Assessment in the College of Science and Engineering – an update for LTPG

In October 2015 I presented a paper to the College Strategy and Management Committee (CSMC) outlining a proposal to (1) examine all semester 1 courses in December, (2) hold exam boards for all S1 courses in January and (3) to limit the number of exams that any student would be expected to sit in a single diet to three. The rationale is explained in the original paper which is provided here as an appendix. The paper focussed on written examinations because these generate the most significant issues for us. We already use a wide range of in-course assessments but will continue to rely heavily on exams in the future for several reasons, including the requirement of several accrediting bodies that at least 50% of assessment is by exam and the belief that this is the only way we can be sure that a piece of work (such as the solution to a mathematical problem or producing a piece of computer code) has been produced independently by a specific student. CSMC identified some areas that might prove problematic to introduce on the proposed time-scale but the principles were accepted as positive by all seven Schools. I was asked to take this forward with Directors of Teaching, developing more detailed changes to courses and programmes. Directors of Teaching are currently working, albeit on different time scales, to bring about the necessary changes and the aim of this document is to provide a brief summary of the current position.

The assessment patterns in some Schools, notably Biological Sciences and parts of GeoSciences, already fit the proposed pattern so no changes are necessary. Biological Sciences has been undertaking a major review of undergraduate programmes with substantial programme changes expected in the coming few years. The assessment pattern will continue to fit the required model and will take on board the lessons learned from the LEAF project.

Engineering is similarly planning a major review of undergraduate programmes for all four disciplines (Civil, Chemical, Electronic and Mechanical). The assessment principles will be introduced with the revised programmes rather than rushing to make immediate, temporary changes to courses. It is expected that the prevalence of 10-credit courses will be further reduced, thereby cutting the dependence on large numbers of exams. The School of Informatics currently has a large number of 10-credit courses that are examined, such that individual students can be required to sit a large number of exams in the spring diet since semester 1 courses are also examine at the end of the year. The School has been focussing on third year courses, seen as the most problematic, and has already reconfigured several courses to a 20 credit structure. Further changes are to be brought to the March Board of Studies, affecting more third year courses and proposing rescheduling of some exams to December as well as changes to UG4, UG5 and PGT courses.

Semester 1 courses in Geography are currently examined in December but no exam boards are held until the end of semester 2. This will change for 2016-17.

Physics and Chemistry are generally compliant in pre-honours years and junior honours. The situation in senior honours and masters years is more complex and is being looked at but it is unlikely that change will be rapid for two reasons. Firstly, Physics have undergone a major restructuring of degree programmes and the exam structure is not the most urgent priority for attention. For these and other Schools the major issue blocking full adoption of the assessment principles is the asymmetry of the two semesters dictated by the current academic year structure. This is, perhaps, most strongly felt in Mathematics where there is a strong belief that good student learning requires a longer period of consolidation than is possible within the tightly constrained
semester 1 that we currently have. Most maths courses are examined in the spring diet and this is unlikely to change with the current academic year structure.

Five Schools in CSE (all except Mathematics and Chemistry) have taken part in the LEAF project. This has been very helpful to Schools in looking at the student experience at programme level and has helped Schools to both identify problems and to find solutions that will improve assessment from both the student and staff perspectives.

Graeme Reid

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Assessment

There is a widespread acceptance across the University that our students are over-assessed. Evidence for this comes from various sources:

- students comment negatively in surveys, including NSS, on the volume of assessment and particularly the number of examinations. This has also been a common theme to arise from student focus groups associated with the LEAF project.
- staff complain about the volume of marking required for in-course assessments and for examinations and the associated demands on staff time;
- setting and checking examination papers takes a very large amount of academic and administrative time and effort;

In Science and Engineering, most courses are assessed by written examination whether or not there is additional in-course assessment. This, coupled with the large number of 10-point courses offered in some programmes can mean that individual students are sitting a large number of exams in a year, and in some Schools theses exams are held in a single diet. The LEAF project (which has so far involved Biological Sciences, GeoSciences, Informatics and Physics & Astronomy with Engineering also beginning the process) has highlighted the volume and nature of assessment at programme level so we can now see more clearly the assessment load from the student perspective. Having developed a clearer understanding of the issues, we are in a much stronger position to take actions that will improve the assessment experience for students and for staff without reducing the robustness of course grades and degree classifications.

Proposals

1. First semester courses should be assessed in the December diet.

Most Schools currently do examine S1 courses in the December diet but not all. Holding the examinations over until the spring diet has several negative consequences:

- students generally want to know how they have done in semester 1 courses, to get useful feedback that can be helpful in semester 2;
- visiting students who are only in Edinburgh for semester 1 need results that are based on different assessments from the rest of the class, generating additional work for staff and difficulty in ensuring equivalence of marks;
- students can have an unreasonably large number of exams that have to be sat in a single diet at the end of the academic year.

2. Results from first semester courses should be ratified by exam boards in January.

Most Schools, but not all, hold Exam Boards twice per year and the external examiner(s) generally attend on both occasions. This has become much more common practice nationally. Holding exam board in January for semester 1 courses enables us to give finalised course marks to students and provides an opportunity for external examiners to meet with students whereas this is not generally possible at the end of the academic year.
3. Schools should review their assessment profiles to ensure that no student is required to sit more than three exams in one diet.

We have seen students required to sit up to eleven examinations in a single diet. Expecting students to sit a large number of written exams in a short period is unlikely to provide us with a fair reflection of their all-round capabilities. We have also seen a marked growth in anxiety- or stress-related Special circumstances impacting on exam performance or the ability to attend examinations, with a corresponding growth in concession requests to College. Not only is the large number of exams proving difficult for the students concerned, and unlikely to bring out the best of their abilities, but it also creates difficulties for scheduling exams particularly because of the need to accommodate adjustments for disabled students (including students who must not have exams on consecutive days).

Of course examinations will continue to have an important role in our overall profile of assessment. The important question is whether we can reduce the number of exams and many possible approaches are available to help with this, including replacement of exams with alternative forms of assessment or by reducing the number of courses, eg by replacing 10-point courses with 20- or 40-point courses. It would still be possible to maintain a degree of choice with larger courses by creating “umbrella” courses with optional elements within. Several other institutions use this approach, particularly at honours level.

These proposals are educationally desirable in their own right but are very much in line with the direction of travel for student experience, learning and teaching under the Senior Vice-Principal. He has suggested “simplification” as a key route to freeing up staff time for more face-to-face time devoted to student learning and feedback. By reducing the volume of assessment we might go some way to achieving this.

If these proposals are broadly accepted we should proposals 1 and 2 for academic year 2016-17. Proposal 3 will take more planning and time for course approval. Some elements such as replacing exams with alternative assessments could also be completed for 2016-17 but re-configuring courses etc. should be completed for the following year, 2017-18.

Exceptions

Some students progress while carrying a credit deficit. These students may be required to sit exams for the additional courses as well as the normal load and thus may exceed the envisaged maximum of three per diet. Similarly, some students choose to register for more than 120 credits in an academic year and may, because of this, exceed the normal maximum. There may be circumstances in some Schools, particularly in final year, where four exams are sat in one diet. We may wish to consider this as reasonable where the total number of exams in the year is no more than six.

Graeme Reid

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