Academic Quality and Standards Team
Received by e-mail 27/06/2013

SEE009

# The University of Leeds

# EXTERNAL EXAMINER'S REPORT

## ACADEMIC YEAR: 2012– 2013

## Part A: General Information

**Subject area and awards being examined**

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

**Completed report**

The completed report should be attached to an e-mail and sent as soon as possible, and no later than six weeks after the relevant meeting of the Board of Examiners, to exexadmin@leeds.ac.uk.

Alternatively you can post your report to:

**Head of Academic Quality and Standards**
Academic Quality and Standards Team
Room 12:81, EC Stoner Building
The University of Leeds, Leeds LS2 9JT

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

***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*
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None

***Only applicable in first year of appointment***
*Were you provided with copies of previous relevant External Examiners' reports and the response of the School to these?*

N/A

***For Examiners completing their term of appointment***
*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*

N/A

## Standards

1. **Please indicate the extent to which the programme Aims and Intended Learning Outcomes (ILOs) were commensurate with the level of the award**
   - *The appropriateness of the Intended Learning Outcomes for the programme(s)/modules and of the structure and content of the programme(s);*
   - *The extent to which standards are appropriate for the award or award element under consideration.*

The course content is diverse and challenging and meets the intended learning outcomes. The expected levels of attainment were appropriate for the awards, however in the BSc programme I noted the drop of one grade by most candidates during their third year the causes of which need investigation.

2. **Did the Aims and ILOs meet the expectations of the national subject benchmark (where relevant)?**
   - *The comparability of the programme(s) with similar programme(s) at other institutions and against national benchmarks and the Framework for Higher Education Qualifications.*

The programmes are highly regarded and the their content is appropriate for the qualifications.

3. **Please comment on the assessment methods and the appropriateness of these to the ILOs**
   - *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.*

The BSc and MGeophys work well together with the stronger students opting for the 4 year course. This split is reflected in the final grade classifications. Though the MGeophys provided two first class marks, the BSc marks were disappointing. The cohorts second year performance showed that it was potentially a strong year with 5 first class marks but these were all converted to upper second and in one case a lower second class mark over the final third year. Only one candidate improved their class over this year. The principal cause was poor dissertation performance but the marks were poor in several of the other modules too (see comment 3) particularly in examination scripts.

Suggested ideas to improve exam performance:

1) exam format – in most modules students are required to complete the whole paper as this forces the students to revise the whole course rather than question spot. It does mean if a student misses a lecture or for some reason the topic is not on the revision radar then that question will be answered poorly. A specific example this year was on module 3350 where the last question was uniformly answered badly bar one candidate. Excluding this candidate gave an average mark of 2/14 on a question that represented nearly 25% of the possible marks. I suggest that the school should consider reformatting exam papers to include a compulsory section making up 50% of the marks, to ensure the revision of the whole course, and then a choice of two answers from three or four questions each worth 25%. Module 3250 already does offer a choice so there is a precedent for this approach;
2) simplify the marking scheme – how each piece of coursework or exam mark contributes to the final module mark is obscure. Again selecting module 3350 as an example: two pieces of coursework are marked out of 27.5 and each contribute 15% of the module mark; the mark total specified on the exam paper is 60 but this represents 70% of the module mark. I suggest either the marks are pre-scaled to the appropriate percentage, this is especially important for coursework, or each piece of work is marked out of 100% with the option to see the accrued module marks on VLE (maybe this is already done but I do not have access to VLE to check);
3) a more minor point is I noticed in at least two of the examination papers and answer scripts the question provides a table of data or a formula and requests that the candidate produce a graph or a graph would add significant clarity to the answer. However, suitable graph paper is not provided and the candidates have to sketch the curves best they can in the lined answer book. I would recommend that graph paper is provided either as part of the answer booklet or on request. This would also provide the candidates with the opportunity to demonstrate graph drawing/understanding which is a skill.

Suggested ideas to improve dissertation performance (also see comment 13):

1) all topics were department based, mostly computational, this prejudices candidates with a strength in collecting data in the field, with associated data reduction and interpretation/modelling/inversion as appropriate. I accept the there is already a significant fieldwork component in the course and there is only limited kit and time to do fieldwork over the preceding summer vacation. Also there is the weather risk. However, for the organised and motivated student a field based project may allow them to excel against a computer based project in which they don't fully engage;
2) improve data presentation techniques – two of the dissertations had used inappropriate methods to convey data. In one case the results were presented as pages of tables which should have been presented as graphs, in an other case the reverse was true where many graphs were used to convey a sparse dataset which would have been more appropriate as a table;
3) writing style – remains poor, in our fieldwork geophysics module required writing 4 full-length

reports during the second year which should feed in to better dissertation reports, please note the word 'should'. Also, at we specifically run small tutor groups (5-6 students) in the first and second years on writing skills. However, students work to deadlines and practice does not guarantee an improved result on a piece of work that is written at the last opportunity;

4) project risk – despite the projects all being department based there appeared to be a significant range of complexity in the projects with some requiring extensive computer coding as well as data reduction whereas others the code is provided. Some were open-ended so it would be difficult for the student to plan as it was unclear as to what the future work would entail. I suggest that the module co-ordinator tries to ensure each project is thought through to ensure the expectation of the project is reasonable given the available time and a work plan is agreed between the supervisor and student during the first weeks of the year so they can monitor progress and keep the project moving forward against the pressure of other assessment deadlines.

The issue of poor performance in dissertations was also noted last year so this aspect needs attention as it appears to be a recurring problem.

**4. Were students given adequate opportunity to demonstrate their achievement of the Aims and ILOs?**

- *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.*

See above – the third year students have performed poorly this year in both dissertations and exams. The net result is disappointing and may look like Leeds has under-performed this year. I don't think this is due to the lack of opportunity nor the aims and ILO's in the course. There is a excellent range of topics in the second and third years that are commensurate with the degree programme. The feedback from students indicates that they have enjoyed the course. Highlights include the field trip; wednesday afternoon surgery and feedback was considered useful and timely. Concerns were expressed on Linux IT provision; opportunities to develop presentation skills and computer coding given the emphasis on computer usage for dissertation projects.

**5. For Examiners responsible for programmes that include clinical practice components, please comment on the learning and assessment of practice components of the curriculum**

N/A

**6. Please comment on the nature and effectiveness of enhancements to the programme(s) and modules since the previous year**

*It would be particularly helpful if you could also identify areas of good practice which are worthy of wider dissemination.*

I was asked to examine module 2212 which had resulted in remarking of exam scripts last year after a student complaint. This module has been rewritten and is now delivered by a different member of staff. By examination of the scripts over the past three years I can confirm the error only affected last year's examination, even though the question had been largely recycled from the previous year. This year's examination shows a significant improvement and is entirely new with a strong focus on Earth Science applications.

I noted issues with dissertations last year. The module cover sheets provided evidence of excellent opportunities for the students to meet with project supervisor to help with project motivation. Also students reported the use of in internal project viva though I do not recall seeing any marking sheets on this as part of the dissertation submission. Poor writing skills is a perennial problem which has not improved.

The marking cover sheets provided with each of the modules were excellent and provided an overview of the module marking and reconciliation process, if required.

**7. Please comment on the influence of research on the curriculum and learning and teaching**

*This may include examples of curriculum design informed by current research in the subject; practice informed by research; students undertaking research.*

There is a link between research and the teaching and learning especially though the final year project reports.

Comments from the students reflected this but also a request to increase support on career choice by interaction with industry – it was suggested that the industry led seminars used in the MSc programme should be more widely advertised to both the BSc and MGeophys cohorts. Though some of the content may be of less interest it would enable links to be made for those students looking for intern-placements during their BSc or MGeophys. This is a repeat comment which has been addressed before and you reported that undergraduate students are made aware of the MSc seminars, clearly the message is not getting across.

**For Examiners involved in mentoring arrangements**

8. **If you have acted as a mentor to a new External Examiner or have received mentor support please comment here on the arrangements**

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| N/A |

## The Examination/Assessment Process

**9. The University and its Schools provide guidance for External Examiners as to their roles, powers and responsibilities. Please indicate whether this material was sufficient for you to act effectively as an External Examiner.**

- *Whether External Examiners have sufficient access to the material needed to make the required judgements and whether they are encouraged to request additional information.*

The school did point me to specific candidates and modules that required attention. This was the second year that the material was divided between module specific documentation (eg exam scripts) and student specific documentation or portfolios (eg coursework). Though this maybe more convenient for the School, my opinion of the portfolio is it makes it more difficult to track issues in any given module (eg the balance between marking of coursework and exam scripts). The students talked to found no benefit in the portfolio system and complained that they felt the department had delegated responsibility for maintaining a log of coursework to them.

I specifically reviewed module 3350, here exam scores were low. The key problem was most students did not attempt the final question, or if they did the answers, bar one, were poor. This single question contributed nearly 25% of the total mark so by ducking this question the students were destined to get a poor overall mark. In another module (inverse theory 3250) where students could answer 3 out of 4 questions, the forth question was avoided by all bar one who got a poor mark. The topic of the question had been covered in the course work in practical sessions 4 & 5 so I conclude the likely cause was lack of revision.

The forth year seismic processing module (5165) that had used VLE and Tunitin and then was printed in hard-copy for me to review was difficult to assess. In-line comments were clipped or tabbed with a comment mark with the comments all on the grade-sheet. Plagiarism scores were not provided, though this module would have low risk. For future years I require an external examiners log-in to VLE to assess these modules more efficiently and to assess all coursework handed in on-line.

**10. Did you receive appropriate documentation relating to the programmes and/or parts of programmes for which you have responsibility, e.g. programme specifications or module handbooks, marking criteria?**

- *The coherence of the policies and procedures relating to External Examiners and whether they match the explicit roles they are asked to perform.*

Yes

**11. Were you provided with all draft examination papers/assessments? Was the nature and level of the questions appropriate? If not, were suitable arrangements made to consider your comments?**

Yes

**12. Was sufficient assessed / examined work made available to enable you to have confidence in your evaluation of the standard of student work? Were the scripts clearly marked/annotated?**

See comment (9) above about linking exam scripts with coursework distributed in portfoliios. The use of cover-sheets for the exam scripts was excellent and made the marking and its justification explicit.

**13. Was the choice of subjects for dissertations appropriate? Was the method and standard of assessment appropriate?**

See comment 3. Leeds students do not perform well in their dissertation and given the weighting of the mark this is a grade-breaker and, this year, has resulted in most students dropping a grade in their third year (this is not true for the MGeophys but a stronger dissertation performance would have been beneficial here too).

Like last year I remarked all the dissertation with a focus on the lower scoring submissions. As last year, I conclude that the marking was at the appropriate level and my marks were a few points higher in some cases but not enough to change the overall outcome. I can only conclude that the issues are the same as last year:

1) lack of motivation early on in the project resulting in incomplete or rushed dissertation report
2) too much assessed work detracting from progressing dissertation
3) need more effort on writing/presentation skills, and a request from students talked to for more computer coding experience
4) topic choice.

**14. Were the administrative arrangements satisfactory for the whole process, including the operation of the Board of Examiners? Were you able to attend the meeting? Were you satisfied with the recommendations of the Board?**

Yes on all counts

**15. Were appropriate procedures in place to give due consideration to mitigating circumstances and medical evidence?**

Yes

## Other comments

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

The student lunch is a great place to gain feedback from the students on their view of the course. This year I only had two students to talk with. Something needs to be done to attract more students. It needs to be something more than a free lunch of sandwiches and water. No obvious ideas, or might there be an opportunity earlier in the year?

Quality Assurance Team
Received by e-mail 02/10/2013

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30 September 2013

Dear <>,

**Re: Response to External Examiner's Report (BSc/MGeophys Geophysical Sciences), 2012/13**

Firstly, apologies for the delay in responding to your report.

Thank you again for examining our Earth Sciences undergraduate degree programmes, in particular the geophysical sciences programmes, for the last academic session. Your views are an essential part of our quality assurance mechanism and we welcome your input into our teaching processes.

As you noted, the final year performance of the graduating cohort was rather disappointing with the majority of the BSc candidates performing worse on average in their final year than in their previous years. Overall 2 students improved and 8 did not. In some cases, students were particularly let down by poor performance in their dissertation; however, there were also students that performed well above their running average in the project. Furthermore, calculating the averages in the non-project final-year modules shows that none of the ten BSc students performed at first class level in their final year regardless of their project mark - overall 4 projects above average and 6 projects below average. This suggests that although the dissertations may be an issue, they are not the only cause of the disappointing student performance in the final year. Looking back at the past four year's graduating classes, there was effectively an even split between students that performed better in year 3 than their previous year and those that did not (38:40), although there is a tendency that fewer performed better on their project than the average of their other final-year modules and that more students performed worse on their project (33:45).

Overall however, as you noted the performance of the graduating class in their final year was indeed disappointing and the project performance contributed to this. The performance this year does seem anomalous compared to the previous year. It is difficult to know why this might be as there were no significant changes to the programme delivery compared to previous years. This year's graduating class had only two MGeophys candidates, both of whom were relatively quiet in classes and did not seem to mix with the BSc students as much as in previous years. Perhaps this BSc cohort suffered from not having as strong of a "pull" from the MGeophys students, certainly a couple of strong, engaged students can have a positive benefit on the whole class.

Perhaps the statistics of small numbers plays a role as well. Nevertheless, there remains a concern with the dissertation performance.

The geophysics teaching team continue to review the programme and in light of the current year's results we have agreed to implement the following:

- We will have some field-based projects this year, which, as suggested, may benefit students with stronger field skills and interests.
- We have moved to include more written assignments in the programme over the last two years. In addition to the two major written reports for second year Applied Geophysics, the students also write technical reports in the revamped Tectonophysics module, and short essays have been added to the final year Global Seismology and Global Geophysics modules.
- We also plan to return the extended field trip report to the final year Practical Geophysics module. (The field trip will also be moved back to running in September, immediately before the final year, this should help better integrate returning year-abroad and year-in-industry students with the "regular" BSc cohort.)
- Although we have academic tutorials in the first year of the programme that work with the students on writing and other academic skills, we do not have such tutorials in the second, something that most other degree programmes in the school do have. As part of the university's on-going Curriculum Enhancement Project (CEP), with its emphasis on broadening of the student experience, the introduction of second-year academic tutorials will be considered as an opportunity to improve general research and writing skills. These tutorials might also allow for a dedicated emphasis on employability issues as is done in, for example, the second year geology tutorials.
- The CEP also includes a recommendation that all programmes contain a 40-credit project in the final year, whereas the BSc project is currently 30 credits. Increasing the credit weighting of the project would reduce the number of taught modules by 10 credits, which should provide more time for the students to dedicate to their project throughout the year. Such a change may help to improve issues with lack of project early in the year and rushed write-ups due to conflicts with on-going coursework assessment.

We already hold a series of tutorials associated with dissertation module, including a session in which we discuss presentation of data and the principles of constructing good figures and will continue to do so. These tutorials also contain session on the principles of project management, refreshers on academic research skills such as approaches to reviewing the literature, and more technical sessions on the use of GMT. We will continue to hold these sessions and stress their importance to the students. This year we have obtained agreement from school management to allow all students in their final year to have access to the computing facilities outside regular opening hours (previously the computing labs shut at 5pm), a move that should also help the students in both their dissertations and other modules.

In the coming year the students will also give oral presentations at the end of semester one on their project progress and remaining tasks, in addition to the mock vivas held last year. The mock vivas give the staff a good opportunity to determine the (lack of) progress on the project, but may not give the students a good judge of where they stand in relation to their peers; it is hoped that the oral presentations to the class as a whole will help to meet this second objective.

Finally, the dissertation module manager is also planning to collect (and distribute to the students) slightly more detailed project descriptions, both so that he can better check that the proposals are viable, and so that the students can better select a project that suits their interests.

Outside of projects, there does not appear to be a long-term problem with student performance in the final year, although there were disappointing results this year. Poor performance especially in exams seems to have been an issue. The inclusion of graph paper already occurs in some exams so there should be no issues in including graph paper in all cases it is needed. Providing a certain amount of choice on exams can certainly help prevent students from having disastrous results where they have failed to revise topics asked. Of course, providing too much choice allows students to "ditch" large portions of the material. Clearly a balance must be struck and different staff and different modules have decided on different balances between the flexibility and completeness. The suggested two-part exam format has been distributed to all staff and all staff should (re)consider how to format their exams such that students are both fairly and rigorously examined on the module material.

With respect to your comments regarding marking schemes, there are a number of different approaches to this depending on the particular type of assessment. We endeavour to explain to students clearly how each component is assessed. It would appear from the feedback that the students gave to you however that we need to review how we communicate marking schemes to our students.

It is encouraging to note that you agree with our own determination that the reworking of SOEE2212 Tectonophysics has significantly improved that module, a credit to the work put in by the staff member that took over that module this year.

Yours sincerely,

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Head of School of Earth and Environment