

**University of Bristol
School of Earth Sciences**

**MSc Palaeobiology
Programme Handbook 2014-2015**



<http://www.bristol.ac.uk/earthsciences/courses/postgraduate/msc-palaeobiology.html>

Programme Coordinator: Dr Davide Pisani
Programme Director: Professor Mike Benton

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Section 1 The School of Earth Sciences

1.1 Welcome to the School of Earth Sciences

WELCOME to the School of Earth Sciences at the University of Bristol. This handbook is intended to help as you begin your studies and will introduce you to some of the people in the school as well as providing a guide for your course. Your academic success is important to us and we strongly encourage your active participation in the various seminar series and discussion groups. You are, of course, encouraged to complete your taught units and research project successfully, we hope that you will enjoy studying here and that you will make a full contribution to school life.

Professor Michael Walter
Head of School

Professor Emily Rayfield
Head of Graduate School

Dr Davide Pisani
Professor Mike Benton
Programme Coordinator
Programme Director

1.2 The University of Bristol

University College Bristol, founded in 1876, was the first institution in the United Kingdom to offer places to women to study in higher education on the same footing as men. The University of Bristol was granted its royal charter as a university in 1909, since when it has grown to about 17,000 students pursuing courses in six faculties.

1.3 The School

The School can trace its origins back to 1876, when Geology was offered as a subject at the original University College. When the University received its charter in 1909, Geology was taught within the School of Zoology and Geology. It achieved separate status in 1910, under its redoubtable head then, Professor S. H. Reynolds. Its latest evolutionary step happened in 1992 when its name was changed to the School of Earth Sciences, to reflect the fact that the research and teaching activities has broadened to encompass environmental geosciences and Earth system science.

The University of Bristol's School of Earth Sciences is situated at the historic heart of the campus, in the neo-Gothic Wills Memorial Building, which has been refurbished with new research and teaching laboratories, lecture rooms and a workshop. The Palaeobiology Research Group is housed in the Life Sciences Building, a state of the art new building with teaching and laboratory space, formal and informal learning spaces and social facilities.

In both teaching and research, the focus is on the physical processes that formed and now influence the Earth, and on testing hypotheses by observation, experiment and modelling. The School's quality of research is recognised internationally, as well as nationally (in 2008 it was ranked in the top five UK Earth and Environmental Sciences schools by the Higher Education Funding Council for England), and the School enjoys active collaboration with other schools of high repute at Bristol, including Biology, Physics, Chemistry, Mathematics, Geography, and Archaeology and Anthropology.

In recognition of the revolutionary changes that have occurred in Geology in recent years, the School has expanded by making many of its appointments in relatively new areas such as environmental geochemistry, mineral physics, isotope geochemistry, geological fluid mechanics, seismology and computing, and phylogenomics and macroevolution.

The School encompasses six research groups covering the spread of Earth sciences topics. It teaches eight undergraduate degree programmes, two of them jointly with the School of Biological Sciences. Its intake quota for Single Honours undergraduates is 76 and in addition some 10-15 Joint Honours students enter each year. It also offers two MSc programmes, in Palaeobiology and in Volcanology, as well as an extensive PhD programme.

The School now has 37 core-funded academic staff (including 12 professors), 20 support staff, and a number of other staff and postdocs who are funded by bodies such as Marie Curie, the Royal Society NERC Fellows, BBSRC and other external sources. We typically have around 85 PhD students and 30 MSc postgraduates. Each year the school attracts over 20 academic visitors from overseas who carry out collaborative research with members of staff.

The School of Earth Sciences draws on funding from the Leverhulme Trust, Royal Society, NERC and other Research Councils, European Union, Environment Agency, European Space Agency as well as commercial sponsors such as Shell, Volkswagen, BHP Billiton and insurance companies. There are also links and support from nuclear waste disposal programmes.

1.4 Who's Who - Administration in the School of Earth Sciences

Head of School	Professor Michael Walter	G22	15126
Deputy Head of School	Dr Mary Benton	G35	45373
Director of the Graduate School	Professor Emily Rayfield	LS119	41210
School Manager	Jane Coles	G20	45444
Student Administration Manager	Karen Spencer	G19	15302
Undergraduate Co-ordinator	Ann Morgan-Davies	G19	45236
Postgraduate Co-ordinator	Naomi Baker	G19	15133

The School Office (G19) is open 9am - 5pm Monday to Friday, tel (0117) 954 5400. Naomi Baker supports the administration of this course. You are welcome to contact her with any queries you may have.

Information about other members of staff, including contact details can be found on the school website here: <http://www.bristol.ac.uk/earthsciences/people/group/>

Section 2 General Information about the School

2.1 Updating Personal Information

It is **VERY important** to keep us informed of your contact address and mobile telephone numbers so that we can communicate with you. This information is stored on a secure university database which only authorized users can access. You can update your own details by going to www.bris.ac.uk/studentinfo and logging in and updating your contact address and your telephone numbers.

2.2 Student Representatives

At the beginning of each academic year, a student rep from each of the Masters programmes is appointed. The role involves consulting your peers and attending a Staff Student Liaison Meeting once per term to discuss matters that have arisen. The staff-student consultative committee provides an open forum for students to air comments, compliments and grievances relating to teaching, and receive feedback and responses from staff concerned. The meeting is attended by the Teaching Quality Officer (usually the chair), the Teaching Support Manager and the Undergraduate Administrator who will produce minutes of the meeting with action points, which will be circulated following the meeting. Minutes of meetings are posted on the intranet.

2.3 Careers Advice

The Careers Service provides career-orientated workshops, practice interviews, assistance with CV writing, and personal guidance as well as a variety of courses to help develop student skills <http://www.bristol.ac.uk/careers/> The Careers Service also has a section which is aimed specifically at postgraduate students <http://www.bristol.ac.uk/careers/postgrads/>

2.4 Disability Issues

Dr Mary Benton is the School disability representative. She acts as a channel for information about disability matters. The Access Unit for Deaf and Disabled Students offers a range of services to ensure that students receive appropriate and accessible support. More information can be obtained from: <http://www.bris.ac.uk/accessunit/>

2.5 Postgraduate Study rooms

G4 is the postgraduate study room in the Wills Building – the room is a shared space for working. You will be issued with the key to a drawer or cupboard when you register, but please be aware that the workspace is shared, and no one desk is yours. There is also designated MSc study space in the Life Sciences building that you can use. Again this is shared, hot-desking space, located close to the Biological Sciences Library, in the basement of the LSB.

2.6 Computing, Printing and Photocopying

The School of Earth Sciences Computing website is at: <http://ict.gly.bris.ac.uk>. The University of Bristol IT Services Service desk can be contacted via email: service-desk@bristol.ac.uk or telephone: (0117) 928 7870 internal 87870 Mon-Fri 8:00am - 5:00pm and can be found on the first floor of the Computing Centre.

There are networked photocopiers and printers (both black and white and colour) in G18 – all new MSc students receive 2000 credits – further credits can be purchased online or at the Library or Computer Centre.

2.7 Health and Safety

The School of Earth Sciences takes Health and Safety seriously and makes every effort to ensure the safety of all staff and students both in the School and out in the field.

2.7.1 General Health & Safety Information

School Safety Advisors (DSA)

Dr Chung Choi (Room IC12)

Ext. 15116

P.C.Choi@bristol.ac.uk

Dr Chris Coath (Room L117)

Ext. 45370

Chris.Coath@bristol.ac.uk

School of Earth Sciences safety website: <http://www2.gly.bris.ac.uk/safety/index.html>

University of Bristol Health & Safety Office website:

<http://www.bristol.ac.uk/safety/>

2.7.2 Emergency telephone numbers

Service	Internal	External
Ambulance	112233	33 112233
Fire	112233	33 112233
Police	112233	33 112233
First Aid	contact your nearest First Aider < http://www2.gly.bris.ac.uk/safety/injury/first_aiders.html >	
Radiation	School Radiation Officer: Dr Chris Coath ext 45370	

The University Security Office should be notified of any emergency as they will guide emergency vehicles and personnel, so make sure you dial **112233** (not 999).

If you are calling for help on your mobile, use **0117 33 112233** too, rather than 999.

2.7.3 In the School

Anyone working in the School outside normal hours must read and abide by the School 'Out of Hours' policy, which can be found on the School safety webpage

<http://www2.gly.bris.ac.uk/safety/department.html>. **It is very important that you read this page and take note of the After Hours procedure,**

The School does not provide training for Display Screen Equipment (VDU) users, but all are strongly encourage taking the e-learning course at <http://www.learninglink.ac.uk/site.htm>

2.7.4 In the laboratories

Prior to working in the Palaeobiology laboratories in Wills and in the Life Sciences building, all MSc students must undertake a lab induction with Palaeobiology laboratory manager Dr Charlotte Cook (charlotte.cook@bristol.ac.uk). Particular laboratory activities will also require the completion of a risk assessment procedure and so **it is vital that you speak to Charlotte and your project supervisor before undertaking any laboratory work**. It is essential that all MSc students read and abide by laboratory and local rules and penalties will apply if rules are not adhered to.

2.7.5 In the field

Serious incidents are more likely to occur in the field than in the School, and therefore it is essential to minimize the risks. The first step is to carry out a risk assessment prior to the fieldtrip. The purpose of a risk assessment is to identify hazards, estimate the risks of an incident occurring, and detail the precautions required to minimize those risks.

Anyone engaging in fieldwork must carry out a risk assessment, which must be signed by the Head of School for staff, or Supervisor for students. Fieldwork risk assessment forms can be downloaded from the School safety webpage and an example risk assessment for independent

fieldwork is given at: <http://www2.gly.bris.ac.uk/safety/field.html>. Completed forms should then be lodged in the School Office.

2.8 Student Counselling Service

At times we all seek help with difficulties by talking them over with others, often friends, family, or tutors. But sometimes, it seems right to seek help elsewhere. The Student Counselling Service exists to meet this need and offers friendly, confidential support to students with problems of many kinds. The service is located at 1a Priory Road (go up the outside staircase) and is open on weekdays throughout the year (closed August). The receptionist's hours are 10.00-14.00 but the service is available from 09.00-17.00. Tel: 0117 9546655. The web link is <http://www.bristol.ac.uk/student-counselling/>

2.9 Term Dates

Autumn Term: Monday 22nd September 2014 – Friday 19th December 2014

Spring Term: Monday 12th January 2015 – Friday 27th March 2015

Summer Term: Monday 20th April 2015 – Friday 5th June 2015

You will be expected to be in residence during these term dates, and for the duration of the summer vacation until submission of your thesis.

Section 3 Library Services

There are 12 branch libraries covering different disciplines and members of the University may use any of them. However, the Wills Building library covers the most relevant collections for Earth Sciences students. It comprises over 22,500 books and periodicals including about 200 currently received titles, and a reprint collection of over 40,000 items. Materials of interest may also be found in other branch libraries especially Engineering, Geographical Sciences, Biology and Chemistry. For details of the locations and opening hours of all the branch libraries see <http://www.bris.ac.uk/is/locations/branches/>.

The Subject Librarian with responsibility for Earth Sciences is Megan Cox. She can be contacted by email at any time (Megan.Cox@bristol.ac.uk).

3.1 Information Resources

Library services and resources are provided by Information Services and a good central web page is <http://www.bris.ac.uk/is/info/students.html>

There are many information resources available to Earth Sciences students, and Information Services provides access to the most important ones via MetaLib gateway:

<http://metalib.bris.ac.uk>

- The library catalogue provides details of most of the printed books and journals, and non-book materials in the library system. You can find where the item is located and whether it is on loan, and reserve items that are on loan.
- Electronic journals and books - many journals and books are available in electronic form. You can search via MetaLib for a specific electronic title, or search for journals, articles or books on a specific topic and access them at any time from any PC on the University campus. The best way to obtain access to electronic resources from home is to use the Off-Site Proxy Service, details at: <http://www.bris.ac.uk/is/computing/advice/homeusers/webcache/auth/>
- Databases help you to search for research information, particularly journal articles, in your subject area. You can track down such journal articles through electronic bibliographic databases (such as the Science Citation Index on Web of Science). To access these databases, especially from home, you log in using your University username and password.
- Resources and information of particular relevance to Earth Sciences are at <http://www.bris.ac.uk/is/library/subjects/earthsciences/>.

3.2 Borrowing from the Libraries

Taught postgraduates may borrow up to 35 items, and research postgraduates up to 75 items. Please check with the individual branch library for details of loan periods. Please help your colleagues by returning books promptly, especially if they have been recalled by another reader.

3.3 Inter-Library Loan Vouchers

If you need a book or article that the University Library does not hold, it is usually possible to get it via the inter-library loan services. For information on how to use this service see: <http://www.bris.ac.uk/is/library/lending/interloans/uob.html>

This is not a free service - the School has to pay a minimum of £8.00 for every item. Research groups are each given an allocation of ILL vouchers at the beginning of the academic year and these are used as payments for ILLs. When your ILL arrives, a charge is placed against your user record: you then take a voucher to the Library to pay off the 'fine'.

PhD, MSc, MRes, MSci and undergraduate students must seek approval from their tutor prior to making an order on the library computer system. If you do not, you run the risk of having to cover the cost of an Inter-Library Loan (currently £8.00) yourself.

Pick up an Inter-Library Loan form from the School Office or download from the web at, <http://www2.gly.bris.ac.uk/www/library.html>, get it completed and signed by your supervisor then take it back to the office to exchange for Inter-Library Loan voucher(s), which you then take to the library.

Section 4 The MSc in Palaeobiology

4.1 Introduction

This programme aims to develop the student's interest in and knowledge and understanding of Palaeobiology, an interdisciplinary subject that emphasizes the understanding of past life on Earth. The MSc in Palaeobiology offers a combined taught and research-orientated programme with advanced coverage of quantitative aspects of the fossil record and the history of life. The overall aim is to bridge the biology-geology divide, providing students with a strong background for independent research, leading to a PhD or a career in science teaching, museums, and the media. The department provides students with high quality education and training, consistent with available resources, integrated with a world-class programme of research. The Palaeobiology Research Group maintains close contacts with other educational institutions (universities, museums) and the media, which we utilize to enrich teaching and learning provision. The objectives of the MSc in Palaeobiology are:

- (i) to achieve the highest standards of teaching and learning and to encourage all students to achieve their potential; to offer specialised training, beyond undergraduate-level, in the latest theories and techniques in the broad range of palaeobiological disciplines;
- (ii) to provide students with extended learning opportunities from expert (internal and external) instructors, including both the taught units and the research projects;
- (iii) to ensure that the programme is available to undergraduates with a variety of academic backgrounds by providing conversion courses; that the programme is flexible and responsive to changes in staff and post-docs in the Palaeobiology Research Group, integrating their expertise in the subject.
- (iv) to motivate students, and provide opportunities, to further their careers via intellectual and practical activities, including transferable skills, and by instilling skills and techniques required to carry out an independent research project, leading to publication of the results; to provide experience of the demands of a large and successful research group;
- (v) to help students develop personal skills, including communication skills (written, oral, web-based, and poster presentations), including public understanding of science; problem solving; independent evaluation of the evidence for competing hypotheses; research project design and implementation; team-working; time management and efficiency;

Students on the programme will develop quantitative and computational skills, including the use of statistical and data handling software. They will become proficient in critical analysis of scientific material from a variety of sources, including primary research documents. They will develop synthesis skills and the ability to write concise and informative material targeted for a variety of audiences, including the public understanding of science. They will be given information about research and career opportunities in related areas, and encouraged to build their skills portfolio during the programme and to take up careers-advice services provided by the University of Bristol.

4.2 Course Structure

The curriculum comprises 180 credits and is divided into two components: the taught units and the research component. The taught unit is worth 120 credit points and the research component is 60 credit points. Some units are mandatory and the taught units are largely or entirely delivered in the Autumn term. Following satisfactory performance in the course work and examinations associated with each Unit (90 credits) and in the Research Methods unit (worth 30 credits), you will proceed to the Thesis (worth 60 credit points). The Programme Structure can be found on the MSc Palaeobiology webpage:

<http://www.bristol.ac.uk/earthsciences/courses/postgraduate/msc-palaeobiology.html>

Each student will receive a booklet detailing the Ordinances, Regulations, and Guidance for taught postgraduate programmes, from the Faculty of Science Office, Senate House, also see <http://www.bris.ac.uk/esu/assessment/>.

4.3 Tutors

During the first week of the autumn term you will be assigned a tutor who will meet you regularly during the first term.

4.4 Assessment

In order to be eligible for award of the MSc, 180 credit points are needed. A Postgraduate certificate can be awarded if only 60 credit points have been obtained, and a Postgraduate diploma for 120 credit points. Students must successfully pass the taught courses in order to progress to the thesis. If a pass is not achieved on the first attempt, you may be offered a resit. University rules state that if you fail a resit, without good reason, you will be asked to leave the course.

A progress board meets in the Spring and Summer terms to determine students' progress on a case-by-case basis. Re-submission of coursework or resit examinations will normally be within 4-6 weeks. Students who fail to progress to the research project might be eligible for a Postgraduate Certificate or Postgraduate Diploma. The final mark for the MSc is a weighted average of the taught component and the research component.

For further details on postgraduate degree classifications please refer to:

University Regulations: <http://www.bristol.ac.uk/esu/pg/>

Faculty of Science Regulations: <http://www.bris.ac.uk/science/postgraduates>

All coursework and Examination papers, along with the literature review and thesis are made available for review by the External Examiner.

4.4.1 Submission of Coursework in the School of Earth Sciences

The majority of coursework should be submitted electronically via Blackboard, the institutionally supported virtual learning environment: <https://www.ole.bris.ac.uk/webapps/login/> Instructions, and support material on how to submit electronically will be made available within Blackboard, together with information on how to check your work has been successfully submitted. All assessed coursework is run through software to check for plagiarism.

If coursework is not to be submitted via Blackboard it should be handed into the School Office, on the designated date. Unless otherwise advised work should be submitted by the time the

School Office closes at 5pm. Coursework handed in via the School Office requires a cover sheet which is available in the Office.

Coursework for which a specific size limitation is defined must be submitted on A4 paper, using one side of the paper at 1.5 line spacing, apart from any reference list, which should be in single spacing. The pages must be numbered, and the word total specified. The work must use Times font size 12, and with adequate margins (e.g. 2.5 cm) on each edge of the paper. Any figures/tables presented must be included as part of the main work and be of a matching size that is not too small or overlarge.

Some submitted work might contain appendices such as extensive data sets. Any such items must have been used in formulating the work, and the results analysed in a meaningful form in the main part of the work, such as by graphical representation of an analytical dataset. Any appendix must be carefully structured and not a loose assortment of various items. The appendix will not form part of the assessed material, but an appendix that is in other than a structured format will generate a 5% penalty on the project mark.

4.4.2 Late Submission of Coursework

Extensions to coursework deadlines can be granted for good reasons, which are mainly for medical conditions or personal matters such as bereavement.

The following are NOT considered as adequate reason for granting extensions to ANY deadlines:

- Not being aware of the deadlines - these are documented in unit handouts, which are available via Blackboard, and on appropriate web sites and timetables.
- Not responding to deadlines because of a failure to read UNIVERSITY email messages. All students must access their university email account at least on a daily basis to ensure they receive information about any aspect of their course.
- Difficulties with any aspect of electronic storage of work (e.g. failure of hard disk/floppy disk etc), or network problems (e.g. printing of work). All students must make backup arrangements for electronic storage of coursework items. In addition, any deadline for coursework will invariably result in overload on the school computer network, particularly in relation to network printing. Multiple requests to print files (especially those containing large graphic images) received by the school network will result in overload and an inability to print. You should therefore plan for such situations and make alternative arrangements; in particular do not leave the final printing of work to the last minute.
- Having a non-school commitment (e.g. sporting fixture) for which the date is known in advance; as with the above item you should plan in advance to meet the specified deadlines.

4.4.3 Extenuating circumstances

To request an extension please contact your course co-ordinator and or Naomi Baker in the School office, who will pass your request on to the Director of Graduate Studies (Prof Rayfield). Where an extension request is made on medical grounds, then it *must* be supported by a self-certification form (available from the School Office). If the illness has been for a period of more than five term-time days a doctor's note is required. Further procedural details on extenuating circumstances can be found here:

<http://www.bris.ac.uk/esu/assessment/codeonline.html#extcircs>. The Students' Union has produced a helpful leaflet on what constitutes extenuating circumstances that you are encouraged to read. It can be downloaded here:

<http://www.bris.ac.uk/esu/assessment/codeonline.html#extcircs>. **If you think you may have extenuating circumstances it is essential that you discuss your situation with Naomi Baker or the Programme coordinator as soon as possible.**

4.4.4 Penalties for late submission of coursework

Coursework that is submitted after the specified deadlines, without authorization or extension, will be penalised by a reduction of marks. The penalties can be found on the Faculty website

<http://www.bris.ac.uk/science/undergraduates/penalties.html> .

4.4.5 Marking

Marked coursework, accompanied by feedback will usually be returned to you by the unit organiser or the marker. The School aims to return marked coursework within 21 days of the submission date, excluding vacations.

4.4.6 Plagiarism

The university takes plagiarism extremely seriously. In this regard, please familiarise yourself with the Regulations and Code of Practice for Taught Programmes (<http://www.bris.ac.uk/esu/assessment/>.html) and specific guidelines on plagiarism: <http://www.bristol.ac.uk/secretary/studentrulesregs/examregs.html#plagiarism>

4.5 Programme Content

Please see the School of Earth Sciences MSc Palaeobiology webpage <http://www.bristol.ac.uk/earthsciences/courses/postgraduate/msc-palaeobiology.html#programme> and the Education Support Unit (Programme and Unit Catalogue) for detailed information about the programme and units: <http://www.bris.ac.uk/esu/unitprogcatalogue/Welcome.jspx?jsessionid=A54533BA9AD7862FC165658C6A0E762B.nAC10040C2063>.

4.6 Thesis

Project proposal

Project titles will be circulated in Term 1, and you should develop your ideas by reading around and talking to potential supervisors. You are invited to make your project choices (1st, 2nd, 3rd), and we strive to allocate as many first-choice topics as possible. You then proceed to the two project-preparation units, EASCM0034 Literature Review, and EASCM0038 Research Methods in Palaeobiology.

Funding

The School covers the cost of necessary laboratory work associated with your project. We are able to fund modest fieldwork, travel or laboratory expenses towards your project, and you will be directed to apply for such funding as you prepare to undertake your project research. We also encourage students to seek project funding from outside sources. Go to the intranet on the School server, and look at 'Grants' and 'Field grants' at <http://www2.gly.bris.ac.uk/www/grants/field.html> for some ideas. Closing dates are generally around December/ January, so project ideas must be clear by then. The Bob Savage Memorial Fund can also assist, and it is aimed especially at students who have made some efforts to raise funds elsewhere. The relevant closing date is March 15th (<http://palaeo.gly.bris.ac.uk/opportunities-savage.html>). Students can bid for specific funding requests associated with their research projects, and monies will be allocated on a case by case basis to the student.

Role of the thesis

The thesis is everything in this unit. The final mark depends on the quality of the thesis, *not on the amount of work a student did in the laboratory*. Students are therefore advised to keep focused on the thesis throughout, to write continuously, and not to delay writing until the very end. Students should discuss their ideas, especially in terms of how to present results, and the meaning of results, with their supervisors at all times. Students should share drafts of parts of the thesis with their supervisor(s) as early as they like. Your supervisor(s) will answer questions and provide feedback throughout, and they will provide detailed feedback on **one** draft of the whole thesis providing it is received at least ten days before the final submission date – use your peers to supplement this. Giving talks in Laboratory groups is a great way to find the strong focus or thread of your work (and of course the very best scientific papers have a strong thread running from beginning to end).

Thesis layout

The thesis should be formatted as a manuscript, intended for publication: discuss which journal is most appropriate with your supervisor at an early stage, and then look at lots of recent papers in that journal of choice to see how people present their papers. The thesis is to be less than 10,000 words in total (excluding title, abstract, contents, references, figures, tables, captions). Additional data may be provided as an electronic supplement (provided on one or more CDs); it is essential to structure the Appendix carefully and to provide a synopsis sheet listing the files provided and their roles. Markers will assess the scientific quality of your thesis, but also how convincingly you write it in the appropriate publishable journal format.

A possible layout of the thesis might include some or all of the following sections, but these will vary depending on the type of project undertaken. Use your judgement. Key items in **bold**.

Title Page: Neatly laid out and centred.

Abstract: Not exceeding 300 words; should be a comprehensive summary of your conclusions - a distillation of your thesis (i.e. a concise description of the problem(s) addressed, method(s) of solving them, and results). The abstract does not contain references. Write this after you have completed the report.

Acknowledgements: Page of thanks (who helped in scientific matters, advice, also indirectly by providing money, help etc.).

Declaration: "I declare that the work contained in this thesis is the author's own, except where stated or referenced. The views expressed in this thesis are those of the author and do not represent those of the University of Bristol", then signed by you and dated.

Table of contents: Include subheadings for each chapter.

Introduction: Introduction should be interesting. The first paragraph or two should be less dry than the scientific norm. Introduction should include what topic was addressed, and why it is important. Specimens, evolutionary problem, geological setting, etc. - a brief outline only; followed by a clear statement of the aims of your work in the final paragraph - "The aims of this project are to...". (Introduction starts on page 1 - previous pages in roman numerals).

Materials and methods: Analytical approaches, field techniques, data handling methods. It should be possible to reproduce exactly what you have done. Also list repositories of material and terminology.

Results: Factual observations, whether a field report, description of specimens, analytical results. One type of results chapter may be "Systematic Palaeontology" (if describing fossils), presented according to the rules of your journal of choice. Do not speculate or interpret your results – keep this for the Discussion.

Discussion: Comparisons and discussions - this is where you try to establish the meaning of your factual observations. Do not repeat the results, but choose broad-scale themes that reflect the impacts of your work, and consider also weaknesses of the methods.

Conclusions: Essentially an expanded abstract, presented in point form. Conclusions are also "So what?" statements (i.e. key ideas that can be drawn from your study). The conclusions are best done after you have had a break from writing, allowing you to put your thesis into perspective.

Suggestions for further research: How can the next researcher take your work further? (also usually written at end of project).

References: Use a standard journal style or that used in *Palaeontology*. Make sure that all references in the text (but no others) are listed and set out in alphabetical order.

Appendices: This is useful for data that might break the flow of the text, e.g. tabulated data, measurements, additional photographs and graphs, etc.

You can read more general advice on report writing on the School web pages, material that you have been taught in the Scientific communication unit.

Submission

The thesis must be submitted by **Tuesday 8th September**. Any over-run must be justified, and permission for an extension sought in advance from the Director of Graduate Studies and appropriate forms and documentation provided (see section 4.4.2). The dissertation will be marked by two Internal Examiners, and these marks will be overseen by the External Examiner. A School Examiners' Board will be held in November, provisional marks are considered by the

Faculty of Science Postgraduate Degree Board in December, and, if successful, you may graduate at the February Degree Ceremony.

Supervisors will encourage students to publish their results, and advise whether the thesis is publishable. If so, students will be advised how to turn their thesis into a paper, and they should produce a draft manuscript within six months of leaving the course; the student will be first author, with the supervisor(s) as junior author(s). Students must submit a single CD-ROM with their thesis containing the text of their research project, all figures, and all databases, saved in standard formats (e.g. Word doc, Excel xls, pdf, Photoshop psd etc.).

Please note that we require **3 copies** of your thesis to be submitted, soft bound, for marking and external marking purposes.

Assessment

Assessment is based entirely, and solely, on the thesis. There is no viva or additional document. Marks are allocated as follows:

1. Student's understanding of the subject (20 marks).
2. Quality and originality of the science represented (20 marks).
3. Quality and appropriateness of analysis of the results (30 marks).
4. Quality of presentation: writing style, illustrations, conciseness and clarity (30 marks).

Thesis grades

1. A fail thesis (<50%) will be incoherent, unclear, and show no very little sign of any understanding of the topic.
2. A pass thesis (50-60%) will show reasonable understanding of the research topic, and some evidence of practical competence, but the results will be limited and barely explored. The write-up will be incomplete and will lack some key components.
3. A low merit thesis (60-65%) will show considerable practical competence and the results will be clearly presented, but the thesis will feel more like an undergraduate laboratory report than the manuscript of a scientific paper. The text may be repetitive in parts, some explanations may be garbled, and the results will not be fully explored. Figures may be rudimentary.
4. A high merit thesis (65-70%) will show intelligence and understanding throughout, evidence that the student has mastered more or less all of the necessary practical techniques, a clear understanding of the aims and outcomes of the work, and it will be well presented. It falls short in missing some possible further avenues for exploration, in confusing some issues, in perhaps being littered with typos, or in having incomplete figures that need further work to make them acceptable by a journal.
5. A distinction thesis (>70%) will be clear, focused, well documented, and well presented; in other words, it will look like a more-or-less finished manuscript, ready for submission to the journal.