The University of Leeds

EXTERNAL EXAMINER'S REPORT

ACADEMIC YEAR: 2016-17

Part A: General Information

Subject area and awards being examined

Faculty / School of:	School of Earth and Environment
Subject(s):	*Geophysical Sciences BSc and MGeophys (Int)*
Programme(s) / Module(s):	BSc and MGeophys
Awards (e.g. BA/BSc/MSc etc):	BSc and MGeophys

Part B: Comments for the Institution on the Examination Process and Standards

Points of innovation and/or good practice

Please highlight areas of innovation or good practice within the programmes or processes you have been involved with in this box.

1. The way that fieldwork is embedded within modules. Using fieldwork to develop student understanding.
2. The use of the VLE. Good to see lecture capture and online coursework submission.
3. The development of key computing skills during the degree course.

Enhancements made from the previous year

Please highlight any enhancements made to the programme(s) or processes over the past year in this box.

1. The final year research project marking criteria has been clarified and applied which is an improvement on last year.
2. I liked the new "blended" SOEE5141M Near Surface Geophysics module which brings together different techniques with some material originally taught to the MSc class.
3. Some students took Engineering Geology module which is a new opportunity which is important given the new focus of many careers.
4. New first year geophysics tutorial module.

Matters for Urgent Attention

If there are any areas which you think require urgent attention before the programme is offered again please note them in this box

None.

For Examiners in the first year of appointment

1.	Were you provided with an External Examiners Handbook?	Y / N
2.	Were you provided with copies of previous relevant External Examiners' reports and the response of the School to these?	Y / N
3.	Were you provided with a External Examiner Mentor?	Y /N

For Examiners completing their term of appointment

4.	Have you observed improvements in the programme(s) over the period of your appointment?	Y / N

5.	Has the school responded to comments and recommendations you have made?	Y / N
6.	Where recommendations have not been implemented, did the school provide clear reasons for this?	Y / N
7.	Have you acted as a External Examiner Mentor?	Y /N

Please comment on your experience of the programme(s) over the period of your appointment, remarking in particular on changes from year to year and the progressive development and enhancement of the learning and teaching provision, on standards achieved, on marking and assessment and the procedures of the School

Standards

8.	Is the overall programme structure coherent and appropriate for the level of study?	Y
9.	Does the programme structure allow the programme aims and intended learning outcomes to be met?	Y
10.	Are the programme aims and intended learning outcomes commensurate with the level of award?	Y
11.	Did the Aims and ILOs meet the expectations of the national subject benchmark (where relevant)?	Y
12.	Is the programme(s) comparable with similar programmes at other institutions?	Y

Please use this box to explain your overall impression of the programme structure, design, aims and intended learning outcomes.

The programmes and individual modules are well designed and allow students to achieve their full potential.. The range of modules available to Geophysics students is impressive, with good choice.

A major component of the final year of both the BSc and MGeophys students is the individual Research Projects. The topics were wide-ranging and appropriate with a large number of staff supervising the projects. I think the quality of writing has improved over the three years that I have been external examiner, but is still rather mixed. Most of the research projects were well structured and the module handbook is clear on what is required. The fact that some students ignored this guidance is not the fault of the supervisors. I think having the supervisors comment on a section of the report is good practice. The final mark profile closely correlates with the quality of the writing.

Marks for research projects are better spread than in previous year with a range of 46 to 80% for BSc and MGeophys students. I was pleased to see a new marking criteria so that you separate out attributes for >70% and >80%. I looked closely at the research projects and found at least three in the first class category that were significantly under marked. Certainly the student that got 80% is marked too low by c. 5%. Other marks below 70% are appropriate. You might look again at the descriptors of what is > 80% work, as opposed to 70% work.

I met with three Geophysical Sciences students during a visit in early March. The MGeophys (Int) students were very positive about their experiences in Leeds and their placements abroad. They felt that they were well supported by all geophysics teaching staff, especially . We had an animated discussion. One topic we discussed in detail was progress different students were making/had made with their final year dissertation, and there were concerns that some students did not start their projects promptly. I have to say this is not an issue unique to Leeds.

I was asked to look closely at the module SOEE2630/2631(SOEE1150) Fundamentals of Geophysics/Introduction of Geophysics. My view is that this is a very good challenging course taken by students with a wide range of maths abilities. In hindsight the exam paper had too much material (something I as External Examiner did not pick up on when I approved the paper). The module had a range of module evaluation responses from the students – some strongly liked it, some did not. Overall students achieved well. I do not think the module needs changing, but any module co-ordinator needs to be aware that they are teaching a cohort of mixed maths abilities, and if the module is taught by an Early Career Researcher they will need support.

I am sure this is in hand, but the student module evaluations suggest poor quality teaching delivery (SOEE2040), and this was confirmed by some spot checks I did on recorded lectures. This has been raised before by External Examiners.

Minor point – I found the format of the module evaluation form to be poor – the pie chart and average bar do not correspond to the actual student data. I assume this is a bug in the system.

This year I looked closely at, and was particularly impressed by SOEE 51666 Seismic interpretation, SOEE 5510/3200 Practical Geophysics, SOEE3350/SOEE5141M Geoelectrics/Near Surface Geophysics.

13.	Is the influence of research on the curriculum and learning and teaching clear?	Y

Please explain how this is/could be achieved (examples might include: curriculum design informed by current research in the subject; practice informed by research; students undertaking research)

There are many clear examples of students being introduced and led through work which is at the forefront/topical in research today.

14.	Does the programme form part of an Integrated PhD?	N

Please comment on the appropriateness of the programme as training for a PhD:

15.	Does the programme include clinical practice components?	N

Please comment on the learning and assessment of practice components of the curriculum here:

16.	Is the programme accredited by a Professional or Statutory Regulatory Body (PSRB)?	Y

Please comment on the value of, and the programme's ability to meet, PSRB requirements here:

The programmes are accredited by the Geological Society, and as far as I can tell, continue to satisfy this.

Assessment and Feedback

17.	Does the programme design clearly align intended learning outcomes with assessment?	Y

Please comment on the assessment methods and the appropriateness of these to the ILOs, in particular: the design and structure of the assessment methods, and the arrangements for the marking of modules and the classification of awards; the quality of teaching, learning and assessment methods that may be indicated by student performance.

I believe that the ILOs are fully addressed. I am continue to be impressed by the range of materials available to me as an external examiner, and the VLE resource is impressive.

Through their degree courses there is a range of assessment methods and the balance of different methods seems appropriate (fieldwork, coursework, examination, final year project).

18.	Is the design and structure of the assessment methods appropriate to the level of award?	Y
19.	Were students given adequate opportunity to demonstrate their achievement of the programme aims and intended learning outcomes?	Y

Please comment on the academic standards demonstrated by the students and, where possible, their performance in relation to students on comparable courses; the strengths and weaknesses of the students as a cohort:

This is my third year as External Examiner, and I was again impressed by the quality of the taught programmes offered at both BSc and MGeophys. The programmes are well-designed, delivered and assessed and are rigorous in terms of content.

This year there was a wide range of final degree marks ranging from 74 to 44% which seem broadly appropriate given the exam scripts and coursework that I inspected. I still think that there is an issue at the top end of the mark distribution where there is a reluctance to give module marks above 80 percent.

In comparison to similar courses in and (where I have also been external examiner recently) I would say that standards are broadly similar, but that there is less use of the top end of the marking scale. I would urge more discrimination of marks for those students that achieve first class marks. Leeds Geophysical Sciences student cohorts have numeracy and computing skills that are at least as good as courses elsewhere, but writing skills continue to need development.

Please use this box to provide any additional comments you would like to make in relation to assessment and feedback:

Assessment looks fair and appropriate.

The Progression and Awards Process

20.	Were you provided with guidance relating to the External Examiners role, powers and responsibilities in the examination process?	Y
21.	Was the progression and award guidance provided sufficient for you to act effectively as an External Examiner?	Y
22.	Did you receive appropriate programme documentation for your area(s) of responsibility?	Y
23.	Did you receive appropriate module documentation for your area(s) of responsibility?	Y
24.	Did you receive full details of marking criteria applicable to your area(s) of responsibility?	Y
25.	Were you provided with all draft examination papers/assessments?	Y
26.	Was the nature and level of the assessment questions appropriate?	Y
27.	Were suitable arrangements made to consider your comments on assessment questions?	Y
28.	Was sufficient assessed work made available to enable you to have confidence in your evaluation of the standard of student work?	Y
29.	Were the examination scripts clearly marked/annotated?	See below
30.	Was the choice of subjects for final year projects and/or dissertations appropriate?	Y
31.	Was the method and standard of assessment appropriate for the final year projects and/or dissertations?	Y
32.	Were the administrative arrangements satisfactory for the whole process, including the operation of the Progression and Awards Board?	Y
33.	Were you able to attend the Progression and Awards Board meeting?	Y
34.	Were you satisfied with the recommendations of the Progression and Awards Board?	Y
35.	Were you satisfied with the way decisions from the School Special Circumstances meeting were communicated to the Progression and Awards Board?	Y

Please use this box to provide any additional comments you would like to make on the questions above:

Re 29. Some module exam scripts still had minimalist comments. Often just a number with no comments.

Other comments

Please use this box if you wish to make any further comments not covered elsewhere on the form

Part C: School Response to External Examiner Report

Name of School and Head of School (or nominee)

Title and Name of Responder:	
Position:*	Head of School
Faculty / School of:	*Faculty of Environment / School of Earth and Environment*
Address for communication:	School of Earth and Environment Maths/Earth and Environment Building The University of Leeds Leeds. LS2 9JT United Kingdom
Email:	
Telephone:	

**If the individual responding to the report is not the Head of School please state their position within the School.*

Completing the School response

The completed School response (including the full original report) should be attached to an e-mail and sent to the Pro-Dean for Student Education in the relevant Faculty. Following approval by the Pro-Dean for Student Education, the School must send the response (including the full original report) directly to the External Examiner. A copy must also be emailed to the Quality Assurance Team at qat@leeds.ac.uk. External Examiners should receive a formal response no later than six weeks after receipt of the original report.

Response to Points of innovation and/or good practice

I am pleased to note the three areas of innovation and good practice that you highlighted.

On the Geophysical Sciences programmes we place a high importance on fieldwork. Its integration with modules, in particular, for SOEE2550 Applied Geophysics, enhances the learning experience. Students learn more processing data that they have collected themselves, than a legacy data set provided for them. For example, it ensures that they keep detailed field notebooks, because they know that they will have to process their results several months later.

Use of the VLE, including lecture capture and online submission of coursework, is something that is being pushed right across the University of Leeds. I am pleased to hear that good use is being made of it on the Geophysical Science programmes.

The development of strong computing skills is something that runs through our Geophysical Sciences degrees and, I think, distinguishes them from those offered elsewhere. In addition, to knowing how to use numerous pieces of specialist software, computer programming skills are developed across the programme, enabling students to edit existing code and write their own, for their dissertation project. These skills are important for those going into scientific research, but also open up opportunities in other areas, e.g. the last two years, at least, two graduates have gone on to become professional computer programmers.

Response to Enhancements made from the previous year

I am pleased to note the four areas of improvement from last year that you highlighted.

The dissertation project marking criteria were re-written by the module manager with a small working group. One of the primary aims was split up the single set of criteria for marks between 70 and 100 percent. The new marking criteria will be revised again, this summer, using feedback from you and that gathered from academic staff.

I am pleased that you liked the new module SOEE5141M Near Surface Geophysics. The Programme Leader passed your kind comments on to the module manager, who really appreciated them. This module was created in response to the issue of students on the MGeophys programme being unable to enrol on some of the modules on the MSc in Exploration Geophysics and seems to have been successful in filling the gap.

This year, two students on the MGeophys programme took SOEE5195M Engineering Geology. Though this module was not on the Geophysical Science programme, they were allowed to do so, as MGeophys students are allowed to take one module from another programme. As you pointed out, this is a great opportunity for the students, given the changing employment market for geophysical scientists, with many more now going into the engineering and environmental geophysics industries. In view of this, this module and its level 3 equivalent have now been added to the Geophysical Sciences programmes.

The new first year academic tutorials module will begin next academic year; it is being developed by , who is adapting some of the material used for SOEE1575, and introducing some innovative new sessions on Fermi problems and fallacies and data interpretation. One important difference of this module, to the academic tutorials part of SOEE1575 is that it will be worth 5 credits instead of only 2 and is pass-for-progression. This should help to increase student engagement.

Response to Matters for Urgent Attention
If any areas have been identified for urgent attention before the programme is offered again please provide a specific response to them here:

n/a

Response to questions 1-7 (and related comments)
Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

n/a

Standards

Response to questions 8 to 16 (and related comments)
Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

I am pleased to note that in your meeting with our students they were positive about their time on the Geophysical Sciences programme and felt that the teaching staff supported them. You noted that you were particularly impressed with the modules SOEE5166M Seismic Data Processing, SOEE3200 | SOEE5510M Practical Geophysics, SOEE3350 Geoelectrics and SOEE5141M Near-Surface Geophysics. This has been conveyed to the module leaders.

Several of the most important concerns that you raised in your report relate to final year dissertation projects. Two of these are issues that you have noted previously. The first relates to a reluctance to award marks at the top end of the scale. The marking criteria for the final year dissertation projects were re-written last year to attempt to address this problem, but will be revised again for the coming academic year, as directed. In particular, as a first move, the descriptors for 80-100 will be re-categorized as those for 90-100, since these effectively describe a perfect dissertation project. In addition, in the longer term the new categorical marking scheme developed within the school will be adopted. The second relates to the quality of writing. It was pleasing to note that you thought the quality of writing had improved over the last few years, but we agree that there is still need for improvement, especially as you point out that it is still lower than that of students on similar courses at other universities. As noted in my response to your report last year, and already discussed above, a new academic tutorials module will begin in the autumn, which should help to improve quality of writing. In addition, we will continue to have supervisors give detailed feedback on ten pages. Note that, one issue with this is that, because they leave things to the last minute, many students do not make much progress with their writing until after the deadline for submitting their ten pages for detailed feedback and so do not benefit as much as they could. You noted that in your discussion with our students that they had concerns that some students did not start their dissertation projects promptly. To address this issue, next academic year we intend to ask students keep an online blog, which they will use to record discussions and actions from meetings with their supervisor and progress. This should allow supervisors to better monitor progress between meetings and encourage continuous progress.

I am pleased to note that you think that SOEE1150/SOEE2630/SOEE2631 Fundamentals of Geophysics is a very good and challenging course. This format of the problem sets changed significantly this year, moving from MCQs to questions that involved logical problem solving. As you rightly noted, the feedback was polarised, with some students being extremely positive and some students being extremely negative. Issues with the module were raised at the staff-student forum during the year. One of these was the amount of time student spent completing the problem sets. To address this the problems sets have been made formative. I also agree with your advice that any early career researcher who teaches on the module should receive significant support from the module leader. In fact, the early career research that taught the module last year is leaving to take up a position at the and is being replaced by a more experienced member of teaching staff.

Thank you for bringing to our attention the poor quality teaching delivery of SOEE2040 Mathematics for Geophysical and Environmental Sciences. As you rightly noted, this has been an issue for several years. Over the past years, the programme leader and others have met with the member of staff concerned to discuss improvements that could be made. Since these meetings have failed to produce any significant change, the member of staff will be replaced next academic year.

Your point regarding the poor format of module evaluation forms has been duly noted. We will pass this on to Quality Assurance.

Assessment and Feedback

Response to questions 17 to 19 (and related comments)
Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

I am pleased that you consider the Geophysical Sciences programme has a balanced and wide range of assessment methods. This year, all programmes will perform a review, mapping each piece of assessment onto programme level learning outcomes. This will allow us to determine whether we are assessing some more than others, and avoid making use of certain types of assessment more than others.

You made a comment that while the final degree marks seems appropriate, there is an issue at the top end of the mark scale, compared to other universities where you have been external examiner. In particular, you observe a reluctance to give marks greater than 80 percent. Steps to address this issue as it relates to final year dissertation projects were outlined above. In the

case of other modules, at a programme delivery team meeting members of academic staff were encouraged to try to adopt the new categorical marking schemes, when marking, in particular, written work. The issue is less of a problem for numerical work.

The issue of quality of writing has been discussed above, but we note here that we recognize that there needs to be more than a band-aid type solution, and there is a plan for a larger scale programme review to address this and other issues.

The Progression and Awards Process

Response to questions 20-35 (and related comments)

Schools may provide a general response; however, where Examiners raise specific points these must be addressed individually:

You noted that for some modules, the marked exam scripts still had minimalist comments. This is unacceptable and will be mentioned by the programme leader at the next programme delivery team meeting. This issue should have been raised by the module moderator, but has slipped through.

Other comments

Response to items included in the 'Other Comments' section of the report