S382/S383 Assessment & Tuition Strategy

Introduction

S382 Astrophysics and S383 The Relativistic Universe are two Level 3 courses, currently in their first presentation from February 2010. The courses each have a novel assessment and tuition strategy, aimed at improving student recruitment, retention and progression, whilst at the same time reducing costs in presentation, as well as increasing engagement of academic staff with students. The courses are part of the Level 3 Physics and Astronomy Student Support Team pilot project within the Student Support Review.

Each 30 credit point course consists of three equal-sized, stand-alone parts; each of the six parts is designed to be studied over 10 weeks. Five of these are based around purpose-written self-study texts that are co-published by Cambridge University Press; the second part of S382 is a VLE-enabled group project based on the acquisition, analysis, and interpretation of astrophysical data. Students are offered a choice of two projects – one using spectroscopic data from an international robotic telescope archive (the Sloan Digital Sky Survey) and one using photometric data from the OU’s own Robotic Telescope in Mallorca (PIRATE). During the project, the students will complete a set of ‘tasks’ and record their progress in personal weekly Progress Reports. The group will also produce a final report on their project in the form of a Wiki, which all members of the group contribute to.

Summative and formative assignments

The overall grade on an OU course is traditionally determined from a two parameter grid that includes the students’ overall examination score (OES) and overall continuous assessment score (OCAS). Although many students believe that their overall course score is in some sense an ‘average’ of these two (equally-weighted) components, in practice, a student’s grade is exclusively determined by the lower of their two components. Since the OES is less than the OCAS for virtually all students, the OCAS has virtually no effect on overall course grade, which is almost always determined solely by the student’s performance in the exam. Not only is this misleading for students, it may give them a false sense of security on entering the exam room.

The effect of removing a summative score from the continuous assignments is that students who scored OCAS = OES still get the same grade; students who scored OCAS > OES still get the same grade; and students who scored OCAS < OES get a higher grade. If continuous assignments are formative then we keep the advantages of: maintaining students’ pace through materials; effective teaching of students through targeted feedback; and tutor-assessment (and self-assessment) of students’ progress towards learning outcomes. We lose the ability to grade students’ ongoing achievement, but the overall grade at the end of the course is unaffected. We also make gains of less resource needed in annual presentation and have assignments that are better suited to teaching.

Furthermore, by providing two summative assessment components, which assess different parts of the course, and which simply combine to produce the overall course grade, the student is better served overall. The model adopted for S382 and S383 means that students have 1/3 of their overall course grade ‘in the bag’ before they even enter the exam room, and they only have to revise 2/3 of the course material for the unseen exam.

Formative assignments in S382/S383

The assessment model of both courses may be summarised by the description ‘little and often’. Each part of the course (apart from the embedded project) has four short formative assignments (2x eTMA and 2x iCMA) which together amount to around 1.2 TMA-equivalents on each part. The pattern for each part of the course is: iCMA (5 questions, after weeks 1&2), eTMA (1 question, after weeks 3&4),
eTMA (1 question, after weeks 6&7), iCMA (5 questions, after weeks 8&9); weeks 5 and 10 of each part are ‘consolidation’ weeks. This pattern allows students to get rapid feedback (on the iCMA) at the start of each part of the course, and again at the end of each part when they are ready to move on to the next part of the course. It also provides detailed tutor-generated feedback on the core central sections of each part of the course.

For the S382 project, there is one iCMA (at the start) based on knowledge and understanding that students are expected to bring to the project they will undertake and one eTMA (after the first couple of weeks of the project) comprising the first two of the student’s weekly Progress Reports, in which students largely plan how they will conduct their project.

Each iCMA consists of five questions and each question has typically three (randomly selected) variants. Every time a student accesses a question they are allowed up to three attempts to get it correct. Feedback is provided on incorrect, or partially correct, answers and hints are given if necessary, until the student gets the answer correct or is provided with a worked solution. iCMAs remain ‘open’ for the duration of the course and students may attempt them as often as they wish, learning from the feedback they are provided with on their answers. As long as they submit their answers after each attempt at the iCMA, their highest ‘score’ will be the one that is retained at the end of the course. Given this pattern of use, it should be difficult to ‘fail’ any of the iCMAs, but since their purpose is to aid student learning rather than assess their knowledge and understanding, this is not an issue.

All eTMAs are assessed by the students’ tutors using criterion referencing against achievement of a subset of the course learning outcomes. Tutors provide detailed feedback to students on their eTMA answers, and a nominal ‘mark’ is calculated by a weighted sum of the scores on each assessed learning outcome. As a further feedback mechanism to students, the Course Team has produced Camtasia screencasts of complete worked solutions to each eTMA, and these are made available to students through the course website after the cut-off date for the submission of each eTMA.

Although ‘marks’ from these iCMAs and eTMAs do not contribute to the overall course score, students must exceed a minimal threshold on 8/10 assignments for S382 and 9/12 assignments for S383, in order to be considered for a grade based on the summative assessment components. Exam board discretion will be used in those cases where students have been unable to submit the required number of formative assignments.

**Summative assessment in S382/S383**

There are two summative assessment components for each course: EC2 is a conventional end-of-course examination in October based on the first and third parts of the course only, whilst EC1 is submitted in July and is based on the second part of the course only. Both the EC1 and EC2 need to be passed separately (i.e. mark >40%) in order to successfully pass the course as a whole, but the overall course grade is based on a simple weighted (2:1) sum of the individual marks. The EC1 for the second part of S382 is a portfolio comprising the student’s individual weekly Progress Reports plus the group’s collaborative Wiki-based Report, with a 60:40 weight between them. The EC1 for the second part of S383 comprises an extended piece of written work. Both EC1s will be fully double marked, usually by the students’ tutor and one other.

There are several advantages of having two summative components, the scores of which simply combine to produce the overall course grade. Firstly, students will get 1/3 of the course out of the way before the unseen exam. Part of their course grade is therefore achieved even before they have finished studying. Secondly, students do not have to revise the entire contents of the course in preparation for the unseen exam. This should take pressure off students and allow them to perform better in the exam itself.

The re-sit policy of the two courses is also novel. As usual, students who narrowly fail the exam (EC2) in October will be eligible to retake the exam in the following April. If they have passed the other
component (EC1) that score will simply carry forwards and combine with the new exam grade. If instead, they narrowly fail the portfolio (S382 EC1) or extended assignment (S383 EC1), they will be offered a viva-voce examination with a member of the course team, just on the appropriate second part of the course. If they have passed the other component (EC2) that score will simply carry forwards.

**Tuition on S382/S383**

As part of the Physical Science Student Support Team (SST) Pilot, all tutors for S382 & S383 are appointed through the OU’s Manchester Regional Office, rather than on a geographic basis from each individual region and nation, as is the norm on most other courses. Each tutor’s group of students is therefore not geographically co-located, but this does not matter, as tuition on S382 and S383 is wholly electronic in nature. There are no face-to-face elements in the tuition at all.

Both courses make extensive use of Moodle Forums, provided through the OU VLE, as well as Elluminate Live! web-based collaborative meeting software. Students are offered a number of small-group tutorials led by their own tutor using the interactivity offered by Elluminate to participate in discussions (both audio and written) and use a shared white-board. Without the limitations of geography imposed by traditional face-to-face tutorials, students can also join in with another tutor’s tutorial if their own tutor’s tutorial is at an inconvenient time (subject to agreement from the tutor concerned).

Students are also offered a number of course-wide seminars, which are more traditional lecture-like presentations, again delivered through the Elluminate interface. There is the capability to record Elluminate seminars so that students may watch the recording at a later time if they are unable to participate in the live event, or if they wish to revisit some of its content.

At the start of each course, ‘Introduction Lectures’ were also presented via Elluminate, by the Course Team Chair. The in-built polling options enabled rapid feedback from the remote live audience of 40-50 students in answer to questions posed by the presenter. This feature is likely to prove very useful as Tutors and Course Teams develop their experience with the software and how best to use it.

A final use of Elluminate is in the Project element of S382, where students may meet informally with the rest of their project group (and their tutor if necessary) in an Elluminate room in order to discuss their weekly activities on the project itself. Likewise, on either course, a tutor may make informal or ad hoc arrangements to meet one or more students in their own Elluminate room whenever necessary in order to provide extra tuition as and when required.

Finally, through the Student Support Team, each S382 & S383 student is assigned to a Pathway Tutor. These comprise eight individuals, four each drawn from the experienced Physical Science Associate Lecturer cohort and the central academic staff of the Physics and Astronomy Department. Pathway tutors take both proactive and reactive roles, ensuring that students are prepared for the course(s) they have embarked on, and that they are maintaining an appropriate pace through the learning materials of these courses. Much of the notification to Pathway Tutors about students’ progression is provided automatically by newly developed systems. In addition, the SST will organise virtual, on-line events using forums and Elluminate in order to inform and guide students with regard to appropriate choice of subsequent courses, study paths and careers guidance.

Overall it is expected that these novel assessment and tuition strategies will improve student retention on, and progression between, courses, and that the SST in particular will lead to the development of a greater sense of community amongst OU Physical Science students.

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