

The University of Leeds

EXTERNAL EXAMINER'S REPORT

ACADEMIC YEAR: 2013– 2014

Part A: General Information**Subject area and awards being examined**

Faculty / School of:	Earth and Environment
Subject(s):	<i>Exploration Geophysics</i>
Programme(s) / Module(s):	Exploration Geophysics
Awards (e.g. BA/BSc/MSc etc):	MSc

Name and home Institution / affiliation of Examiner**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 Quality Assurance**
Room 12:81, EC Stoner Building
The University of Leeds, Leeds LS2 9JT

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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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?

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

Throughout the period the course has maintained high academic standards while also giving students practical experience of acquiring, processing and interpreting geophysical data. This is a very good preparation for a career in the geophysical industry, and students are much sought after by employers.

There have been no radical changes in course content over the last five years, but a useful evolution has been apparent, for example by increasing the attention paid to petrophysics and by substantially updating the gravity and magnetics module. At the start of the period a new MSc lab was inaugurated, and this has proved to be a very successful resource for the students. Increased emphasis has been placed on pre-course and start-up work to fill gaps in students' background knowledge, which are almost inevitable given that the course combines elements of both geology and physics. A useful innovation has been the introduction of a limit on the length of dissertations, which has forced students to think more clearly about the key points of their project work.

A key challenge has been to confine the amount of course material within reasonable limits. Work has been undertaken in the past and is in progress again today to chart the student workload through the year, in order to avoid bunching of deadlines and other peaks in workload. Nevertheless, the total amount of work required of students is at the limit of acceptability; they are working harder than they are likely to do in any early-stage job in industry.

The most significant change has been the increase in student numbers, to a total of almost 40 this year. This is nearly at the limit of the present capacity, both in terms of teaching staff and physical availability of workstations. The course is now the

dominant MSc in Exploration Geophysics in the UK, with <> closing its course next year and <> beginning to offer a course this year but with low student intake initially. High student numbers are therefore likely to remain a feature over the coming years. It is already apparent that the higher numbers place some strain on the system; student feedback on assignments has been maintained at the mostly excellent standard that it has been in the past, but the time taken to mark and return assignments has increased to the point where some students are unhappy with it.

The increase of student numbers brings with it other problems, such as difficulty in finding enough industrial placements for dissertation work. Such placements are valuable experience for the students, but with increased numbers more of them have to carry out their dissertation work entirely within the University. However, the increase in numbers may also create an opportunity to restructure the modules in the taught course, for example by breaking large modules such as seismic acquisition and processing into a compulsory core and an optional advanced module. This could also reduce the total coursework load on the students, and give them a little more time for reading around the subject.

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 structure and content are entirely appropriate for the MSc level. Standards are high across the entire programme.

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.*

I am not aware of any national benchmark. The standards achieved are at least as high as the broadly comparable courses that I am familiar with, though these are more narrowly focussed on the oil industry.

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.*

Assessment is by coursework assessment, examination and a final dissertation. These are in general well designed. Feedback from students, as last year, is that they would like to see consolidation of small coursework exercises into larger units, with corresponding aggregated credit; with careful design this could reduce the excessive workload that students face at some points in the year. Standards of marking are high; feedback is variable but generally very good. Where supporting notes were available for a module, they were much appreciated, but students would like more information on exactly what is expected of them at the start of an assignment.

Student feedback on individual course modules has been at a much lower level than last year; often only about 20% of the class sends in a response. The ones that are sent in are mostly very positive, but there is a trend toward saying that, although the quality of feedback is high, it has not always been received in a timely fashion. Students felt that where two subjects are combined within a module (e.g. sequence stratigraphy and seismic interpretation), they could usefully be more closely integrated.

The log interpretation exercise in the examination for the SOEE5128M module caused some problems in that it was too easy to obtain very high marks from a fully correct answer. The difficulty was solved by appropriate moderation, but in future years either this exercise needs to be made more difficult, for example by including some data of dubious quality or a larger element of discussion needs to be incorporated in order to give more differentiation in the answers.

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.*

They were given ample opportunity; dissertation projects were mostly well supervised, though in a few cases there had been insufficient attention paid by industrial supervisors to the need for students to be given adequate time to write up their results; guidance on this point perhaps needs to be strengthened.. In general the standard of this cohort was more uniform than that of previous years, with fewer borderline passes but also no dissertations (from the selection that I read) that demonstrated strikingly original thought. The latter is probably a random fluctuation, given the small numbers performing at the Distinction level.

This year the presentations of project work went well, and most of the project posters were of reasonably good quality; students appear to have put more thought into these than in some past years.

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

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.

The gravity and magnetism module has been refurbished, and attracted many positive comments from students.

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.

Many of the dissertation topics, both those undertaken in industry and those carried out in the University, were on topics close to the leading edge of current knowledge, giving students the opportunity to develop original ideas that would in principle be publishable. As noted above, this year none of the students quite achieved this standard.

8. Where the programme forms part of an Integrated PhD, please comment on the appropriateness of the programme as training for a PhD

For Examiners involved in mentoring arrangements

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

The Examination/Assessment Process

10. 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 guidance supplied was very full. I was able to review half the dissertations in detail, to hear students present their work, and view their posters. In addition, course work and examination scripts were available for review. Staff were happy to answer questions on the course, and in addition the external examiners held a meeting with the students to hear their comments and suggestions. It was thus possible to obtain a rounded view of the course.

11. 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, the documentation was more than adequate.

12. 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?

I reviewed about half the draft examination papers, and was happy with the nature and standard of the questions. I had not anticipated the problem noted above with the petrophysics element of the examination, obvious as it may seem in retrospect.

13. 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?

Ample material was available. All scripts were clearly marked, and where appropriate copiously annotated.

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

All the dissertations had well chosen topics, calculated to give students the opportunity to demonstrate their capabilities. The marking scheme is clear and had been applied consistently.

15. 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?

I attended the meeting of the Board and was completely happy with the recommendations. All administrative processes worked smoothly.

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

Yes, it was clear that careful thought had been given to mitigating circumstances.

Other comments

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

There has been an instance of insufficient availability of workstations, over a period when they were being used for a structural geology Petrel course. To maximise the use of the workstations, it would be helpful if students were able to log in remotely from a laptop; this would also be useful for running software that needs only intermittent intervention, as is the case with seismic processing.

School of Earth and Environment

University of Leeds
Leeds LS2 9JT

**UNIVERSITY OF LEEDS**

03 February 2015

Dear

Re: Response to External Examiner's report – MSc Exploration Geophysics

First and most important, MANY thanks for your sterling work over the last few years. It's been hugely appreciated and we've enjoyed your input and visits, both personally and scientifically. To address your report, item-by-item where appropriate:

Section "examiners completing term of appointment"

Thanks for that useful review, and I'm pleased you've found the evolution successful and worthwhile. As well as responding to concerns, I'll also add a few remarks about some of the other developments under way. Together they cover many specific later points too.

You flag the **amount of course material and student workload** as a key challenge – so, we're doing a full 'refresh' of curriculum & workload for 2015-16, and preserving innovations you mention. In forming the new curriculum, we did discuss your comment about **breaking large modules into core and advanced**, but felt it would 'pigeon-hole' students too much, and lose the breadth of training that has been a strength of this Master's programme in particular.

Some immediate action was taken for 2014-15. The Student Support Office produced, very promptly, an excellent collated deadline spreadsheet – from it, a '**coursework deadline & workload map**' was made: this allowed urgent action to reduce coursework (by a target of 20%, achieved reasonably well for Term 1: under way for Term 2) and manipulation of deadlines (in conjunction with student representative) to avoid bunching.

The **dedicated Laboratory** is about to undergo a further hardware upgrade such that it remains a sector-leading resource, and some £150k is being investing in upgrades and additions to our **field equipment**. We're actively recruiting for an **additional applied geophysics lecturer**, having already appointed a **graduate teaching assistant** on a 5-year post, to do some non-academic administrative tasks. The oil price fall has lost us only 1 of our 11 **industry scholarships** – 3 are renewing, the other 7 expect to. Internally, we have an Alumnus Discount in place, and have created an annual £5k "PetroleumLeeds" scholarship and 4 x £250 conference/project bursaries from accumulated surpluses on industry scholarships. Finally, we are realigning our **entrance criteria & admissions processes**, to control intake and raise standards.

Section ".... assessment methods"

Consolidation of coursework will be directly addressed in the Curriculum Refresh, where assessment amounts will be re-checked against the School norms. **Timely feedback** should be

too, indirectly – if the overall strategy is to reduce coursework, staff ought to be able to deliver the high quality feedback that we do give, but more quickly.

The relevant teaching staff are very aware of the too-easy **SOEE5128M log interpretation** exercise, and have been specifically asked to revise it.

Section “... opportunity to demonstrate”

The summer project schedule now explicitly shows a suitable writing-up period, to address the concern that **industrial supervisors don't give adequate time to write up**. The timing of visits, and other 'waypoints', has been adjusted slightly to give more time for students to act on advice in the closing weeks.

Section “Other comments”

Re **availability of workstations** – IT have encountered license and other obstacles when trying to implement remote login, so for the time being we have made the lab usage visible through the online timetable, so students can at least manage their activity & time.

Yours sincerely,

Head of School
School of Earth and Environment
University of Leeds
Leeds
LS2 9JT

The University of Leeds**EXTERNAL EXAMINER'S REPORT**

ACADEMIC YEAR: 2013– 2014

Part A: General Information**Subject area and awards being examined**

<i>Faculty / School of:</i>	School of Earth & Environment
<i>Subject(s):</i>	M.Sc. Exploration Geophysics
<i>Programme(s) / Module(s):</i>	M.Sc. Exploration Geophysics
<i>Awards (e.g. BA/BSc/MSc etc):</i>	M.Sc. (one year full time)

Name and home Institution / affiliation of Examiner**Completed report**

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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

A thorough multi-dimensional review of student coursework loading and coursework deadline timings within the M.Sc. taught programme modules for 2014-2015.

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

The M.Sc. Exploration Geophysics degree at Leeds University is an excellent 12-month Masters level course providing students with the bridge between a B.Sc. degree and a professional career in the global hydrocarbon exploration industry. Academically the course is at a very high standard and it is well respected by European industrial employers. I do not have many issues to bring up in my final 4th year of employment as external examiner which I have much enjoyed, but listed below are some areas that could be further improved:

The M.Sc. student questionnaire feedback rates were only 10% in 2011-12, but increased significantly to over 60% in 2012-13. This past year the rate of returned dropped back to only 30%. On quizzing the students about this low return they said that they were asked to fill in the feedback questionnaires during a particularly intensive period of coursework and most could not be bothered, as it was a low priority. Students should also be asked to provide a confidential feedback on their company placement experiences and supervision that would be of benefit in placing future students with companies. In future the timing of questionnaires should be more sympathetic with ongoing student workloads, then statistically significant feedback data can be compiled.

At this time in September 2014 I understand that competitor M.Sc. Geophysics courses at [redacted] and [redacted] have announced closure. This now means that Leeds University is the premier M.Sc. Exploration Geophysics course of No.1 student choice in the UK. I would imagine that Leeds is going to have no trouble attracting students, in fact you will be probably be turning excellent students away. Academically, the optimal number of students on the course would be 24 as this would make small group lab and field work teaching a pleasure and marking/feedback for academic staff not that onerous. Numbers at the moment are logistically capped at 40 by the number of individual computer work stations the students require. Clearly increasing student numbers should come with increased academic staffing, technical support staffing, equipment, technical support etc. However raising intake numbers above 40 would result in staff overloading, doubling up lab teaching, would reduce the quality of available summer dissertation projects and would probably diminish greatly the excellence of this course. Over the four years I have been external examiner I have noticed a drop in the number of technical personnel engaged in supporting this M.Sc., particularly the computer intensive seismic processing module and this staffing issue should aim to be improved over the next few years, particularly to support increased M.Sc. student numbers.

The re-occurring most important topic of student complaint over my four years as external examiner, based on talking personally to the students, is the over-assessment and coursework overloading within periods of the taught programme. In my first year as external examiner (2010-11) this factor was highlighted and I managed then to free up the two-week pre-examination period from any coursework deadlines, which resolved one serious problem of over-loading the students. The taught programme has core and optional modules all worth 15 credits, which should mean they have roughly equal student work-loading. However, there is one anomalous module 5165 Seismic Reflection Acquisition & Processing that contains a student workload significantly greater than the other modules. During intensive periods of coursework, particularly in the last three weeks of the spring semester 2, students are working seven days a week and many hours each day completing the IT-based laboratory exercises. Students each year complain of deadline bunching and multiple assessments that involve many hours of work that actually form small percentages (as little as 3%) of the total module weighting. Many students in the past have complained of migraines from too many hours of IT-based activity staring at PC screens.

I would strongly recommend a total review of all coursework set in the M.Sc. taught programme. For each module, firstly re-assess the coursework versus written examination weighting balance. Then for the module coursework items, assess each particular coursework item, specifically asking how many hours each lecturer expects a student to work on the particular item, determine how many credits it is actually worth, the date it is set and the deadline submission date. This analysis can be done in a graphical Gantt chart calendar style format so you can see how many student coursework projects are running parallel each week. Anomalous coursework items that involve a lot of student work for little credits should be re-designed (or removed), plus parallel modular deadlines can be re-arranged to avoid clashes. I would advocate a reduction of overall coursework by around 20% in this M.Sc. degree and no single coursework item to be worth less than 15% of the module (worth 2 or 3 credits). All coursework tasks should have clear aims, objectives and word limits when given out to the students. For some coursework items set over the last academic year some students thought that it was not clear what and how much the lecturer actually wanted.

I do not consider this proposed overall coursework reduction will reduce academic standards, but would actually free up more time for these conscientious students to read more around the varied subject areas. I believe that an overall reduction in coursework in the taught programme modules will also lead to the students achieving a higher standard in individual coursework assessments (as they will be under less pressure), you will have less student complaints, a reduced academic staff coursework marking loading which will result in improved rates of coursework turn-around times. M.Sc. student numbers I estimate will be buoyant in the high 30s, so you have to look long term at a sustainable workload programme for both staff and students.

It may be an option with continued high student numbers to offer other formal pathways within the degree such as Petrophysics or alternatively offer a core module in seismic processing that all students study, plus an optional

module in a dvanced seismic processing techniques for those with Physics d egress wishing to pursue a career in the data processing industry.

Overall the standard of dissertation topics is excellent and diverse, many based with industrial sponsors. I would recommend that Leeds University gets a bit tougher with sponsoring companies who are often offering much sought after Masters students company employment before completing their University dissertations. Students feel they cannot refuse company work that may not be directly related to their project. Based on my own experience as M.Sc. project manager at University I recommend three guidelines are given out to company sponsors offering student project placements :

1. The student's project placement module must be well thought out in advance and is practically up and running with all basic data in place and the required software working with some introductory software training by week three of the company placement.
2. The M.Sc. project should be logistically achievable within the 3 month project period and not be too over-ambitious. Some dissertation projects I have seen come close to the aims of a Ph.D. to pick and were unrealistic within the short timeframe.
3. The sponsoring company must realise that the student is still an M. Sc. student until she/he submits a dissertation to Leeds University by the late August deadline. Companies should release students from other company distractions for the two weeks before the dissertation deadline, to concentrate solely on writing up their dissertation to a high standard.

If the three points above were all adhered to by all companies, then the few problems and student complaints I have observed with company-based projects could be avoided in future.

Presently the dissertations are assessed by double blind marking the written thesis (which is the major component), also there are marks awarded for the viva, oral presentation and a poster. The latter three components in reality typically only change the final module mark by +/- 1% of the dissertation mark, so there is an element of a lot of work (for students, staff and external examiners) for not many credit marks. Long term, the amount of formal assessment in the independent project module beyond the actual important written dissertation could be reviewed.

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 design, academic content, technical training programmes, T&L outcomes are all totally in line with UK Masters level education and appropriate for the subject area of exploration geophysics.

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.*

This postgraduate taught masters M.Sc. course is now the best of its kind in the UK and fulfils all national benchmark criteria. As its only competitor at Imperial College is due to close, this leaves the Leeds course in the pole position in the UK for students wishing to gain the necessary Master's qualification for employment in the global hydrocarbon exploration industry.

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.*

Although the M.Sc. Exploration Geophysics course has two potential taught pathways, hydrocarbon exploration and near-surface, all the 36 graduating students in the 2013-14 cohort chose the hydrocarbon option, as this leads to a strong track record of employment in the global exploration industry with the potential of a high salary with careers in companies such as Shell and BP etc. The near-surface geophysics pathway

on the other hand now looks like a poor student option for long term career opportunities.

M.Sc. students commented that they like the lecturers who put accompanying notes on the VLE as well as their lecture slides. Some modules such as Sequence Stratigraphy for example where only the lecture slides are put on the VLE, students found this format difficult to revise from. I would encourage all lecturers to at least produce a short bullet key point supplementary notes document to accompany their lecture slides on the VLE.

The M.Sc. course is well-designed, with an impressive programme of lectures, laboratory / computing practicals and fieldwork exercises as well as formal examinations. The student's varied assessment portfolio is concluded with an individual dissertation project. Students were very complimentary about the high standards of enthusiastic teaching they had encountered throughout the course. With increased numbers on the course over this past year it was noted by some students that the time taken to return coursework with feedback has been longer than optimal. I noted that the staff had still retained a good standard of feedback, but clearly increased student numbers over this past academic year means increased volumes of marking which has obviously resulted in a longer time taken for lecturers to mark and return coursework with quality personal feedback annotations.

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.*

All the assessment items I looked at (numerical exercises, lab practicals, IT-based computer processing and fieldwork reports) over a 4-day period were at a high M-level standard. I also took part in seventeen, 45 minute individual student viva sessions covering half of the student cohort. During the 'industry-day' I also sat through the day of 12-minute individual lecture presentations given to invited industry professionals and also scrutinised the individual students' project poster displays. The assessment items related to the dissertation projects were all clearly at the M level standard and some were at the impressive distinction level.

The student intake is wide-ranging and have impressive B.Sc. qualifications. Around half the intake having degrees in physics the other half shared between geophysics and earth sciences / geology at undergraduate level. It was also good to see that there was some flexibility with one mature student seeking a change in career path from RAF acoustics into geophysics. I noted that two students already had previous M.Sc. awards from overseas universities.

The degree has to deal with teaching physics graduates the necessary fundamental geological concepts, plus also making sure that the B.Sc. geoscience graduates are sufficiently numerate to understand the geophysical concepts and mathematical procedures. The School produced new introductory distance-learning pre-reading material that provided incoming students with extensive self-learning short courses to help them before coming to Leeds. The majority of students have first or high 2(i) class degrees and I think this should remain the standard entry requirement for undertaking this rigorous Masters course. Overseas students clearly have a variable standard of first degree education which can be hard to predict standards in comparison with the UK, but the enrolment selection process appears robust, in that the majority of non-UK students are capable of working to an M-level UK education standard.

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.

During 2013-24 there was a major overhaul of the gravity and magnetism module with new teaching staff. This proved a big success with students being complimentary about the enthusiasm of the lecturers and their enjoyment of this module.

The management and monitoring of the individual student dissertation topics has been tightened up and all topics this year were again realistic and achievable within the tight three month summer schedule. With 36 or

more individual projects all requiring data, software, supervision etc. it is understandable that not all projects can be 100% perfect, but overall the standard of dissertations were again impressive.

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.

The vast majority of M.Sc. student dissertation topics are industry-sponsored and are at the cutting edge of global hydrocarbon exploration research. Many of the M.Sc. students are using state of the art software and multi-million pound exploration data sets from all over the world for their research dissertations with many students working with global companies based in their offices around Europe. Some in-house projects (such as gravity and magnetics) are also related to the on-going research projects carried out by Leeds University staff and are of a high research standard. The majority of M.Sc. dissertation presentations could be given at European hydrocarbon industry research conferences.

8. Where the programme forms part of an Integrated PhD, please comment on the appropriateness of the programme as training for a PhD

N/A

For Examiners involved in mentoring arrangements

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

N/A

The Examination/Assessment Process

10. 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.

I had full access to all necessary documentation throughout my four-day period in Leeds. All the students' assessed coursework and examination scripts were bound and indexed in individual portfolios and were made freely available for me to study in detail during a long morning session in the computer laboratory.

11. 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 I was given a fully indexed comprehensive pack of all the necessary programme documentation for me to successfully carry out my external examination duties. The programme specifications, examination rules and award criteria were clearly laid out in the documentation.

12. 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, I reviewed all the examination questions and apart from making some minor comments about improving the clarity of a few questions to avoid ambiguity, overall I had no issues about the M-level nature of all the examination questions set.

13. 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?

Absolutely as noted above I looked through the full set of students' coursework assessment.

As the M.Sc. course is taught by numerous academic staff, the standard of feedback ranged from copious hand-written individual notes to just ticks and marks. Overall the standard of feedback was good, but a few staff do need to take note of the good practice of others. Increased students numbers over the past year did not appear to reduce the quality of feedback, although it may have taken staff longer to turn the marking around. The academic staff made a remarkable effort to turn around all the dissertation marking with detailed marking notes over a 2 week period in late August.

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

This year I received the M.Sc. dissertations electronically by PDF. The reduced page limit imposed this year was very successful cutting down on the number of overly long and verbose dissertations I had to read in previous years. The reduced word limit forced the M.Sc. students to write in a concise, technical fashion, with copious illustrative material, which is common practice in research and industry reporting of geophysical topics.

Although I did not produce individual marks for each thesis I read, I personally graded them into pass, merit, distinction. When I saw the internal markers comments and final mark I was in full agreement with these standards. It was good to see there were no fails at the dissertation stage. This year only 6 students gained dissertation marks above 70% and the highest dissertation mark was only 73%. With the high standard of student intake, I personally would like to see more dissertation distinction grades above 75% and guides / advice should be given to the students on how to achieve > 75% marks and what the markers are looking for in a distinction level dissertation.

15. 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 I attended the final exam board which was well managed and I was in full agreement with all student classifications that were agreed at the final exam board. I particularly like Leeds' electronic screen student management system, which is a joy compared to the vast number of pages of A3 sided paper I have to plough through at my own exam boards. The student administrators present at the board clearly knew the university regulations in detail.

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

Yes, I was fully aware of all student mitigating circumstances and I felt that in all cases those individual students had all been given due case and personal consideration.

Other comments

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

School of Earth and Environment

University of Leeds
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**UNIVERSITY OF LEEDS**

03 February 2015

Dear

**Re: Response to External Examiner's report – MSc Exploration Geophysics/
(Completing his term of appointment)**

First and most important, MANY thanks for your sterling work over the last few years. It's been hugely appreciated and we've enjoyed your input and visits, both personally and scientifically. To address your report, item-by-item where appropriate:

Section "matters for urgent attention"

We are doing a full 'refresh' of curriculum & workload for 2015-16, but immediate action was taken for 2014-15. The Student Support Office produced an excellent collated deadline spreadsheet: from it, a '**coursework deadline & workload map**' was made, allowing urgent action to reduce coursework (a target of 20%, achieved quite well for Term 1: under way for Term 2) and manipulation of deadlines to avoid bunching. Student representatives were involved also, to ensure they were aware of and content with these improvements.

Section "examiners completing their term of appointment"

Thanks for your compliments: I'm pleased you find our course of a **high standard and ... well respected**. Your overview has 5 general **areas that could be further improved**:

1. **Questionnaire feedback rates** are a widespread issue: SEE is taking generic action on it.
2. Class size has still proved troublesome. We agree that 24 would be a comfortable number. The 2013-14 intake was 38 due to an unexpected increase in conversion rate. The 2014-15 intake is 44 despite closing admissions early and making fewer new offers: ≈12 deferred entrants showed up. Consequently, we're realigning our entrance criteria & admissions processes, to control intake and raise standards.
3. Your thorough discussion of **over-assessment and coursework overloading** is very useful, as are your proposals. As noted above, immediate action was taken to reduce workload for 2014-15 by your target of 20%, and a much larger 'refresh' of curriculum & workload is nearly complete for 2015-16.
4. You suggest **other formal pathways**. Staff are amenable to a petrophysics-geomechanics option in due course, but our priority is (3) above. In the Curriculum Refresh, we did discuss **streaming into advanced modules targeted at specific careers**, but felt it would 'pigeon-hole' students too much, and lose the breadth of training that has been a strength of this Master's programme in particular.

5. Your comments on **dissertation guidelines to company sponsors** are valuable: points (1) and (3) are now included in the published schedule for summer 2015.

You might like to hear of some additional positive steps. The **dedicated Laboratory** is about to undergo a further hardware upgrade such that it remains a sector-leading resource, and some £150k is being investing in upgrades and additions to our **field equipment**. We're actively recruiting for an **additional applied geophysics lecturer**, having already appointed a **graduate teaching assistant** on a 5-year post, to do some non-academic administrative tasks. The oil price fall has lost us only 1 of our 11 **industry scholarships** – 3 are renewing, the other 7 expect to. Internally, we have an Alumnus Discount in place, and have created an annual £5k "*PetroleumLeeds*" scholarship and 4 x £250 conference/project bursaries from accumulated surpluses on industry scholarships.

Section “... assessment methods”

We do ask that staff put *support notes on the VLE* but it's clearly not always done. I'll remind teaching teams, but from 2014-15 all lectures must be captured on audio or full video. These are a popular supplement to actual lectures. The **time taken to return coursework with feedback** (S13 also) is indirectly targeted by the Curriculum Refresh: if coursework volume is reduced, staff can deliver a **high standard of feedback** more quickly.

Yours sincerely,

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