DEPARTMENT OF GEOGRAPHY

POSTGRADUATE TAUGHT STUDENT HANDBOOK

MSc Quaternary Science

2016/2017
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.

An electronic copy of this handbook can be found on your Departmental website (https://www.royalholloway.ac.uk/geography/home.aspx) where it will be possible to follow the hyperlinks to relevant webpages.
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1.1 Welcome

Welcome to the Department of Geography at Royal Holloway. We very much hope that your year with us will be enjoyable and challenging, and we look forward to working with you on the programme. This handbook aims to give you all the basic information you will require for your academic studies. This includes information on the structure and organisation of the degree programme, teaching arrangements and assessment.

Aims of the programme
The MSc degree in Quaternary Science offers comprehensive and flexible postgraduate training in the established yet dynamic field of Quaternary Science, with the academic emphasis being on the time-dependent processes affecting environmental change. In recent years, Quaternary research has developed a multi- and inter-disciplinary approach to the study of recent Earth history. In addition to the development of new fieldwork and laboratory techniques, substantial advances have been made in geochronological (dating) techniques. These, together with information from new geological archives such as those from the deep ocean floors and in the polar ice sheets, have provided new insights into Quaternary environmental change and created a framework for reconstructing patterns of past change with a degree of accuracy, precision and detail not normally obtainable for older geological periods. Quaternary science therefore provides the best available ‘laboratory’ for researching Earth-system processes and for generating critical baseline data for predicting future climate change.

The aims of this programme are:
- provide a conversion programme for students of, for example, Biology, Physical Geography, Geology, Ecology, Archaeology, Oceanography, Environmental Science who wish to develop or augment a background in global environmental history and processes;
- provide a training programme for students wishing to continue postgraduate study to PhD standards, and who require fundamental training in appropriate palaeoenvironmental, stratigraphical and/or quantitative principles and methods;
- provide a vocational programme for teachers and professional scientists who desire or require a fuller understanding of the time-dependent elements of environmental change as essential context for their career.

The MSc is taught by members of the Centre for Quaternary Research (CQR) at Royal Holloway, a leading interdisciplinary research centre in the field of Quaternary Science. Expertise within the group covers geochronology, palaeoenvironmental proxies, sedimentology and stratigraphy, human evolution, tephrochronology and palaeoclimatology amongst others, as well as a range of technical skills such as micromorphology and stable isotope
analysis. This range of expertise is augmented by leading researchers from the Natural History Museum, London, who teach option courses on Quaternary chironomids and microfossils. The MSc teaching staff are in a unique position to convey research knowledge, experience and skills that will have direct relevance to employability as well as research training for further education, namely doctoral research.

Past students of the course are now employed by national scientific policy making and implementing agencies such as Natural England, the British Geological Survey and the Environment Agency, within government Research Councils, science publishing, higher education institutions, and as teachers and researchers. Many of our alumni are also currently undertaking doctoral programmes in the UK and abroad.

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

Knowledge and understanding
Acquire and demonstrate specialist disciplinary knowledge and understanding of key issues pertaining to Quaternary Science, in particular the core linking themes of:

a) high-resolution palaeoenvironmental records;
b) high-precision dating;
c) multi-proxy approaches to the investigation of past environmental changes.

Skills and other attributes
- ability to assess the causes, scale and rapidity of past climate and environmental fluctuations, encompassing field, laboratory, statistical and computing methods used in the acquisition, interpretation and modelling of proxy climatic and environmental data;
- ability in project formulation and design, sampling strategies and hypothesis testing;
- effective problem-solving and decision-making;*
- critical analysis and synthesis of information;*
- good communication skills;*
- advanced interpersonal skills;*
- quantitative analysis;*
- skills in Information Technology;*
- good time management;*
- effective team work.*

* transferable skills
1.2 How to find us: the Department

The Department of Geography is located in the Queen’s Building can be found on the College campus map as building 35

1.3 Map of the Egham campus

Student parking is limited and a parking permit is required. This can be obtained via Security. You will need proof of insurance and ID before a permit will be issued.
1.4 How to find us: the staff

CONTACT DETAILS

Head of Department
Professor Katie Willis 161

Departmental Education Support Officer
Dr Mike Dolton 173

MSc Teaching Staff
Dr Simon Armitage (MSc Director) 174a
Dr Simon Blockley 155
Professor Ian Candy 157
Dr Bethan Davies 148
Professor Scott Elias 124
Professor John Lowe EMU11
Dr Ian Matthews 156
Dr Alison MacLeod 149
Dr Alice Milner 175
Dr Adrian Palmer 125
Professor Danielle Schreve (CQR Director) 174b
Dr Varyl Thorndycraft 152b

Technical Operations Manager
Dr Claire Mayers 130

Technical/Operations Staff
Ray Aung (Computer Technician) 137
Jenny Kynaston/Malcolm Kelsey (Cartographic Technician) 137
Adrian Palmer (Senior Research Officer) 125
Katie Flowers (Laboratory Technician) 127
Marta Perez (Laboratory Technician) 127
Iñaki Valcarcel (Laboratory Technician) MF 001

Administrative/Secretarial Staff
Moya Watson (Department Manager) 160
Lisa Fell (Department Manager) 160
Liz Hamilton (PG Administrator) (Mon-Tue) 162
Karen Oliver (PG Administrator) (Wed-Fri) 162
Laura Flitney (UG Administrator) 162

There are also a number of research staff based in the department and visiting academics. You can find out more about teaching staff and their research interests and activities on the Departmental web pages and in Appendix 1.
1.5 How to find us: the Departmental office

The Departmental Office is located in Room 162 Queen’s Building, and the Postgraduate Administrators (Karen Oliver and Liz Hamilton) are usually able to answer questions concerning postgraduate matters.

1.6 The Department: practical information

Any official Departmental forms that you may need to obtain are normally available from the Postgraduate Administrators or the Department Manager (Moya Watson/Lisa Fell). If you want to leave messages for members of staff, these can be left in staff pigeonholes in the post room next to the Departmental Office. The Department has its own web-site – http://www.rhul.ac.uk/geography/home.aspx

This has a wealth of easily-accessible information about the Department, including pages solely dedicated to Postgraduate issues, see – https://www.royalholloway.ac.uk/geography/currentstudents/home.aspx

1.7 Staff research interests

Details on staff research interests can be found at http://www.rhul.ac.uk/geography/staffdirectory/home.aspx and in Appendix 1 for all staff associated with the programme.

2 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 or meetings you might be required to attend. 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 to your email address. Do not ignore the email as it will be assumed that it will have been received by you within 48 hours, excluding Saturdays and Sundays.

You should also make a habit of checking the student pigeonholes in the Department.

2.1 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
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. Email communications from staff and all the Faculty Administrators should be treated as important and read carefully.

The College provides a number of PC Labs around Campus for student use, and you can also use your own laptop/smart phone etc., so the Department expects you to check your email regularly. 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 email account is kept in working order. If you have any problems contact the IT Service Desk

The Geography Department will only use the address in the College Global Address List and does not use private or commercial email addresses, such as Hotmail or Gmail. Students who prefer to use commercial email services are responsible for making sure that their College email is diverted/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 (you may need to use IE browser to access this as the link does not work on some browsers). 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.

2.2 Post

All post addressed to students in Geography is delivered to the student pigeonholes (alphabetical by surname) in the post room (Q163). 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.
2.3 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.royalholloway.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.

2.4 Notice boards

The official student notice boards are on the walls opposite the Departmental office. 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 venues of all class meetings and of any requirements (eg. essay deadlines) relating to your courses, so, if in doubt, please ask!

2.5 Personal Advisers

All students are allocated a Personal Tutor, with whom they are expected to meet at least once a term. Additional ad hoc meetings may be arranged where appropriate with the tutors or the Programme Director. The major role of the Tutor is to act as a point contact and source of advice, give feedback on overall academic performance and help guide career plans. All students are invited to meet with the Programme Director individually in April for confidential feedback on progress with the programme in the light of performances on all of the Core and Option courses. For the dissertation, students are allocated a main Project Supervisor, though in some cases more than one supervisor is allocated where a combination of techniques is to be employed, while external advisers may additionally be formally recognised, in cases where the project involves a considerable amount of work to be undertaken in other institutions for essential access to specialist advice and/or facilities.

You are encouraged to participate in career-oriented activities run in the Department (see Careers Section 8.6), and to use the services and facilities of the Careers Service and other opportunities for skills development on campus (e.g. through the Computer Centre, Language Centre). Your Personal Tutor can help you monitor and review your personal skills and think about how
these can be developed.

2.6 Questionnaires

It is important that we gain feedback from you on how the programme has been delivered and what your experience has been. At the end of each course, you will be provided with a questionnaire to complete, which should be returned to the Programme Director as promptly as possible. You will also be provided with questionnaires concerning the field training programme, dissertation supervision and regarding your experience of the programme as a whole. All questionnaires are anonymous. Please take some time to give your response to the course - these questionnaires form an important part of the way we monitor the quality of teaching and learning in the Department. All questionnaires are seen by the Head of Department and Programme Director, and are analysed as part of the College’s Annual Monitoring process. Constructive criticism is always welcomed and plays an important role in course development. Deserved praise is also very welcome and can make a tremendous contribution to the job satisfaction of your lecturers!

Problems, comments, observations and key recommendations raised by the Visiting Examiner and minutes of the Periodic Review Committees and examination sub-board meeting are recorded and reviewed by the Programme Director at the end of each academic year and are discussed with the teaching staff for future development of the programme. Key summaries of these are submitted to the college for annual monitoring of postgraduate taught courses. Annual Review of the programme takes place at the end of the academic year to enable staff to identify points for action where necessary, and to plan programme developments from a sound knowledge base.

On-going feedback from students is achieved through student representation on the Periodic Review Committee, a meeting of all programme teaching staff that takes place approximately once a term. Two student representatives are invited to attend the PRCs, in order to provide feedback from the student cohort. In addition, the Department has a Staff-Student Committee as a formal liaison and feedback mechanism, on which the MSc representatives also serve.

From time to time you may find another lecturer sitting in one of your classes. The Department operates a system of ‘peer-observation’ of teaching - members of the teaching staff observe and comment on each other’s teaching during the year.
2.7 Space

There are study spaces available in most of the libraries on campus. In the Department, PGT students can use the Library@Geography (Reading Room) (Q174) and Common Room (Q144) which also has eating/drinking facilities.

3 Teaching

3.1 Dates of terms

Term dates can be found on the College website http://www.royalholloway.ac.uk/aboutus/collegecalendar/home.aspx

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/practical’s etc., you are expected to keep your department informed and fill in a Notification of Absence Form (see 3.3 below). During the summer term, after the summer examination period, you are expected to attend all required academic activities organized by your department(s) and to be available should you be required to meet with College staff for any reason. Furthermore as Master’s programmes run for one calendar year from September to September you are also supposed to be available to meet with staff after the official end of term should this be required, that is, during the summer vacation period.

3.2 Reading weeks

There are two Reading Weeks in the timetable. In 2016-17, these will be from 24th-28th of October 2015 and the 28th of November-2nd of December 2015. The October Reading Week will include a graphics training session.

3.3 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 Geography Department 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 (see 3.3.6 below). 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, field work, laboratory work, and meetings your Personal Advisor.

It is vital that you manage your time effectively, so that any paid employment, voluntary work, extracurricular 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 Postgraduate Taught 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 authorize your absence. If you are experiencing such difficulties on an ongoing basis, please contact your Personal Adviser or Year 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/.

3.3.1 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.

3.3.2 Departments’ responsibilities for monitoring attendance

The Geography department will monitor your attendance at scheduled learning activities. 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:

i. you fail to attend for two weeks without providing notification of your absence;

ii. you display a pattern of absence that the department feel is affecting or is likely to affect your work;

iii. 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.

3.3.3 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 & Policy Office (AQPO).

The College also has obligations places on it by UK Visas and Immigration
3.3.4 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

**Figure 1 - Notification of Absence Form – Absence Due to Illness**

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 Course Director and Course Leader by e-mail
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. This paperwork should be submitted to the Departmental Office.
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 Advisor).
- 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.

3.3.5 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 e-mail 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.

3.3.6 Consequences of failing to attend

As indicated in 3.3.2 above 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.aspx and in the relevant regulations http://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx.
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.

3.3.7 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 Postgraduate Taught Regulations (http://www.rhul.ac.uk/ecampus/academicsupport/regulations/home.aspx)

4 Degree Structure

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

4a Structure and content

Attendance at all elements/modules is compulsory. Candidates must complete all of the following course components:

- Five Core Courses
- Field Training Programme
- Five Option Courses
- Dissertation

4b Core Courses
• GG5291 Quaternary Palaeoclimatology (10 credits)
• GG5201 Sedimentology & Stratigraphy (10 credits)
• GG5293 Techniques of Quaternary Research (10 credits)
• GG5232 Palaeoecology, Dating & Quantification (10 credits)
• GG52XX Oral presentation (10 credits)

Full details of the teaching staff, aims, content, teaching format, assessment, learning outcomes, and assessment goals of these compulsory core courses are provided in Appendix 2.

4c Field Training Programme (FTP)
Reconstruction of Quaternary Ice Masses, formerly an option course, is now taught as part of the field training programme for Techniques of Quaternary Research. The location and duration of the courses vary from year-to-year, but in recent years it has been centred in the Scottish Highlands region of Glen Roy. All students are required to participate in the two main residential programmes that are elements of the Sedimentology and Stratigraphy core course (4 days) and GG5295 (the main Field Training programme, of minimum 11 days). In addition, field training exercises form compulsory elements of some of the option courses. The objectives of these exercises vary and include (i) collection and analysis of data in the field, (ii) collection of materials for laboratory analysis, (iii) application of advanced analytical skills, applying the principles of the methods taught in the relevant option course, and (iv) in-depth study of Quaternary palaeoenvironmental and/or stratigraphical evidence.

4d Option Courses
Below is a list of the option courses offered from which students are required to select five. The number of units offered each year may vary slightly but will be a minimum of nine. Some degree of flexibility in the curriculum is envisaged in order to make provision for staff sabbaticals and other logistical matters.

• GG5203 Palynology
• GG5207 Coleoptera
• GG5209 Micromorphology
• GG5212 Luminescence Dating
• GG5220 Quaternary Microfossils (Natural History Museum)
• GG5223 Quaternary Mammals
• GG5229 Late Quaternary Palaeohydrology
• GG5231 Chironomids (Natural History Museum)
• GG5233 Glaciers in the Climate System
• GG5290 Tephrochronology

Full details of the teaching staff, aims, content, teaching format, assessment, learning outcomes, and assessment goals of these option courses are provided in Appendix 3.
Each option course is taught in a block of one week (5 working days). The assessment for option courses may take a variety of forms, including laboratory reports, practical exercises, essays and scientific papers, depending upon the course. However, the assessments are designed in such a way as to be capable of completion within a maximum of two days additional to the 5 days allocated to the course for instruction.

4.1 Course registrations
While you have the option of changing course unit registrations within the first two/three weeks after the start of teaching (excluding Welcome Week) 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.

5 Facilities
5.1 Libraries
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](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 Geography is Emma Burnett, who can be contacted at [emma.burnett@rhul.ac.uk](mailto:emma.burnett@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](http://www.royalholloway.ac.uk/library/helpandsupport/findinginformation.aspx)
5.2 Photocopying, printing and computing

5.2.1 Photocopying
PGT students are issued with a number of photocopying credits at the start of the academic year, after which there is a small charge. A photocopier for postgraduate use is located in the Post Room next to the Departmental Office. In addition 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:
https://www.royalholloway.ac.uk/it/printing/home.aspx

If you require copying to be done for a seminar presentation, you need to give these materials to your tutor to copy on your behalf. Please make sure that you plan ahead and give the materials to your tutor in plenty of time.

5.2.2 Printing
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.

Departmental staff are unable, in any circumstances, to print anything out on your behalf. Copier-printers (MFDs) are located across the campus in the PC labs, libraries and Computer Centre. Further information on printing is available online:
http://www.royalholloway.ac.uk/it/printing/home.aspx

5.2.3 Computing
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

NB Printing/copying/computing problems are not a valid excuse for late submission of coursework – late penalties will be applied. Previous cohorts have made extensive use of the printer in the GVML. However, this printer cannot cope with a queue of large files so plan to print your work several hours prior to the submission deadline. This is particularly important for the dissertation – print it the day before submission!
6 Coursework Essays and Dissertation

6.1 Coursework essay

The marking criteria and pro formas for coursework assignments are given in the Appendices. Details of the course assessment deadlines are given below in the table and descriptions of the assignments appear under individual course outlines in Appendices 2 and 3. Course leaders will also give additional guidance on assignments.

Deadlines for course assignments are outlined in the table overleaf. Please note that the option course timetable is provisional, and one or more courses are likely to change date.

<table>
<thead>
<tr>
<th>Core courses</th>
<th>Deadline (by 4pm unless stated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quaternary Palaeoclimatology</td>
<td>Monday 5th December 2016</td>
</tr>
<tr>
<td>Sedimentology &amp; Stratigraphy</td>
<td>Monday 14th November 2016</td>
</tr>
<tr>
<td>Techniques of Quaternary Research</td>
<td>Monday 5th December 2016</td>
</tr>
<tr>
<td>Palaeoecology, Dating &amp; Quantification</td>
<td>Monday 16th January 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option Courses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tephrochronology</td>
<td>Monday 6th February 2017</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>Monday 13th February 2017</td>
</tr>
<tr>
<td>Mammals</td>
<td>Monday 20th February 2017</td>
</tr>
<tr>
<td>Palynology</td>
<td>Monday 27th February 2017</td>
</tr>
<tr>
<td>Micromorphology</td>
<td>Monday 6th March 2017</td>
</tr>
<tr>
<td>Quaternary Microfossils</td>
<td>Monday 13th March 2017</td>
</tr>
<tr>
<td>Luminescence</td>
<td>Monday 20th March 2017</td>
</tr>
<tr>
<td>Chironomids</td>
<td>Monday 27th March 2017</td>
</tr>
<tr>
<td>Glaciers in the Climate System</td>
<td>Wednesday 19th April 2017</td>
</tr>
<tr>
<td>Palaeohydrology</td>
<td>Monday 24th April 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field training</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scottish Highlands assignment</td>
<td>Tuesday 2nd May 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dissertation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissertation</td>
<td>Wednesday 23rd August 2017 12pm</td>
</tr>
<tr>
<td>Oral presentation</td>
<td>Wednesday 30th August September 2017</td>
</tr>
</tbody>
</table>
6.2 Marking schemes and academic feedback

Provided the assignment is received by the appropriate deadline, staff will return assignments and completed pro-formas to the Programme Director for circulation to students within 4 term weeks of submission. Any assignment not received by the deadline will be subject to the penalties for late submission of work set out in Section 7.4. Extensions will only be granted if there are extenuating circumstances and written agreement has been reached in advance with the Programme Director (see Section 7).

Students must retain copies of assignments as the originals will not be returned; staff will not write comments on the scripts. Feedback is via a pro forma completed by the first marker (with additional comments by the second marker if appropriate). Percentage marks are supplied.

Members of staff send all written assignments, pro formas and separate sheets of agreed marks to the Programme Director. Students collect or are sent by e-mail copies of their pro formas from the Programme Director. Staff members are only allowed to give out indicative grades for marked coursework. Numerical marks are only finalised when they have been ratified by the visiting examiner. Until that time (September), all marks are provisional.

Appendix 5 shows the assessment criteria that are used by examiners in marking work within the Department, and shows you the general criteria that are used to calculate grades and marks. They are general models of the characteristics that are expected of work being awarded particular grades.

6.3 The dissertation

Candidates must also prepare a dissertation (GG5299) not exceeding 10,000 words. The aim of the dissertation is to build upon the research training provided in the core and option courses and to enable students to undertake an independent and original piece of research on a Quaternary Science topic of their choice.

Having identified an appropriate topic and supervisor(s), students must produce a written draft dissertation proposal outlining aims, methods and resource requirements. These drafts are circulated to staff attending the presentations in early May at which oral presentations of dissertation projects are made. After taking into account verbal and written comments of staff, students complete and submit a final dissertation proposal that must be approved by supervisors and the Programme Director before field or laboratory work can be undertaken.

All members of the Teaching Team are available to be supervisors and external advisers/co-supervisors may also be appointed where appropriate. Each student is allocated one or more supervisors who will provide guidance on appropriate techniques and approaches as required. It is the supervisor’s
responsibility to ensure that a student is made aware of the relevant health and safety procedures in the field and/or laboratory. The assessment should be submitted in both paper and electronic format.

**Learning outcomes of the dissertation**

By the end of the dissertation, students should be able:

- To plan, design and execute an advanced and rigorous piece of Quaternary Science research
- To undertake effective fieldwork and/or laboratory analysis with due regard for safety and risk assessment
- To collect, combine, present, analyse and interpret different types of Quaternary Science data

**Assessment goals**

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the dissertation

**Promotion of transferable skills**

The dissertation develops a range of transferable skills including time management, problem solving, presentation, writing and critical analysis.

Formal requirements for the preparation and submission of the dissertation are outlined in Appendix 4). Appendix 5 outlines the dissertation marking guidelines and grade descriptors. Appendix 6 lists a selection of the topics chosen by students registered for the degree programme in recent years; this will give an indication of the wide range of topics and techniques available.

**By Wednesday 3rd of May 2017**, the dissertation proposal form, counter-signed by the prospective supervisor, must be submitted to the director of the programme. The proposal should include as full as possible an account of the main research aims, methodology, location of field or lab work and any budgetary considerations (e.g. costs of running particular analyses and how these will be financed). Each student will then be required to make a ten minute oral presentation (followed by questions) of their dissertation project in front of staff and postgraduates on **Wednesday 10th May 2017**, at which staff will give feedback to improve the proposals. Final dissertation proposals, taking into account this feedback, should be submitted to the Programme Director by **Friday 12th May 2017**.

**Students who have not submitted their research proposal will not be allowed to proceed to do their fieldwork and dissertation.** Approval of the research
proposal is required before candidates are permitted to start field or laboratory work for the main research. The supervisor will then proceed, with the student, to complete the Departmental risk assessment forms.

During the summer vacation, there is no formally scheduled contact with supervisors during this period, although it is expected that students will consult them as appropriate to discuss progress of their research and writing. Supervisors are, however, NOT permitted to comment on any written work beyond a short (less than 1000 words) report of progress, which should be submitted in writing to your supervisor by Wednesday 12th July 2017, unless alternative arrangements have been made (such as a workshop, or personal meeting for oral report on progress).

Two copies of the dissertation must be submitted for examination, both spiral bound. Spiral binding is available in the Departmental Drawing Office, for which a nominal charge will be made. The dissertation must comply with conventional formatting requirements, including full contents pages, a clear chapter structure, an alphabetical bibliography and where appropriate, appendices. In addition, an electronic copy of the dissertation (figures and diagrams removed) should be submitted to the College plagiarism system, Turnitin. A receipt of submission of work to the Turnitin system should be handed into the Departmental office when the hard copies of the dissertation are submitted. You will also need to complete a statement of work, which will be circulated to you beforehand by the Programme Director and which will be counter-signed by your supervisor.

As well as the hard copies of their dissertation, students are required to submit their project results in electronic format (as a single .pdf file, though Appendices may be presented as separate files where necessary).

6.4 Choice of dissertation topic

Students will be encouraged to choose topics that integrate well with the established research strengths and interests of the staff contributing to the MSc degree programme. Guidance will be given in project formulation and design by the supervisor. Students are encouraged to explore the different course options before discussing a range of potential research projects with staff. N.B. Where an option course does not run because the course leader is on sabbatical, it is possible that this member of staff will still wish to supervise dissertations.

6.5 The dissertation supervisor

Your department will assign you a dissertation supervisor who will oversee your work. In most cases students are happy with the supervisory relationship. However, there are occasions where for some reason the supervisory relationship does not work and breaks down. If this happens, you should speak as soon as possible with the Programme Director or your Personal
Advisor to see whether the problem can be resolved informally, e.g. through mediation, changing supervisor. You should not wait until after you have received your final degree results to raise the matter as it is very difficult for the College to resolve such matters or take remedial action at that point.

7 Assessment Information

7.1 Illness or 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.

7.2 Submission of written work

It is normally expected that you will word-process all assessed written work, unless a prior agreement has been made with the course leader.

All assessed work should be handed in at the Departmental Office in person by 4pm on the specified deadline for each course, except the dissertation and any other notified elements that have separate arrangements (see Section 6.1). Coursework receipts are issued by the Postgraduate Administrators, and you should retain these until the examination process is completed for the year in the following September.

In addition, an electronic copy of the work should be submitted to the College plagiarism system, Turnitin, by the given deadline. A receipt of submission of work to the Turnitin system should be handed in to the Departmental office when submitting the paper copy of the assessed work.

Both paper and electronic (via Turnitin) copies of a piece of assessed work must be submitted prior to the deadline to avoid incurring the penalties specified in Section 7.4.
7.3 Extensions to deadlines

Any requests for extension of coursework and dissertation deadlines must normally be made in writing to the Programme Director at least 24 hours in advance of the deadline. Such extensions will only be granted on the grounds of illness or other personal hardship. You may be required to submit medical evidence as appropriate.

7.4 Penalties for late submission of work

Work submitted after the published deadline will be penalised in line with Section 13 (5) of the College’s Postgraduate Taught 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, e.g. whether you need to submit electronic and/or paper copies for your submission to be deemed complete (see 7.2 above).

Section 13 (5)
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 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 your department(s). 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. Please see the section on applying for an extension to the deadlines set, and the section for details on submitting requests for extenuating circumstances to be considered.
7.5 Anonymous marking and cover sheets

It is a College requirement that in respect to individual written coursework, all assignments remain anonymous until marking has been completed. You should only write your candidate numbers on individual written work, not your name. Candidate numbers will be issued to you in the first weeks of the degree programme. All summatively assessed written work is double marked.

7.6 Penalties for over-length work

Work which is longer than the stipulated length in the assessment brief will be penalised in line with Section 13 (6) of the College’s Postgraduate Taught Regulations 2016-17 (https://www.royalholloway.ac.uk/ecampus/academicsupport/regulations/home.aspx)

Section 13 (6)

Work which exceeds the upper word limit will be penalised as follows:

(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.

In addition to the text, the word count should include quotations and footnotes. Please note that the following are excluded from the word count: candidate number, title, course title, preliminary pages, bibliography and appendices.

7.7 Return of written coursework

The following College policy applies to the return of 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. 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.
7.8 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 7.9 below), 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 Advisors 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.

7.9 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. 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.
7.10 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 the Disability and Dyslexia Services. http://www.royalholloway.ac.uk/ecampus/welfare/disabledstudents/home.aspx

7.11 Progression and award requirements

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

For details on the requirements governing the level of award please see the section on the Consideration and Classification of Candidates for the Award in the Postgraduate Taught Regulations.

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

7.12 Examination/assessment results

Please see the Examinations & Assessments 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 & Assessments 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/academicsupport/academicappealsandcollegecomplaints.aspx
8 Student Support

8.1 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

8.2 Students in need of support (including students with special needs)

Your first point of reference for advice within the Department is the Course Director. Inevitably, problems will sometimes arise that the Course Director 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 page: 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. The Departmental Disability and Dyslexia Service (DDS) representative is Dr Mike Dolton. You must also contact the DDS (Founders West 143; tel: +44 (0)1784 276473; email: 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 Support, health and welfare page http://www.royalholloway.ac.uk/ecampus/welfare/disabledstudents/home.aspx

8.3 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.

8.4 Student-staff committee

There is a student-staff committee on which both taught and research students are represented. For constitution see committee’s handbook under Compliance/Governance http://www.royalholloway.ac.uk/iquad/collegepolicies/home.aspx
The Committee meets three times each year and plays an important role in the Department as a forum for airing student views.

You can use the Committee to raise any issues which concern students. Notices will appear on departmental notice boards giving details of forthcoming elections or the names of current representatives.

8.5 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

8.6 Learning resources: library, IT, photocopying and printing

There are a number of libraries and computing facilities on campus where photocopying and printing can also take place. Details can be found on the Library (http://www.rhu.ac.uk/information-services/library/) and Computer Centre (http://www.rhu.ac.uk/Information-Services/Computer-Centre/index.asp) web pages.

8.7 Careers information

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
8.8 Non-academic policies

Please see the Regulations and procedures webpage http://www.students.royalholloway.ac.uk/study/read-our-college-regulations-and-procedures/ which includes information on non-academic policies, regulations, and codes of practice as well as the Student Charter. http://www.royalholloway.ac.uk/aboutus/governancematters/studentcharter.aspx

8.9 Complaints and academic appeals procedure

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 Advisor 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 http://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 

9 Health and Safety Information

9.1 Code of practice on harassment for students

This can be found on the student home pages under regulations and procedures http://www.students.royalholloway.ac.uk/study/read-our-college-regulations-and-procedures/

9.2 Lone working policy and procedures

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 Department and the type of work conducted by students
(other than laboratory work where specific guidance will be issued prior to
the commencement of work) is classified as a low risk activity and as such the
following advice is relevant.

Working out of hours counts as lone working - and the rule is the usual "If you
arrive and leave the department outside of 9-5 then you must call security on
3063 to let them know you are in the building and again to let them know
when you leave." There is an open access phone in the Queens foyer to use
for this purpose.

Any health and safety concerns should be brought to the attention of the
Departmental Health and Safety Coordinator or the College Health and
Safety Office.

It is likely that most activities will take place on College premises. However,
the principles contained in the above section will apply to students
undertaking duties off campus.

9.3 Field trips
Students carry out fieldwork as part of a number of core and option courses.
These activities are risk assessed and risk assessment forms will be issued to
students prior to the commencement of fieldwork. It is your responsibility to
familiarize yourself with and adhere to the measures put in place to
mitigate/reduce risk.

Students carry out fieldwork in relation to the dissertation. The procedure in
terms of health and safety is that the supervisor and student discuss health
and safety issues relating to the fieldwork and these are then formally
recorded on the Departmental risk assessment forms (available from the
Programme Director). The risk assessment forms give a detailed account of all
risks associated with fieldwork and measures put in place to mitigate/reduce
risk. Students will not be able to proceed with fieldwork unless they have
satisfactorily completed the risk assessment forms.

10 Equal Opportunities Statement and College Codes of Practice

10.1 Equal opportunities statement

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.

10.2 College codes of practice
Postgraduate codes of practice can be found in the Departmental Postgraduate Handbook.
APPENDIX 1: TEACHING STAFF AND ADMINISTRATION

**MSc Programme Director & Chairman of Sub-Board of Examiners**
Dr Simon Armitage
Responsible for overseeing day-to-day running of degree programme, policy matters, forward planning, recruitment, selection of candidates and liaison with external organisations.

**MSc Teaching Team**
All members of staff contributing to the teaching of the course syllabus (see details below).

**MSc Examination Sub-Board**
All members of staff contributing to the teaching of the course syllabus and one Visiting Examiner of senior status within the field of Quaternary Science. The current Visiting Examiner is Professor Pete Langdon, Professor of Palaeoenvironmental Change, University of Southampton.

**BRIEF STAFF CURRICULA VITAE**

**Dr Simon Armitage**
Reader in Quaternary Science, Centre for Quaternary Research, Department of Geography, RHUL

Simon is the Director of the Geochronology Laboratory at Royal Holloway and has research interests in the technical and theoretical development of luminescence dating and its application to a wide range of Quaternary archaeological and palaeoenvironmental problems. He is particularly interested in climate change and archaeology in dryland environments, with current work focusing on the impacts of late Quaternary climatic changes upon pre-industrial human/hominin populations in Africa and the Arabian Peninsula. He is a member of the TRACSYMBOLS project, which examines how key behavioural innovations emerged among *Homo sapiens* and *Homo neanderthalensis* in southern Africa and Europe respectively, and whether/how environmental variability from MIS 6-3 influenced this development.

**Dr Simon Blockley**
Reader in Quaternary Science, Centre for Quaternary Research, Department of Geography, RHUL

Simon’s research activity focuses on improving chronologies, by better age modeling and through tephrochronology. He is a Co-Investigator on the NERC RESET (Response of Humans to Abrupt Environmental Transitions) consortium, leading efforts to trace and identify tephra layers in terrestrial sites in Europe and North Africa, and leads the Chronology workgroup of the EU-
funded INTEGRATING Ice core, MARine and TERrestrial records (INTIMATE) project, which aims to develop common protocols and methods to reconstruct abrupt and extreme climate change across Europe, 60,000 to 8000 years ago. Much of his research has been focused on the Late Glacial, including ongoing work at the classic late upper Palaeolithic/Mesolithic site of Star Carr (North Yorkshire). He is Chair of the ROXSTOR (Royal Holloway and Oxford Tephrochronology Research) network.

Mr Stephen Brooks (external, Natural History Museum)

Research Entomologist at the Natural History Museum, London

Steve’s research focuses on the use of Chironomidae as indicators of environmental change with a focus on (a) quantitative reconstruction of late Quaternary climate change in Northern Europe and southern South America; (b) post-industrial pollution of freshwater ecosystems; systematics and ecology of freshwater insects, especially Chironomidae, Odonata and Neuroptera.

Professor Ian Candy

Professor of Geography, Centre for Quaternary Research, Department of Geography, RHUL

Ian’s research interests include the study of Quaternary sedimentary sequences from Britain through the Mediterranean and Near East with the aim of producing high resolution chronologies that allow better understanding of geomorphic response to environmental change. In particular Ian is keen on combining U-series dating with other complementary techniques (such as OSL) to produce high precision sediment chronologies that can be correlated with high resolution records of palaeoclimatic change. Ian’s research also focuses on palaeoclimatic reconstruction in northwest Europe through stable isotope analyses. He is a core member of the Ancient Human Occupation of Britain project (a £3.3 million research project funded by the Leverhulme Trust) and serves on the Executive Committee of the Quaternary Research Association as Publications Secretary.

Dr Bethan Davies

Lecturer, Centre for Quaternary Research, Department of Geography, RHUL

Bethan is a glacial geologist interested in the interaction between glaciers and climate over multiple timescales. She specialises in ice-sheet and glacier reconstruction in temperate and high latitudes. Bethan uses a combination of field studies, chronostratigraphical methods (especially cosmogenic nuclide dating), remotely sensed data sets and numerical modelling to quantify ice-sheet and ice-shelf history. She is particularly interested in glacial processes at the ice-bed interface, and has used detailed sedimentological analyses and micromorphology to analyse processes of entrainment, deposition and
deformation. Her current research interests are orientated towards the Antarctic Peninsula, the Patagonian Ice Sheet and the last British-Irish Ice Sheet. Highlights from this research have included a revised reconstruction of Middle Pleistocene and Devensian British and Fennoscandian ice sheet interactions, an analysis of past, present and future ice-shelf and glacier change in the northern Antarctic Peninsula and in Patagonia using field studies, satellite image analysis and numerical modelling, an analysis of glacial processes on James Ross Island, northern Antarctic Peninsula and reconstructions of Last Glacial Maximum ice stream dynamics on the northern Antarctic Peninsula. She is an editor of the Royal Society Open Science and the Open Quaternary journals. Bethan recently held a Scientific Committee for Antarctic Research (SCAR) Visiting Fellowship to visit Victoria University of Wellington in New Zealand for six months in 2013.

**Professor Scott Elias**

Professor of Quaternary Science, Centre for Quaternary Research, Department of Geography, RHUL

Scott’s expertise is in Quaternary insects, palaeoclimate, palaeoecology and biogeography. His key focus is on the reconstruction of palaeoenvironments, particularly in the Beringian region, and most notably in Pleistocene interglacial climates in the Arctic. Scott is engaged in the development of quantitative estimates of past climates, both through the use of stable isotope analysis from fossil beetle chitin and through refining the Mutual Climatic Range method of palaeoclimate estimation for North American Quaternary insect assemblages. He is also collaborating with ancient DNA researchers to extract genetic information from fossil beetle remains in permafrost sediments in Beringia. He is Editor in Chief of the Encyclopedia of Quaternary Science.

**Dr Tom Hill (external, Natural History Museum)**

Museum Scientist Micropalaeontology, Natural History Museum, London

Tom’s main research interests lie in the reconstruction of Quaternary palaeoenvironments. He has specific expertise in late Quaternary climate change, with focus on the transition from the Devensian Late-glacial to the Holocene period, and has experience in the application of pollen, diatom and particle size analyses to palaeoenvironmental reconstructions.

Tom also has interests in contemporary and ancient coastal lowland systems and the use of microfossils, including diatoms and foraminifera preserved in coastal sedimentary archives as a quantitative tool for reconstructing sea-level change during the Holocene. His most recent work builds on a strong interest in geoarchaeology and the use of palynology and stratigraphy to study the impact of human activity on the landscape change during the prehistoric period.
Professor J. John Lowe

Professor of Geography and Quaternary Science, Centre for Quaternary Research, Department of Geography, RHUL

John’s research interests include Quaternary palynology, high-precision geochronology of late Quaternary events, Late Quaternary palaeoclimate change, tephrostratigraphy, palaeolimnology and peat stratigraphy. He is Lead PI on the NERC RESET consortium and a founding member of the EU-funded INTEGRATING Ice core, MARine and Terrestrial records (INTIMATE) project. He is a Past President of the Quaternary Research Association and of the INQUA Palaeoclimate Commission.

Dr Alison MacLeod

Leverhulme Early Career Research Fellow, Centre for Quaternary Research, Department of Geography, RHUL

Alison’s research focuses on Late Quaternary sediment sequences, with a particular aim to construct robust and precise regional records of environmental change through difference techniques, including analysis of annually laminated sediments by thin section micromorphology, high-resolution sedimentology and ITRAX XRF core scanning, tephrochronology, radiocarbon dating and Bayesian integration of chronological data. In recent years, she has been engaged in the development of a varve chronology for the Last Glacial-Interglacial Transition (and Holocene) in the UK and involved in the independent correlation and integration of records of abrupt climatic change across the North Atlantic region and continental Europe. She is a member of the EU-funded INTEGRATING Ice core, MARine and Terrestrial records (INTIMATE) project.

Dr Ian Matthews

Senior Lecturer, Centre for Quaternary Research, Department of Geography, RHUL

Ian’s research combines aspects of geochronology, environmental archaeology and palaeoecology. Most recently, he has focused on constraining and testing Holocene human-environment interactions in European wetlands through high-precision geochronological techniques including tephrochronology. His interests currently extend into investigating abrupt climate change in a variety of geographic regions, including the North Atlantic seaboard and the central Mediterranean, through the generation of robust palaeoenvironmental and archaeological datasets underpinned by precise and accurate chronologies. He is a member of the EU-funded INTEGRATING Ice core, MARine and Terrestrial records (INTIMATE) project.
Dr Alice Milner

Lecturer, Centre for Quaternary Research, Department of Geography, RHUL

Alice’s research is focussed on using high-resolution pollen and multiproxy records to characterise ecosystem and climate change during the interglacials and early glacialss of the late Quaternary (Eemian and Holocene). She is particularly interested in using pollen analysis to understand rapid climate changes and their characteristics, causes and effects on terrestrial ecosystems. Much of Alice’s research has focussed on wetland, lake and marine sites in the Mediterranean and the UK, although she also has interests in using pollen to support archaeological interpretations of early human activity in East Africa. Some of her current research applies a contemporary and palaeo approach to understand recent ecological and hydrological changes in peatlands, with an overarching aim of improving the robustness of peat-based environment and climate reconstructions.

Dr Adrian Palmer

Senior Research Officer in Physical Geography, Centre for Quaternary Research, Department of Geography, RHUL

Adrian is the deputy Technical Operations Manager in the Department of Geography. His research involves the development of high-resolution chronologies for the UK using the thin section micromorphology technique for the analysis of annually laminated sediments. Adrian has particular interests in the Lateglacial of the Scottish Highlands but also works on Middle Pleistocene glacial and interglacial deposits, including the generation of high-resolution information for the Hoxnian parastratotype deep lake sequence at Marks Tey in Essex. He is also a member of the EU-funded INTegrating Ice core, MArine and TErrestrial records (INTIMATE) project, which aims to develop common protocols and methods to reconstruct abrupt and extreme climate change across Europe, 60,000 to 8000 years ago.

Professor Danielle Schreve

Professor of Quaternary Science, Centre for Quaternary Research, Department of Geography, RHUL

Danielle’s research is on Quaternary mammals, combining biostratigraphy and the reconstruction of past environments, with the investigation of palaeobiological aspects such as extinctions and evolutionary change and the interaction of past mammalian communities with early humans. She has worked extensively on fluvial sequences in the UK (especially the Thames and Trent), on tufa sites in central Europe and most recently, on Late Pleistocene
cave sites in Britain. She is a core member of the Ancient Human Occupation of Britain project (a £3.3 million research project funded by the Leverhulme Trust), past President of the Geologists’ Association, Fellow of the Society of Antiquaries and current Vice President of the Quaternary Research Association. She is also a member of the EU-funded INTEgrating Ice core, MArine and TErrestrial records (INTIMATE) project.

Dr Varyl Thorndycraft

Senior Lecturer, Centre for Quaternary Research, Department of Geography, RHUL

Varyl is a fluvial geomorphologist with research interests in palaeohydrology and investigating the response of rivers to changing climate and land use drivers during the Holocene. His research areas currently encompass the north-west of England and southern Chile. His work combines alluvial stratigraphic and hydraulic flood modelling approaches to quantify flood response to past environmental change, by reconstructing pre-instrumentation flood magnitudes and frequencies from slackwater flood deposits preserved in bedrock gorges, and by quantifying the response of flood hydraulics to both autogenic and allogenic drivers. He is a Member of the Executive Committee of the British Society for Geomorphology and Vice-Chair of the Publications sub-Committee.
APPENDIX 2: CORE COURSE OUTLINES

GG5291 Quaternary Palaeoclimatology

Staff

Dr Simon Armitage (co-ordinator, week 1), Dr Ian Matthews (co-ordinator, week 2); CQR staff

Aims

The course aims to provide a comprehensive introduction to the different palaeoclimate archives and proxies. It will provide an overview of Quaternary climate forcing factors (both internal and external), events, cycles and thresholds, illustrated with a range of case studies.

Content

Week 1: The Quaternary Period and Climate Change

Overview of the structure of the Quaternary, characteristics, key terms; Onset of global cooling, potential causes for the onset of the Quaternary; Ice Age cycles, ideas of Orbital Forcing, the proxy record of Ice Age cycles in the benthic $^{18}$O record; The proxy record of Ice Age cycles in the ice core record; amplification of the orbital signal (albedo, dust and greenhouse gases); Abrupt climate change during the last Glacial; Heinrich events, D/O cycles and the Bi-Polar see-saw; proxy records of abrupt change and their correlation; Abrupt and short-term climate change during the Holocene; key events and their causes (8.2ka, Medieval Warm Period, Little Ice Age); response of ecosystems and landscapes; The Monsoon and its role in Quaternary climates.

Week 2: Quaternary climate change: its Physical Expression

Quaternary climate change in High latitudes; Quaternary Glaciations; Quaternary climate change in the temperate Mid-Latitudes (western Europe and the Mediterranean); Abrupt climate change in northwest Europe

Teaching format

The course is based upon lectures and class discussion.

Assessment

Coursework accounts for 100% of the marks: 3000 word essay in the style of a NERC-quality grant proposal, on a choice of palaeoclimatological topics.
Learning outcomes

By the end of this course, students should:

- Understand the nature and process of climate forcing factors during the Quaternary, including external (e.g. tectonics, orbital forcing, solar) and internal (e.g. ocean circulation, ice sheets, greenhouse gases) factors.
- Appreciate the archives available to provide Quaternary palaeoclimate records, particularly ocean and ice cores.
- Have an overview of Quaternary climate thresholds, cycles and events (e.g. onset of Northern Hemisphere glaciation, Mid-Pleistocene Revolution, Glacial-Interglacial cycles, Dansgaard-Oeschger cycles, Heinrich events, ENSO, NAO)
- Understand the physical expression of Quaternary palaeoclimate through a range of case studies

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the course work essay
- Indirectly through the dissertations which may benefit from an appreciation of the specific techniques and palaeoclimatic principles covered in the course

Promotion of transferable skills

Group discussion promotes evaluation and critique of published information. The course work encourages the assimilation, summary and interpretation of palaeoclimatic datasets, requiring considerable organisation and presentation skills. The style of a NERC grant proposal for the assignment promotes skills in designing and costing a research grant.

GG5201 Sedimentology and Stratigraphy

Staff

Professor Ian Candy & other CQR staff

Aims

The aim of the course is to make students aware of how Quaternary sequences are preserved and explain how sediments accumulate in a range of depositional environments (Including fluvial, marine, glacial, lacustrine and Aeolian), highlighting the problems that different depositional environments present for the construction of continuous Quaternary records. The course
also aims to highlight the issues associated with constructing stratigraphies within the fragmented terrestrial record and the problems of relating these stratigraphies to climatic events in the continuous marine isotopic record, and to explain the range of approaches that can be used to construct stratigraphies, with particular reference to the Quaternary stratigraphy of Britain. Finally, the course will develop student ability to describe and interpret sediment sequences using a range of techniques

Content

Week 1: Sedimentology

Introduction; Depositional processes and flow; Diamicton processes; Sorted sediment structures; Deformation structures; Particle size analysis; Sediment fabrics; Roundedness and other properties; Describing sediments in the field; Field sedimentology: poorly sorted sediments (Hunt’s Bay, South Wales); analysis of Quaternary sediments (practical) and presentation of field and laboratory results in the afternoon; Lacustrine sedimentation; sediment accumulation and preservation; Review of fieldwork data

Week 2: Stratigraphy

Quaternary climate change; Terrestrial stratigraphies and introduction; Stratigraphic techniques; the Early and early Middle Pleistocene in the UK; Warm climates in the early Middle Pleistocene; Lowland Glaciation; Interglacial episodes; Quaternary stratigraphy in the field (two day trip to eastern England); Last Glacial cycle and the Last Glacial Maximum; the Lateglacial/Interglacial transition; Review of fieldwork results

Teaching format

The course is based upon lectures, field trips, practicals and class discussion.

Assessment

Coursework accounts for 100% of the marks on the course. There are two coursework reports, based around the field trips (one based on sedimentology and one based on stratigraphy), both of these will be a maximum of 1500 words.

Learning outcomes

By the end of this course, students should:

- Understand the processes that lead to the accumulation of sediment sequences
- Identify the strengths and limitations of sediment sequences as archives of palaeoenvironmental change
• Develop skills in recording sediment characteristics and attributes in the field
• Be able to explain the main techniques that are commonly used to construct terrestrial stratigraphies
• Develop key skills in presenting and describing scientific data

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

• Directly through the course work essays
• Indirectly through the dissertations which may benefit from an appreciation of the specific techniques and sedimentological/stratigraphical principles covered in the course

Promotion of transferable skills

Group discussion promotes evaluation and critique of published information. The fieldwork encourages observational and descriptive skills. The course work encourages the assimilation, summary and interpretation of sedimentological and stratigraphical datasets, requiring considerable organisation and presentation skills, in particular of stratigraphical logs.

**GG5232 Palaeoecology, Dating and Quantification**

**Staff**

CQR Staff

**Aims**

The aims of the course are to provide an overview of important palaeoecological proxy methods used to reconstruct Quaternary environments and biotic assemblages and to provide instruction of methods employed to obtain quantitative estimates of past environmental conditions using palaeoecological data. Students will be introduced to the principal methods used to date Quaternary sequences, and learn to assess their limitations, and will then combine palaeoecological methods with chronological data in order to construct realistic age models from which the timing, rate and persistence of environmental changes can be inferred. The overarching aim is this to show how the above procedures and their outcomes fit into the wider perspective of global models of past environmental change and the potential for testing models of future environmental change.
Content

Week 1: Palaeoecology

Uniformitarianism; taphonomy; application, strengths and limitations of a range of environmental proxies, including pollen, plant macrofossils, beetles, chironomids, cladocerans, vertebrates and hominins, diatoms, marine foraminifera, ostracods, molluscs and biomarkers.

Week 2: Quaternary geochronology

The application, strengths and limitations of a range of Quaternary dating methods, including the construction of the SPECMAP timescale based on oxygen isotope variations, radiometric methods (potassium-argon; U-series; radiocarbon), radiation 'damage' methods (luminescence, fission track, and cosmogenic isotope ratio analysis), chemical and biological degradation methods (obsidian hydration, uranium uptake and calcification, amino-acid dating), time-equivalent procedures (palaeomagnetic variations, volcanic ash chronology) and annually-resolved methods (dendro-chronology, varve chronology, coral growth layers).

Week 3: Quantification and modelling

Radiocarbon calibration procedures; age model construction and testing; convergence testing of age models; modern analogue approach to modelling of past environmental conditions; transfer function approaches; spectral analysis; time-space reconstructions/mapping; biome models and Earth System Models.

Teaching format

The course is based upon lectures, practical exercises and class discussion.

Assessment

Coursework accounts for 100% of the marks on the course: a 3000 word course paper (on a choice of topic), reporting results of analysis of a palaeoecological data-set.

Learning outcomes

By the end of this course, students should:

- Have an up-to-date overview of key methods used in Quaternary palaeoecology and chronology
- Have experience of how these approaches are combined to generate integrated models of environmental change
• Be able to judge which methods have the highest potential and reliability in different geographical, stratigraphical and site contexts
• Have knowledge of running quantitative models, including Bayesian-based procedures, from which the magnitude and rate of environmental change can be inferred, and to assess the uncertainties associated with the results
• Be better equipped to design experiments that may lead to improved precision and accuracy of environmental reconstruction and geochronological definition. Understand the physical expression of Quaternary palaeoclimate through a range of case studies

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

• Directly through the course work essay
• Indirectly through the dissertations which may benefit from an appreciation of the specific techniques and palaeoecological and geochronological principles covered in the course

Promotion of transferable skills

Group discussion promotes evaluation and critique of published information. The laboratory work encourages observational and descriptive skills. The course work encourages the assimilation, summary and interpretation of palaeoecological and geochronological datasets, requiring considerable organisation and presentation skills.

GG5293 Techniques of Quaternary Research

Staff

CQR teaching staff

Aims

The course aims to provide a range of specific and transferrable skills in laboratory, field and desktop techniques to: a) complement skills taught on other core and option courses; b) prepare the students for their dissertation; and c) improve employability.

Content

The course is divided into three parts, each of a week’s duration:

Week 1: Introduction to Quaternary geomorphology; importance and applications of mapping and surveying in Quaternary Science; remote
sensing; aerial photographs; Google Earth; NextMap and other methods; practical sessions on use of Google Earth using case studies; field surveying (Total Station, differential GPS, coring, sediment description); introduction and practical sessions on LiDAR and GIS; graphics training (drawing of sediment logs). The graphics training session will be taught separately as a single session in Reading Week so as to provide maximum benefit following the Sedimentology & Stratigraphy core course.

Week 2: Filmed individual oral presentations; PhD and grant applications advice; employability sessions with former graduates and other employers

Week 3: Preparation for the Scottish Highlands field course, including approaches to mapping and interpreting glacial landforms; key elements of the glaciation history of the Highlands; webpage design training and practice

Teaching format

The course is based upon fieldwork, laboratory and computer practicals, oral presentations and lectures.

Assessment

Students will be given verbal and written feedback on: a) their mapping skills (Week 1); filmed oral presentations (Week 2); and web design (Week 3).

Coursework accounts for 100% of the marks on the course: A website conveying the findings and significance of a scientific paper to a general audience. Attendance on the course is a compulsory pre-requisite for the students to attend the Scottish field trip (GG5230) and undertake the dissertation (GG5299).

Learning outcomes

By the end of the course, students should:

- Be familiar with essential field techniques including remote sensing, surveying, mapping, coring and other methods
- Be able to integrate field data and LiDAR with GIS to generate and interpret landform models
- Be proficient in presentational skills, both orally and in the form of webpage design; be proficient in the use of graphics for Quaternary sediment logs and other purposes
- Be prepared for the fieldtrip in the Scottish Highlands by understanding approaches to mapping and interpreting landforms and sediments in the field and acquire background in the history of glaciations in
Scotland; receive logistical, safety and academic briefings and guidance

- Be able to maximise employment or further research potential through acquisition of specific and transferrable skills

**Assessment goals**

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through a series of field and practical exercises on the fieldtrip and elsewhere
- Directly through the assessed presentations
- Indirectly through the choice, design, content and execution of the dissertation/research project

**Promotion of transferable skills**

The course provides experience and skills in relevant information-based technology. Teamwork skills are developed through group co-operation for data synthesis and analysis. Skills in graphics and web-page design also form an integral part of this course. Over the course of the programme, each student has to present a minimum of four oral presentations to peers, other postgraduates and academic staff, under conference-type formal proceedings, which fosters communication skills.

**GG5230 Field Training Programme**

**Staff**

Dr Adrian Palmer, Dr Bethan Davies, Dr Ian Matthews and Professor John Lowe

**Aims**

This field course (currently based in the Western Highlands of Scotland) aims provides students with a sustained period in the field to gain in-depth experience of a range of field methods, including landform mapping, instrumental surveying, sub-surface coring, stratigraphic logging and applied numerical modeling. It also has been designed to bring together all of the relevant elements and approaches that the students have studied in the Core and Option courses. During the field course, these different threads are all brought to bear on a particular time period and landscape context, and a core theme. The theme is the extent, timing, rate and causes of the growth and demise of the last glaciers to occupy the Western Highlands of Scotland. It is scheduled just before the date when students are required to select project topics for the dissertation element of the degree programme, and
therefore provides instruction relevant to project design, execution and presentation. It therefore provides a bridge between the taught courses in Terms 1 and 2, and the Dissertation (individual project) of Term 3.

Content

Two preparatory days of lectures are provided in advance of departure to Scotland, to set the regional and scientific context, explain the structure, aims and content of the course, and introduce the students to the literature available. The field course itself is structured as follows:

The first six days of the course introduce the students to the local landscape and key geological features, to existing theory and understanding, and to the outstanding questions that remain to be answered, particularly concerning the extent, timing and causes of the last glacier ice masses to have occupied the Scottish Highlands. The party visits different locations throughout the Highlands, the students are shown important elements of the field evidence, and are required to keep notes of their observations and of the field discussions. In the evenings, staff lead discussions on the evidence covered each day, invite questions, and provide a steer towards current gaps in knowledge. Data projectors are available for this purpose.

Day 7: The students are then given a full day to review the information gathered during the first six days, and to design their own team projects that address some of the key issues raised in earlier discussions. The project proposals are reviewed by the staff on the evening of Day 7, and equipment lists and other logistical requirements are agreed with each project team.

Days 8 and 9 are devoted to execution of the team projects, with the results and observations reviewed each evening. Students are encouraged to photograph the features they observe, the field methods employed, and any particularly problematic elements encountered, and in the evenings these can be shown to peers and staff, allowing the emerging evidence and project progress to be reviewed.

Day 10 is student-led. In the morning each team co-ordinates their project results and prepares a PowerPoint presentation explaining the project’s aims, methods, results and scientific implications. In the afternoon, a mock-conference session is held, during which each team presents their project results within predetermined time limits. Each presentation is followed by questions and discussion.

Assessment
(a) A summative 2500 word Field Project Report, explaining the aims, methods, results and outcomes of the field project completed, with a 500-word appendix explaining the individual student’s contribution to the project (70% of marks).
b) An A3 colour poster to be presented at a mock conference session entitled 'The Late Quaternary of Scotland: Current Issues and future perspectives'. The students would be asked to identify a key scientific problem within one of the topics discussed during the field training programme, explain our current understanding and then summarise a future programme of research that might advance our understanding of the Late Quaternary Geology of Scotland (30% of marks).

Learning outcomes

By the end of the course, students should be able to:

- Plan and conduct field-based investigations that address key, modern research questions in Quaternary Science.
- Develop the optimal design strategies for field-based experiments, including the development of substantive aims and objectives for a project.
- Work as a team for the integration of linked field investigations and data synthesis.
- Visualize field-based experimental results and evaluate their significance.
- Give an oral presentation of field-based experimental results, illustrated using PowerPoint slides, under mock-conference constraints.
- Present research results in poster form.

The course also provides students with hands-on experience of a range of field equipment and illustrates the full gamut of progressive stages in field-based research, from conceptualising a problem, through experimental design, to delivery of results. The students will also have a much clearer idea of how the various topics taught in the Core and Option courses can be integrated for the reconstruction of relatively sophisticated palaeoenvironmental models.

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the field report and poster.
- Directly through a series of field and practical exercises on the fieldtrip.
- Directly through the mock presentations.
- Indirectly through the choice, design, content and execution of the dissertation/research project.
Promotion of transferable skills

The course provides experience and skills in participating in field research and planning of field-based analyses. Fieldwork encourages individual observational and descriptive skills. Teamwork skills are developed through group co-operation for data synthesis and analysis. Students also present talks and posters under conference-type formal proceedings, which fosters communication skills and promotes abilities in synthesizing information.
APPENDIX 3: OPTION COURSE OUTLINES

GG5203 Palynology

Course Leader

Dr Alice Milner

Aims

The course aims to provide a thorough grounding in the theory and methodology of Quaternary pollen analysis, in particular pollen morphology, pollen identification, pollen recruitment and preservation, field and laboratory techniques, pollen counting, construction and zonation of pollen diagrams, and interpretation of pollen diagrams in terms of past flora, vegetation, landscape and environment. Particular emphasis is given to the “hands on” aspects of pollen analysis.

Content

The detailed syllabus covers the following topics:

- Basic pollen structure, pollen types and pollen identification
- Field sampling selection criteria
- Preparation and laboratory techniques
- Pollen counting and pollen diagram construction
- Zonation and use of computer programs to plot a pollen diagram
- Interpretation of pollen analytical data
- Factors affecting fossil pollen abundance, diversity and preservation

Teaching format

The course is based upon lectures, laboratory practical and data analysis classes.

Assessment

Course assessment is based on a 3000 word report, formatted as a short communication that conforms to the guidelines of a specified Quaternary journal. The report should include (i) the results of laboratory analytical exercises undertaken during the course; (ii) data plots and a zoned pollen diagram, with justification for the zonation scheme; and (iii) critical assessment of the data in the context of relevant published late Quaternary pollen records.
Learning outcomes

By the end of this course, students should:

- Understand the principles of pollen analysis as a tool in Quaternary palaeoecology
- Be aware of the strengths and the weaknesses of pollen analysis as a tool in Quaternary research
- Know how to make reliable pollen counts of samples and plot a pollen diagram
- Appreciate the factors which influence the assessment and interpretation of Quaternary pollen-analytical data

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the formally assessed work, in which the students must show an understanding of the theory and practice of Quaternary pollen analysis and the ability to perform reliable pollen counts
- Indirectly through the dissertation, which may benefit from an appreciation of the specific techniques and palaeoecological principles, as well as the general concepts covered in the course

Promotion of transferable skills

The course encourages clear and logical thought in the design and implementation of Quaternary pollen-analytical studies and in the analysis and interpretation of Quaternary pollen stratigraphical data. The course involves individual practical work, which encourages observational skills. The assessment requires critical reading and assimilation of original papers, and the ability to synthesise and evaluate critically selected scientific publications.

GG5207 Coleoptera

Course Leader

Professor Scott Elias

Aims

The course aims to provide an introduction to the extraction of insect remains from sediments and facilitate understanding of the processes of identification using comparative collections and published keys. The course will also promote familiarisation with the techniques involved in quantifying past palaeoenvironmental and palaeoclimatic conditions, as well as stratigraphical correlation.
Content

This course introduces the use of coleoptera as environmental and climatic indicators. No previous experience of these insects will be assumed, but students will benefit from having a broad interest in Quaternary palaeoecology. The following topics will be covered:

- Insects as environmental indicator fossils
- Recovery and identification of insects in Quaternary deposits
- Interpretation of datasets in terms of communities, local environment and palaeoclimate
- Comparison of reconstructions to those derived from other data sets (e.g. pollen)
- Insect assemblages in correlation
- Quaternary insect stratigraphy: lessons for ecological theory

Teaching format

The course is based upon lectures, practicals and class discussion.

Assessment

Course assessment is based upon an essay (3000 words) critically assessing the techniques of Coleoptera analysis with particular reference to qualitative and quantitative palaeoenvironmental and palaeoclimatic reconstructions. Students will choose their essay topic from a selection of alternatives. Their essays will entail extensive use of the literature, based principally on references provided in the course reading list. These references are available from the course leader.

Learning outcomes

By the end of this course, students should:

- Be aware of the techniques used to isolate insects from sediments
- Be aware of the main criteria used to identify different Coleoptera species
- Understand the basis of the various numerical techniques of analysis and the Mutual Climatic Range (Coleoptera) approach to palaeoclimatic reconstruction
- Appreciate the reasons for discrepancies between palaeoclimatic reconstructions derived from different palaeoecological data sets
- Be familiar with the potential and limitations for using insect remains for stratigraphic correlation
Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the formally-assessed coursework, for which students have to complete an essay designed to test their ability to assess critically the techniques of fossil insect analysis
- Directly through a series of non-assessed practical exercises requiring the isolation and identification of insects as well as the analysis of data sets
- Indirectly through the dissertation and assessment, which may benefit from an appreciation of the specific techniques and palaeoecological and palaeoclimatic approaches as well as the general concepts covered in the course

Promotion of transferable skills

Some of the practical exercises require group co-operation for data synthesis and analysis. Numerical and statistical skills are developed through the analysis of data sets.

**GG5209 Micromorphology**

**Course Leader**

Dr Adrian Palmer

**Aims**

The course will provide an introduction to the study of thin section micromorphology and its application to Quaternary sediments. The course will focus on the preparation of thin sections from unconsolidated sediments, using appropriate descriptive formats and generate robust interpretations of different Quaternary sediment sequences. Students should also have an understanding of how thin section micromorphology has become a key tool in Quaternary Sedimentology and is of crucial importance for the interpretation and palaeoenvironmental reconstruction of Quaternary sequences, whilst also essential for the generation of high-resolution chronologies.

**Content**

The emphasis of the course will be placed on developing the microscopy skills of the students and therefore much time will be devoted to microscopic work. During the examination of sediments time will be set aside for students
to describe their findings to the group and discuss the processes of sediment deposition. The syllabus will cover:

- Examples of palaeoenvironmental reconstructions using micromorphology; Sampling techniques in the field and from cores; Preparation of samples in laboratories at RHUL; Introduction to petrological microscopy
- Glaciolacustrine sediments; Introduction to micromorphology of glacigenic sediments
- Glacigenic sediments
- Quaternary palaeopedology

Teaching format

The course is based upon lectures, practicals and class discussion.

Assessment

An essay (2000 words maximum) focussing on a critical examination of how thin section micromorphology has enhanced Quaternary research. Practical exercises focusing on the detailed analysis of one thin section selected from the suite of palaeoenvironments studied during the course. Thin sections will be made available in the two weeks subsequent to the course in order to develop more detailed descriptions of the sediments (1000 words).

Learning outcomes

By the end of this course, students should be able to:

- Understand how sections are sampled in the field and laboratory, including manufacture of thin sections, timescales for the preparation of the slides and costs associated with production
- Use of petrological microscopes for the description of Quaternary sediments
- Use appropriate descriptive techniques and generating summary sheets for communicating the findings of microscale analysis of the different Quaternary sediments covered in the course
- Make appropriate process-based interpretations of thin sections to develop a palaeoenvironmental reconstruction
- Critically examine the micromorphological technique in a variety of sedimentological contexts
Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through a series of practical exercises requiring the description and interpretation of the microscopic characteristics of different deposits
- Directly through the formally-assessed course work, for which students have to complete exercises designed to test their ability to derive and interpret micromorphological data
- Indirectly through the formulation and execution of dissertations which may benefit from an appreciation of micromorphological studies

Promotion of transferable skills

Part of the assessed course work has to be submitted in the form of laboratory reports requiring manipulation of microscopic methods and computer software.

G5212 Theory and Applications of Luminescence Dating

Course Leader

Dr Simon Armitage

Aims

The course aims to introduce students to both theoretical and practical aspects of the luminescence dating of Quaternary sediments.

Content

The detailed syllabus includes the following topics:

- Physical mechanisms of luminescence dating
- Preparation techniques and measurement equipment
- Assessment of equivalent dose and environmental dose rate values
- Case studies of luminescence dating in a range of sedimentary contexts

Teaching format

The course is based upon lectures, practicals and class discussion.
Assessment

The course assessment consists of two elements:

1) Course Paper: A 2000 word review of an aspect of luminescence dating including technical information and details of the practical implications. This review should be written in the style of a scientific paper. 67% of course mark.

2) Laboratory report: A concise report (1000 words) on the activities conducted during the practical element of the course. 33% of course mark.

Learning outcomes

By the end of the course, students should:

- Be aware of the processes of luminescence signal accumulation, storage and stimulation
- Be aware of methodologies used to isolate and measure the luminescence signal of those minerals commonly used in luminescence dating
- Be aware of the principles, forms and reliability of environmental dose rate evaluation
- Be able to produce equivalent dose and environmental dose rate values, with associated values of statistical uncertainty, and hence luminescence age estimates

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through a series of practical exercises in the luminescence laboratory
- Directly through the formally-assessed course work, which tests their ability to assess technical information and interpret luminescence data
- Indirectly through the formulation and execution of dissertations which may benefit from an appreciation of OSL

Promotion of transferable skills

The course paper requires critical reading and the assimilation of a wide range of data. The ability to reduce this information to a specified word limit and communicate concisely is developed. The course paper should be in the style of a scientific paper, developing or affirming the knowledge of the technical requirements of such a publication. The laboratory report requires numerical and statistical skills, notably organisation and analysis of large
volumes of data within a spreadsheet and practical approaches to error propagation.

**GG5220 Quaternary Microfossils**

**Course leaders**

Dr Tom Hill

**Aims**

The course will provide students with an overview of the role of microfossil analysis in Quaternary science, after which three key microfossil groups (diatoms, foraminifera and testate amoebae) will be studied in detail. These groups will be used to exemplify the advantages and disadvantages inherent in the use of microfossils in Quaternary environmental reconstruction.

**Content**

The microfossils reviewed are valuable Quaternary 'proxies', providing an indirect signal of past climatic or environmental conditions. Such signals may be linked to changes in temperature, precipitation, sea level etc., which in turn enable Quaternary scientists to establish qualitative and quantitative reconstructions of past environments. Each group will be studied in terms of morphology, identification and environmental interpretation, providing students with the ability to successfully undertake self-directed critical analysis of microfossil data. The microfossil groups under consideration will be divided between freshwater and marine environments.

**Teaching format**

The course will be divided approximately equally between lectures/discussions and practical work.

**Assessment**

The course assessment will take the form of a 3,000 word assignment, formatted in the style of a commercial report. Students will be expected to analyse and interpret up to three different microfossil assemblages alongside appropriate metadata (e.g. grain size, sediment colour and texture) and combine these data to provide a palaeoenvironmental interpretation of the sedimentary sequence.
Learning outcomes

By the end of this course, in which practical exercises and assessed coursework form an integral part, students should:

- Appreciate basic taxonomy and identification techniques associated with a selection of microfossil groups.
- Be aware of the key strengths and weaknesses relating to the different microfossil groups when undertaking Quaternary investigations.
- Be competent in the methods used to collect, present and interpret data from a range of microfossil groups.
- Understand and apply the principles of microfossil analyses to Quaternary environmental reconstructions.

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the formally-assessed course work consisting of a 3000 word report
- Directly through a set of non-assessed practical
- Indirectly, through the formulation and execution of the dissertation that may benefit from an appreciation of the analytical techniques and general concepts covered in the course

Promotion of transferable skills

The discussion sessions encourage group co-operation and teamwork. The practical exercises develop general laboratory and observational skills. The course provides experience in numerical data handling and report writing.

GG5223 Quaternary Mammals

Course Leader

Professor Danielle Schreve

Aims

The course aims to provide students with a theoretical and practical understanding of the value of mammalian fossil material to Quaternary studies and its use in Palaeolithic zooarchaeology. The course promotes a familiarity with the techniques involved in the excavation, identification and analysis of mammalian fossil material, an understanding of taphonomic factors and an awareness of different depositional environments. The course further aims to provide students with an understanding of the principles
behind the use of mammalian assemblages in biostratigraphy and the implications for Quaternary climatic and environmental change

Content

The course will provide a thorough grounding in Quaternary vertebrate (principally mammalian) palaeontology, with particular reference to sampling and processing techniques, taphonomy and the description, identification and interpretation of vertebrate assemblages against a background of Quaternary climatic and environmental change. The detailed syllabus covers the following topics:

- Site formation processes and biases in the fossil record
- Techniques for the collection, processing and analysis of fossil vertebrate remains
- Identification and taxonomy of key vertebrate groups
- Palaeoecology of Quaternary vertebrates
- The application of ancient DNA to Quaternary mammal studies
- European Quaternary mammalian faunal history, including the application of biostratigraphical techniques to sedimentary sequences, evolutionary trends, responses of mammals to Quaternary climatic and environmental change
- Identification of evidence of mammalian exploitation by early hominins
- Quaternary mammals of North and South America and Australia
- Megafaunal extinctions

Teaching format

The course will include lectures, practicals, demonstrations and class discussion. A hands-on approach is encouraged with ample opportunity to handle fossils, casts and recent comparative mammalian material.

Assessment

The course assessment (100%) will take the form of a guided practical exercise (to be written up as a 3000 word report), during which students will be expected to interpret vertebrate assemblages of different ages and from different depositional environments.

Learning outcomes

By the end of the course in which discussion, practical exercises and course work form integral parts, students should have acquired:

- Basic identification skills in a number of key fossil vertebrate group
• An appreciation of the nature of the vertebrate fossil record, with regard to taphonomy
• An understanding of Pleistocene vertebrate faunal histories and their use in biostratigraphy and palaeoecological reconstruction
• A knowledge of early hominin practices relating to mammalian remains
• An awareness of the strengths and weaknesses of vertebrate remains in the interpretation of Quaternary sequences

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

• Directly through practical exercises requiring the description and identification of key fossil groups
• Directly through the formal assessment, for which students must apply their knowledge of taphonomic processes, vertebrate palaeoecology and biostratigraphy to interpret fossil assemblages
• Indirectly, through the formulation and execution of the dissertation that may benefit from an appreciation of the specific techniques and palaeontological principles, as well as the general concepts covered in the course

Promotion of transferable skills

Vertebrate identification encourages observational and descriptive skills, as well as the application of identification keys. The formal assessment encourages the collection, assimilation and summary of diverse lines of evidence (taphonomic, biostratigraphical, palaeoecological), requiring considerable organisation and presentation skills.

GG5229 Late Quaternary Palaeohydrology

Course Leader

Dr Varyl Thorndycraft

Aims

To provide an overview and critical discussion of key issues in Late Quaternary palaeohydrology through two main topics: 1) Late Pleistocene glacial meltwater palaeohydrology; and 2) Holocene alluvial systems.
To provide practical research experience in palaeohydrology, including: 1) geomorphic mapping of Late Quaternary river systems using GIS; and 2) fieldwork on alluvial floodplain stratigraphy.

Content

The course will cover the following topics:

- Introduction to fluvial processes: flow hydraulics and sediment transport.
- Late Quaternary meltwater palaeohydrology: meltwater pulses and palaeoclimate; glacial lake outburst floods and landscape change; GIS mapping of glacierised catchments.
- Holocene alluvial systems: floodplain sedimentary environments; deciphering allogenic and autogenic drivers of change; palaeoflood hydrology: Holocene floods and climate; Fieldwork on late Holocene floodplain palaeoenvironments: testing allogenic vs autogenic drivers in the River Erme (Devon).

Teaching format

The course consists of lectures, a fieldtrip, group presentations (on their field data), group discussions, and a GIS practical.

Assessment

Coursework (100%). One piece of written coursework (3000 words maximum): A dating proposal for River Erme (Devon) field site to test allogenic vs autogenic drivers of floodplain change.
Learning outcomes

By the end of this course, students should have gained knowledge of:

- How Late Pleistocene meltwater pulses can influence palaeoclimate
- The role of glacial lake outburst floods in causing regional to local scale catastrophic changes in landscape
- The roles of allogetic versus autogenic drivers of change in Late Quaternary fluvial systems.
- The controls on fluvial terrace formation and preservation.
- Holocene climate change and flooding through evidence from palaeoflood hydrology.
- Techniques of reconstructing floodplain environments: geomorphological mapping and coring; floodplain stratigraphy and depositional environments;
- Mapping Late Quaternary palaeohydrology using GIS.

Assessment goals

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly by assessment of the formal assessment exercise
- Indirectly through fieldwork, class discussions and informal oral presentations
- Indirectly, through the formulation and execution of the dissertation that may benefit from an appreciation of the analytical techniques and general concepts covered in the course

Promotion of transferable skills

The fieldwork promotes group collaboration and synthesis of ideas and data. The GIS practical builds on GIS work in TQR1 to provide further experience in the application of GIS software (ArcMap). Student presentations provide experience in scientific dissemination techniques.

GG5233 Glaciers in the Climate System

Course Leader

Dr Bethan Davies

Aims
To give students an introduction to the key concepts and methods used in modern glacial geology and glaciology, including process glaciology, glacial geology and numerical ice-sheet modelling.

Content

The detailed syllabus will include some or all of the following topics:

- Techniques for constraining past and present glacier dynamics
- Methods for extrapolating these changes using numerical models
- Practical experience of numerical modelling, GIS, remote sensing, and ice penetrating radar.

Teaching format

The course consists of lectures, practical classes and informal class discussions. Lectures will introduce the fundamental principles, whilst practical classes will encourage deeper, active learning. These practical classes will provide students with key experience in numerical modelling, GIS and remote sensing, and ice penetrating radar.

Assessment

a) A 1000 word report on one of the three practical exercises conducted in the class (33% of marks for the course).

b) A 2000 word essay on one of a series of possible essay questions, exploring themes introduced in the module (67% of marks for the course).

Learning outcomes

By the end of this course, in which practical exercises and assessed coursework form an integral part, students should:

- Understand the physical processes of ice flow and mass balance
- Be aware of the limitations and advantages in reconstructing past ice sheets from glaciological and glacial geological data
- Understand the key principles of ice-sheet and glacier modelling
- Have developed skills in quantitative GIS and remote sensing of glaciers
- Understand the role which glaciers and ice sheets play within the climate and ocean system
- Understand the role which radar data plays in understanding ice-sheet and glacier dynamics and thermal regime

Assessment goals
The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through a series of practical sessions
- Directly through the summatively-assessed course work
- Indirectly through the formulation and execution of dissertations which may benefit from an appreciation of the key concepts and methods used in modern glacial geology and glaciology

Promotion of transferable skills

The course paper requires critical reading and the assimilation of a wide range of data. The ability to reduce this information to a specified word limit and communicate concisely is developed. The practical exercises will enhance data handling, numerical and statistical skills.

GG5290 Tephrochronology

Course leaders

Dr Ian Matthews

Aims

To give students an introduction to the scientific underpinning of tephrostratigraphy and tephrochronology and the essential practical skills required to undertake tephra studies in palaeoenvironmental records.

Content

The detailed syllabus includes the following topics:

- Volcanological background to tephrochronology and tephrostratigraphy
- Transport, deposition and stratigraphic issues in distal tephra research
- Identification and extraction of distal tephra
- Geochemical characterization of tephra
- Age modelling and tephrochronology

Teaching format

The course is based upon lectures, and practical classes, with about 50% of the course being based around practical teaching.

Assessment

Building on the skills and information acquired during the practical sessions, students will prepare a research paper on the identification, correlation and
age modelling of tephra located in the cores they have been analysing. This should be concise and of a style suitable for an academic journal (3000 words).

**Learning outcomes**

By the end of this course, in which practical exercises and assessed coursework form an integral part, students should:

- Be aware of the scientific underpinning of tephra research
- Be aware of methodologies used to identify and correlate tephra
- Be aware of the potential for improving age models based by integrating tephra with other dating and correlation methods
- Be able to extract distal ash from host sediments, identify microscopic tephra and evaluate tephra chemical data
- Be able to integrate tephra with various dating methods

**Assessment goals**

The degree to which students have successfully attained these learning outcomes is evaluated:

- Directly through the formally-assessed course work consisting of a focused research paper
- Directly through a set of non-assessed practical exercises which culminate in the production of a tephra correlation exercise
- Indirectly, through the formulation and execution of the dissertation that may benefit from an appreciation of the analytical techniques and general concepts covered in the course

**Promotion of transferable skills**

The course paper requires critical reading and the assimilation of a wide range of information. The ability to integrate this with data from the practical exercises is a key skill across a range of sciences. The course paper should be in the style of a scientific paper, developing or affirming the knowledge of the technical requirements of such a publication. Tephra identification requires a set of practical skills applicable in many areas of research, particularly the use of a polarizing microscope. Moreover correlating tephra using chemical and other information, as well as integrating tephra into age models requires develops a range of statistical and numerical skills.
APPENDIX 4: GUIDELINES FOR THE PREPARATION AND SUBMISSION OF THE MSc DISSERTATION

A dissertation forms an integral, assessed component of the MSc degree programme. This should report the results of an original piece of research that includes fieldwork and/or laboratory analyses on a topic relevant to the MSc programme syllabus. Dissertations must be submitted typed on A4 paper following the instructions set out below, and the whole report, including all figures and tables, should also be submitted in electronic form, this to accompany the paper copy by the set deadline.

Dissertations should include: (i) a clear statement and explanation of the problem being examined; (ii) relevant background information, including a concise literature review and evaluation of proposed methodology; (iii) details of the data collected and the various analyses carried out; (iv) interpretation of results; (v) discussion of the wider context and relevance of the results; and (vi) conclusion(s). The written text should be supplemented by appropriate tables, maps, diagrams, photographs and other illustrative material. The dissertation should not exceed 10,000 words in the main text. This excludes the abstract, acknowledgements, title page, contents page, list of figures and tables, figure and table captions and the bibliography.

Timetable

- A short report of progress should be submitted in writing to your lead Supervisor by Wednesday 12th July 2017, unless alternative arrangements have been made (such as a workshop, or personal meeting for oral report on progress)
- Titles of dissertations in their final form must be submitted to the Programme Director by Friday 18th August 2017
- The completed dissertation AND an electronic copy must meet the guidelines outlined below. The deadline for submission is 12pm on Wednesday 23rd August 2017. The text of the dissertation must also be submitted to Turnitin by the same deadline.

If, in exceptional circumstances, (i.e. medical reasons, supported by medical certificates), a request for an extension of the deadline is required, a written request must be submitted to the Programme Director immediately the circumstances are known, in order that the matter can be considered by the Board of Examiners and a decision given. If an extension is not granted, then the original deadline must be adhered to.

Any dissertations received after the submission date will NOT be marked but referred to the main Board of Examiners Meeting for appropriate action. Please calculate carefully the amount of time needed for carrying out the field and laboratory work and writing, typing and producing the final dissertation.
TWO identical copies of the dissertation must be submitted by the prescribed submission date. These should be spiral bound. Please liaise with Jenny Kynaston and allow adequate time for this if you are arranging for it to be done in the department. In addition, an electronic copy of the final and complete version of the dissertation (including figures) should also be submitted on a CD, along with the two paper copies of the thesis by the same deadline. Preferably, this electronic copy should take the form of a single file, to facilitate distribution to future MSc students.

Supervision
Supervisors will provide guidance on appropriate techniques and approaches. However, they are NOT allowed to read or comment on draft chapters of the dissertation. It is the supervisor’s responsibility to ensure that a student is made aware of relevant Health and Safety procedures in the field and/or laboratory.

Preparation of the dissertation
Dissertations must conform to the following layout unless alternative arrangements have been given prior approval by the Programme Director.

1. Written Report
   (a) Dissertations should not be more than 10,000 words in length. You are advised that conciseness is a desirable quality in producing a scientific report and your ability to write concisely will be assessed. A report in excess of 10,000 words will be subject to the penalties outlined in Section 7.6 of this handbook.
   
   (b) Page sizes for the dissertation are to be A4
   
   (c) Dissertations must be typed, using font size 12, preferably in Times New Roman or Ariel and line spacing 1.5 (single spacing may be used in figure captions, tables, headings and list of references, and also in appendices)
   
   (d) The title page of the dissertation should state the following:-
      
      (i) The title of the dissertation in capitals centrally placed.
      
      (ii) Centrally placed below the title, the author’s name and initials.
      
      (iii) Towards the bottom of the page in smaller font, the words "submitted as an integral part of the Masters of Science Degree in Quaternary Science, Royal Holloway, University of London. This report presents the results of original research undertaken by the author and none of the results, illustrations or text are based on the published or unpublished work of others, except where specified and acknowledged. This text does not exceed the
10,000 word limit, being...words in length (excluding bibliography, appendices and illustrations)”. (Insert relevant word count).

(iv) At the bottom of the page, right-hand side, the date of submission and the candidate’s signature.

(e) It is recommended that the form and the sequence of the dissertation should be as follows:-

(i) Title page
(ii) Abstract
(iii) Acknowledgements
(iv) Contents
(v) List of tables
(vi) List of figures and maps
(vii) Introduction/introductory chapters, outlining the scientific problem and approach, with (where appropriate) a concise literature review and an evaluation of the proposed methodology
(viii) The main body of the dissertation, suitably arranged in parts, sections or chapters. This section should cover matters such as site descriptions, laboratory analyses, interpretations of results.
(ix) Discussion, setting the results in the wider context and emphasising critical comparisons
(x) Conclusion, concisely restating the findings and indicating the advances the work has made and its scientific relevance
(xi) Bibliography, conforming to the style of presentation in *Journal of Quaternary Science* (title of journals and books must be in full). Referencing within the dissertation should conform to the Harvard System, i.e. references in the text should give the surname of the author and the year of publication in brackets, for example, Collins (1970) or (Smith & Jones, 2001), followed by a, b, etc when two or more references to work by one author are given for the same year - e.g. (Harris, 1996c). Page numbers should be given for quotes, for example, (Collins, 1970: 42). At the end of the text the references should be listed in a single bibliographical list, in alphabetical order of authors’ names and in chronological order for each author.
(xii) Appendix/appendices

(f) Only one side of a sheet should be used for text or illustrative material. To allow for binding, the left margin should be 3.5 cm and a 2.5 cm right margin is recommended. All pages must be numbered.

2. Presentation of figures

(a) Figures (including maps) should be clear and produced to a publishable standard. Normally this will involve production using a
graphics package (e.g., Adobe Illustrator, CorelDraw) but hand-drawn is acceptable (see 2b). Allowance for margins should be as in section 1(f) above. Maps or diagrams larger than A4 should be avoided if possible, and kept to a minimum where essential.

(b) Any figures that are hand-drawn are to be drawn in waterproof ink on smooth white paper or on tracing material. However, lettering must be mechanically or electronically formed (e.g., computer-generated), not freehand.

(c) Descriptive, clearly worded legends should accompany all the maps, diagrams, figures, tables and plates, and the source(s) must be cited always. Captions should be typed at the base of the figure (not on figures) in the fashion adopted by major science journals.
<table>
<thead>
<tr>
<th>Grade</th>
<th>%</th>
<th>Grade description for Coursework</th>
<th>Grade description for Dissertation</th>
<th>Grade description for Fieldwork Report</th>
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<tr>
<td>A+</td>
<td>85+</td>
<td>Deep understanding; near-comprehensive knowledge; significant originality in interpretation or analysis; coherent structure (may show significant innovation in organisation); intensive, detailed and critical reading with independent reading beyond reading lists; excellent presentation; referencing and bibliography of publishable standard; incisive and fluent style with no or very minor errors of spelling, punctuation or grammar; high levels of ability in analysis of quantitative or qualitative information (where appropriate).</td>
<td>Significant and highly original contribution to Quaternary Science; professional level of understanding of the main issues, concepts, underlying principles and mastery of the relevant literature; significant originality in construction of main research aims and questions; substantial original fieldwork or other independent research; high ability in appropriate techniques; critical commentary on research design and methodology; incisive and fluent style; professionally presented with referencing and bibliography of publishable standard; no or very minor errors of spelling, punctuation or grammar; publishable as a journal paper with only minor revision.</td>
<td>Exemplary formulation of the project aims and structure; very clear scientific and regional context provided that underlie the project’s rationale; reference to relevant literature concerning the project setting is succinct and inclusive; the appropriate methods and their limitations are clearly explained; the data are presented in a cogent manner, and represent an excellent body of work within the time allowed; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of excellent quality, including spelling and grammar; the report shows appropriate critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data throughout the report; a set of succinct and well-conceived conclusions are provided that summarise in a cogent manner the overall achievements of the project. For an A+ grade, all of these criteria should be met; for an A or A- grade, a number of these criteria should be met, the grade awarded depending on the overall balance.</td>
</tr>
<tr>
<td>A</td>
<td>75-84</td>
<td>Deep understanding; detailed knowledge; may show some originality in interpretation or analysis; coherent structure (may show some innovation in organisational form); in-depth reading (with either independent reading beyond any reading list given or intensive, detailed and critical reading of suggested material); excellent presentation; referencing and bibliography close to publishable standard; incisive and fluent style with no significant errors of spelling, punctuation or grammar; high levels of ability in analysis of quantitative or qualitative information (where appropriate).</td>
<td>Deep understanding of subject area; some originality in construction of main research aims and questions; substantial original fieldwork or some other independent research; high ability in appropriate techniques; critical commentary on research design and methodology; coherent structure; in-depth reading; excellent presentation with referencing and bibliography of publishable standard; no or very minor errors of spelling, punctuation or grammar; some additional work would be required to bring to publishable standard but demonstrates professional standards of research.</td>
<td>Predictably formulated and presented the project aims and structure; clear scientific and regional context that underlie the project’s rationale; adequate reference to relevant literature concerning project setting; appropriate methods and limitations adequately explained; data presented in a reasonably clear manner, and represent a solid body of work within the time allowed; standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of good quality, including spelling and grammar; some critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; a set of clear conclusions are provided that summarise the overall achievements of the project. For a B+ grade, all of these criteria should be met; for a B or B- grade, several of these criteria should be met, the grade awarded depending on the overall balance.</td>
</tr>
<tr>
<td>B+</td>
<td>67-69</td>
<td>Good understanding; wide-ranging knowledge; direct focus on subject; coherent structure; evidence of in-depth reading; well-presented with detailed referencing and properly-formatted bibliography; fluent style, few errors of spelling, punctuation or grammar. generally effective analysis of quantitative or qualitative information (where appropriate).</td>
<td>Good understanding of subject area; clear statement of research aims and questions; significant original fieldwork or some other independent research; effective ability in appropriate techniques; commentary on research design and methodology; coherent structure; in-depth reading; well-presented with referencing in acceptable style and properly-formatted bibliography; fluent style; few errors of spelling, punctuation or grammar</td>
<td>Clear formulation of the project aims and structure; clear scientific and regional context that underlie the project’s rationale; adequate reference to relevant literature concerning project setting; appropriate methods and limitations adequately explained; data presented in a reasonably clear manner, and represent a solid body of work within the time allowed; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of good quality, including spelling and grammar; some critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; a set of clear conclusions are provided that summarise the overall achievements of the project. For a B+ grade, all of these criteria should be met; for a B or B- grade, several of these criteria should be met, the grade awarded depending on the overall balance.</td>
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<tr>
<td>B</td>
<td>63-66</td>
<td>Good understanding; wide-ranging knowledge; direct focus on subject; coherent structure; evidence of in-depth reading; well-presented with detailed referencing and properly-formatted bibliography; fluent style, few errors of spelling, punctuation or grammar. generally effective analysis of quantitative or qualitative information (where appropriate).</td>
<td>Good understanding of subject area; clear statement of research aims and questions; significant original fieldwork or some other independent research; effective ability in appropriate techniques; commentary on research design and methodology; coherent structure; in-depth reading; well-presented with referencing in acceptable style and properly-formatted bibliography; fluent style; few errors of spelling, punctuation or grammar</td>
<td>Clear formulation of the project aims and structure; clear scientific and regional context that underlie the project’s rationale; adequate reference to relevant literature concerning project setting; appropriate methods and limitations adequately explained; data presented in a reasonably clear manner, and represent a solid body of work within the time allowed; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of good quality, including spelling and grammar; some critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; a set of clear conclusions are provided that summarise the overall achievements of the project. For a B+ grade, all of these criteria should be met; for a B or B- grade, several of these criteria should be met, the grade awarded depending on the overall balance.</td>
</tr>
<tr>
<td>B-</td>
<td>60-62</td>
<td>Good understanding; wide-ranging knowledge; direct focus on subject; coherent structure; evidence of in-depth reading; well-presented with detailed referencing and properly-formatted bibliography; fluent style, few errors of spelling, punctuation or grammar. generally effective analysis of quantitative or qualitative information (where appropriate).</td>
<td>Good understanding of subject area; clear statement of research aims and questions; significant original fieldwork or some other independent research; effective ability in appropriate techniques; commentary on research design and methodology; coherent structure; in-depth reading; well-presented with referencing in acceptable style and properly-formatted bibliography; fluent style; few errors of spelling, punctuation or grammar</td>
<td>Clear formulation of the project aims and structure; clear scientific and regional context that underlie the project’s rationale; adequate reference to relevant literature concerning project setting; appropriate methods and limitations adequately explained; data presented in a reasonably clear manner, and represent a solid body of work within the time allowed; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of good quality, including spelling and grammar; some critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; a set of clear conclusions are provided that summarise the overall achievements of the project. For a B+ grade, all of these criteria should be met; for a B or B- grade, several of these criteria should be met, the grade awarded depending on the overall balance.</td>
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| C+   | 57-59 | Basic understanding and awareness of the main issues, concepts, underlying principles and of some key literature but lacking in-depth reading; maintains focus on question; satisfactory organisation and presentation but may have some errors of spelling, punctuation or grammar, familiarity with correct strategies for analysis of quantitative or qualitative data (where appropriate) but possibly with errors in process of analysis; analysis and/or synthesis not well developed | Basic understanding of subject area; simple statement of research aims and questions; original fieldwork or some other independent research; familiarity with appropriate techniques (some errors in application); basic account of methods; adequate structure; some evidence of reading; adequately presented, some referencing and short bibliography; straightforward style; some errors of spelling, punctuation or grammar | Project aims and structure are adequate, but could be fuller and clearer; scientific and regional context that underlie the project’s rationale are addressed, but could be better explained; limited reference to relevant literature concerning the project setting; appropriate methods and their limitations are not fully explained; data are presented, but could be organised better or explained more clearly: the amount of data presented are less than might reasonably be expected in the time available; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) are of variable quality, including spelling and grammar; the report lacks critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; no clear conclusions are provided, or they may not adequately reflect the data and the project’s rationale; Where all or the majority of these criteria apply, a C grade will be awarded; where performance exceeds some of these criteria, a C- or
<table>
<thead>
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<th>Grade</th>
<th>Range</th>
<th>Description</th>
<th>Examples</th>
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<tbody>
<tr>
<td>D+</td>
<td>47-49</td>
<td>Some general understanding and knowledge; weakness in detail; may lack clear focus on the assignment; simple structure; content drawing exclusively on lecture material; no or very limited evidence of outside reading; significant weaknesses in presentation; little or no referencing; inadequate or missing bibliography; simple style; significant errors in grammar, spelling, and punctuation; familiarity with correct strategies for analysis of quantitative data, but significant errors in the process of analysis.</td>
<td>Limited understanding of subject area; confused or vague research aims or questions; limited original fieldwork or other independent research; very general familiarity with appropriate techniques (significant errors in application); simple account of methods; very limited further reading; significant weaknesses in presentation; little or no referencing and an inadequate or absent bibliography; simple style; significant errors of spelling, punctuation or grammar.</td>
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<tr>
<td>D</td>
<td>43-46</td>
<td>Limited general understanding; sketchy coverage, with some significant errors in factual details; lack of clear focus on question; poor structure, drawing exclusively on direct teaching, but with significant weaknesses; no evidence of further reading; poorly presented; little or no referencing; inadequate or absent bibliography; sketchy style; significant errors of spelling, punctuation or grammar; bare familiarity with correct strategies for analysis of quantitative data, with substantial errors in the process of analysis.</td>
<td>Very limited understanding of subject area; confused or vague research aims or questions; very limited original fieldwork or other independent research; bare familiarity with appropriate techniques (substantial errors in application); vague or confused discussion of methods; sketchy structure; no further reading; poorly presented; little or no referencing and an inadequate or absent bibliography; sketchy style; significant errors of spelling, punctuation or grammar.</td>
</tr>
<tr>
<td>D-</td>
<td>40-42</td>
<td>No understanding of the subject; fails to address the topic in any meaningful way; information largely erroneous or has little or no relevance to the question; inadequate structure, with no sense of logical argument; no evidence of further reading; poorly presented; no referencing; inadequate or absent bibliography; inadequate style; significant errors of spelling, punctuation or grammar; significant confusion over appropriate analysis of quantitative data; analytical work incomplete and erroneous.</td>
<td>No understanding of subject area; no clear research aims or questions; no evidence of original fieldwork or other independent research; serious confusion over techniques; no serious discussion of methods; inadequate structure; no further reading; poorly presented, with no referencing of sources and an inadequate or absent bibliography; no referencing and an inadequate or absent bibliography; inadequate style; significant errors of spelling, punctuation or grammar.</td>
</tr>
<tr>
<td>F+</td>
<td>30-39</td>
<td>No understanding of the subject; fails to address the topic in any meaningful way; information largely erroneous or has little or no relevance to the topic; incomplete, fragmentary or chaotic structure; no evidence of further reading; poorly presented; no referencing; inadequate or absent bibliography; inadequate style; substantial errors of spelling, punctuation or grammar; substantial error and confusion over appropriate analysis of quantitative data; complete inability to analyse information.</td>
<td>No understanding of subject area; no clear research aims or questions; no original fieldwork or other independent research; no analytical work; no discussion of methods; inadequate structure — fragmentary; incoherent or incomplete; no further reading; poorly presented, with no referencing of sources and an inadequate or absent bibliography; no referencing and an inadequate or absent bibliography; inadequate style; substantial errors of spelling, punctuation or grammar.</td>
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<tr>
<td>F</td>
<td>20-29</td>
<td>No understanding of the subject; fails to address the topic in any meaningful way; information erroneous or has no relevance to the topic; incomplete, fragmentary or chaotic structure; no evidence of further reading; poorly presented; no referencing; inadequate or absent bibliography; inadequate style; substantial errors of spelling, punctuation or grammar; substantial error and confusion over appropriate analysis of quantitative data; complete inability to analyse information.</td>
<td>No understanding of subject area; no clear research aims or questions; no original fieldwork or other independent research; no analytical work; no discussion of methods; inadequate structure — fragmentary; incoherent or incomplete; no further reading; poorly presented, with no referencing of sources and an inadequate or absent bibliography; no referencing and an inadequate or absent bibliography; inadequate style; substantial errors of spelling, punctuation or grammar.</td>
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<tr>
<td>F-</td>
<td>1-19</td>
<td>No project aims are provided or the aims are not achievable in the time available; the report lacks structure; little or no scientific and regional context is provided; there is little or no reference to relevant literature concerning the project setting; the appropriate methods and their limitations are very poorly explained; few data are presented, or they are very inadequate in amount or quality; the standard of presentation of figures, tables, text, reference list and appendices (where appropriate) is very poor, including spelling and grammar; the report lacks critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; no conclusions are provided or they are not clearly related to the limitations in the data presented.</td>
<td>No project aims are provided or they are not clearly related to the project's rationale; the scientific and regional context that underlies the project's rationale are not well formulated; reference to relevant literature concerning the project setting is limited; the appropriate methods and their limitations are poorly explained; the data are presented, but are inadequate in amount or quality; the standard of presentation of figures, tables, text and appendices (where appropriate) is generally poor; the report lacks critical awareness of the limitations in (i) the methods adopted, (ii) the data collected and (iii) interpretations of the data; no conclusions are provided or they are not clearly related to the limitations in the data presented. Where all or the majority of these criteria apply, an F- grade will be awarded, depending on the overall balance of performance.</td>
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<td>Grade</td>
<td>%</td>
<td>Grade description for Oral Presentation</td>
<td>Grade description for Web Presentation</td>
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<tr>
<td>A+</td>
<td>85</td>
<td>Original and thought-provoking presentation, identifying subtleties in detail of research presented; clear and original structure of content and conclusions; ideas linked coherently and authoritatively; evidence of comprehensive research and original thought in evaluation; pitch of voice and audio-visual aids used to a professional standard; appropriately paced and perfectly to time; eye contact and body language excellent; gauged the needs of the audience and encouraged appropriate involvement and questioning, answering with authority and/or originality. Standard of a first-rate conference presentation</td>
<td>An exceptionally effective presentation. Extremely clear structure, with ideas linked coherently; aims presented clearly and evidence of comprehensive research; considerable novelty in construction and design; pages visually well balanced with appropriate font, size and use of colour; excellent use of illustrations; excellent functionality with links all working; perfectly pitched to promote public understanding of science (authoritative yet accessible); absence of jargon and/or comprehensive glossary provided. Produced to a professional standard</td>
</tr>
<tr>
<td>A</td>
<td>70-84</td>
<td>Presentation addresses explicitly the topic, identifying subtleties in detail of research presented; clear and appropriate structure of content or conclusions; ideas linked coherently; evidence of original thought with respect to structure of content or conclusions; explicit, well-structured and relevant analysis; consultation and evaluation of a broad range of relevant sources; clearly audible presentation, audio-visual aids used to increase effectiveness; almost entirely appropriately paced and ran close to time; eye contact and body language used for most of the presentation; obvious attempt to gauge audience needs; encouraged appropriate involvement and questioning, demonstrating knowledge and understanding in answers</td>
<td>An effective presentation. Very clear structure, with ideas linked coherently; aims presented clearly and evidence of comprehensive research on show; may show some novelty in construction and design; pages visually well balanced with appropriate font, size and use of colour; very good use of illustrations; excellent functionality with links all working; very well pitched to promote public understanding of science (authoritative yet accessible); absence of jargon or comprehensive glossary provided</td>
</tr>
<tr>
<td>B</td>
<td>67-69</td>
<td>Explicitly addresses the topic, structure evident but could be more focussed; evidence of coherent links between ideas; commenced and concluded appropriately; included relevant analysis; evidence of a broad range of relevant sources, and evidence of some evaluation; clearly audible and audio-visual aids used to increase effectiveness; almost entirely appropriately paced and ran close to time; eye contact and body language used for most of the presentation; obvious attempt to gauge audience needs; encouraged appropriate involvement and questioning, demonstrating knowledge and understanding in answers</td>
<td>A good presentation. Logical structure, with ideas mostly linked coherently; aims generally clear and research presented with a good level of detail; pages visually well balanced with appropriate font, size and use of colour; good use of illustrations; may be some minor errors in functionality of links; generally achieves objective of promoting public understanding of science but may lapse into jargon or be too simplistic in places</td>
</tr>
<tr>
<td>C</td>
<td>60-62</td>
<td>Addresses the topic; evidence of structure but could be improved; evidence of coherent links between most ideas; commencement and conclusion could have been more appropriate; included some analysis; evidence that some relevant sources were consulted but could have been evaluated more effectively; audible for all of the presentation and audio-visual aids were used, although some lack of planning; pace not always appropriate and ran over/under time; more use of eye contact and body language could have been made; audience needs not well gauged and limited encouragement to participate/question; answers with basic understanding or hesitancy</td>
<td>An adequate but basic presentation. Structure may be confused in places; simple statement of research aims; research findings presented adequately but may lack detail; design is simple but presentation could be improved in terms of attractiveness and legibility; some useful illustrations; may be some minor errors in functionality of links; adequate attempt to promote public understanding of science but may lapse into jargon or be too simplistic in places</td>
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<tr>
<td>C-</td>
<td>50-52</td>
<td>Only partially addresses the topic; some evidence of appropriate structure but presentation is partially rambling or unfocused; ideas could have been linked more coherently; commenced and concluded with some hesitation or confusion; included little or no analysis; few relevant sources presented and little evaluation made; presentation ran over/under time; presentation paced too fast or too slow to be effective; presenter slightly inaudible; audio-visual aids not very effective (including having too many factual errors);</td>
<td>A poor presentation. Structure is confused, with no clear linkage of ideas; aims are present but not adequately defined; research is presented in cursory fashion or so jargon-heavy as to be of limited use to a non-specialist audience; poor design with page layout jumbled, inappropriate use of fonts and colour; images poorly chosen, unclear, too many or too few; text may have significant errors of spelling, punctuation or grammar; overall limited understanding of subject area; confused or vague research aims or questions; limited scientific background and research rationale, possibly containing significant factual errors; vague statement of research aims and questions; very general familiarity with appropriate techniques (significant errors in application); simple account of methods; very limited further reading; significant weaknesses in presentation; little or no referencing and an inadequate or absent bibliography; simple</td>
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<tr>
<td>D+</td>
<td>47-49</td>
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<td>D</td>
<td>43-46</td>
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<td>Grade</td>
<td>Score</td>
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<td>D-</td>
<td>40-42</td>
<td>Largely fails to address the topic; rambling or unfocussed; commenced and concluded with hesitation or confusion; included little or no analysis; few relevant resources consulted, and little evaluation made of them; partially inaudible; audio-visual aids not used or used ineffectually; ran severely over- or under-time; presentation paced too fast or too slow to be effective; did not engage the audience with eye contact or body language; no attempt to gauge audience needs; no attempt to encourage appropriate audience involvement and questioning; answers largely erroneous or had little or no relevance to the topic.</td>
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<tr>
<td>F+</td>
<td>30-39</td>
<td>An extremely poor presentation, making no attempt to engage with the task; inadequate and/or illogical structure; aims absent; research findings presented in very cursory fashion or so jargon-heavy as to be completely ineffective to a non-specialist audience; serious issues over functionality and technical flaws throughout; colour and illustrations absent or used to very poor effect; substantial errors of spelling, punctuation or grammar; no attempt to make pages accessible or interesting to a non-specialist audience.</td>
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<tr>
<td>F</td>
<td>20-29</td>
<td>Fails to address the topic; very rambling and unfocussed; commenced and concluded with hesitation or confusion; included no analysis; no resources consulted; presenter was fully or partially inaudible; audio-visual aids not used or used ineffectually; ran severely over- or under-time; presentation paced too fast or too slow to be effective; did not engage the audience with eye contact or body language; no attempt to gauge audience needs; no attempt to encourage appropriate audience involvement and questioning; unable or unwilling to answer questions.</td>
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<tr>
<td>F-</td>
<td>1-19</td>
<td>No understanding of subject area; no clear research aims or questions; no or entirely erroneous scientific background and research rationale; techniques inappropriate; inadequate structure — fragmentary; incoherent or incomplete; no further reading; poorly presented, with no referencing of sources and an inadequate or absent bibliography; inadequate style; significant errors of spelling, punctuation or grammar.</td>
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<td>Grade</td>
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<td>Grade description for Poster Presentation</td>
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<td>A+</td>
<td>85+</td>
<td>The aim of the poster is very apparent from immediate impressions; there is considerable originality in the formatting of the poster and exceptional and effective presentation of complex themes; excellent summary of main ideas demonstrating deep awareness of key debates; significant evidence of further reading, with well synthesised supporting information; text excellently presented, quantity and font size extremely effective; clear, relevant illustrations that enhance purpose and interest of poster through synthesis of large datasets and/or ideas; excellent spelling and grammar; fluent style; innovative poster design, allows rapid communication of message; very neat and presentable; good source of further information and excellently presented bibliography. <em>Poster produced to first-rate conference poster session standard.</em></td>
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<tr>
<td>A</td>
<td>75-84</td>
<td>The aim of the poster is very apparent from immediate impressions; excellent summary of main ideas demonstrating deep awareness of key debates; significant evidence of further reading, with well synthesised supporting information; text excellently presented, quantity and font size extremely effective; clear, relevant illustrations that enhance purpose and interest of poster through synthesis of large datasets and/or ideas; excellent spelling and grammar; fluent style; innovative poster design, allows rapid communication of message; very neat and presentable; good source of further information and excellently presented bibliography. <em>Poster presented to conference poster session standard.</em></td>
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<tr>
<td>A-</td>
<td>70-74</td>
<td>The aim of the poster is very clear; provides a good summary of main ideas demonstrating awareness of key debates; evidence of further reading, with good supporting information given; text well presented, quantity and font size effective; clear, relevant illustrations that add to purpose and interest of poster and provide a synthesis of key data or ideas; good spelling, grammar and written style; very good poster design, allows communication of message; neat and presentable; further information and bibliography well presented.</td>
<td></td>
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<tr>
<td>B+</td>
<td>67-69</td>
<td>The aim of the poster is very clear; provides a good summary of main ideas demonstrating awareness of key debates; evidence of further reading, with good supporting information given; text well presented, quantity and font size effective; clear, relevant illustrations that add to purpose and interest of poster and provide a synthesis of key data or ideas; good spelling, grammar and written style; very good poster design, allows communication of message; neat and presentable; further information and bibliography well presented.</td>
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<tr>
<td>B</td>
<td>63-66</td>
<td>The poster has a title, but it is unclear immediately what the poster concerns; the main ideas are appropriate to the topic; little evidence of further reading, little supporting information given; text reasonably presented, quantity and font size adequate; there are few illustrations, some appropriate with an attempt to synthesis data or ideas; numerous errors in spelling, grammar or written style; reasonable poster design, allows communication of message; basically presentable; little further information and inadequate bibliography.</td>
<td></td>
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<tr>
<td>C+</td>
<td>57-59</td>
<td>The poster has a title, but it is unclear immediately what the poster concerns; the main ideas are appropriate to the topic; little evidence of further reading, little supporting information given; text reasonably presented, quantity and font size adequate; there are few illustrations, some appropriate with an attempt to synthesis data or ideas; numerous errors in spelling, grammar or written style; reasonable poster design, allows communication of message; basically presentable; little further information and inadequate bibliography.</td>
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<tr>
<td>C</td>
<td>53-56</td>
<td>The main ideas behind the poster are inappropriate to topic with evidence of error and confusion; no evidence of further reading, little supporting information given; text may be ineffective, too small, unclear; few or no illustrations, uninformative or</td>
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<tr>
<td>C-</td>
<td>50-52</td>
<td>The main ideas behind the poster are inappropriate to topic with evidence of error and confusion; no evidence of further reading, little supporting information given; text may be ineffective, too small, unclear; few or no illustrations, uninformative or</td>
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<tr>
<td>D+</td>
<td>47-49</td>
<td>The main ideas behind the poster are inappropriate to topic with evidence of error and confusion; no evidence of further reading, little supporting information given; text may be ineffective, too small, unclear; few or no illustrations, uninformative or</td>
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<td>Grade</td>
<td>Mark Range</td>
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<tr>
<td>D</td>
<td>43-46</td>
<td>Irrelevant; significant errors in spelling or grammar; sketchy style; poor poster design; hinders communication of message; untidy, messy; no bibliography or further information included</td>
<td></td>
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<tr>
<td>D−</td>
<td>40-42</td>
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<tr>
<td>F+</td>
<td>30-39</td>
<td>The poster may lack a title and makes little attempt to engage with the task, such as the main ideas being inappropriate to the topic; there are numerous errors and ineffective communication of ideas. No supporting information provided and illustrations are either uninformative, poorly reproduced or irrelevant. Text is ineffective, too small, unclear; significant errors in spelling, grammar or written style; poor poster design, hinders communication of message; untidy, messy; no bibliography or further information included</td>
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<td>F</td>
<td>20-29</td>
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<td>F−</td>
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APPENDIX 6 : RECENT DISSERTATION TOPICS

Dissertations topics 2012/13

Using the ‘Varian VF-50J’ X-ray source in routine luminescence dating of quartz.

Assessing the evidence for a short-lived environmental disturbance event during the early Holocene at Lake Llangorse, South Wales.

A high resolution isotopic record for the Lateglacial Interstadial from Star Carr, North Yorkshire.

The provenance and transport history of igneous clasts in late Quaternary deposits, Northwest Scotland; A pilot study into the use of geochemical methods to discriminate between glacial deposits of different age.

Chironomid-inferred Lateglacial interstadial temperatures from Muir Park, Southern Scotland.

Identification and correlation of cryptotephras from Lake Kushu on Rebun Island, Japan.

The Late-Glacial palaeoenvironmental record from Tirinie, south-east Grampian Highlands: Assessing the vegetative response to abrupt short term climatic change.

Testing the potential for tephra to time glacial retreat: tephrostratigraphic analyses of four Early Holocene sequences from the Scottish Highland.

The Mammalian Assemblages of The Crypt, Creswell Crags, Nottinghamshire.

The landscape evolution of the View Point area of the Glen Roy valley, NW Scotland, during the Loch Lomond Readvance; A detailed sedimentological and geomorphic analysis.

A tephrostratigraphic investigation of mire deposits associated with Viking occupation sites in Greenland.

A macro-scale and micromorphological investigation of the genesis of a glacigenic diamicton complex - an example from Happisburgh, North Norfolk.

Lateglacial Stadial paleoclimate reconstruction for the British Isles using high resolution isotope records from carbonate lake systems.
**Selected dissertations topics 2013/14**

An investigation into the Lateglacial vegetation history of Arisaig, northwest Scotland.

Utilising palynology and tephrochronology to assess the onset of the Holocene and its potential timing from Kingshouse 2, Rannoch Moor, NW Scotland.

Evidence for and timing of polyphase deformation in a multiple till sequence at Balglass Burn, Central Scotland: A micromorphological approach.

An oxygen isotopic investigation of the Flixton area, North Yorkshire: Implications for the human reoccupation of Britain across the Pleistocene-Holocene transition.

A diatom assessment of a lake sequence from Tanera Mor, Scotland.

A geoarchaeological investigation into the Mid- to Late-Holocene Queens Sedgemoor, Somerset Levels: Pollen and micro-charcoal evidence.

The ability of Bayesian age modelling to refine glacial chronologies in the Late Quaternary: A case study from Highland Asia.

A tephrochronology investigation of Straloch Loch, Scotland.

A lateglacial environmental and temperature record from Wykeham, Yorkshire, interpreted from subfossil beetles (Coleoptera)

A microscale sedimentary investigation of annually laminated sediments in Middle Glen Roy: the implications for site varve chronology.

Stable oxygen isotope ratios in chitin from Alaskan fossil water beetles: Palaeoecological implications and development towards a new palaeotemperature proxy.


The Lateglacial mammalian assemblage from Bridged Pot Shelter, Somerset: taphonomy, palaeoenvironment and age.

Vertebrate response to climatic deterioration in Britain during MIS 5a.
Selected dissertations topics 2015/16

A lateglacial interstadial chironomid inferred temperature record from the site of Tirinie, Scotland.

Detailed sedimentological and tephrochronological study of annually-laminated deposits at Svarsdsklova, Southeastern Sweden.

OSL dating of palaeofired hearths from the western Nefud Desert, Saudi Arabia.

A comparison of chironomid-inferred summer temperatures with a Lateglacial pollen record from Tanera Mor, NW Scotland.

Combined use of high resolution remote sensing and field mapping to determine icetflow dynamics on Rannoch Moor, Scotland, during the Loch Lomond Stadial.

Sedimentology of a new deep-water core from Llangorse covering the Last Termination, helping refine the timing of deglaciation.

Chronology and palaeoenvironments of lacustrine sediments in the western Nefud desert, Saudi Arabia.