DEPARTMENT OF EARTH SCIENCES

UNDERGRADUATE STUDENT HANDBOOK

2016/2017
<table>
<thead>
<tr>
<th>Term dates 2016 - 2017</th>
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<tr>
<td><strong>First Term starts:</strong> Monday 19 September 2016</td>
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<tr>
<td>(Teaching starts       Monday 26 September 2016)</td>
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<tr>
<td>(2(^{nd}) and 3(^{rd}) year Independent study week commencing 24 October 2016)</td>
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<td><strong>First Term ends:</strong>   Friday 9 December 2016</td>
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<td><strong>Second Term starts:</strong> Monday 9 January 2017</td>
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<tr>
<td>(3(^{rd}) year Independent study week commencing 13 February 2017)</td>
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<td><strong>Second Term ends:</strong>  Friday 24 March 2017</td>
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<td><strong>Third Term starts:</strong> Monday 24 April 2017</td>
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<tr>
<td><strong>Third Term ends:</strong>   Friday 9 June 2017</td>
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<tr>
<td>(Graduation Ceremonies: 10 – 14 July 2017)</td>
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Note that teaching weeks of individual courses may vary; a list of course schedules is posted on the Moodle web site. Note also that some field courses and project deadlines may be scheduled outside these term times.

Disclaimer: This document was published in September 2016 and was correct at that time. The Department\(^*\) reserves the right to modify any statement if necessary, make variations to the content or methods of delivery of programmes of study, to discontinue programmes, or merge or combine programmes if such actions are reasonably considered to be necessary by the College. Every effort will be made to keep disruption to a minimum, and to give as much notice as possible.

*Please note, the term ‘Department’ is used to refer to ‘Departments’ ‘Centres’ and ‘Schools’. Students on joint degree programmes will need to use two departmental handbooks.

An electronic copy of this handbook can be found on the departmental website (www.royalholloway.ac.uk/earthsciences/home.aspx) where it will be possible to follow the hyperlinks to relevant webpages.

Front cover: A 1787 engraving by John Clerk of James Hutton's Unconformity near Jedburgh, Scotland. Contemplating the vastness of geological time - concluding in 1788 that there was "no vestige of a beginning, no prospect of an end" - Hutton is regarded as the father of geology.
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Department plan (top floor)
Campus plan
Welcome (or welcome back!) to the Department of Earth Sciences. Please take time to read through this booklet; it is packed with important and useful information. Do not assume that it does not change from year to year; it does, and each year there are important changes to take note of.

This Undergraduate Handbook, informally referred to as ‘The Yellow Book’, is produced annually by the Department of Earth Sciences to provide students with essential information about the department, degree programmes and courses. If you have any suggestions about how this booklet may be improved by changing the layout, or adding or removing material, please discuss your ideas with your personal adviser, the Director of Teaching or a representative on the student-staff liaison committee.

**Important information - you must read this!**

**Safety**
- The Department is pledged to ensure that everyone working in it does so in a safe environment, whether in an office, in a laboratory, or in the field.
- All students will receive and must read the Earth Sciences Undergraduate Safety Handbook.

**Attendance**
- Attendance at all lectures, practicals, seminars, tutorials and field classes is compulsory.
- Attendance is monitored, and any student with a poor attendance record will be subject to disciplinary procedures that can lead to termination of registration. In addition, please be **punctual** for any class or appointment.

**Illness**
- Absence due to illness or other extenuating circumstances must be notified in writing to the Department Manager; a medical certificate is required for absences of more than one week.
- You must provide the department with a written record of illness or extenuating circumstances which may affect your performance (**especially for examinations and other assessed work**), clearly stating the dates (see page 15).

**Fieldwork**
- You must treat the accommodation and other guests with due respect.
- Safety is paramount in the field: you must obey instructions from field trip leaders and any failure to do so may lead to disciplinary action. You must inform the department of any medical condition.

**Plagiarism**
- If work is copied from another student or copied from another source without acknowledgment, this is considered to be plagiarism. This is a serious offence and the matter may warrant disciplinary action (see page 18).

**Submission of work**
- All assessed coursework and reports must be submitted to the departmental office by the specified time. Penalties will be imposed on work submitted late. Extensions can only be approved by the Course Coordinator and then only in exceptional circumstances (see page 16).
- Failure to submit coursework for assessment will result in disciplinary procedures that can lead to termination of registration.

**Information and communication**
- Communication will be through handouts provided in class, notices on the student notice board, notes in the pigeonholes, the Moodle web site or via e-mail. It is crucial that you ensure that you have received all information provided by any of these means and that the department has your valid and up to date postal and e-mail addresses.

**Help and advice**
- If you have a problem, you must talk to somebody – your personal adviser, the academic coordinator, head of department, or any member of staff.

**Regulations:**
- It is your responsibility to be familiar with the College Undergraduate Regulations, which can be accessed at [https://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx](https://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx).

*More details of all of the above are in this book, so please read on…..*
SECTION A: GENERAL INFORMATION

Introduction

The Department

The Department of Earth Sciences was created at Royal Holloway in 1985 by the merger of former departments at Bedford, Chelsea and King’s Colleges (all part of London University). The Department is committed to providing an educational environment in which learning and research are inseparable. It aims to foster academic excellence at all levels of study and was awarded the top grade of “Excellent” in a national Teaching Quality Assessment. The Research Excellence Framework (REF) exercise completed in 2014 ranked us 2nd among UK universities for world-leading and internationally excellent research. We are also ranked 7th in the UK with 95% overall satisfaction from our students (NSS 2015). There are 26 academic staff, 13 research staff, 12 technical and administrative staff, over 200 undergraduates and some 60 postgraduate students (MSc and PhD) in the Department.

Location

The Department is located in Queen’s Building, with most teaching staff offices and undergraduate laboratories on level 2 (see map at back of this booklet). Most undergraduate classes are held in the teaching laboratories in rooms 205, 240, 264 and the adjacent science block (the John Bowyer Building, ‘JBB’). The Queens Lecture Theatre (‘QLT’) is on the ground floor of the Queens Building and is accessed from the main foyer. Part of the foyer on level 2 serves as a common room area for staff and students. All students are welcome to use this common room area. Student car parking is limited and a parking permit is required from Security.

Undergraduate degree programmes

Students are currently admitted to four-year, MSci degree programmes in the Department (Geoscience, Environmental Geoscience, Geoscience with an international year, Environmental Geoscience with an international year), and three-year, single honours, BSc degree programmes (Geology, Petroleum Geology, and Environmental Geology). (In addition, all single honours degrees can be extended by taking a year in industry.) There is also a three-year, joint (approximately 50:50 split between two subjects), degree programme with Geography.

Course Credits

Degree programmes at Royal Holloway are composed of a number of course credits, normally 120 course credits for each stage of the BSc (3-year) and MSci (4-year) degrees. Courses may be ‘mandatory (condonable fail)’ i.e. taken by all students on a particular degree programme, ‘mandatory (non-condonable fail)’ must be taken and passed for progression, or ‘optional’ i.e. students may choose from a range of options, particularly in the 3rd and 4th years of the degree programme. The course structure for each of the degree programmes offered in the Department of Earth Sciences is shown in Section D.

Accredited Degree programmes

The MSci Geoscience, MSci Geoscience with an International Year, MSci Environmental Geoscience, BSc Geology, BSc Petroleum Geology and BSc Environmental Geology degree programmes have been accredited by the Geological Society as offering a sound training for a professional career and as degree programmes which satisfy the requirements of Fellowship and Chartered Geologist status.

Postgraduate study and research

At postgraduate level, we offer MSc degree courses in Petroleum Geoscience and Environmental Diagnosis & Management, and an MSc by Research, and we sustain a flourishing research school. We are internationally recognised for our strengths in a number of major research areas: Global Environmental Change (modern atmospheres, surface processes, palaeobiology, ancient Earth systems), Geodynamics and Sedimentary Systems (sedimentology, mountain evolution, uplift, and erosion, numerical modelling, lithospheric processes) Physics and Chemistry of Earth Processes (crust-mantle evolution, plumes and ridges, volcanic arcs). Our research activities influence our teaching: a team spirit in research is reflected in our teaching and in student learning.

Staff list

Title, name, room number and telephone (01784-44-)

Head of Department & Professor of Isotope Geology:

Prof. Dave Mattey

Professor of Plant Palaeobiology/Lyell Chair

Prof. Margaret Collinson

Professor of Structural Geology:

Prof. Agust Gudmundsson

Professor of Geology:

Prof. Robert Hall

Professor of Atmospheric Chemistry:

Prof. Martin King

Professor of Structural Geology:

Prof. Ken McClay

Professor of Geophysics:

Prof. Jason Morgan

Professor of Geochemistry

Prof. Wolfgang Müller

Earth Sciences Handbook, 2016-2017
New College Foundation Professor of Geology:
    Prof. Euan Nisbet  280  3809
Professor of Isotope Geochemistry:
    Prof. Matthew Thirlwall  245  3609
Professor of Geophysics
    Prof. David Waltham  247  3617
Readers:
    Dr Howard Falcon-Lang  277  (41)4039
    Dr Javier Hernández-Molina  267b  3604
    Dr Dan Le Heron  244  3615
    Dr Paola Vannucchi  279  3616
Senior Lecturers:
    Dr Juergen Adam  251  (41)4258
    Dr Kevin Clemishaw  243  (41)4026
    Dr Saswata Hier-Majumder  252  (41)4040
    Dr Steve Smith  248  3635
Lecturers:
    Dr Anirban Basu  250  (41)4083
    Dr Domenico Chiarella  242  3890
    Dr Nathalie Grassineau  276  3810
    Dr David Lowry  276  3105
    Dr Christina Manning  246  3835
    Dr Nic Scarselli  222c  3597
    Dr Giulio Solferino  249  3585
    Dr Ian Watkinson  278  (41)4046
Technical Operations Manager:
    Mr Dan Parsonage  265  3595
Deputy Technical Operations Manager:
    Mr Kevin D’Souza  219  3610
Department Manager:
    Ms Julie Brown  215  3582
Postgraduate Programmes Coordinator:
    Ms Lynne White  215  3581
Financial Administrator:
    Ms Diane Serpent  266  3588
IT Manager:
    Mr Mark Longbottom  224  3622

Photographs of all staff in the Department are displayed in the Department foyer.

Email addresses
The standard format of email address for all staff in the Department of Earth Sciences is  

Communication

It is vitally important that you keep in touch with us and we keep in touch with you. Members of staff will often need to be able to contact you to inform you about changes to teaching arrangements, special preparations you may have to do for a class, meetings you might be required to attend, and so on. You will need to be able to contact members of the department, for example if you are unable to attend a class, or wish to arrange a meeting with a tutor or your Personal Adviser. Email to your College email address is routinely used and you should check regularly (at least daily) if any official communication has been sent. Do not ignore the email.

Email
The College provides an email address for all students free of charge and stores the address in a College email directory (the Global Address List). Your account is easily accessed, both on and off campus, via the student portal at: https://campus-connect.rhul.ac.uk/cp/home/displaylogin (Campus Connect) or direct via Outlook.com http://outlook.com/ Email to this address will be used routinely for all communication with students. Email may be used for urgent communication and by course tutors to give or confirm instructions or information related to teaching so it is important that you build into your routine that you check your emails once a day. Emails from staff and all the Faculty Administrators should be treated as important and read carefully.

It is also important that you regularly clear your college account of unwanted messages or your in-box may become full and unable to accept messages. Just deleting messages is not sufficient; you must clear the ‘sent items’ and ‘deleted items’ folders regularly. It is your responsibility to make sure your College e-mail account is kept in working order. If you have any problems contact the IT service desk http://itservicedesk.rhul.ac.uk/

The Department of Earth Sciences will only use the address in the College Global Address List and does not use private or commercial e-mail addresses, such as hotmail or Gmail. Students who prefer to use commercial e-mail services are responsible for making sure that their College email is forwarded to the appropriate commercial address. Detailed instructions on how to forward mail can be accessed by visiting http://help.outlook.com/ and searching for forwarding. This process is very easy, but you do have to maintain your College account. When you delete a forwarded message from, say, hotmail, it will not be deleted from the Royal Holloway account. It is your responsibility to log on to your College account occasionally and conduct some account maintenance or your account may become full and therefore will not forward messages.

If you send an email to a member of staff in the department during term time you should normally receive a reply within 3-4 working days of its receipt. Please remember that there are times when members of staff are away from College at conferences or undertaking research.

Post
All post addressed to students in Earth Sciences is delivered to the student pigeonholes (alphabetical by surname) located outside room 205. At the end of each term student pigeonholes are cleared of accumulated mail, which is then destroyed. Important information
from Registry is often sent by internal post and tutors sometimes return work to you via the pigeonholes, so you are advised to check them regularly.

If you need to leave a document for a member of staff, the pigeonholes for all staff are located in the departmental post/photocopy room (Room 257).

**Telephone and postal address**

It is your responsibility to ensure that your telephone number (mobile and landline) and postal address (term-time and forwarding) are kept up to date on the student portal (Campus Connect) [https://campus-connect.rhul.ac.uk/cp/home/displaylogin](https://campus-connect.rhul.ac.uk/cp/home/displaylogin). There are occasions when the Department needs to contact you urgently by telephone or send you a letter by post. The Department does not disclose students’ addresses and telephone numbers to anybody else (including relatives and fellow students) without the student’s specific permission to do so.

**Notice Boards**

The official student notice boards are on the walls outside room 201. Every effort is made to post notices relating to class times, etc., well in advance, but occasionally changes have to be made at short notice and in that case email will be used.

It is your responsibility to check the times and places of all class meetings and of any requirements (e.g., report deadlines) relating to your courses; so, if in doubt, please ask!

**Whom to contact**

If you have any questions or doubts about any aspects of your courses, or any other queries about the department or college, please seek advice from your personal adviser, the Academic Coordinator, the Head of Department or any other member of the academic staff.

The Academic Coordinator supervises student registration, ensures proper liaison between the College and students in the Department, co-operates with coordinators in other departments in making inter-departmental arrangements for courses, and has overall responsibility for degree course structure and content. Within the Department, any changes to Degree Programme, course registration or exam entry, must be authorised by his signature.

- If you have any questions relating to lectures, practicals or the assessment of a particular course, see the course coordinator (see list of courses in Section E)
- Questions about degree programmes, options and transfer should be addressed to the Year Tutor in the first instance.

- All field courses are associated with a course number (see fieldwork schedule on page 11) and questions should be addressed to the coordinator for the relevant course.
- Your Personal Adviser will be able to help you with general guidance about academic issues.
- You may wish to talk to your personal adviser about non-academic issues, or alternatively you may take problems to a member of the College staff (see below).
- If you wish to discuss something with a senior member of the academic staff, your Year Tutor followed by the Academic Coordinator will normally be the most appropriate people to talk to. Appointments may be made to see the Head of Department through the Department Manager (Julie Brown).

**Course Coordinators**

Each course presented by the Department is managed by a Course Coordinator, as indicated in the synopses of courses listed in this handbook in Section E. Any queries about delivery and assessment of a particular course should be directed to the course coordinator.

**Earth Sciences Staff Administrative Responsibilities**

- **Head of Department** Prof Dave Mattey
- **Director of Admissions** Dr Howard Falcon-Lang
- **Director of Teaching** Dr Dan Le Heron
- **Year Abroad Coordinator** Prof Wolfgang Müller
- **Timetables** Prof Collinson/Julie Brown
- **Student/Staff Liaison** Dr Domenico Chiarella
- **Field Courses** Dr Javier Hernandez-Molina
- **Personal Adviser Coordinator** Dr Howard Falcon-Lang
- **Health & Safety Coordinator** Mr Dan Parsonage
- **Examinations** Prof Jason Morgan
- **Library** Prof Robert Hall
- **Disabilities Adviser & Senior Tutor** Dr Christina Manning

**College Student Support**

**Non-academic related enquiries & support**

The Student Services Centre is located in the Windsor Building and provides a single point of contact for all non-academic related queries including accommodation, fees and funding, enrolment and graduation. For further details please visit [http://www.royalholloway.ac.uk/ssc](http://www.royalholloway.ac.uk/ssc)

**Security:**

General Office (non-urgent enquiries) (01784-44) 3063
Emergency (internal phones) 444

**Students in need of support**

The Department of Earth Sciences is committed to the principle of education for all and we seek to make our courses accessible to all those with special educational needs. Feedback from students who experience learning
problems is a vital component of our strategy for improving delivery. So, if you can suggest ways that we can do better, please discuss them with the Departmental Disabilities Adviser (Christina Manning - room 246). All discussions are held in total confidence (subject to College regulations).

Inevitably, problems will sometimes arise that Christina is not qualified to deal with. The College offers a high level of Student Welfare Support which includes a comprehensive Health Centre, a highly regarded Counselling Service, dedicated educational and disability support, as well as a wealth of financial, career and other advice. Further details of each service can be found on the College web on the Student Welfare:
http://www.royalholloway.ac.uk/ecampus/welfare/home.aspx

If you have a disability or specific learning difficulty, it is important that you bring it to our attention as soon as possible. You must also contact the Disability and Dyslexia Services Office (Founders West 143; tel: 01784 276473; e-mail: disability-dyslexia@royalholloway.ac.uk) who will arrange for an assessment of needs to be carried out and will advise on appropriate sources of help. Further information is available on the College web on the DDS Support, health and welfare page https://www.royalholloway.ac.uk/ecampus/welfare/disabilityandyndyslexiaservices/home.aspx.

Academic Skills Support
The Centre for the Development of Academic Skills (CeDAS) offers a variety of courses, workshops, 1:1 tutorials, online resources that aim to ensure all students at Royal Holloway reach their full academic potential in a range of areas, including academic writing, oral communication skills and maths and statistics.

Whatever your needs, CeDAS is there to ensure that you can perform to the best of your ability, whether it be through a workshop that introduces you to a crucial academic skill, a session within your department that focuses on writing in the discipline, a course that develops your confidence and competence in academic English language, or a 1:1 tutorial with a specialist to help you master a maths technique or sharpen your essay skills.

The Centre also oversees the Royal Holloway Proofreading Scheme, which enables students to pay for an approved third-party proofreader to identify surface error in final drafts. Please note that Royal Holloway does not permit the use of paid third-party proofreaders who are not part of this scheme.

The CeDAS Office can be found on the ground floor of

the International Building, room IN002, and you can follow them on Twitter: @cedasrhul. Further details can be found on the CeDAS webpages: www.royalholloway.ac.uk/cedas.

Non-academic policies
Please see the College Regulations and Procedures webpage
https://www.royalholloway.ac.uk/students/study/our-college-regulations/our-college-regulations.aspx which includes information on non-academic policies, regulations, and codes of practice as well as the Student Charter. This can be found at: http://www.royalholloway.ac.uk/aboutus/governancematters/studentcharter.aspx

Careers Information and Advice
The College has a careers advisory service, housed in the Horton Building, which is open to any student during normal College hours. http://www.royalholloway.ac.uk/careers/home.aspx

Careers information, including job vacancies, is posted on the notice board in the corridor outside Room 228. Within the Department, careers advice is given by personal advisers and the College Careers Service is also available to give general information and advice.

A number of second and third year students are able to benefit from the close ties that the Department has with industry to obtain employment during the summer vacation. This provides work experience of value for future careers and sometimes also affords opportunities for final year project studies.

Personal Advisers and Tutorials

Personal Advisers
Personal Advisers are responsible for giving students guidance in their studies and for offering advice, should any academic or personal problems arise. Your Personal Adviser in your final year will normally be prepared to provide you with references for jobs or further study. Each single or joint honours student is assigned a member of the teaching or research staff as a Personal Adviser, and the Personal Adviser will change each year.

Tutorials
Personal Advisers will organise tutorials which will be attended by all students in the tutorial group. These will be held regularly and should take place about once a fortnight (five or six times a term) in the first two terms of the first year, but usually decreasing in frequency in later years. In exam terms Personal Advisers will be
available (by arrangement) for consultation and to assist with revision. For some tutorials, students may be expected to complete some work. Other tutorials will provide the opportunity to discuss project work, problems with the course and study techniques.

If you fail to attend a tutorial, you must see your Personal Adviser (preferably in advance) to explain the reason and to find out what was covered. **Attendance at tutorials is compulsory** and is carefully monitored by the Department.

**Confidentiality**

It is very important that you notify your Personal Adviser about any personal or family problems you may be facing, or if you are unhappy with the course or the College. A student may ask to discuss any matter in confidence with their personal adviser, Senior Tutor, the Academic Coordinator or the Head of Department. If confidentiality has been requested, the issues will not be discussed with any other person without the permission of the student (but subject to College regulations). In some circumstances the student will be advised to approach another member of departmental or college staff that may be more qualified to provide help or advice.

**Using your Personal Adviser as a referee**

Your Personal Adviser is the first person to ask if you need a reference for summer vacation employment or for post-graduate training or work. Always ask, however, before using names on an application or **curriculum vitae**: the person concerned may be planning to be away on leave or fieldwork that would make him/her unavailable at the critical time, or there may be other reasons why he/she cannot act on your behalf on every occasion. You may find it helpful to let your personal adviser comment on your c.v. before sending it to prospective employers. It is in your own interest to remain in regular contact with your Personal Adviser throughout your period of study and after you have graduated, keeping them acquainted with your career plans and progress.

**Student-Staff Liaison Committee**

Students are encouraged to discuss any matter of concern with their Personal Adviser or any other member of the academic staff. In many cases an informal discussion will provide a satisfactory resolution to a problem. There are, however, issues which are appropriate to raise through the more formal forum of the Student-Staff Liaison Committee. This committee meets once a term and plays an important role in the Department as a forum for airing student views. Notices will appear on the notice board outside room 201, giving the names of current representatives. For constitution see committee’s handbook under Compliance / Governance [http://www.royalholloway.ac.uk/iquad/collegepolicies/home.aspx](http://www.royalholloway.ac.uk/iquad/collegepolicies/home.aspx)

Two student representatives are appointed each year by the year group to act as spokespersons for the student body on any academic matters and other issues, such as departmental facilities. A student rep will chair this meeting. The members of staff on the committee are the Academic Coordinator and the Student-Staff Liaison Coordinator.

**Student Feedback**

At least once each year, students are asked to complete a detailed questionnaire on each of the courses they have taken. Completed questionnaires are returned anonymously, but give students the opportunity to comment on each course overall, the practicals, any coursework tasks, and individual lecturers. The views expressed in these questionnaires are used by the Department to review and, if necessary, improve teaching quality. A similar procedure is used to obtain student views on field courses.

The Department, the Faculty and the College all continually review degree programmes and individual courses. These questionnaires form an important part of the quality assurance process in the department by providing a mechanism for students to take part in the review of courses.

**Complaints and academic appeals procedures**

If you have a complaint relating to any aspect of the Department or its staff or to any academic or College matter, you should first discuss it informally with your Personal Adviser or with another member of staff in the Department. We would hope that the majority of issues of this kind can be resolved by informal discussion. There are, however, procedures that can be invoked in serious cases. These are set out in the College Complaints Procedures for students [https://www.royalholloway.ac.uk/ecampus/academicsupport/complaints/complaints.aspx](https://www.royalholloway.ac.uk/ecampus/academicsupport/complaints/complaints.aspx). You should raise your complaint as soon as possible.

If the complaint concerns an academic decision, there is an academic appeals process. Please note that an academic appeal can only be submitted once you have
received your results via the College portal. Details of the appeals procedures and permitted grounds for appeal can be found on the following webpage http://www.royalholloway.ac.uk/ecampus/academicsupport/academicappealsandcollegecomplaints.aspx

Departmental Facilities

Teaching Laboratories
Students are allowed in teaching laboratories (rooms 205, 240, 264, and JBB0-05) for private study at any time during the working day when the room is not being used for a timetabled class. The times of classes are displayed on the door of each of these laboratories. Students can use their college card to gain access to the class rooms in Queen’s Building for working out of normal working hours. Undergraduate students are not allowed to work in research laboratories at any time unless supervised by a member of staff.

Microscopes
Every student who requires one is issued with a microscope in a locker. There is a £20 charge for the key. Any faults should be reported to Dan Parsonage (Room 265 in the Foyer) immediately; no attempt should be made to repair the equipment. The microscopes are shared between students of different year groups and can be used at any time when there is no scheduled class. They must not be removed from the Department under any circumstances.

Libraries, Computing, Printing and Photo-copying

There are 2 libraries on campus:
- Founder’s Library, located on the South Side of Founder’s Building, houses most language, literature, film, music and theatre material;
- Bedford Library, located up the hill from the Students’ Union next to the History Department, houses science, social science and history material;

Details, including further resources available, opening times and regulations, can be found online: http://www.royalholloway.ac.uk/library/home.aspx

If you cannot find the specific items that you require in the libraries, it is possible to order items from other libraries by inter-library loan or to gain access to the Senate House Library or other university libraries. You can obtain further information on this by asking at the library helpdesks. The Information Consultant for Earth Sciences is Leanne Workman, who can be contacted at leanne.workman@rhul.ac.uk

The Library provides a range of training sessions designed to enhance your existing library and research skills. These are available in both class-based and self-study formats. For information on available sessions and to book a place, go to: http://www.royalholloway.ac.uk/library/helpandsupport/findinginformation.aspx

Most texts and journals relevant to Earth Sciences are housed in the Bedford Library. This library also contains numerous computers for students’ use and has photocopying facilities.

The departmental photocopier is in constant use by office staff and lecturers. For this reason, we are unable to allow undergraduate students to use it. Instead you can use copier-printers (MFDs) located in the libraries, the Computer Centre and many PC labs, which will allow you to make copies in either black and white or colour. Further information is available online: http://www.royalholloway.ac.uk/library/usingourlibraries/photocopyingandprinting.aspx

Many of the PC labs are open 24 hours a day, 7 days a week. Alternatively, there are computers available for your use in the libraries and Computer Centre. Further information on printing is available online: http://www.royalholloway.ac.uk/it/printing/home.aspx

The Computer Centre provides a range of IT training sessions designed to enhance your current IT skills. These are available in both class-based and self-study formats, and successful completion of the course is rewarded by a College IT Skills certificate. To participate in these sessions, go to: http://www.royalholloway.ac.uk/it/training/home.aspx

Department Activities

Lyell Geoscience Society
This important feature of departmental activity is organised by undergraduate students with the assistance of postgraduate students and academic staff. The Lyell Geoscience Society Committee organises a programme of lectures by distinguished speakers, a social programme and occasional field excursions. The Society also arranges an annual symposium and dinner in mid/late February. The Lyell Geoscience Society is recognised by the Students’ Union and, as such, is an official part of the activities of the College. The Society has a notice board in the foyer of the Department on which details of committee membership, future meetings and social
events are displayed, and a website:  
http://www.royalholloway.ac.uk/earthsciences/lyellsoc/home.aspx

Research Seminars
There is a programme of research seminars presented by staff, postgraduate students and academic visitors to the department. These may be on a wide variety of topics, and all students are welcome to attend. Details of forthcoming seminars are posted on the ‘Geology Today’ notice board at the top of the stairs.

Health & Safety
The Department has a strong commitment to safety in all its activities. Its safety policy and codes of practice for laboratory work in the Department and for field work are set out in the Students’ Safety Handbook which is given to every Earth Sciences student on enrolment. This must be read carefully and its procedures strictly adhered to on all occasions. The handbook should be retained carefully for reference but further copies are available from the Departmental Office.

Earth Sciences students, for whom fieldwork is compulsory, must purchase first aid kits, emergency blankets, safety helmets and glasses (e.g. from the on-line store). Safety helmets must be worn at all times in working quarries, in any other places where there are similar hazards, and whenever instructed by a member of staff. Safety glasses must be worn when hammering rocks. Suitable footwear for rough ground and adequate clothing for protection against the weather conditions must be worn for fieldwork.

The member of staff leading it will carry out a Hazard Assessment for every field class. You will be required to complete a hazard assessment form of your own for every piece of independent field or laboratory work that you undertake.

Students who are not properly equipped or who fail to heed safety advice in the field or laboratory will be excluded from the relevant field and practical classes.

It is essential that field trip leaders are aware of any specific medical conditions you suffer from that may affect your health or safety in the field (e.g. diabetes, asthma). We ask you to complete a confidential form when you first arrive in the Department detailing any such conditions; this will be kept on file, and field trip leaders will be advised as and when they need to know. Please note that the Health Centre will not pass on such information from your medical record, so we rely on you to bring such matters to our attention. Please contact our Disability Coordinator, Dr Christina Manning, if you have a disability which may affect your field or laboratory work.

Please contact the Departmental Health & Safety Coordinator, Dan Parsonage (Room 265, tel: 3595) or the College Health and Safety Office if you have any query about health and safety. Copies of all departmental safety policies are kept in room 265.

Code of practice on harassment for students
This can be found on the student home pages under College regulations and procedures 
https://www.royalholloway.ac.uk/students/study/our-college-regulations/our-college-regulations.aspx

Lone working policy and procedure
The College has a ‘Lone Working Policy and Procedure’ that can be found at 
http://www.royalholloway.ac.uk/iquad/services/healthandsafety/policiesandprocedures/loneworking.aspx

Lone working is defined as working during either normal working hours at an isolated location within the normal workplace or when working outside of normal hours.

The type of work normally conducted by Earth Sciences undergraduate students is classified as a low risk activity and as such the following advice is relevant:

• Lone working is permitted, but it is good practice to ensure that a second person is aware of the first person’s location and that they have access to means of communication.

• It is recommended that the second person could be a relative/friend who knows where the first person is located and approximate time of return. Relevant details should be exchanged (e.g. campus number and security telephone number).

• Inspections/risk assessments of the work area are by the Departmental Health and Safety Co-ordinator to ensure that hazards have been identified, risks controlled and provisions for emergencies are in place (e.g. escape routes open, fire fighting equipment, first aid etc.).

Note that the principles contained in the above section will apply to students undertaking any duties outside of campus, including fieldwork.

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Fieldwork

Fieldwork is regarded as an important part of the curriculum throughout the undergraduate degree course. Some of the Earth Sciences courses have specific requirements for field study, and each of the degree programmes has an integral fieldwork component. For instance, field mapping (GL3901) is an integral (i.e. compulsory) part of the Geology and Geoscience degrees, and GL3940 (Methods of environmental investigation) for the Environmental geology/geoscience degrees. Failure to complete fieldwork to a satisfactory standard is likely to have significant repercussions on progression and the final degree awarded.

In our undergraduate field-training programme we seek:
- to excite interest in Earth Sciences and enhance individual motivation;
- to reinforce and build on knowledge and understanding gained in lectures and practicals;
- to help students to gain confidence and become skilled in analysing three-dimensional relationships;
- to train all students in the essential practical skills of field geology, geophysics and geochemistry, and to enable each to gain confidence, competence and self-reliance through practical experience;
- to train all students in safe field practice and establish a culture of individual responsibility for the well being of self and others;
- to provide an alternative channel for informal but formative contact between staff and students.

Notice of all the fieldtrips that you will be expected to attend in a given year of study can be found in this handbook. A notice will be posted on the Year Notice board giving details of forthcoming field trips. The notice will also announce a briefing meeting to explain the objectives of the trip, to discuss safety requirements, and to answer questions. Every student going on the trip is formally required to attend the briefing unless specifically excused by the fieldtrip leader. If you miss a briefing, you must see the leader immediately.

Codes of practice

Field classes and independent field work are undertaken following the code of practice set out by the Geologists’ Association and a safety code for field work prepared by the Committee of Heads of University Geoscience Departments, as summarised in the Earth Sciences Student Safety Handbook issued to all students on enrolment. Safety briefings are arranged by the Department before all field trips. These are compulsory and students not attending these will not be able to take part in the relevant trip/course.

Field equipment

The Department requires each student to possess his/her own approved Fieldwork Pack, which contains safety helmet, first aid kit, whistle, safety blanket, eye protection (when using hammer), field notebook, hand lens, compass clinometer, grain size comparator card, and geological time scale card. This is available for £110 from the Online Store (see www.royalholloway.ac.uk/earthsciences/informationforcurrentstudents/home.aspx). The pack must be taken on all field excursions and used when instructed. Excursion leaders have the authority to exclude from a trip any student who is inadequately clothed or equipped. Notebooks may also be purchased separately from the Online Store; all other equipment may be purchased from Geo Supplies (www.geosupplies.co.uk) or UKGE Ltd (www.ukge.com).

Overseas field trips

All students will need a passport for overseas field courses. Please advise the Department Manager if your name on the College records differs from that on your passport, or if you have a non-EU (and non-UK) passport. You should also check to see if there are specific visa requirements. Although you will be covered by College insurance, the possession of the European Health Insurance Card (EHIC) may facilitate health care provision in European Economic Area countries. You can obtain this card by applying on-line or using a form obtainable from a Post Office.

Degree Programmes

Royal Holloway has a University of London modular system for organising degree programmes by building them from various combinations of courses. The particular combination of courses taken defines the Degree Programme. The mandatory and optional courses for each degree programme are shown in the tables in Section D.

Full details about your programme of study, including,
amongst others, the aims, learning outcomes to be achieved on completion, courses which make up the programme and any programme-specific regulations are set out in the programme specification available through http://www.royalholloway.ac.uk/coursecatalogue/home.aspx or http://www.royalholloway.ac.uk/studyhere/progspecs/home.aspx

### Field Programme for 2016/2017

#### First year
- **Sept 30 - Oct 4**: GL1900, South Devon (2 groups)
- **Nov 12**: GL1800, Oxfordshire
- **Feb 14**: GL1600, Charnwood
- **March 25 - 30**: GL1900, Pembrokeshire

#### Second year
- **Sept 14 - 20**: GL2901/2930, Lake District/Oban (2 groups)
- **March 11 – 25**: GL2901/GL2930, Almeria
- **May – June**: GL3901/3920/3951, Geological mapping
- **May – June**: GL3940, S. W. England

#### Third year
- **Dec 7 - 14**: GL3001, Cyprus

#### Fourth Year
- **Day trips tbc**

### Study in another country

The Department and the College offer students the opportunity to study abroad for a year through the International Exchange programme and the Erasmus programme. Students are able to apply to study abroad in Europe or at one of 28 International institutions in the USA, Canada, Australia, New Zealand, Hong Kong, South Korea, Japan and Singapore, either as an integral part of their MSci degree programme or as an additional year of study. Further details on participating in such programmes and restrictions placed on students in different departments are available at https://www.royalholloway.ac.uk/international/studyabroadandexchanges/ougoing/home.aspx, or see Year Abroad Coordinator.

### Teaching

You are expected to be in the UK and engaging with your studies during term time. In the case of an emergency which requires you to leave the country and/or miss lectures/seminars/practicals etc., you are expected to keep your department informed and fill in a Notification of Absence Form (see overleaf). During the summer term, after the summer examination period, you are expected to attend all required academic activities organised by your department and to be available should you be required to meet with College staff for any reason.

### Attending classes and engaging with your studies

The College has a responsibility to ensure that all students are attending regularly and progressing with their studies. While it is essential that you attend all the compulsory learning activities related to your programme of study, the College recognises that emergencies may occur at any time throughout the year. In light of this, the Department of Earth Sciences has set a minimum attendance level at 80%. You should be aware that you may also study courses that have different and specific course attendance requirements, particularly if you are taking courses in another department, so it is essential that you check all programme and course handbooks to ensure you are fully aware of the requirements.

Your regular attendance in class and consistent engagement with your studies are fundamental requirements of your learning experience with the College. As such, failure to attend and/or absence without permission can result in serious consequences and may lead to disciplinary action, including the termination of your registration. Your ‘classes’ are any learning or teaching activity deemed essential to your programme of study. The term is used to encompass a variety of different activities, including lectures, seminars, tutorials, workshops, fieldwork, laboratory work, and meetings with your Personal Adviser.

It is vital that you manage your time effectively, so that any paid employment, voluntary work, extracurricular activities, or personal commitments do not interfere with your class attendance or with your personal studies.
activities or social commitments do not interfere with periods where you are required to attend classes. With regard to paid employment during the course of your programme of study with the College, the Undergraduate Regulations (http://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx) stipulate that the amount of paid work undertaken by a student enrolled with the College on a full-time basis shall not exceed 20 hours per week during term time. No student may undertake paid work which may conflict with his/her responsibilities as a student of the College.

If you face difficulty in attending any classes or undertaking an assessment it is very important that you inform the department(s) in which you are studying as early as possible, citing the reasons for your non-attendance. The department will make a decision on whether or not to authorise your absence. If you are experiencing such difficulties on an ongoing basis, please contact your Personal Adviser or Senior Tutor. In addition, an extensive range of additional support, guidance and advice is readily available from the College’s Student Advisory Service (https://www.royalholloway.ac.uk/ecampus/welfare/home.aspx). The Students’ Union also operate an Advice and Support Centre, details on which can be found here http://www.su.rhul.ac.uk/advice/.

Your responsibilities in relation to attendance
Your responsibilities around attendance and engagement include:
• attending all classes necessary for the pursuit of your studies (including lectures, seminars, practicals and personal tutorials);
• undertaking all summative and formative assessment requirements for your courses;
• attending all meetings and other activities as required by the department(s) in which you are studying;
• where you experience any form of difficulty in attending classes, for whatever reason, contacting the department(s) in which you are studying to notify them of your circumstances at the earliest possibility.

You are expected to fully engage in your classes, undertaking any reading, research or further preparation identified between these sessions alongside punctual attendance. It is essential that you make suitable arrangements for travel to your classes and plan to arrive in good time, as teaching will start at five minutes past the hour and finish five minutes before the hour. You will normally be marked absent if you turn up late without good reason.

Department’s responsibilities for monitoring attendance
The Department of Earth Sciences will monitor your attendance at lectures, practicals, tutorials and field trips. It is your responsibility to complete any attendance register that is circulated and to make sure that your attendance has been noted. The activities at which your attendance is monitored may vary depending upon the discipline in which you are studying or the department in which you are taking courses in the case of electives, for example.

It is important that you attend all the learning activities related to your programme of study. Whilst attendance is compulsory at all learning activities, it is recognised that emergencies may occur at any time throughout the year and therefore as indicated above a minimum attendance requirement has been set.

You will be contacted in the event that:
• you fail to attend for two weeks without providing notification of your absence;
• you display a pattern of absence that the department feel is affecting or is likely to affect your work;
• you display a pattern of absence that the department feel is a cause for concern over your wellbeing or may point to a disability which you may not have disclosed.

College’s responsibilities for monitoring attendance
The College has a number of important obligations in relation to monitoring your attendance and engagement, including legal responsibilities under the Equality Act (2010). As a result, the College may adjust the attendance requirement for your programme but will only do this when such adjustment does not compromise competence standards or your ability to reach the learning outcomes of your programme. Any need to adjust attendance requirements will be treated case by case and discussed by the department with the Disability and Dyslexia Services (DDS) and Academic Quality and Policy Office (AQPO).

The College also has obligations placed on it by UK Visas and Immigration (UKVI) – see overleaf.

Missing classes
If you are unable to attend College for whatever reason you must advise the department in which you taking the course(s) in question and complete the relevant Notification of Absence Form, which is available online. https://www.royalholloway.ac.uk/ecampus/academicsupport/attendance/notificationofabsence.aspx
This must be submitted to the relevant department(s) together with the relevant supporting documentation either before your absence or within five working days of the end of the period of absence.

You should ensure:

a. that you advise the departments(s) by emailing the lecturer concerned.
b. that you complete the Notification of Absence Form, copies of which are also available from the Health Centre.

c. that you submit the paperwork to your department(s) either before your absence or within FIVE working days of the end of the period of absence. Failure to do so may result in the absence being counted as unacceptable and counting against the minimum attendance level.
d. that you meet any departmental requirements concerning notification of absence or request for leave of absence as you may be required to meet formally with an academic tutor.

This table shows the documentation that is required should you be absent for any reason.

<table>
<thead>
<tr>
<th>Reason for absence</th>
<th>Documentation required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illness up to and including 5 consecutive term-time days (excluding Saturdays and Sundays)</td>
<td>Completed Notification of Absence Form – Self Certification</td>
</tr>
<tr>
<td>Illness for more than 5 consecutive term-time days (excluding Saturdays and Sundays)</td>
<td>Completed Notification of Absence Form - Self Certification plus Formal Medical Certification signed by the Health Centre, your GP or hospital consultant</td>
</tr>
<tr>
<td>Unrelated to sickness</td>
<td>Notification of Absence Form plus supporting evidence</td>
</tr>
<tr>
<td>Leave of absence request</td>
<td>Notification of Absence Form plus any departmental requirement must be met</td>
</tr>
</tbody>
</table>

Note:

• If you are absent for a prolonged period it is essential that you keep in touch with the Department (e.g. through regular emails with your Personal Adviser).

• The Department will monitor the frequency of self-certified absences and the Head of Department may request a doctor’s medical certificate from you in the event of multiple and/or sustained instances of self-certified illness.

• The departments in which you are studying are responsible for monitoring your attendance and engagement, and deciding whether a period of absence is deemed acceptable or unacceptable (for further information please refer to the online guidance http://www.rhul.ac.uk/ecampus/academicsupport/attendance/notificationofabsence.aspx for details of what constitutes ‘acceptable’ and ‘unacceptable’ circumstances relating to absence). If deemed unacceptable the absence will be recorded as such and will count against your minimum attendance level.

Missing an examination

In the event that you are unable to attend an exam (e.g. through reasons of sudden illness), it is essential that you notify Student Administration at the very earliest possibility. Wherever possible, please try to ensure you contact them via email at student-administration@rhul.ac.uk before the scheduled start of the exam with your name, student ID and confirmation of the exam that you are unable to attend. Please include a brief explanation within the email outlining the reasons for the non-attendance.

This notification will then be forwarded by Student Administration to your department so that they are aware of your non-attendance.

Please note, this notification is not a substitute for formally notifying your department of Extenuating Circumstances. It is essential that you inform your department and Chair of the Sub-board of Examiners by completing the Extenuating Circumstances form. For further information, please refer to the website https://www.royalholloway.ac.uk/ecampus/academicsupport/examinations/extenuatingcircumstances.aspx.

In the event that you do not complete the Extenuating Circumstances form, your department will be unable to consider the reasons for your non-attendance at your departmental Sub-Board of Examiners.

Consequences of failing to attend

As indicated earlier, the Department may contact you if there are concerns about your attendance.

Should it become apparent that there are no acceptable reasons for your non-attendance and/or general lack of engagement with your studies, the Department may issue you with a formal warning which can escalate to the termination of your registration at the College. You are strongly advised to read the guidance on the formal warning process and the consequences of receiving such a warning on http://www.royalholloway.ac.uk/ecampus/academicsupport/formalwarnings/formalwarnings.aspx and in the relevant regulations.


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In situations where you are experiencing documented severe difficulties the Department and College will make every effort to support you and counsel you as to the best course of action. However, there may be cases where, although non-attendance is explained by an acceptable reason, your level of attendance falls to a level which compromises educational standards and/or your ability to reach the learning outcomes of the course. In such cases it will be necessary to implement disciplinary procedures as detailed above.

Withdrawal of visa
If you are in receipt of a Tier-4 (General) Student Visa sponsored by Royal Holloway, it is a requirement of your Visa that you attend classes and complete assessments. This is also a requirement of the College's academic regulations. The College has a legal responsibility to report any student admitted to the College on a student visa who does not appear to be in attendance to UK Visas and Immigration (UKVI). Therefore if you fail to meet UKVI visa requirements and/or fail to respond to informal and formal warnings from the College in this regard you could have your sponsorship withdrawn, your Visa cancelled and your registration with the College terminated. The termination of registration due to a breach in Visa requirements is conducted independently of the College's formal warning process and the decision is not open to appeal.

Please see the College Undergraduate Regulations (http://www.rhul.ac.uk/ecampus/academicsupport/regulations/home.aspx)

Registration for degree programmes

Formal registration for degree programmes and courses takes place on the first day of the first term of each academic year. A period of 3 weeks is normally allowed for students to change registration, although transfer to a course which has already commenced may not be possible. Note that withdrawing from a course after the deadline (usually January) automatically equates to one attempt at the exam for that course. And note that normally you can only have 2 attempts at a course.

Preliminary Registration for the following year takes place in the latter part of the second term. This allows the department to judge whether or not there are sufficient registrants for 3rd and 4th year optional courses. Optional courses which fall below the registration number threshold set by the College may be withdrawn and students will be asked to choose alternative options. Certain combinations of course options may not be available due to timetable constraints; you are advised to check the current timetables, but also be aware that timetables may change from year to year.

Course registrations

You can only register for 120 credits in each academic year (this excludes courses which are being resat). While you have the option of changing courses within the first three weeks after the start of teaching, subject to agreement from the department, once you have submitted assessment for the course, you may not replace it with another either in that term or in a subsequent term (e.g. Spring term). Any courses that you wish to take on an extracurricular basis (that is, as extra and not counting towards your degree) must be identified at the start of the academic year or before any assessment has been completed for the course.

In Section E there is a list of all the courses currently offered by the Department of Earth Sciences. Courses in other departments may also be taken in place of optional courses as part of a degree programme. These are known as ‘elective’ courses and there are limits to the number and type of such courses which may be taken.

Change of degree programme

You are only permitted to change programmes up to a maximum of three weeks after the start of teaching with the following exceptions:

- if the change is only in degree pathway title, which does not affect the courses taken and you are still taking the correct courses (worth 120 credits in total) as detailed in the relevant programme specification;
- if the change does affect the courses taken and you have to pick up an extra course in the Spring term but you would be taking the correct courses as detailed in the relevant programme specification and would have no less than 120 credits.

Students who wish to transfer from a 3-year BSc to a 4-year MSci programme (or vice-versa) can usually do so if they have met all the progression requirements (pre-requisite courses and marks at a particular level). To ensure that funding from their Local Education Authority is continued the agreement of the LEA must be sought.

Students who wish to transfer between any single honours and joint honours programmes should seek advice from the relevant degree programme coordinators and the Academic Coordinator at the earliest possible opportunity. Transfer is normally possible provided that appropriate core courses have been taken, but students should be aware that their choices of options in later years might be limited.

If you have any questions about the arrangements for transfer between degree programmes, contact the Academic Coordinator or the Senior Tutor.
Illness and other extenuating circumstances

Students are advised to carefully read the Instructions to candidates as well as the Extenuating circumstances – Guidance for students.

Extenuating circumstances are defined as unforeseen circumstances which are outside a student’s control and which may temporarily prevent a student from undertaking an assessment or have a marked/significant detrimental/adverse impact on their ability to undertake assessment by coursework or examination to the standard normally expected.

This means that such circumstances rarely occur. They are outside your control as they are:

- Unforeseeable - you would not have prior knowledge of the event (e.g. you cannot foresee that you will be involved in a car accident);
- Unpreventable – you could not reasonably do anything in your power to prevent such an event (e.g. you cannot reasonably prevent a burst appendix.)

It is these short-term (temporary) circumstances that the College normally regards as extenuating circumstances.

Inability to submit coursework

If you are unable to submit coursework through unexpected illness or other acceptable cause (i.e. events which are unpreventable and unforeseeable) it is assumed that you will request an extension to the submission deadline from your department. In order for an extension to be granted you will need to provide the department with adequate documentation in accordance with the guidance in Appendix B of the Extenuating Circumstances – Guidance for students. The decision on whether to grant an extension rests with your department.

Absence from an examination

The Sub-board of Examiners may take the following into account when considering your results: if you miss an examination through unexpected illness, or other acceptable cause (events which are unpreventable and unforeseeable), if you commence an examination and have to leave due to acute illness or if you believe your performance on the day was seriously compromised by an unexpected and acute illness that you could not reasonably have been expected to have managed otherwise.

You will, however, need to submit an Extenuating Circumstances form and have adequate supporting documentation in accordance with Appendix B of Extenuating Circumstances – Guidance for students. You should also read the section Illness & absences from an examination and departmental assessments and extenuating circumstances in the Instructions to Candidates issued by Student Administration http://www.royalholloway.ac.uk/ecampus/academicsupport/examinations/examinations/home.aspx for full details on how to inform your department about extenuating circumstances relating to missed examinations as well as the deadline for submission of such information.

Ongoing circumstances

If you have ongoing circumstances that you believe are adversely affecting your performance during the year, these should be raised with your department and with the College’s Support and Advisory Services as soon as possible so that strategies to help you manage the situation can be considered e.g. you have an illness that does not constitute a disability, a family member is ill and needs your support or you have suffered an adverse life event.

It may that the circumstances are severely impacting on your ability to study by causing you to repeatedly miss scheduled teaching and/or impacting on your ability to complete assessments at the designated time. If this is the case and there is not a reasonable method available to enable you to manage the situation, you may need to consider, in consultation with your department and Support and Advisory Services, whether it would not be in your best interests to interrupt until the issues have been resolved and you are able to fully commit to and benefit from your academic studies.

Ongoing adverse circumstances do not normally constitute extenuating circumstances as they are not unforeseen and in some cases are not unpreventable. There is therefore very little that the Sub-board can do, in terms of current College regulations, to mitigate such circumstances. Please read the Extenuating circumstances – Guidance for students, in particular Section 5.

Support and exam access arrangements for disabled students and those in need of support

Some students at the College may have a physical or mental impairment, chronic medical condition or a Specific Learning Difficulty (SpLD) which would count as a disability as defined by the Equality Act (2010) that is, “a physical or mental impairment which has a long-term and substantial effect on your ability to carry out normal day-to-day activities”. It is for such conditions and SpLDs that Disability and Dyslexia Services can put in place support and exam access arrangements. Please note that a “long-term” impairment is one that has lasted or is likely to last for 12 months or more.
If you have a disability or SpLD you must register with the Disability and Dyslexia Services Office for an assessment of your needs before support and exam access arrangements (‘reasonable adjustments’) can be put in place. There is a process to apply for special arrangements for your examinations. Disability and Dyslexia Services can discuss this process with you when they assess your needs. Please see the section Students in need of support (including disabled students) for further guidance about registering with the Disability and Dyslexia Services Office.

Please note that if reasonable adjustments, including exam access arrangements, have been put in place for you during the academic year, the Sub-board will not normally make further allowance in relation to your disability or SpLD.

Coursework deadlines

Deadlines for assessed projects and reports will be given at the time the work is set. All courses in all years have elements of coursework which form part of the assessment of the course. You will receive notification of the submission dates for all other assessed coursework (NB. never on a Friday for ‘hard’ copies). Unless otherwise stated the work should be handed in to the Departmental Office (Room 215) by 14.00 on the day of the deadline. Any changes to these dates and deadlines for submission of work will be posted on the departmental notice boards and/or students will be informed by e-mail.

In most cases, your coursework should be submitted anonymously (i.e. using candidate number rather than name).

Feedback and return of assessed coursework

The following College policy applies to the return of written coursework:

Assessed work (other than formal examinations) should be returned within 4 weeks of the submission deadline, except in cases where it is not appropriate to do so for academic reasons (e.g. 3rd or 4th year which may have to be retained by the department for inspection by the External Examiners in May/June). The deadline for the return of marked work should be made clear to students when they receive their assignments. In the event that the intended deadline cannot be met, the revised deadline must be communicated to students as soon as possible. If you feel that there are several deadlines which ‘clash’ at one time, you are advised to see the relevant lecturer and ask for some flexibility. The Department actively avoids clashes of deadlines.

Feedback will be provided for all assessed coursework in a variety of forms, including (a) written comment on individual pieces of work, (b) general comments provided verbally or as a summary sheet to the whole class (c) written or verbal comments provided through the students’ personal adviser. You are urged to seek feedback, but note that any marks given to you will be provisional.

Whilst we strive to provide feedback within a reasonable time, students are always welcome to seek feedback and comments during practical classes.

Penalties for late submission and over-length work

Work submitted after the published deadline will be penalised in line with Section (13)(4) of the College’s Undergraduate Regulations 2016-17 (https://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx)

Please ensure that you are aware of the deadlines set by your department(s) and also the requirements to meet this deadline, eg. whether you need to submit electronic and/or paper copies for your submission to be deemed complete.

Section (13)(4)

In the absence of acceptable extenuating cause, late submission of work will be penalised as follows:

• For work submitted up to 24 hours late, the mark will be reduced by ten percentage marks*;
• For work submitted more than 24 hours late, the maximum mark will be zero.

*eg.: an awarded mark of 65% would be reduced to 55% and a mark of 42% would be reduced to 32%.

If you have had extenuating circumstances which have affected your ability to submit work by the deadline these should be submitted in writing, accompanied by any relevant documentary evidence, to the relevant Course Coordinator. As with all extenuating circumstances it is the discretion of the examiners whether to accept these as a reason for having not submitted work on time.

If you are unable to get hold of the Course Coordinator before the deadline please contact either your personal adviser or the Academic Coordinator for advice.

Work which is longer than the stipulated length in the assessment brief will be penalised in line with Section (13)(5) of the College’s Undergraduate Regulations 2016-17 (https://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx):

Section 13 (5)

Work which exceeds the upper word limit set will be penalised as follows:
You cannot fail or jeopardise your project or independent mapping. Although they will have looked at either your independent work or collective ideas are presented as uniquely those of the individual submitting the work, failure to comply with the Quality Assurance Process may result in plagiarism (see overleaf).

Assessments

(a) for work which exceeds the upper word limit by up to 10%, the mark will be reduced by ten percent of the mark initially awarded;

(b) for work which exceeds the upper word limit by more than 10% but less than 20%, the mark will be reduced by twenty percent of the mark initially awarded;

(c) for work which exceeds the upper word limit by more than 20%, the mark will be reduced by thirty percent of the mark initially awarded.

When the work is set it should be made clear whether or not references, quotations and bibliographies are counted.

Examinations

Particular note should be taken of the regulations regarding the assessment of courses and entry to examinations (see the College Regulations). If you have any doubt about these regulations you should consult your personal adviser, Senior Tutor or the Academic Coordinator.

Theory and practical examinations are mostly held within the third term, at times notified by the College. (Some 4th year exams are held jointly with MSc students at other times, e.g. December or January). Copies of previous years’ papers may be accessed via the Moodle web site for each course.

Exam access arrangements for disabled students and those in need of support

For all such students there is a process to apply for special arrangements for your examinations and other forms of assessment. Such requests should be made as soon as possible to Disability and Dyslexia Services which will carry out an assessment of your needs. Please see the section Students in Need of Support (including disabled students) on page 5 for further guidance about registering with the DDS.

Post-examination interview

As part of the examination process, all graduating Single and Joint Honours students in the Department are requested, after the examinations in their third and fourth year, to attend an interview conducted by External Examiners.

What is the purpose of the interview? It allows the external to check our examination process and is thus part of the Quality Assurance Process.

What will I be asked? Anything to do with your degree, although they will have looked at either your independent project or independent mapping.

You cannot fail or jeopardise your mark by your performance at interview. You cannot go down a degree class because of it.

Do I have to turn up? No - but you have absolutely nothing to lose and it is rather rude to fail to turn up.

What do I wear? Whatever you like, but clean and smart may make a good impression.

Can I revise for my interview? Not really - but we do recommend reading through your independent mapping or project because that is what the external examiner will most likely want to talk to you about.

Can I re-schedule my interview? No – it’s part of the examination process and inflexible.

When will I know the time and place of my interview? At the beginning of the summer term. All interviews will occur in the Department. Relevant information will be sent by e-mail and there will be a list on the notice board at the top of the stairs into the Department.

How long will it last? About 20 minutes.

If you have further questions of worries please see your personal adviser.

College assessment schemes

The College operates a credit system in which each course has a value. BSc students will follow the programme for 3 years and normally take 120 credits at each stage; MSc students will follow the programme for 4 years. For full details of the College’s assessment and degree classification schemes please see the College Regulations.

For each degree programme in the Department of Earth Sciences, the mandatory and optional courses are indicated on the degree programme pathway diagrams.

Assessment:

• students will be assessed equally across all marks in each year.
• the year weighting for all BSc degrees will be 0:1:2
• the year weighting for all MSc degrees will be 0:1:2:2.

Assessment offences

The College has regulations governing assessment offences which can be found on the following webpage:

http://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx

Assessment offences include, but are not limited to plagiarism (see overleaf), duplication of work, that is, submitting work for assessment which has already been submitted for assessment in the same or another course, falsification, collusion, for example, group working would constitute collusion where the discipline or the method of assessment emphasises independent study and collective ideas are presented as uniquely those of the individual submitting the work, failure to comply with
the rules governing assessment (including those set out in the ‘Instructions to candidates’). The Regulations set out some of the types of assessment offences in more detail, the procedures for investigation into allegations of such offences and the penalties. Students are strongly encouraged to read these Regulations and to speak with their Personal Advisers or other members of staff in their department should they have any queries about what constitutes an assessment offence. The College treats assessment offences very seriously and misunderstanding about what constitutes an assessment offence will not be accepted as an excuse. Similarly extenuating circumstances cannot excuse an assessment offence. Students with extenuating circumstances which affect their ability to submit work should contact their departments about the possibility of an extension or other support.

**Plagiarism**

**Definition of plagiarism**

‘Plagiarism’ means the presentation of another person’s work in any quantity without adequately identifying it and citing its source in a way which is consistent with good scholarly practice in the discipline and commensurate with the level of professional conduct expected from the student. The source which is plagiarised may take any form (including words, graphs and images, musical texts, data, source code, ideas or judgements) and may exist in any published or unpublished medium, including the internet.

Plagiarism may occur in any piece of work presented by a student, including examination scripts, although standards for citation of sources may vary dependent on the method of assessment. Group working would constitute plagiarism where the discipline or the method of assessment emphasises independent study and collective ideas are presented as uniquely those of the individual submitting the work.

Identifying plagiarism is a matter of expert academic judgement, based on a comparison across the student’s work and on knowledge of sources, practices and expectations for professional conduct in the discipline. Therefore it is possible to determine that an offence has occurred from an assessment of the student’s work alone, without reference to further evidence.

**Marking of illegible scripts**

It is College policy not to mark scripts which are illegible. If you anticipate that you may have difficulty in handwriting scripts which would lead to your scripts being illegible you should contact Disability and Dyslexia Services.

https://www.royalholloway.ac.uk/ecampus/welfare/disabilityanddyslexiaservices/home.aspx

**Progression and award requirements**

The Regulations governing progression and award requirements are set out in your Programme Specification (http://www.royalholloway.ac.uk/coursecatalogue/home.aspx) and also more generally in the Undergraduate Regulations

http://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx

For details on the requirements for degree classification please see the section on the Consideration for the Award in the Undergraduate Regulations.

http://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx

**Examination results**

Please see the Examinations & Assessment website: http://www.royalholloway.ac.uk/ecampus/academicsupport/examinations/home.aspx for details of how you will be issued with your results:

http://www.royalholloway.ac.uk/ecampus/academicsupport/examinations/results.aspx

The Examinations & Assessment website is the place where you can access the “Instructions to Candidates” and details of the examinations appeals procedures.

http://www.royalholloway.ac.uk/ecampus/academicappealsandcollegecomplaints.aspx

**Prizes and Scholarships**

The Department awards (or recommends candidates for) the following prizes

- Tennant Exhibition, for the best 1st year student
- Mary Isabella Webb Prize, for the best 1st year field report
- The Driver Prize for meritorious work (1st year)
- Kate and Harry Harper Chelsea Prize, for the best 2nd year student
- The Driver Prize for meritorious work (2nd year)
- Mary Isabella Webb Prize, for the best 2nd year fieldwork report
- Tennant Medal, for the best final year BSc and MSci student
- Fleet Memorial Chelsea Prize, for the best fieldwork by an undergraduate
- Frank Barker memorial prizes for the most improved
I think I am going to be late handing in some discuss the options for different degree programme. Your personal adviser, the relevant degree programme programme.

I think I would like to change to a different degree longer that you leave it, the more difficult it is to catch up. Inform the department of the problem as soon as you possibly can by telephone or e-mail. It is YOUR responsibility to make sure that this information gets to the Chair of the Exams Sub-Board via the Department Manager. If you are ill for a short period (up to 5 days) complete the Notification of Absence Self Certification (see page 12) and hand it in to the Departmental Office. Longer absences (more than 5 days) will also require a medical certificate obtainable from your doctor. Contact the staff involved in all the classes you have missed and your personal adviser for advice on how to catch up on the material that you have missed.

“I have two coursework deadlines which are close together.”
Ask the relevant staff member to allow you some flexibility. If the request is reasonable then it should be possible to change the deadline.

“I have missed an assessed practical or exam”. Explain the reasons as soon as possible to the course coordinator, copied to the Department Manager. If the reasons are acceptable, you are likely to be required to carry out an alternative assessment soon after.

Teaching and Research
Interests of Academic Staff
A list of staff interests is given below, to guide students seeking advice for project work or future careers.

Dr Jürgen Adam - Coupled tectonic, climate and surface processes; Geodynamic modelling of thrust belts, accretive and non-accretive convergent margins; Salt Tectonics in passive margin sedimentary basins; Physical simulation of rock deformation from basin to fracture scale; Fault & fracture mechanics, Tectonic modelling of structurally complex basins and reservoirs; Neotectonics and geohazards at continental margins and intracontinental strike-slip faults.

Dr Anirban Basu - Isotope geochemistry, Biogeochemical metal cycling, Contaminant transport and remediation, Environmental geochemistry and microbiology, Redox-sensitive isotopic tracers.

2nd, 3rd and 4th year student
- Palaeontological Association Prize
- Mineralogical Society Prize
- Parish prize, for the best Environmental Geology finalist
- Dave Roberts Memorial prize, for the best Petroleum Geology finalist
- Best Geochemistry Project
- Best Volcanology Project
- Jon Wright memorial prize for 2nd year achievement
- The William Smith Essay Prize, for the best report on stratigraphy. [This is open to all undergraduates in the department. The essay should be about 3000 words and no more than 5000 words long on a subject within the general area of stratigraphy. The essay must be submitted by the May examination period. GL2200 reports are automatically assessed for this prize].
- The Miers Prize is awarded to the University of London graduate with the best performance in Mineralogy.

College Prizes and Scholarships
The Mary Isabella Webb Scholarship is awarded each year to a woman graduate continuing in geological research in the College.

As well as the departmental prizes, the College awards prizes on a Faculty basis and may advertise competitive prizes.

Frequently asked questions
“I don’t understand some of the material presented in lectures and practicals in one of my courses.” In the first instance talk to the relevant lecturer or ask one of the demonstrators in a related practical class; if you still have problems, talk to your personal adviser. You may also find that one of your class colleagues can help explain things to you.

“I’m having problems coping with the workload.” Talk to your personal adviser as soon as you feel things are getting too much; your personal adviser will be able to offer advice and guidance to help you out, but the longer that you leave it, the more difficult it is to catch up.

“I think I would like to change to a different degree programme.” Your personal adviser, the relevant degree programme coordinator or the academic coordinator will be happy to discuss the options for different degree programmes.

“I think I am going to be late handing in some coursework.” The only circumstances for granting extensions for coursework are medical or serious personal circumstances, and if such a situation exists, you should discuss it with the relevant coursework supervisor as early as possible. In all other circumstances, a penalty for late submission will be applied. Please note that technical problems such as computer system failures are rarely accepted as excuses for late submissions.

“Illness has prevented me attending lectures and practicals, or it has affected my exam performance.” Inform the department of the problem as soon as you possibly can by telephone or e-mail. It is YOUR responsibility to make sure that this information gets to the Chair of the Exams Sub-Board via the Department Manager. If you are ill for a short period (up to 5 days) complete the Notification of Absence Self Certification (see page 12) and hand it in to the Departmental Office. Longer absences (more than 5 days) will also require a medical certificate obtainable from your doctor. Contact the staff involved in all the classes you have missed and your personal adviser for advice on how to catch up on the material that you have missed.

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Dr Anirban Basu - Isotope geochemistry, Biogeochemical metal cycling, Contaminant transport and remediation, Environmental geochemistry and microbiology, Redox-sensitive isotopic tracers.
Dr Domenico Chiarella – Sedimentology. Tidal deposits, mixed siliciclastic-bioclastic sediments, sedimentary petrography and provenance analysis, tectonic and sedimentation of coarse-grained deltas, seismic interpretation and attribute analysis, reservoir characterisation.

Dr Kevin Clemishaw - Sources, sinks and trends of gaseous air pollutants that impact on health and climate. Tropospheric chemistry and measurements of nitrous acid. Atmospheric chemistry, transport and impacts of organic nitrates.

Prof Margaret Collinson - Tertiary floras, vegetation and climate; floras of the Cretaceous/Tertiary boundary event; evolution of wetland communities; fossil history of mammal/plant interactions; megasporophyll ultrastructure and the evolution of heterosporous plants; palynofacies; organic geochemistry and chemical composition of plant fossils and their role in kerogen formation.

Dr Howard Falcon-Lang - the evolution of terrestrial ecosystems and palaeoclimates. Current projects include the origin and early evolution of reptiles in mid-Carboniferous, the collapse of the first rainforests in Late Pennsylvanian times, and the explosive appearance of flowering plants in the Cretaceous Period.

Dr Nathalie Grassineau - Early life and the rise of oxygen in the Archaean, by determining microbial activity using carbon and sulphur isotopes. Volcanic activity and hydrothermal vents in spreading ridges, using stable isotopes. Director of the Wet Geochemistry laboratory, analysing geological, environmental and archaeological materials for major and trace elements.

Prof Agust Gudmundsson - Volcanotectonics, dyke emplacement and caldera formation; Seismotectonics, development of seismogenic faults; Reservoirs of oil, gas, ground water, and geothermal water; Rock fractures in geological processes.


Dr Saswata Hier-Majumder - Computational geophysics, including microgeodynamics, magma ocean crystallization, detection of partial melting atop the core-mantle boundary and the mantle transition zone, and migration and storage of partial melt in the Earth. Numerical modeling of multiphase flow and analyzing seismic and electrical conductivity data from various sources.

Prof Martin King – Snow, ice and atmospheric chemistry and physics; the effect of atmospheric aerosol on modern climate change; the calibration of Earth observing satellites using sea ice and desert dust.

Dr Dan Le Heron - Glacial sedimentology; carbonate sedimentology; regional geology; field geology.

Dr David Lowry – Use of stable isotopes to understand geological, environmental and atmospheric problems, including sources of greenhouse gases in the atmosphere, formation of mineral deposits and intrusions, and development of the Neoproterozoic rocks of Scotland. Development of new instrumentation for greenhouse gas analysis.

Dr Christina Manning - Application of isotope geochemistry to the identification and evolution of mantle sources beneath Iceland. The use of mineral chemistry as a recorder of magmatic evolution.


Prof Jason Morgan – Large scale geodynamic processes at subduction zones, spreading centres, hotspots and passive margins, often using marine geophysical methods to test model hypotheses.

Prof Wolfgang Müller - Isotope geochemistry applied to the earth sciences, archaeology and anthropology: Human subsistence reconstruction (migration and palaeodiet) from biominerals (teeth); U-Th-Pa disequilibrium dating. Past heavy metal pollution (e.g. Pb) as recorded in teeth; Isotopic tracing of metal (artefacts). Earliest Archaean crust (>4Ga).Time scales of geological faulting. In-situ analysis by laser-ablation-(MC)-ICPMS.

Prof Euan Nisbet - Komatiites and mantle evolution; the
global carbon cycle both past and present; global environmental change.

**Dr Nicola Scarselli** - Seismic geomorphology, structural geology and petroleum geology.

**Dr Steve Smith** - Risk characterization of natural, anthropogenic and engineered particulates in the environment; their adsorptive characteristics for metal and organic contaminants and their surface physical and chemical characteristics.

**Dr Giulio Solferino** - Georesources, specifically hydrothermal copper ores and porphyry type deposits with a focus on Irish Palaeozoic terrains. Additional research interests: Pallasite meteorites and experimental petrology/geochemistry.

**Prof Matthew Thirlwall** - Geochemistry, particularly combined chemical Sr-Nd-Pb isotope studies of subduction related magmas, crustal contamination processes and ocean island magmatism. Geochronology and magmatism of the Caledonian Orogen. High precision analytical techniques including thermal ionisation mass spectrometry, isotope dilution and XRF.

**Dr Paola Vannucchi** – Structural geology. Global tectonics and convergent margins. Earthquake geology. Geology of Italy.

**Prof Dave Waltham** - Numerical modelling of seismic data, hanging wall and footwall deformation; carbonate platforms; evaporites; simple clastic systems.

**Dr Ian Watkinson** – Structural geology, particularly active tectonics, ductile shear zones, exhumation of metamorphic rocks and the major strike-slip faults of SE Asia. Geohazards and urban seismic vulnerability.

**SECTION B:**
**STUDYING EARTH SCIENCE**

**Department of Earth Sciences ethos**

In Higher Education, our foremost objectives are to help you to realise your full intellectual potential, to raise your personal expectations and to strengthen your intellectual self-confidence. The Department has set itself the following goals in relation to undergraduate teaching:

- to create an atmosphere of individual academic enterprise and self-reliance in which each student is challenged to develop his or her intellectual powers to the full.

- to develop a teaching culture that offers every student the means to learn most effectively, according to individual ability.

- to cultivate in students a capacity for logical, independent and critical thought, and an ability to propose, test and refute hypotheses objectively.

- to stimulate an interest in, and a wide-ranging understanding of, the mechanics of Earth Processes and history, how they are analysed, measured and modelled, and how they and their products may be utilised to the benefit of humanity.

- to enable students to develop technical competence in field and laboratory data analysis and computer techniques, to serve as a foundation for careers as professional geoscientists.

- to enable students to develop transferable skills (personal, numerical, information and communication) to equip them for successful careers in science and in other disciplines.

What we expect from you and what you should expect from us

A satisfactory programme of study at university requires both the students and the department to enter an informal ‘contract’ of obligations and expectations which all should seek to abide by.

**What you can expect from us**

The Department is committed to effective teaching, but we judge our success in terms of how well you learn. We will do all we can to stimulate your interest in Earth Science, to make the aims of each course clear, to train you by means of interesting and fulfilling practicals, fieldtrips and projects, to provide support that is matched to your individual needs, and to monitor and guide your progress. We hope our enthusiasm for the subject will prove infectious, and will stimulate you to pursue your studies energetically. Most of all, we hope you will find the Department a friendly, supportive and stimulating place in which to work. Our interest in you will not come to an end at the graduation ceremony.

As a student you can expect the department to:

- Provide lectures, practicals and field courses in a series of courses that will make up your degree programme

- Take reasonable steps to assist students who are disadvantaged through illness or other problems

- Take steps to ensure that your working environment is safe, both in the department and in the field

- Nominate a personal adviser who will provide
tutorials and act as your point of contact with the department
- Assess and examine your work
- Provide verbal or written feedback on coursework where appropriate
- Organise a schedule of fieldwork appropriate for your degree programme
- Subsidise the cost of most field courses which are part of the degree programme
- Provide a feedback mechanism for student evaluation of courses through questionnaires
- Provide reasonable notice of all coursework deadlines, changes to programmes and fieldwork arrangements by electronic mail or display of notices
- Treat all students in a fair and just manner without any form of prejudice

**What we expect of you**

If your degree course has not challenged you to grapple with difficult concepts, to become skilled in new and demanding techniques, and to push your intellectual powers to the limit, then you will not have used your opportunity to the full. Employers of graduates are interested not only in the knowledge you have acquired (though knowledge is obviously relevant to careers in Earth Sciences), but also in personal qualities like self-reliance and initiative, and in your capacity to think rationally and independently, to apply scientific principles to new problems, to work in a team, to write clear reports within a firm deadline, and so on. These are qualities that develop from your efforts rather than being taught. They depend on many factors, among them the energy you put into your studies and the resourcefulness with which you pursue your career goals. Nevertheless we want you to enjoy your studies here; if you enjoy what you do, you will work harder and learn more effectively.

**As a student you are expected to:**
- Attend all lectures, practicals and field courses unless you are ill or have other acceptable cause for absence
- Keep the department fully informed of any factors that may seriously affect your studies
- Follow all safety instructions in the field and laboratory
- Attend all tutorial sessions arranged with your personal adviser and keep him/her fully informed of any problems which may affect your studies
- Complete all coursework by set deadlines and attend all examinations
- Behave responsibly in classes and ensure that your actions do not distract others (e.g. phones are switched off and no inappropriate computer use).
- Behave responsibly and in accordance with all instructions from staff whilst in the field
- Pay the student contribution to field courses in instalments by the published dates
- Fill in all course questionnaires (anonymously) and provide constructive feedback
- Check e-mail accounts regularly (preferably daily)
- Always behave in a manner that will not bring the department or college into disrepute.

**How you will spend your time**

**Lectures**

In any science degree course, lectures provide the main avenue for transferring new knowledge and understanding. You will have to adapt to a variety of styles and speeds of lecturing. Your job is to condense as much as you can of the material that the lecturer presents, both orally and in written form, into a set of coherent notes that will be intelligible months or years later. To succeed in this, you will need to read the notes through shortly after the lecture (ideally the same day) and clarify any uncertain points with the aid of a textbook, or using other sources recommended by the lecturer. In more advanced courses, you may also be referred to articles in scientific journals.

Lectures merely define your learning agenda - they are no substitute for individual study, and it’s your job to fill in the gaps in your notes, and to do enough library or textbook reading to grasp the material covered. Bear in mind that in science understanding is valued at least as highly as factual knowledge.

All lecture courses in the Department are examined, and poor attendance may lead to you failing the course concerned. If you miss a lecture, for whatever reason, copy the notes up from a friend at the earliest opportunity; make sure you understand the notes fully, and ask the lecturer concerned about any points you can’t follow. It is courteous to let the lecturer know in advance if you expect to be absent from a lecture. Keep your lecture notes carefully filed in a ring binder, together with all the relevant handouts, reports and exercises. Do not discard notes as soon as you have passed the course; remember that parts of your final-year assessment will examine material covered in earlier years.

Each lecture/practical course is the responsibility of a Course Coordinator. Speak to him or her if you are having difficulty with any part of the course.

**How to address lecturers**

Earth Sciences is an informal department, and you will
probably be on first-name terms with most staff by your second or third year. When you first arrive, however, your lecturers and your personal adviser will usually indicate to you how they prefer to be addressed until you get to know them well, so please respect their wishes. Formal terms like ‘Sir’ are never used.

Reading

Independent reading is an essential ingredient of a good honours degree. Science thrives on controversy and on fresh insights, and although in lectures we try to embrace opposing points of view and introduce you to stimulating new ideas, we cannot present the arguments as vividly as the combatants themselves: there is no substitute for reading the books and research papers in which the story unfolds year by year or month by month. To gain a good degree, therefore, it is essential that you read widely, to enhance your understanding, to broaden your knowledge of the science, and to keep abreast of progress.

Do I need to buy all the recommended textbooks?

Buying textbooks can be an expensive commitment, and we accept that it is not practical to purchase all recommended book(s) for every course you take. Your priorities should be:

• Reference manuals used in practical classes, particularly in subjects such as mineralogy. Without these, you will be severely handicapped.
• Textbooks for core courses in the first and second years.
• Texts covering course(s) which you find most difficult.

Always examine a book carefully to ensure that it meets the needs of the course before spending money. You can help your book budget go further by arranging with a friend to buy different books and share, looking around for second-hand opportunities or recovering some of your outlay by selling books that you no longer need to fellow students. If you plan to sell a book, avoid writing or highlighting in it.

Journals and magazines

You should aim to keep abreast of major developments in Earth Sciences by browsing through current issues of more accessible science and geology journals such as New Scientist, Scientific American and Geology Today; by the time you reach the third year, you should be having a regular look at Geology, Nature Geoscience, Journal of the Geological Society, etc. Many journals have automatic “table of contents” email notifications which you can sign up to, enabling you to keep abreast of major developments.

Coursework and practical training

Practical work lies at the heart of all core courses in the Department, and it usually takes the form of a class that complements the preceding lecture. Practicals test and extend your understanding of course content, train you in essential skills, help you to become familiar with minerals, rocks and fossils, and acquaint you with modern methodology (e.g., in geochemistry and in geophysical exploration). Many practicals are so designed that you learn through investigation and are able to draw scientific conclusions for yourself, thereby gaining confidence in your own powers of reasoning.

You should generally take with you to every practical class:

• the lecture notes for the course concerned;
• notes from previous practicals in the course;
• any relevant textbook (e.g. for mineral identification);
• relevant equipment (e.g. hand-lens, knife, protractor, coloured pencils);
• a calculator;
• where specified, a practical notebook with graph pages.

In many courses the coursework is assessed, so you should take care to hand it in by the deadline specified. Take careful note of advice written on your script or practical book when it is returned to you. All marked coursework should be carefully filed for future reference and revision.

It is natural to discuss what you are doing in a practical with your neighbour, but it is very important that what you hand in is your own work and collusion will not be tolerated. We cannot correct your misunderstandings and errors if you simply copy someone else’s work, even though in the short term this may gain you better marks. For the same reason, do not simply write down what a demonstrator tells you; make sure you understand it first. Do not be afraid to question what you are told. Do not be afraid of reaching the ‘wrong’ answer. In the first place, there may be more than one ‘right’ answer. Secondly, one learns more from bona fide errors than from getting things right all the time.

Catch up in your own time with practical classes you miss; for nearly all practical classes there will be a practical script outlining what you have to do, which can be obtained from the lecturer concerned or downloaded from the Earth Sciences server. If your absence is
legitimate, the class supervisor will normally agree to mark your work, unless it is excessively late.

Most taught courses allocate a proportion of the marks to assessed coursework of various kinds. This may be work carried out in regular practical classes, or it may take some other form such as a project or literature report. Take particular note of the deadline for handing in coursework: you are certain to be penalised if it is handed in late.

**Numeracy and quantitative methods**

Earth Sciences is a quantitative science, and in the course of your studies you will be required to manipulate equations, process numerical data, plot graphs and become generally conversant with quantitative methods of analysis. If you haven’t got A (or AS) level Maths, don’t worry: you will receive a gentle introduction in the first year. Ask your Personal Adviser for help if you get out of your depth.

**Languages**

The College Language Centre provides basic proficiency courses in several European languages for students without language A-levels. You are strongly encouraged to take this opportunity during your three years at Royal Holloway; your overseas field courses give you a wonderful chance to build on the language skills you learn, which may open up career opportunities that would otherwise not be available to you.

**Writing literature reports and project reports**

Success in most professions depends on being able to write concise, well structured, informative reports or papers, which provide an important avenue of communication with your manager, your client or the scientific community at large. Without a good command of written English your professional opportunities may be limited. At Royal Holloway, we expect you to work hard to improve these vital writing skills from the very start of your undergraduate career, and we take every opportunity to help you, especially if English is not your first language or you are dyslexic.

The training you receive in writing good scientific English will be based on written work in the form of literature reports on topics that you have researched in scientific literature written for particular courses or for your Personal Adviser: your Personal Adviser will provide initial guidance on researching your report, and constructive feedback on your work. In the third and fourth years you will have to write extended project reports that, in addition to summarising the current state of published research on the topic in question, will report your own project objectives, measurements and conclusions. Some first and second year courses also require project reports at a less demanding level.

Each literature report and project report will have to be prepared to a deadline, and must meet professional standards of presentation. The marks for literature reports and projects contribute substantially to your final degree grade, and they may also be scrutinized by External Examiners. Moreover, work of this kind provides an important indicator for Personal Advisers when they write references in support of your job or postgraduate studentship applications in advance of your final degree grade. It is therefore important to achieve the highest standards that you can.

This section outlines the standards expected for literature reports, project reports and the equally important professional skills of effective oral and audio-visual communication (useful when preparing seminars). More detailed guidelines will be given during your time studying here.

**Quotations and sources**

It is most important that you acknowledge any work by other people that you have used in your report. You may wish to quote a passage directly from the text of a paper or book (in which case inverted commas should be used to identify the quoted passage), or reproduce a figure or table, or merely use information or data from the publication in your own synthesis. If you wish to quote a passage directly, it must be short (ideally no more than 2 sentences), in inverted commas, referenced, and such quoted passages should make up less than 5% of your total text. In all such cases, you must refer in your text (or in a relevant figure caption) to the published source of the information, for example as ‘Bloggs (1994)’, and provide bibliographic details in your reference list, e.g., Bloggs, J. 1994. Organic pollutants in groundwater, *Environmental Geochemistry*. 23, 1-16.

Internet sources: You should not place too much reliance on internet sources of information. Most of these are unregulated and not subject to the same rigorous editing as is the case with books and journals. It may be appropriate to use the occasional
image or diagram, but for factual information it is almost always much better to consult a written source.

**Plagiarism (also see earlier section)**

Plagiarism is the presentation of another person’s work without adequately identifying it and citing its source. It may exist in any quantity, in any published or unpublished medium (including the internet) and could exist as text, graphs, images or data. Therefore all work presented for any form of assessment must be entirely the student’s own work, except in cases where joint reports from team exercises are assessed.

Plagiarism can occur in any piece of assessed work. If work is copied from another student or copied from another source without acknowledgement, this is considered to be plagiarism. Similarly, it is considered to be plagiarism if more than a single phrase is imported from another text without quotation marks and a source.

And plagiarism can be deliberate or unintentional. The Department treats plagiarism as a very serious offence. Instances of plagiarism will be reported to the Head of Department who will consider whether further penalties should be applied or the matter referred to the College authorities. Students have a right of appeal to the College against penalties imposed by the department.

To avoid suspicion of plagiarism, and furthermore to lend legitimate authority to what you write, always acknowledge EVERY source of material that you use, however small it may be. And it’s not a good idea to ‘self-plagiarise’ - i.e. use the same piece of work for more than one course. We don’t like this!

**Writing simple, clear English**

Your aim should always be to write lucid, concise English that is easy to read. The general rules are:

- Map out an outline of what you want to say. Starting to write without a clear mental or written image of the finished article usually leads to a circuitous, turgid product. Always begin by making a list of the topics to be covered, or the points you want to make, and devote a paragraph (or possibly several paragraphs) to each topic.

- Keep the language **simple**. Eschew (!) fancy words whose meaning you do not fully understand. (However, don’t let this stop you enriching your genuine vocabulary.) If in doubt of the meaning, **use a dictionary**.

- Be **concise**. There is no merit in length for its own sake. Inflating a report with repetition or circumlocution may only emphasise how little you have to say. Aim at a style that is lean and informative. Keep sentences short.

- Adjust the **style** of your writing to the task in hand. An exam answer can be written in note form as long as the meaning is clear. A letter enquiring about possible job opportunities should be formal but fluent.

You will find the *Oxford Guide to the English Language* by E.S.C. Weiner and J.M. Hawkins (OUP, 1985) a useful source of reference on good written English. It includes a dictionary.

**How to write a good report**

A scientific report is an exercise in lucid, concise scientific writing on a topic, based on primary data or on secondary sources. Here are some general guidelines to help you begin in the right way. They apply to all reports, exam answers, and other written work.

**DO’s**

- **Read the title** carefully and make sure you know what is required.

- **Sources of information**. Research your literature sources in good time. You may be given a list of references, or a single key reference from which other sources of information may be gleaned. Delays may arise (e.g. while the Library recalls a book from another reader).

- **Carefully plan the structure of your reports** before you start writing. A disordered structure leads to repetition and the omission of important aspects; it also makes the report much harder to read. Decide on the extent of subject matter to be covered in your report, break it down into sections, each under an appropriate heading, and sketch in the individual topics you intend to include under each heading. These headings should appear in the final report to help the reader to appreciate the structure of your report.

- **Check the relevance of the content** before writing the final version.

- **Illustrate your report with appropriate diagrams or tables**. You should cite the source of each diagram (or table) where appropriate.

- **Ensure that the facts are presented before the speculation** (unless the purpose of your report is to compare two conflicting hypotheses in the light of available data, in which case the theories can be summarised first).

- **Avoid woolly generalisations**. One concrete example is worth a page of generalisation.

- **References**: finish off the report with a list of the sources of information you have actually used and have specifically referenced in the text.

- **Read through** the report before handing it in: there will inevitably be mistakes that need correcting. Check the spelling using a spell-checker on the word-processing package, but remember that a spell checker can only identify incorrect spelling, not incorrect words. Make sure the punctuation is correct and conveys the meaning you intend.

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• **Stick to the stated word limit.** Add the number of words to the report. There will be a penalty for exceeding the limit.

**DON’Ts**
- Don’t put off your report writing until the night before the deadline.
- Don’t pad out a report with irrelevant material and repetition.
- Don’t use fancy words unless you are sure what they mean.
- Avoid using personal terms (‘I’, ‘we’, ‘our’, etc.).
- Don’t string sentences together with commas.
- Don’t print to the edge of the page. Leave a margin of at least 2.5 cm on left and right for binding, and marker’s comments and use a line spacing of 1.5. Don’t hand in your report just as a bundle of loose sheets - bind or staple them.

**Oral Presentations**
In some courses you may be required to give a talk on material that you have researched. Bear the following points in mind when preparing an oral presentation as these aspects will most likely be assessed:
- Assess how much material you can present in the time allowed. Stick to the guidelines and practice your talk a few times in private to check on the length.
- Select the subject matter carefully: pick out the topics that you think your audience will find the most interesting. Make sure that there is a clear and logical structure and list the important headings as ‘bullet points’. Ensure there is adequate scientific quantity and quality in the talk.
- Know your subject inside out. Last-minute preparation of material for oral presentation is rarely successful. Be prepared for questions.
- Never just read verbatim from written text - a deadly experience for your audience. Spoken and written English are quite different animals. Prepare skeleton notes for your talk, and then just speak naturally to your audience using the notes to prompt you only when necessary. Try to face the audience during the talk. Try to get a colleague to check that you can be heard clearly at the back of the room.
- Prepare informative presentation slides showing simple figures, tables or ‘bullet point’ lists to help your audience to assimilate the information. Make sure your slides are easy to read from the back of the room. Do not pack in too much detail. Check your colour schemes.
- Provide sources for all of the information and images in the talk.

**Literature Reports**
Through writing a literature report you will learn how to research the scientific literature, compile a review of recent work or ideas, and weigh up the merits of conflicting arguments and theories. A literature report may form a major part of the assessment for a given course. When a marked report is handed back, take note of the marker’s comments so that you can improve the standard next time.

You will usually be given a title (possibly a choice of titles) indicating the topic you are to write on and possibly a few key references to start you off; you will need to look at those sources to track down further references that may be of use to you. Alternatively you may be expected to use the bibliographic resources of the Library.

**Objectives of the literature report**
A literature report should review recently published ideas and research on a topic of current interest. A good literature report is a critical synthesis of current thinking, weighing up all sides of the debate, their strengths and their shortcomings. The mark awarded will take into account the analytical content of your literature report.

You should initially discuss the topic with your supervisor, who will outline its scope and may provide a series of references to get you started. You should determine straight away whether they are available in the Bedford Library - if not you will either need to read them at another library in London, or ask for them to be obtained by inter-library loan.

**Planning your work**
Note the deadline for submission of the report. The deadline is waived only in serious cases (e.g. illness supported by a doctor’s certificate); in all other circumstances, you will be penalised for late submission. To avoid this you should, at an early stage, draw up a timetable for preparing the report:
- List, in the light of your reading, the main headings you intend to cover and arrange them into a draft ‘Table of Contents’.
- Write the text (see following section), including table of contents, references and (last of all) the abstract.
- You are strongly advised to write the text directly on a PC. This makes successive drafts easy to edit and correct. Check your final draft carefully, ensuring it does not exceed the required length.
- Get a literate friend to read your draft text for spelling/punctuation/grammatical errors.
- Prepare diagrams.

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• Check for, and correct, typing errors. Number pages and enter page numbers in the table of contents.
• Print your final version on a laser printer or ink-jet printer.

**Length, structure and style.**
The literature report should not exceed the stated word limit (excluding references). (But check - is it a word limit or only guidance?) It should be organised so that the facts are given before the speculation. A typical structure might be:
• Title page (and add the number of words you used)
• Abstract (<300 words). As it is a summary, write this last.
• Table of contents with page numbers.
• Introduction (10%): objectives of report; background literature.
• Descriptive / factual part (50%).
• Interpretative part (30%): comparing models, discussing controversy, new correlations, recommendations, etc.
• Summary (10%). Emphasise your conclusions; do not re-cycle the abstract.
• List of references (in alphabetic order by author).

Great importance is attached during marking to the clarity, style, spelling, punctuation and accurate typing of the text. This is your chance to show you can prepare a report of a professional standard - take it seriously.

**Abstract.**
Immediately after the title page there should be an informative abstract, summarising in about 300 words the factual content and conclusions of the literature report. *(It is not an introduction to the project)*. Write the abstract last, so that it is a true summary of report contents.

**References.**
References cited in the text should correspond exactly with those appearing in the reference list. Use the reference style recommended for the *Journal of the Geological Society of London* (look at any recent issue). If you figure a diagram/table from a book/paper, *always* quote the source (see ‘plagiarism’). Check that all references cited (including those referred to in figure/table captions and appendices) are listed in full in the reference list.

**Typing.**
The literature report must be typed in 1.5 spacing (except references). The title page should list the title of the report (in capitals), your full name, your supervisor’s name and “GLxxxx Literature Report, Department of Earth Sciences, Royal Holloway, University of London”, followed by the academic year.

**Figures and Tables.**
Diagrams should be drawn in ink or printed from computer. Photocopies of figures (but not captions) are acceptable provided the source is cited; always write your own caption. Each diagram should have its own caption typed on the same page, beginning with ‘Figure X’. The same applies to tables: each should have its own caption beginning ‘Table Y’. Do not refer to tables as figures. The source(s) of each figure or table, or the data from which it is derived, should be quoted in the caption. Little credit is given for photocopied figures; you are encouraged to devise original figures illustrating your own analysis, interpretation or model.

Take care to back-up your files as a precaution against corruption, accident or loss and save your file regularly to both disks. Take care not to confuse different versions of your document. Before printing your literature report, consult the ‘Standard of Presentation’ section following ‘Project reports’; use Print Preview to check page format and page breaks. The Department requires *two* copies of some third and fourth year reports; print a third copy if you wish to keep one yourself. Some reports must be submitted with a specific cover and title page showing your name, report title, course code and date submitted.

**Project reports**
A project is a piece of practical scientific research that you will carry out independently or as part of a group. The topic is normally proposed by the member of staff who will supervise it, but the Course Co-ordinator may consider an alternative suggestion from you. Through gathering together the necessary background information, planning the project, booking laboratory time, carrying out the experiments or analyses, and drawing your own objective conclusions from the data, you will gain a valuable personal appreciation of scientific research, and experience some of the rewards and frustrations. Carrying out a final-year project will help you to decide whether you want to go on to do postgraduate research.

You should buy a field/laboratory notebook specifically for the project. Make sure at the beginning that you fully understand the scientific objectives, and write them down in your notebook. Use the notebook for making notes on papers you read, and for all other project information.

The project will be assessed on the report that you write on it, which should be set out along the same lines as a literature report (see previous section). Keep within the specified maximum word length. It should be structured so that the facts are given before the speculation, and should be organised under relevant headings.
A typical structure might be:
• Abstract - around 300 words. Always write this last.
• Table of contents with page numbers.
• Introduction (10%): Objectives of the project.
• Background literature.
• Fieldwork (if any).
• Experimental methods used (5-10%).
• Factual commentary on the data (30%): note correlations, differences, etc. Except for relevant summary tables, raw data belong in an appendix.
• Interpretation of data (30%): comparing and testing hypotheses, models, proposing new models, speculation, etc.
• Summary of the conclusions (10%) and avenues of future research.
• Acknowledgements to people who helped you.
• References cited (including those cited in tables, figure captions etc.)
• Any appendices listing numerical data, etc.

Field mapping reports
Separate instructions will be given to you on the preparation of geological field sheets, maps, cross-sections and mapping reports for assessment.

Standard of presentation
Employers expect the graduate scientist to be capable of preparing documents and presentations to the standards of a professional printer. As an Earth Science student at Royal Holloway you have access to up-to-date IT hardware and applications packages, and you are strongly encouraged to refine such skills in the interests of your future career.

Any professionally printed document such as a scientific book or paper will indicate the style to aim for. Here are some hints on setting up your PC-based Word® document to get a professional result. Do not be afraid to experiment, but save your document first, just in case!

Margins. Set margins to at least 2.5 cm at left, right, top and bottom.

Font. The best general-purpose text font (typeface) to use with a laser printer is Times 12pt. Do not be tempted to use some of the more unusual fonts which are often not so easy to read.

Line spacing. A line spacing equivalent to about one-and-a-half times the font height provides a pleasing appearance.

Headings. Use bold and/or italic and a larger font to emphasise headings and use a consistent heading hierarchy for main, secondary and third-tier headings. Do not use underline. Each heading type can be set up initially as a Style (Format menu, Styles).

Figures and Tables. Word® allows computer-generated figures like Excel® graphs to be pasted in using the ‘clipboard’. It also offers a Table format, but numerical tables may be easier to prepare and print from Excel®. Mathematical formulæ may be set using the Formula facility (see Help).

Print Preview (File menu). Print Preview shows an image of the current page as the printer will print it.

Preparing a curriculum vitae (‘CV’)
A good curriculum vitae is important when you are seeking a job in competition with other applicants. A personnel manager commonly faces tens or even hundreds of applications for a single job, so at the first short-listing stage he or she may spend only a minute or two looking at your c.v. or form. It must therefore be concise, informative, carefully prioritised and neatly laid out if it is to succeed in getting your name on to the short list.

Use a PC for drafting your c.v., refining it in the light of your Personal Adviser’s comments, up-dating it to include recent experience, and printing a high-quality copy to create a positive initial impression. Include name, date of birth, home and term- time addresses with phone numbers if available, e-mail address, A-level or other entry information, your degree course with dates and course options, activities or interests in which you have excelled, shown initiative or borne responsibility, and the names of two academic referees. (Look at the table in section G to remind yourself about the skills you should have picked up during your period of study.) Confine yourself to established facts. Leave it to your academic referees to predict the class of degree you may get.

Basic Study Skills

• Use initiative. Don’t just wait for things to be given to you - go and find what you need for yourself.
• Keep a diary and use it to plan your days/weeks/year, and to note changes of schedule.
• Keep a daily eye on relevant notice boards and check your e-mail account regularly.
• Play an active part in Department events, enjoy the social life and get to know staff well.
• If illness or other circumstances prevent you from attending exams, fieldwork or a significant numbers of classes, ask the Health Centre to send a note to the Department Academic Co-ordinator. Illness cannot be taken into account in your overall assessment unless the Department receives a medical certificate.
Lectures
- Concentrate on understanding the lecture. Give priority to getting the key words down in the right order. Then you will be able to make sense of the notes with the aid of a book later.
- Lectures merely define your agenda - it’s your job to fill in the gaps in your notes, and to do enough library or textbook reading to understand the course material. Merely knowing things is not enough.
- Each evening, consolidate your notes from that day, from tutorials and lectures. Write in additional headings to structure the notes. Use reference books straight away to sort out problems and fill in blanks. Do not allow poorly written notes or non-understood material to accumulate for more than a week, and never until the exam period.

Practicals
- Most practicals relate directly to the lectures preceding them. Take your lecture notes and previous practicals with you to practical classes, plus a calculator, relevant reference books (e.g. a mineralogy book), and drawing materials.
- Try to be clear what the learning/training objectives are for each practical.
- Write up each practical report promptly, even if the practical is not being assessed.
- Carefully file all practical scripts and reports - practicals are an important part of your learning process and scripts therefore provide essential revision material.

Tutorials
- Keep notes of material discussed in tutorials.
- Use your diary, because tutorials may take place at irregular intervals.
- Write down titles of assignments, the length required (if a report) and the deadline for handing in.
- Use tutorials to iron out problems. Spend some time before a tutorial reviewing different areas of lecture notes, etc., to discuss at the tutorial.

Private Study
- Keep all your lecture notes in an orderly state - e.g. in a file with dividers - so that material can be traced easily.
- Keep notes of the background reading that you do - making the notes helps you to assimilate the material (no highlighter pen does that).
- Where possible, review the previous week’s lecture(s) the evening before the next lecture in the series. Take up any difficult points with the lecturer when you see him/her.
- When mentally assimilating a large volume of factual material, try to view it from different angles by making lists or alternative notes.

Exam technique

Preparation
Organise your time as the exams approach:
- map out the preparation time available.
- list all the tasks to be done and prioritise them.
- timetable tasks as if you had only half the time available. Use the remainder for overspill, or going over material a second time.
- beware the perils of ‘displacement activity’ - filling time with trivial activities as a means of putting off an unpleasant job, like revising!
- Arrange to discuss past exam papers (available on Moodle), and your attempts at writing outline answers to questions, with your personal advisor and/or the relevant course co-ordinators.

Exam writing
Read the paper instructions very carefully:
- number of questions to be answered? time allowed?
- are any questions compulsory, or is there a prescribed number per section?
- do different sections require separate answer books?
Read each question very carefully. For those you decide to tackle:
- start each question on a new page of the answer book. Take note of any instructions to answer different sections of the paper in different answer books.
- don’t waste time copying out the question into the answer
- map out your answer in the answer book as a list of topics/headings (don’t just start writing).
- check the question to make sure you are really answering the points required. However erudite your answer, we cannot give you marks if it is on the wrong topic.
- write the full answer, if possible with 5 minutes to spare. Spend most time on the parts of the question that earn most marks.
- check the answer to ensure it fully covers what is required (as much as you can).
A well-annotated figure may be as informative as a page of writing. Don’t inflate your answer with repetition or irrelevant material. Hard information and evidence of understanding earn marks, not length.
At the end of the exam, ensure your Candidate Number is correctly entered on each answer book, and tie answer books.

**Personal Development Planning (PDP)**

In a climate where job opportunities and career patterns are becoming increasingly unpredictable, and skills and the ability to articulate one’s skills increasingly important, planning for the future is crucial. Personal Development Planning is a structured and supported process that enables you to reflect on your own learning, performance and achievement and to plan for your personal, educational and career development. It involves devising a scheme that will enable you to determine where you are now, where you aim to go, and which actions you might need to take to get there.

PDP offers formal mechanisms for reflection and self-assessment and methods for recording them, as well as opportunities for meaningful discussion of learning, achievement and employment. For more details consult the College PDP web site (https://www.royalholloway.ac.uk/careers/gainexperience/pdp/pdp.aspx). Section G of this handbook lists some of the skills you should acquire during your time in the department.

**Student Community Action – get volunteering!**

The Royal Holloway Community Action Volunteering Programme exists to connect, train and support students seeking to volunteer in the local community. There is a whole range of project opportunities from sports coaching, youth work, supporting clubs for young people with special needs, tutoring & mentoring school pupils, teaching English or IT to young refugees & asylum seekers, reminiscence work, befriending elders, charity shop support, carrying out conservation & preservation work and so much more. We also have office placements and internships with local charities available. Volunteering enhances your transferable skills and employability giving CV value, builds a healthy long-term community spirit, and is loads of fun whilst meeting new people.

The Community Action Volunteer Co-ordinator and the Student Union Volunteering Officer can support your volunteering work with training through the student development programme, community action student team and volunteering awards & accreditation scheme. During the year you are invited to volunteer through our one off project events such as Make A Difference Day, the BIG spring clean and Volunteering Week take place with the slogan ‘serving the community, students in action’ where volunteers get involved in a range of local community projects. So choose to get involved today!

**Equal opportunities**

The University of London was established to provide education on the basis of merit above and without regard to race, creed or political belief and was the first university in the United Kingdom to admit women to its degrees.

Royal Holloway, University of London (hereafter 'the College') is proud to continue this tradition, and to commit itself to equality of opportunity in employment, admissions and in its teaching, learning and research activities.

The College is committed to ensure that:

- all staff, students, applicants for employment or study, visitors and other persons in contact with the College are treated fairly, have equality of opportunity and do not suffer disadvantage on the basis of race, nationality, ethnic origin, gender, age, marital or parental status, dependants, disability, sexual orientation, religion, political belief or social origins
- both existing staff and students, as well as, applicants for employment or admission are treated fairly and individuals are judged solely on merit and by reference to their skills, abilities qualifications, aptitude and potential
- it puts in place appropriate measures to eliminate discrimination and to promote equality of opportunity
- teaching, learning and research are free from all forms of discrimination and continually provide equality of opportunity
- all staff, students and visitors are aware of the Equal Opportunities Statement through College publicity material
- it creates a positive, inclusive atmosphere, based on respect for diversity within the College
- it conforms to all provisions as laid out in legislation promoting equality of opportunity.

**Students’ Union**

The Students’ Union offers a wide range of services and support, from entertainment and clubs/societies to advice on welfare and academic issues. The Advice and Support Centre, situated on the first floor of the Students’ Union, runs a confidential service that is independent from the College. Open 9.30am - 5pm, Monday – Friday, it operates an open door policy exclusively for students during term time. However, during vacation periods students should call to book an appointment. Full details can be found at www.su.rhul.ac.uk/support
SECTION C
MARKING CRITERIA FOR ASSESSED UNDERGRADUATE WORK

<table>
<thead>
<tr>
<th>Mark (%)</th>
<th>Degree class</th>
<th>Examinations: long (essay) answer or coursework exercise</th>
<th>Report and Dissertations (100 – 10,000 word report)</th>
<th>Seminars, oral and poster presentations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A* - 90</td>
<td>First-class (excellent)</td>
<td>5. deep understanding, real comprehensive knowledge; high levels of ability in analysis; significant ability to plan work; ability to present a clear and coherent argument; high levels of ability in using scientific language; high level of problem-solving ability; fluent, accessible style; professional standard of presentation with no or very minor errors of spelling, punctuation or grammar</td>
<td>complete answer to the question or questions; displays full understanding of the topic; shows complete competence at the skills tested</td>
<td>evidence of excellent understanding of topic; material presented accurately and in depth; very clearly structured; high quality of effective diagrams, very professionally presented; all sources acknowledged; oral presentations very clear, audible, concise and thoroughly rehearsed; excellent ability to answer questions</td>
</tr>
<tr>
<td>A - 90</td>
<td>First-class (good)</td>
<td>4. deep understanding, significant knowledge; high levels of ability in analysis; very clear and coherent presentation; high levels of ability in using scientific language; ability to plan work; significant ability to present a clear and coherent argument; some errors in analysis; professional standard of presentation with some or very minor errors of spelling, punctuation or grammar</td>
<td>complete answer to the question or questions; displays full understanding of the topic; shows high level of competence at the skills tested</td>
<td>evidence of very good understanding of topic; material presented accurately and in depth; clearly structured; good use of effective diagrams, professionally presented; sources acknowledged; oral presentations clear, audible, concise and rehearsed; good ability to answer questions</td>
</tr>
<tr>
<td>B - 90</td>
<td>Upper second</td>
<td>3. deep understanding, very comprehensive knowledge; high levels of ability in analysis; very clear and coherent presentation; good levels of ability in using scientific language; ability to plan work; significant ability to present a clear and coherent argument; some minor errors of spelling, punctuation or grammar</td>
<td>complete answer to the question or questions; displays adequate understanding of the topic; shows adequate level of competence at the skills tested</td>
<td>evidence of good understanding of topic; material presented generally and in adequate depth; moderately well structured; some effective diagrams, professionally presented; sources acknowledged; oral presentations clear, audible, concise and rehearsed; reasonable ability to answer questions</td>
</tr>
<tr>
<td>C - 80</td>
<td>Upper second</td>
<td>2. deep understanding, comprehensive knowledge; high levels of ability in analysis; quite clear and coherent presentation; levels of ability in using scientific language; ability to plan work; some ability to present a clear and coherent argument; little or no errors of spelling, punctuation or grammar</td>
<td>some general understanding of the subject area; adequate presentation of research aims and methodology; little or no evidence of independent reading; some minor errors of spelling, punctuation or grammar</td>
<td>evidence of adequate understanding of topic; material presented generally and in adequate depth; adequately structured; adequate presentation; some sources acknowledged; oral presentations moderately clear, audible, concise and rehearsed; limited ability to answer questions</td>
</tr>
<tr>
<td>D - 80</td>
<td>Lower second</td>
<td>1. deep understanding, limited and knowledge; adequate levels of ability in analysis; some evidence of coherence in the information; some ability to plan work; little evidence of independent reading; some minor errors of spelling, punctuation or grammar</td>
<td>limited understanding of the subject area; vague statement of research aims and methodology; limited evidence of independent reading; some minor errors of spelling, punctuation or grammar</td>
<td>evidence of limited understanding of topic; material presented generally and in inadequate depth; inadequately presented; sources acknowledged; oral presentations poor in terms of clarity and audibility; little ability to answer questions</td>
</tr>
<tr>
<td>E - 80</td>
<td>Lower second</td>
<td>0 – 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. The scale range may be extended where the assessed work merits the majority of the criteria for that range.
2. The grade descriptions are defined in comparison with all calculations provided in the course learning outcomes.
3. Not all marks are necessarily attainable at once and none of the assessments are mandatory, therefore, the award of a grade in any subject will be based on the best results obtained in that subject.
4. These marking criteria are subject to amendment by the Earth Sciences Teaching Committee.
### SECTION D: Degree programmes and associated courses

Note: Courses enclosed in bold boxes are 'mandatory/condonable' (must be taken) or 'mandatory/non-condonable' (italics, must be passed) for completion of the relevant programme. All single honours programmes can also be combined with a year in industry to form a 'year in industry' degree. Dashed boxes refer to courses in other departments.

<table>
<thead>
<tr>
<th>F601/602</th>
<th>MSci Geoscience</th>
<th>2016/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR</strong></td>
<td><strong>SECOND YEAR</strong></td>
<td><strong>THIRD YEAR</strong></td>
</tr>
<tr>
<td>GL1100: Global Tectonics</td>
<td>GL2200: Stratigraphy &amp; the History of Life</td>
<td>GL3001: Advanced Concepts and Techniques in Geology</td>
</tr>
<tr>
<td>GL1460: Igneous and Metamorphic Geology</td>
<td>GL2410: Regional Geology</td>
<td>Options (four):</td>
</tr>
<tr>
<td>GL1500: Physics and Chemistry of the Earth</td>
<td>GL2410: Igneous and Metamorphic Geology</td>
<td>GL3210: Research Proposal</td>
</tr>
<tr>
<td>GL1800: Earth Structures</td>
<td>GL2410: Regional Geology</td>
<td>GL4250: Earth Surface Processes</td>
</tr>
<tr>
<td>GL1900: Scientific &amp; Geological Field Skills</td>
<td>GL2410: Regional Geology</td>
<td>GL4600: Sediment Processing &amp; Interpretation</td>
</tr>
<tr>
<td>and either</td>
<td>GL2410: Regional Geology</td>
<td>GL4810: Geodynamics and Plate Tectonics</td>
</tr>
<tr>
<td>GL1300: Maths with Environmental issues</td>
<td>GL2410: Regional Geology</td>
<td>GL4920: Interpretation of Structural Settings</td>
</tr>
<tr>
<td>or</td>
<td>GL2410: Regional Geology</td>
<td>GL4960: Terrestrial Palaeoecology</td>
</tr>
<tr>
<td>GL1750: Maths with Petroleum Geology</td>
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<td>Index for choices from MSc Environmental Geoscience options</td>
</tr>
</tbody>
</table>

**International Year students:** GL3920 and GL4920: Independent Geological Field Mapping (3rd and 4th year)

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<table>
<thead>
<tr>
<th>F600</th>
<th>BSc Geology</th>
<th>2016/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR</strong></td>
<td><strong>SECOND YEAR</strong></td>
<td><strong>FINAL YEAR</strong></td>
</tr>
<tr>
<td>GL1100: Global Tectonics</td>
<td>GL2200: Stratigraphy and the History of Life</td>
<td>GL3001: Advanced Concepts and Techniques in Geology</td>
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<tr>
<td>GL1460: Igneous and Metamorphic Geology</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>Options:</td>
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<tr>
<td>GL1500: Physics and Chemistry of the Earth</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>GL3210: Research Proposal</td>
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<td>GL1600: Earth structures</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>GL3300: Aqueous Geology</td>
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<tr>
<td>GL1800: Introductory Palaeontology</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>GL3460: Volcanology</td>
</tr>
<tr>
<td>GL1900: Scientific &amp; Geological Field Skills</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>GL3510: Planetary Geology &amp; Geophysics</td>
</tr>
<tr>
<td>and either</td>
<td>GL2400: Igneous and Metamorphic Geology</td>
<td>GL3900: Advanced Techniques in Tectonic and Structural Interpretation</td>
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<tr>
<td>GL1300: Maths with Environmental issues</td>
<td>GL2410: Geochronology</td>
<td>GL3750: Mineral Resources</td>
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<tr>
<td>or</td>
<td>GL2410: Geochronology</td>
<td>GL3800: Advanced Palaeontology</td>
</tr>
<tr>
<td>GL1750: Maths with Petroleum Geology</td>
<td></td>
<td>GL3901: Independent Geological Field Mapping</td>
</tr>
</tbody>
</table>

**Option:** GL3141: Applied Geology (Industrial Placement) 9-12 month work experience
### F631: Environmental Geoscience

**FIRST YEAR**
- GL1100: Global Tectonics
- GL1200: Introductory Sedimentology
- GL1300: Maths with Environmental Issues
- GL1400: Igneous and Metamorphic Geology
- GL1500: Physics and Chemistry of the Earth
- GL1600: Earth Structures
- GL1800: Introductory Palaeontology
- GL1900: Scientific & Geological Field Skills

**SECOND YEAR**
- GL2200: Stratigraphy and the History of Life
- GL2210: Regional Geology
- GL2300: Geohazards
- GL2410: Geochemistry
- GL2500: Geological Field Skills for Environmental Students
- Options (three):
  - GL2230: Sedimentary Basin Analysis
  - GL2430: Igneous & Metamorphic Geology
  - GL2500: Applied Geophysics
  - GL2600: Computational Earth Sciences
  - GL2800: Structural Analysis & Remote Sensing

**THIRD YEAR**
- GL3000: Advanced Concepts and Techniques in Geology
- GL3340: GIS and Remote Sensing
- GL3360: Environmental Geoscience Investigation
- GL3940: Methods of Environmental Investigation
- Options (three):
  - GL3200: Marine Geology
  - GL3510: Advanced Topics in Sedimentology
  - GL3520: Aqueous Geology
  - GL3600: Volcanology
  - GL3750: Mineral Resources

Option: between 2nd & 3rd or 3rd & 4th years

International Year Students: Year 3 abroad

### F630: Environmental Geology

**FIRST YEAR**
- GL1100: Global Tectonics
- GL1200: Introductory Sedimentology
- GL1300: Maths with Environmental Issues
- GL1400: Igneous and Metamorphic Geology
- GL1500: Physics and Chemistry of the Earth
- GL1600: Earth Structures
- GL1800: Introductory Palaeontology
- GL1900: Scientific & Geological Field Skills

**SECOND YEAR**
- GL2200: Stratigraphy and the History of Life
- GL2210: Regional Geology
- GL2320: Geohazards
- GL2410: Geochemistry
- GL2530: Geological Field Skills for Environmental Students
- Options (three):
  - GL2230: Sedimentary Basin Analysis
  - GL2430: Igneous & Metamorphic Geology
  - GL2500: Applied Geophysics
  - GL2600: Computational Earth Sciences
  - GL2800: Structural Analysis & Remote Sensing

**THIRD YEAR**
- GL3001: Advanced Concepts and Techniques in Geology
- GL3321: Environmental Geology Project
- GL3380: Aqueous Geology
- GL3940: Methods of Environmental Investigation
- Options (two):
  - GL3200: Marine Geology
  - GL3510: Advanced Topics in Sedimentology
  - GL3540: GIS and Remote Sensing
  - GL3600: Volcanology
  - GL3750: Mineral Resources

Option: between 2nd and final years

GL3141: Applied Geology (Industrial Placement)
9-12 month work experience placement available in addition to final year courses
### F620: BSc Petroleum Geology

#### First Year
- GL1100: Global Tectonics
- GL1200: Introductory Sedimentology
- GL1400: Igneous and Metamorphic Geology
- GL1500: Physics and Chemistry of the Earth
- GL1600: Earth structures
- GL1750: Maths with Petroleum Geology
- GL1800: Introductory Palaeontology
- GL1900: Scientific & Geological Field Skills

#### Second Year
- GL2210: Regional Geology
- GL2230: Sedimentary Basin Analysis
- GL2500: Applied Geophysics
- GL2520: Computational Earth Sciences
- GL2600: Structural Analysis and Remote Sensing
- GL2901: Advanced Scientific & Field Skills

#### Third Year
- GL3001: Advanced Concepts and Techniques in Geology
- GL3210: Advanced Topics in Sedimentology
- GL3900: Advanced techniques in Tectonic and Structural Interpretation
- GL3700: The Geology of Petroleum
- GL3951: Mapping Sedimentary Basins

#### Options (two):
- GL2200: Stratigraphy and the History of Life
- GL2300: Geohazards
- GL2400: Igneous & Metamorphic Geology
- GL2410: Geochemistry
- GL2520: Computational Earth Sciences

#### Option: between 2nd and final years
- GL3141: Applied Geology (Industrial Placement)
- 9-12 month work experience placement available in addition to final year courses

### F640: BSc Digital Geosciences

#### First Year
- GL1100: Global Tectonics
- GL1200: Introductory Sedimentology
- GL1400: Igneous and Metamorphic Geology
- GL1500: Physics and Chemistry of the Earth
- GL1600: Earth structures
- GL1800: Introductory Palaeontology
- GL1900: Scientific & Geological Field Skills
- GL1990: Scientific & Geological Field Skills and either
- GL1300: Maths with Environmental Issues
- GL1750: Maths with Petroleum Geology

#### Second Year
- GL2210: Regional Geology
- GL2230: Sedimentary Basin Analysis
- GL2250: Applied Geophysics
- GL2520: Computational Earth Sciences
- GL2550: Project Proposal for Computational Geosciences
- GL2600: Structural Analysis and Remote Sensing

#### Final Year
- GL3001: Advanced Concepts and Techniques in Computational Geosciences

#### Options (three):
- GL2200: Stratigraphy and the History of Life
- GL2300: Geohazards
- GL2400: Igneous & Metamorphic Geology
- GL2410: Geochemistry
- GL3500: Marine Geology
- GL3600: Advanced Techniques in Tectonic and Structural Interpretation
- GL3700: Petroleum Geology
- GL3800: Advanced Palaeontology
- GL3951: Independent Project

#### Options:
- GL3200: Marine Geology
- GL3300: Aqueous Geology
- GL3340: GIS and Remote Sensing
- GL3460: Volcanology
- GL3510: Planetary Geology & Geophysics
- GL3600: Advanced Techniques in Tectonic and Structural Interpretation
- GL3700: Petroleum Geology
- GL3800: Advanced Palaeontology
**FF68 BSc Physical Geography and Geology 2016/2017**

**SECOND YEAR**
- GL2200: Stratigraphy and the History of Life
- GL2210: Regional Geology
- GL2320: Geohazards
- GL2930: Geological Field Skills for Environmental Students

**Options: two courses in Geography**
- GG2013: Environmental systems (1cu)
- GG2021: Geomorphology (1 cu)
- GG2041: Environmental Change (1cu)
- GG2043 Biogeography (1cu)

**THIRD YEAR**
- GG3002/GL3131: Independent project

**Options: normally two to four from**
- GL3110: Advanced Topics in Sedimentology
- GL3300: Aqueous Geology
- GL3400: GIS and Remote Sensing
- GL3460: Volcanology
- GL3510: Planetary Geology & Geophysics

**Options: normally two to four from**
- GG3013: Defending Coastal and Wetland Environments
- GG3014: Savannas
- GG3015: Tropical Land Management
- GG3016: Mediterranean landscapes
- GG3021: Rivers and Landscape
- GG3034: Arid Africa
- GG3035: Holocene Rivers
- GG3041: Climatic change
- GG3044: People and the Ice Age
First Year Course Units offered by the Earth Sciences Department

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Course Title</th>
<th>Coordinator</th>
<th>Prerequisites</th>
<th>Unit Value</th>
<th>Assessment %</th>
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</thead>
<tbody>
<tr>
<td>GL1100</td>
<td>Global Tectonics</td>
<td>P Vannucchi</td>
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<td>exam 80</td>
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<td>fieldwork</td>
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<td>fieldwork</td>
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<td>Environmental Issues with Maths</td>
<td>S Hier-Majumder</td>
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<td>exam 70</td>
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<td>Physics and Chemistry of the Earth</td>
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<td>reports 20</td>
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<td>Earth Structures</td>
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<td>exam 60</td>
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<td>fieldwork</td>
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<td>GL1750</td>
<td>Petroleum Geology with Maths</td>
<td>N Scarselli</td>
<td>None</td>
<td>0.5</td>
<td>exam 70</td>
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<td></td>
<td>fieldwork</td>
</tr>
</tbody>
</table>

**UNIT VALUE: 0.5**

**Assessment %:**
- exam: 80%
- reports: 20%
- fieldwork: 0%

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**SECTION E**

**GL1100 Global Tectonics**

Coordinator: P Vannucchi

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 80%
- reports: 20%
- fieldwork: 0%

**Course Description:**

An introductory framework for understanding the evolution of major features of current and past tectonic activity of the Earth. The plate tectonic theory represents the biggest achievement in Earth Science giving a unitarian perspective of the geological processes. Lectures will cover the current understanding of the Earth's interior, stressing its importance for both the kinematic and tectonic evolution of the planet. The Earth has a hot interior and continually loses heat to space, and heat transfer controls the motions of plates. The course will explore how plate boundaries have formed, the dynamic processes involved, the types of data used to explore these regions both onshore and offshore, and the importance/relevance of these processes to society.

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**GL1200 Introductory Sedimentology**

Coordinator: D Le Heron

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 70%
- reports: 30%
- fieldwork: 0%

**Course Description:**

Surface processes and the mechanisms of weathering, transport and deposition. Depositional facies analysis and interpretation of paleoenvironment. Sedimentary rock environments: Continental (glacial, aeolian, fluvial, lacustrine), marine (deltas, coastlines, estuaries, shelves and deep water). Post depositional effects (diagenesis). Resources in sedimentary strata. Sedimentary logs, triangular diagrams, vector scales (rose diagrams) and granulometric data.

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**GL1300 Environmental Issues with Maths**

Coordinator: S Hier-Majumder

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 70%
- reports: 30%
- fieldwork: 0%

**Course Description:**

This course introduces geologists to important environmental issues. The material focuses on fundamentals of environmental geology, natural hazards, and resources and pollution. Students will appreciate the linkage between geological processes and the environment, the importance of geological education in regards to natural hazards, the causes and consequences of several natural hazards, and the origin and usage of water and energy resources. Students will also learn the geological tools used to study climate change. The Maths course is designed to teach basic mathematics in a geological context to ensure that students have the necessary quantitative skills to cope with the remainder of their degree. It is based around online learning.

---

**GL1460 Igneous and metamorphic geology**

Coordinator: C Manning

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 60%
- reports: 40%
- fieldwork: 0%

**Course Description:**


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**GL1500 Physics and Chemistry of the Earth**

Coordinator: M King

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 80%
- reports: 20%
- fieldwork: 0%

**Course Description:**

Outline of principles and techniques, and their application in a geological context. Chemistry of the Earth - atoms and atomic structure, the Periodic table, reactions, equations, introduction to geochemical analysis, composition of the Earth, interpretation of phase diagrams, solubility of minerals, weathering and the hydrological cycle. Geophysics to investigate the Earth: Newton's Laws, kinematics, circular motion, planetary orbits, gravity, magnetism, electricity, resistivity, stress, strain, seismicity, isostasy, radioactivity, geochronology.

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**GL1600 Earth Structures**

Coordinator: R Hall

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 60%
- reports: 20%
- fieldwork: 0%

**Course Description:**


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**GL1750 Petroleum Geology with Maths**

Coordinator: N Scarselli

Prerequisites: None

**Unit Value:** 0.5

**Assessment %:**
- exam: 70%
- reports: 15%
- fieldwork: 15%

**Course Description:**

This course introduces students to the basics of petroleum geoscience and the nature and operation of the oil & gas industry. Lectures focus on the nature of petroleum and give students an introduction to exploration and production methods. The final part of the course covers the environmental concerns related to hydrocarbon exploitation and the future for oil. Students are required to take part in group exercises and produce technical reports on a variety of aspects related to petroleum geoscience. The Maths course is designed to teach basic mathematics in a geological context to ensure that students have the necessary quantitative skills to cope with the remainder of their degree. This course is based around online learning.
## First Year Course Units offered by the Earth Sciences Department

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Coordinator</th>
<th>Unit Value</th>
<th>Assessment %</th>
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</thead>
<tbody>
<tr>
<td>GL1800</td>
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<td>15 fieldwork</td>
</tr>
<tr>
<td>GL1900</td>
<td>Scientific &amp; Geological Field Skills</td>
<td>C Manning</td>
<td>0.5</td>
<td>10 exam</td>
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</tr>
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<td></td>
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<td>80 fieldwork</td>
</tr>
</tbody>
</table>

### Introductory Palaeontology
- **Description**: Palaeobiology and Palaeoecology - key fossil groups, diagnostic characters and mode of life. Palaeocommunities and palaeoenvironments - community reconstructions and analysis. Application of fossils in biostratigraphy and palaeoenvironmental analysis.

### Scientific & Geological Field Skills
- **Aims**: To develop geological field skills and transferable communication skills. The field skills component is based around a series of activities in South Devon (3 days) and Pembrokeshire (5 days), and comprises a basic practical introduction to the core skills required of a geologist. The transferable communication skills component is based around a series of tutorial-based exercises involving preparing and delivering a talk on a geological subject using Powerpoint, preparing a geological report using the structure of a scientific paper and finally, a networking exercise using LinkedIn.
## Second Year Course Units offered by the Earth Sciences Department

### GL2200  Stratigraphy and the History of Life

**Coordinator:** H Falcon-Lang  
**Unit Value:** 0.5  
**Prerequisites:** normally GL1300  
**Assessment:**  
- **exam:** 60%  
- **fieldwork:** 40%  
- **fieldwork:** 50%  
- **practicals:** 50%  
- **fieldwork:** 60%

This course covers the principles of stratigraphic analysis and considers major events in the history of life. The general aims are: to provide a core of training in stratigraphic techniques; to outline key events in the history of life; and it is also intended that the students will develop the ability to undertake self-directed learning through independent reading and literature research. The course contains a number of related elements:  
A. Stratigraphic techniques: lecture/practical sessions on Geochronology and Litho-, Bio- and Sequence Stratigraphy principles and techniques  
B. Major events in the history of Life

### GL2210  Regional Geology

**Coordinator:** H Falcon-Lang  
**Unit Value:** 0.5  
**Prerequisites:** normally GL1300  
**Assessment:**  
- **exam:** 60%  
- **fieldwork:** 40%  
- **practicals:** 40%  
- **practicals:** 30%

This course uses the regional geology of the UK as case study area for regional geological and palaeoenvironmental analysis. The course aims to provide a general knowledge of UK geology, and a critical understanding of how geological histories are established. It is also intended that the students will develop the ability to undertake self-directed learning through independent reading. The course contains a number of related elements:  
(A) Case studies in regional geology: comprising an extended case study of the Caledonides and a series of studies of aspects of depositional palaeoenvironments in UK regional geology, and (B) Mapwork practicals (7 sessions) – geological map interpretation exercises based on UK geology.

### GL2230  Sedimentary Basin Analysis

**Coordinator:** D Le Heron  
**Unit Value:** 0.5  
**Prerequisites:** normally GL1300  
**Assessment:**  
- **exam:** 70%  
- **fieldwork:** 30%  
- **practicals:** 20%  
- **fieldwork:** 50%

In this course students will consider sedimentary basins as complete entities by investigating the mechanisms by which they may form and the processes and patterns of sedimentary fill. Surface and sub-surface techniques in basin analysis through stratigraphic and facies analysis. Seismic stratigraphy. Basin classification based on tectonic regime and basin fill.

### GL2320  Geohazards

**Coordinator:** E Nisbet  
**Unit Value:** 0.5  
**Prerequisites:** normally GL1300  
**Assessment:**  
- **exam:** 60%  
- **fieldwork:** 40%  
- **practicals:** 30%  
- **fieldwork:** 60%

The course will cover hazards associated with geological activity, their causes and risk management including topics such as volcanoes, earthquakes and radon. Additionally the course will cover hazards associated the exploitation of geological resources and associated anthropogenic activity. Students will work in small groups to prepare a presentation on a city of their choice outlining geohazards (causes and management) that are pertinent to that city. Throughout the course students will be assessed formatively on a number of practicals that draw together a variety of geological, numerical and geochemical data that require analysis and interpretation of these data.

### GL2400  Igneous and Metamorphic Geology

**Coordinator:** D Mattey  
**Unit Value:** 0.5  
**Prerequisites:** GL1460  
**Assessment:**  
- **exam:** 60%  
- **fieldwork:** 30%  
- **practicals:** 40%  
- **fieldwork:** 60%

Modules 1 and 2: Igneous and Metamorphic Geology  
1. Fractional crystallisation, silica saturation concepts, alkali basalt differentiation series, undersaturated rocks and minerals, potassic alkaline rocks, granites, case studies of the British Tertiary and Lesser Antillean.  
2. Metamorphic facies and associations, petrogenetic grids, metamorphic phase diagrams, metamorphic reaction types and rates, metamorphic textures and fabrics; interrelationships between deformation and metamorphism; P-T-t paths; thermochronology.

### GL2410  Geochemistry

**Coordinator:** W Müller  
**Unit Value:** 0.5  
**Prerequisites:** GL1500  
**Assessment:**  
- **exam:** 50%  
- **fieldwork:** 30%  
- **practicals:** 30%  
- **fieldwork:** 60%

This course builds on the first year Chemistry of the Earth course by introducing further, more complex, chemical concepts relevant to the Earth Sciences. The emphasis in the first term is on basic chemical systems though practical classes are designed to demonstrate the relevance and application of these concepts in an Earth Science context. The second term introduces techniques more directly applied to Geology, such as isotope geochemistry. Students do a small project involving the analysis and interpretation of a geochemical dataset which will be assessed in the form of a written report.

### GL2500  Applied Geophysics

**Coordinator:** S Hier-Majumder  
**Unit Value:** 0.5  
**Prerequisites:** GL1500  
**Assessment:**  
- **exam:** 60%  
- **fieldwork:** 40%  
- **fieldwork:** 60%

In this course, the students will be trained in the theory and practice of a number of geophysical techniques including seismic reflection and refraction, gravity, magnetics, electromagnetic, and resistivity methods. The students are expected to integrate these techniques to solve problems related to Earth Sciences and oil and natural gas exploration.
### Second Year Course Units offered by the Earth Sciences Department

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Coordinator</th>
<th>Unit Value</th>
<th>Assessment %</th>
</tr>
</thead>
<tbody>
<tr>
<td>GL2520</td>
<td><strong>Computational Earth Sciences</strong>&lt;br&gt;The course content will be divided in four modules each lasting 2-3 weeks. The theme of these modules will be (a) basic maths and digital data processing, (b) basics of geological modelling, (c) statistical data analysis, and (d) digital mapping.</td>
<td>GL1300/1750</td>
<td>S Hier-Majumder</td>
<td>0.5</td>
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<tr>
<td>GL2550</td>
<td><strong>Project Proposal for Computational Geosciences</strong>&lt;br&gt;During the course, the student will work on identifying and proposing an independent project for the year 3. The report will be 3000 words long, should contain formatted references, and figures. The project proposal must provide a background summary based on the literature review, a section on proposed work, identification of project milestones, identification of necessary resources, identification of risks and mitigation strategy, and a Gantt chart outlining the work for the project. In the proposed work section, the student should clearly indicate what digital/computational techniques will be used and indicate their level of understanding of these. The student will also need to give a short presentation of proposal at the end of the term.</td>
<td>GL1300/1750</td>
<td>S Hier-Majumder</td>
<td>0.5</td>
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</tr>
<tr>
<td>GL2600</td>
<td><strong>Structural Analysis and Remote Sensing</strong>&lt;br&gt;Evolution of geological structures in terms of processes and their interaction in regional tectonic settings worldwide.&lt;br&gt;Module 1: Introduction to structural geology: Structural elements, geological structures (folds, faults, fractures), and concepts (stress, strain, rheology)&lt;br&gt;Module 2: Introduction to regional tectonic systems and examples of global tectonics&lt;br&gt;Google Earth Project: Presentation of a major tectonic structure as part of a 'virtual class' field trip around the world (term 2)</td>
<td>GL1600</td>
<td>I Watkinson</td>
<td>0.5</td>
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</tr>
<tr>
<td>GL2901</td>
<td><strong>Advanced Scientific &amp; Field Skills</strong>&lt;br&gt;To develop advanced geological field skills and advanced transferable communication skills. The field skills component is based around a series of activities in an area of Igneous and Metamorphic rocks (6 days) and an area of Sedimentary rocks (13 days) and comprises an advanced practical class designed to develop the core skills required of a geologist. Practical activities include (1) preparing a geological map, (2) describing and interpreting sedimentary rocks using the graphic log technique, (3) describing and interpreting igneous and metamorphic rocks, (4) analysing structural features using stereonets, (5) constructing scaled cross-sections through structurally complex terrains, and (6) inferring the geological history of a region.</td>
<td>GL1900</td>
<td>J Hernandez-Molina</td>
<td>1.0</td>
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<tr>
<td>GL2930</td>
<td><strong>Geological Field Skills for Environmental Students</strong>&lt;br&gt;To develop advanced geological field skills and advanced transferable communication skills. The field skills component is based around a series of activities in an area of Igneous and Metamorphic rocks (6 days) and an area of Sedimentary rocks (6 days) and comprises an advanced practical class designed to develop the core skills required of a geologist. Practical activities include (1) preparing a geological map, (2) describing and interpreting sedimentary rocks using the graphic log technique, (3) describing and interpreting igneous and metamorphic rocks, (4) analysing structural features using stereonets, (5) constructing scaled cross-sections through structurally complex terrains, and (6) inferring the geological history of a region.</td>
<td>GL1900</td>
<td>J Hernandez-Molina</td>
<td>0.5</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Unit Value</td>
<td>Assessment %</td>
<td>Fieldwork %</td>
<td>Examination %</td>
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<tr>
<td>GL3001</td>
<td>Advanced Concepts and Techniques in Geology</td>
<td>1.0</td>
<td>exam 65</td>
<td>reports 15</td>
<td>practicals 20</td>
</tr>
<tr>
<td>GL3120</td>
<td>Independent Project</td>
<td>0.5</td>
<td>exam 90</td>
<td>reports 10</td>
<td>practicals 10</td>
</tr>
<tr>
<td>GL3131</td>
<td>Independent Project</td>
<td>1.0</td>
<td>exam 90</td>
<td>reports 10</td>
<td>practicals 10</td>
</tr>
<tr>
<td>GL3141</td>
<td>Applied Geology (Industrial Placement)</td>
<td>1.0</td>
<td>exam 100</td>
<td>practicals 10</td>
<td>fieldwork</td>
</tr>
<tr>
<td>GL3200</td>
<td>Marine Geology</td>
<td>0.5</td>
<td>exam 60</td>
<td>reports 25</td>
<td>practicals 15</td>
</tr>
<tr>
<td>GL3210</td>
<td>Advanced Topics in Sedimentology</td>
<td>0.5</td>
<td>exam 70</td>
<td>practicals 30</td>
<td>fieldwork</td>
</tr>
<tr>
<td>GL3300</td>
<td>Aqueous Geology</td>
<td>0.5</td>
<td>exam 60</td>
<td>reports 10</td>
<td>practicals 30</td>
</tr>
</tbody>
</table>
### Environmental Geology Project

**Coordinator:** N Grassineau  

**Prerequisites:** None  

**Unit Value:** 1.0  

**Assessment %**  
- exam: 100  
- reports: 100  
- practicals: 100  
- fieldwork: 100  

**Unit Description:** Under tutorial guidance, the independent project involves students in research into some aspect of environmental geology, such as groundwater pollution, waste management, subsidence, etc. Further information, including notes concerning the style of presentation will be available at the time a topic is selected and approved. Students are expected to give a verbal account of their project to their supervisor and tutor during the Lent Term. The project is examined orally by the External Examiners.

### GIS and Remote Sensing

**Coordinator:** R Hall  

**Prerequisites:** None  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 60  
- reports: 40  
- practicals: 40  
- fieldwork: 40  

**Unit Description:** A practical introduction to geographical information systems and remote sensing through computer applications. An introduction to the most commonly used GIS software and the principles of digital cartography and computer databases capable of storing and manipulating geographically referenced information. Use of GIS (MapInfo) through hands-on acquisition of their own and existing datasets. Principles of remote sensing and different image types. How different types of imagery are obtained, interpreted and used in environmental geology. Use of digital image processing application (ERMapper) to see how different types of information can be acquired from remotely sensed images and can be used in environmental geology.

### Environmental Geoscience Report

**Coordinator:** N Grassineau  

**Prerequisites:** None  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 100  
- reports: 100  
- practicals: 100  
- fieldwork: 100  

**Unit Description:** A largely independent literature review project, presented in the form of a scientific paper, concerned with a topic of environmental geology interest. Topics will be chosen from an approved list, or after discussion with members of academic staff and may be related to 4th year projects.

### Volcanology

**Coordinator:** A Gudmundsson  

**Prerequisites:** GL2400  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 50  
- reports: 50  
- practicals: 50  
- fieldwork: 50  

**Unit Description:** A course dealing with the physical dimension of igneous activity. Magma viscosity in relation to chemical composition and structure, non-Newtonian behaviour of melts, laminar and turbulent flow and Reynolds number, with applications to the flow of lavas and pyroclastic systems. Styles of volcanic eruption in relation to volatile content, viscosity, effusion rate - the dispersal-fragmentation (D-F) plot. Mechanisms and products of hawaiian, strombolian, plinian eruptions and the formation of calderas. Magma-water interaction. Magma chamber convection and the formation of layered intrusions. Tectonic controls on the emplacement of granites.

### Planetary Geology and Geophysics

**Coordinator:** D P Mattey  

**Prerequisites:** None  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 50  
- reports: 50  
- practicals: 50  
- fieldwork: 50  

**Unit Description:** The course offers an exploration of the Solar system, its physical and chemical characteristics, origin and evolution. Exploration methods involve remote sensing image analysis, geophysics and geochemistry. Processes of impact cratering, volcanism, tectonism and gradation determine planetary morphologies. Planetary interiors and atmospheres build knowledge and understanding of planetary processes. Systematic study of the Earth-Moon system, terrestrial planets and outer giants, planetary satellites, comets and meteorites creates an holistic and critical appraisal of planetary evolution.

### Advanced techniques in tectonic and structural interpretation

**Coordinator:** A Gudmundsson  

**Prerequisites:** GL2600  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 70  
- reports: 70  
- practicals: 70  
- fieldwork: 70  

**Unit Description:** This course is designed to develop advanced skills in structural and tectonic analysis. Topics covered include brittle and ductile deformation mechanisms, stress & strain analysis, and fracture processes & analysis.

### The Geology of Petroleum

**Coordinator:** D Chiarella  

**Prerequisites:** None  

**Unit Value:** 0.5  

**Assessment %**  
- exam: 60  
- reports: 60  
- practicals: 60  
- fieldwork: 60  

### GL3750 Mineral Resources
**Coordinator:** G Solferino  
**Prerequisites:** GL1460  
**Coordinator:** G Solferino  
**Prerequisites:** GL1460  
**Assessment:**  
- Reports: 20%  
- Fieldwork: 15%  
**Unit Value:** 0.5  
**Exam:** 65%  

The course covers: the diverse nature of ores and their classification; ore-forming processes and the controls to ore formation. Hydrothermal fluids - their nature and origin; major metallic ore deposit associations in sedimentary, igneous and metamorphic environments; industrial minerals; ore microscopy; methods of mining and processing; the environmental effects of mining and processes of remediation; the economics of the commodity markets - the influences of supply, demand and prices, and future trends.

### GL3800 Advanced Palaeontology
**Coordinator:** M Collinson  
**Prerequisites:** normally GL2200  
**Coordinator:** M Collinson  
**Prerequisites:** normally GL2200  
**Assessment:**  
- Exam: 60%  
- Reports: 40%  
**Unit Value:** 0.5  
**Exams:** 60%  

A course of advanced lectures which illustrate currently developing concepts or methodologies in Palaeontology. These involve detailed studies of some plant, invertebrate and vertebrate groups, including both macrofossils and microfossils, whose emphasis reflects research strengths in the Department. The lectures cover areas such as environmental proxies, evolution, palaeoenvironmental analysis, fossil preservation and a range of other geological applications. A series of seminars will be presented by students which are discussed by both staff and students.

### GL3901 Independent Field Mapping
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Assessment:**  
- Exam: 100%  
- Reports: Fieldwork: 100%  
**Unit Value:** 1.0  
**Exams:** 100%  

Mapping areas, typically of 15-25 sq km., are chosen to satisfy safety and academic demands. Field supervision is provided by academic staff during the early part of the field work; the student then works independently to produce a field map and a complete field record. During the first term of the 3rd year the data record, results and interpretation are discussed with the field supervisor. Further study of rocks and other data from the field area is undertaken. Students give an illustrated oral presentation, prepare an illustrated written report and a high quality interpreted geological map. The project aims to use the field data to understand the stratigraphy, structure and geological history of the area studied.

### GL 3920 Geological mapping 1
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Assessment:**  
- Exam: 100%  
- Reports: Fieldwork: 100%  
**Unit Value:** 0.5  
**Exams:** 100%  

The first part of the geological mapping module for year abroad students (equivalent to GL3901). Assessment will be based on: Field slips, logs, structural measurements, notebooks.

### GL3940 Methods of Environmental Investigation
**Coordinator:** A Basu  
**Prerequisites:** GL2901  
**Coordinator:** A Basu  
**Prerequisites:** GL2901  
**Assessment:**  
- Exam: 50%  
- Reports: Fieldwork: 50%  
**Unit Value:** 0.5  
**Exams:** 50%  

Field work, comprising: approximately 10 days, visiting industrial sites and investigating the environmental problems associated with present and past extraction of resources (water, metals, industrial minerals); disposal of industrial and domestic waste; engineering problems associated with slope stability and sea-cliff erosion; monitoring water quality and pollution of water. Sampling environmental media: principles, practice, strategies and errors. ICP-AES and ICP-MS analysis: instrumentation and practical applications. Element behaviour and mobility: composition of soils, partitioning of elements, adsorption processes, acid hydrolysis. Natural and anthropogenic sources of elements in soils and waters.

### GL 3951 Mapping Sedimentary Basins
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Coordinator:** D Lowry  
**Prerequisites:** GL2901  
**Assessment:**  
- Exam: 100%  
- Reports: Fieldwork: 100%  
**Unit Value:** 1.0  
**Exams:** 100%  

As for GL3901, but with special emphasis on petroleum geology and hydrocarbon potential. Assessment of possible source, reservoir and cap rocks. Special emphasis on sedimentary structures and graphic sedimentary logs.
### Fourth Year Course Units offered by the Earth Sciences Department

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Unit Value</th>
<th>Assessment</th>
<th>Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>GL4012</td>
<td>Independent Geoscience Project</td>
<td>2.0</td>
<td>exam</td>
<td>M King</td>
</tr>
<tr>
<td>GL4100</td>
<td>Research Proposal and Critical Review</td>
<td>0.5</td>
<td>exam</td>
<td>D Mattey</td>
</tr>
<tr>
<td>GL4250</td>
<td>Physical processes of sediment transport and deposition. Depositional systems at a source-to-sink scale. The generation of detritus and techniques for measuring denudation. Sediment routing systems.</td>
<td>0.5</td>
<td>exam</td>
<td>J Hernandez-Molina</td>
</tr>
<tr>
<td>GL4300</td>
<td>This module begins with fundamental aquatic science and hydrological and hydrogeological processes that impact surface and groundwater. It continues with the treatment and management of water and wastewater, including study visits to water and wastewater treatment plants. The module includes a practical introduction to chemical and ecological monitoring of water quality.</td>
<td>0.5</td>
<td>exam</td>
<td>M King</td>
</tr>
<tr>
<td>GL4310</td>
<td>This module is concerned with the dispersion and conversion of gaseous and particulate air pollutants derived from man-made and natural sources, their impacts on the environment, and policy-related management issues. Air quality strategies and measurement methods are also considered. There are study visits to various monitoring networks in the London region.</td>
<td>0.5</td>
<td>exam</td>
<td>K Clemitshaw</td>
</tr>
<tr>
<td>GL4320</td>
<td>Mechanisms and feedbacks behind modern climate change, Radiative equilibrium, Cycles, Albedo, Snow/ice and frozen grounds, Sea-level rise – mechanism and effects, Models and predictions; Gaia and more extraordinary ideas (e.g. auto-variance).</td>
<td>0.5</td>
<td>exam</td>
<td>M King</td>
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<tr>
<td>GL4322</td>
<td>An independent project, planned by the student with initial guidance and reasonable supervision by academic staff, based on the collection of data and later analysis of that data. The project provides an opportunity to apply many aspects of environmental geology skills acquired during the earlier years of the degree course.</td>
<td>2.0</td>
<td>exam</td>
<td>M King</td>
</tr>
</tbody>
</table>

*Core for Geoscience*

*Option for Geoscience*

*Option for Geoscience and Environmental*

*Option; Course is taught partly in conjunction with MSc in Petroleum Geoscience*

*Option; Course is taught partly in conjunction with MSc in Environmental Diagnosis and Management*
### Fourth Year Course Units offered by the Earth Sciences Department

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Coordinator</th>
<th>Pre/Corequisites</th>
<th>Unit Value</th>
<th>Assessment Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>GL4340</td>
<td>Oceans and Atmospheres</td>
<td>M King</td>
<td></td>
<td>0.5</td>
<td>exam 50, reports 15</td>
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<td></td>
<td>The course analyses quantitatively the chemical and thermal reservoirs</td>
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<td>fieldwork</td>
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<td></td>
<td>in the oceans and atmosphere with special reference to the material</td>
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<td>and energy fluxes between them that regulate Earth's climate.</td>
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<td>Understanding the physical and chemical workings of the oceans, eg.</td>
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<td>physical circulation, chemical cycling in the ocean-atmosphere system</td>
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<td>This understanding is used in the second half of the course to</td>
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<td>examine and understand the major features of climate change</td>
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<td>throughout Earth history, but with particular emphasis on</td>
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<td>natural climate change over the past 2 Myr and anthropogenic</td>
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<td>impacts over the past several hundred years and into the future.</td>
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<tr>
<td>GL4370</td>
<td>Contaminated Land</td>
<td>K Clemitshaw</td>
<td></td>
<td>0.5</td>
<td>exam 70, reports 30,</td>
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<td></td>
<td>Students work together in teams to diagnose the levels of</td>
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<td>fieldwork</td>
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<td>contamination and make recommendations to manage risks for a</td>
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<td>former industrial site. The case study comprises a desk-top study</td>
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<td>and conceptual model of pollutant source-pathway-receptor linkages;</td>
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<td></td>
<td>on-site sampling and analysis of soil, surface waters and</td>
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<td>vegetation with laboratory analysis for heavy metals and organic</td>
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<td>s; statistical and spatial interpretation of data; quantitative</td>
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<td>assessment of health-risks; recommendations for remediation and</td>
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<td>validation.</td>
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<tr>
<td>GL4380</td>
<td>Environmental Inorganic Analysis</td>
<td>N Grassineau</td>
<td></td>
<td>0.5</td>
<td>exam 70, reports 30,</td>
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<td></td>
<td>A practical introduction to the quantitative analysis of a wide</td>
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<td>fieldwork</td>
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<td>range of inorganic and radionuclidial contaminants derived from</td>
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<td>fossil-fuel combustion, agriculture, and environmental impacts of</td>
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<td>waste and nuclear industries. It emphasises the use of</td>
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<td>appropriate sampling strategies, preparation processes and</td>
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<td>analytical methods required to produce quality assured and quality</td>
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<td>controlled data for elements, ions, solids and radionuclides</td>
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<td>in different environmental media.</td>
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<tr>
<td>GL4500</td>
<td>Seismic Processing and Interpretation</td>
<td>N Scarselli</td>
<td>GL2500</td>
<td>0.5</td>
<td>exam 50, reports 50,</td>
</tr>
<tr>
<td></td>
<td>This course covers the theory, techniques and methods of seismic</td>
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<td>fieldwork</td>
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<td>reflection profiling and the processing and interpretation of data.</td>
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<td>Interpretation of seismic data requires knowledge of seismic</td>
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<td>resolution, amplitudes, depth conversion, direct hydrocarbon</td>
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<td>indicators and seismic and sequence stratigraphy. Practicals will</td>
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<td>involve paper and computer based exercises, industry standard</td>
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<td>software and an introduction to the use of workstations.</td>
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<td>External industry specialists will present data and techniques in</td>
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<td>some practicals. The course will conclude with a seismic</td>
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<td>interpretation project.</td>
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<tr>
<td>GL4510</td>
<td>Geodynamics and Plate Tectonics</td>
<td>J Morgan</td>
<td>GL1500, GL2600</td>
<td>0.5</td>
<td>exam 60, reports 40,</td>
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<tr>
<td></td>
<td>The course covers the following topics: Modern day plate tectonics</td>
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<td>fieldwork</td>
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<td>and plate structure, Rigid plate tectonics, Asthenosphere dynamics,</td>
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<td>Lithosphere-Asthenosphere interactions, Forces on plates, Thermal</td>
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<td>structure of plates, Temperature structure of the continental</td>
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<td>lithosphere, Lithospheric thickening/thinning, Plate flexure,</td>
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<td>Continental rifts, Passive margins, Foreland basins, Forearc</td>
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<td>basins, Strike-slip basins, Inversion.</td>
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<td>GL4520</td>
<td>Interpretation of Structural Settings</td>
<td>I Watkinson</td>
<td>GL2600, GL4500</td>
<td>0.5</td>
<td>exam 70, reports 30,</td>
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<tr>
<td></td>
<td>Interpretation of geological structures from a variety of different</td>
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<td>extensional, contractual and strike-slip terranes, and the variation</td>
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<td>in structural styles that result. Expression of structures on</td>
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<td>seismic and remotely sensed data and the interpretation of such</td>
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<td>data sets. The course covers Extensional fault geometry, Rift</td>
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<td>systems, Inversion, Salt Tectonics, Thrust faults and thrust</td>
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<td>systems, Strike slip faults, Strike slip basins.</td>
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<td>GL4580</td>
<td>Terrestrial Palaeoecology</td>
<td>M E Collinson</td>
<td>GL2200</td>
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<td>exam 50, reports 50,</td>
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<td>This course charts the evolution of plant groups and</td>
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<td>vegetation types from the earliest coalescence of the land to the</td>
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<td>present day. It examines palaeoenvironmental controls on plant</td>
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<td>distribution and the ways in which plant fossils can be used to</td>
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<td>Factors controlling preservation of plant fossils will be</td>
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<td>emphasised. This vegetational framework will form the basis for</td>
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<td>study of the evolution of terrestrial ecosystems, with emphasis on</td>
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<td>insect/plant and mammal/plant co-evolution.</td>
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</table>

**Assessment Components: %**
- **Exam**: 50%
- **Reports**: 35%
- **Practicals**: 15%
- **Fieldwork**: 10%

**Option for Geoscience:** Course is taught partly in conjunction with MSc in Petroleum Geoscience
**Option for Geoscience:** Course is taught partly in conjunction with MSc in Environmental Diagnosis and Management
**Option for Geoscience:** Course is taught partly in conjunction with MSc in Petroleum Geoscience

---

- **Fieldwork**
- **Practicals**
- **Reports**
- **Exam**
### Palaeoclimates
**GL4820**  
**Coordinator:** M Collinson  
**Pre/Corequisites:**  
Palaeoproxies for climate change: soils, speleothems, ice cores, leaf analysis, tree rings.  
Factors: ocean gateways, plate convergence, weathering, fire, greenhouse gases, large igneous provinces, Milankovitch cycles.

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<thead>
<tr>
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<td>practicals: 20</td>
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<tr>
<td>fieldwork:</td>
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**Unit Value:** 0.5  
Ancient climate change and how earth-science factors relate to this. Key events in history.  

**Core for Year Abroad students**

### Geological Mapping 2
**GL4920**  
**Coordinator:** D Lowry  
**Pre/Corequisites:** GL3920  
The second part of the mapping module (equivalent to GL3901). Report, fair copy map, cross-sections, stratigraphic columns.

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**Unit Value:** 0.5
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<tr>
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<td>Physics &amp; Chem. of the Earth GL1500 QB240</td>
<td>Physics &amp; Chem. of the Earth GL1500 QB240</td>
<td>Global Tectonics - Plates GL1100 QB240</td>
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Remember to join the Lyell Geoscience Society for regular social events and Guest Lecturers! Search "Lyell Geoscience Society" on Facebook
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<td>Advanced topics in Sedimentology GL3210 JBB0-05</td>
<td>Advanced topics in Sedimentology GL3210 JBB0-05</td>
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<td>Advanced topics in Sedimentology GL3210 JBB0-05</td>
<td>Adv. Concepts &amp; Techn. in Geology Presentation skills GL3001 JBB0-05</td>
<td>Adv. Concepts &amp; Techn. in Geology Presentation skills GL3001 JBB0-05</td>
<td>Mapping Presentations (not every week) GL3901/51 JBB0-05</td>
<td>Mapping Presentations (not every week) GL3901/51 JBB0-05</td>
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Remember to join the Lyell Geoscience Society for regular social events and Guest Lecturers! Search "Lyell Geoscience Society" on Facebook
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<td>31 Oct - 4 Nov</td>
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<td>14-18 Nov</td>
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GL4820 Palaeoclimates
GL4810 Terrestrial Palaeo
GL4320 Modern Climate Change
## SECTION G: SKILLS PROGRESSION

You may also find it useful to look at the criteria listed on the GEES website (www.gees.ac.uk/npjthermo/resemp/profgh.html)

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| **KEY:**               |                  |                  |                  |                  |
|                       | GL1 core courses for all grade honours |                  |                  |                  |
|                       | GL2Geology/Geosci. core courses |                  |                  |                  |
|                       | GL3 environmental or global topic |                  |                  |                  |
|                       | GL4 optional course(s) |                  |                  |                  |
|                       | GL5 skills depend on relevant topic |                  |                  |                  |
Fieldwork completed at end of second year in summer vacation. Subsequent report drafting, follow up analysis, data interpretation throughout third year.

Decide between either Tenerife or Cyprus trips. Your personal tutor will be able to advise you in making the appropriate choice.

NOTE: This list gives a broad indication of the skills which may be gained on various trips. It may well be that others are relevant (or some may not be included) depending on the format of the trip in a particular year.