refer to the Course Finder.

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Further learning and career opportunities

The course provides a firm foundation for postgraduate study and research, and for careers in the hydrocarbon industry. Graduates of the course have successfully progressed on to more advanced research degrees at Royal Holloway and elsewhere. Careers which will especially suit graduates, and which they have gone on to pursue, include work as Petroleum Geoscientists in international oil companies, in geological consultancy for the oil industry and for government bodies engaged with the oil industry. Furthermore, it is anticipated, by the UK government, that industries exploiting the subsurface for energy and carbon-dioxide storage will begin to rival the oil-industry in economic-size from 2030 onwards. Graduates of this course will be in an excellent position to take advantage of the resulting opportunities as they begin to develop in the next few years and decades. The course also provides graduates with range of intellectual, personal and social skills that are transferable to a wide variety of other employment opportunities. In addition to the services offered by the College Careers Service, the Department has strong links with employers and arranges several recruitment visits by potential employers. For more details on further learning and career opportunities 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 Excellence Framework (REF 2014) conducted by the Higher Education Funding Council (HEFCE). The scoring system for the REF 2014 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 and 3* indicating research that is internationally excellent. 81% of the College's research profile was deemed to be within

the 4* or 3* categories, an increase of over 20% since 2008. This results for the quality of our research outputs placed Royal Holloway 15th in the UK based on an overall Grade Point Average (GPA) score and 20th in the UK for 4* and 3* research. The Department of Earth Sciences is ranked 14 in the UK for research of 4* standard and 2 for 3* and 4* research and is ranked within the top 5 departments for their subject in the UK.

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List of courses

The courses are taught by staff at Royal Holloway, University of London and the Masters leads to an award of the University of London. The Postgraduate Diploma and Postgraduate Certificate lead to awards of Royal Holloway and Bedford New College. The Banner course codes are given in parentheses.

Master of Science Courses in Energy Geosciences

MSc in Energy Geosciences: Petroleum Geosciences (3593)
MSc in Energy Geosciences: Renewable Georesources (3594)

Postgraduate Diploma in Energy Geosciences

PG Diploma in Energy Geosciences: Petroleum Geoscience (tbc)
PG Diploma in Energy Geosciences: Renewable Georesources (tbc)

Postgraduate Certificate in Energy Geosciences

PG Certificate in Energy Geosciences: Petroleum Geoscience (tbc)
PG Certificate in Energy Geosciences: Renewable Geosresources (tbc)

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