
Rewarding students' time and effort

Judith Pollard, The University of Adelaide
judith.pollard@adelaide.edu.au

Introduction

In aligning semester activities with assessment we need to bear in mind:

- ❖ the aims of the subject;
- ❖ the activities and learning opportunities in which the students engage;
- ❖ the time spent in these activities;
- ❖ the appropriate assessment weighting.

As an example of how that might be managed, we will look at the First Year calculus-based Physics subject at the University of Adelaide.

Subject Aims

For students in Physics I, the aims are:

1. to develop your understanding of the concepts and laws of physics and the models of the physical world based on them;
2. to provide opportunities for making careful observations and measurements of physical phenomena, and interpreting the results;
3. to enable you to use the ideas of physics to understand and explain common physical phenomena;
4. to enhance your skills in critical thinking, problem solving, independent learning and communication.

Each section of the subject has a more specific set of objectives, listing in detail what the students should know, understand and be able to do.

Semester activities

Semester activities comprise lectures, tutorials, practical work and private study. Their relationship with the stated aims is as follows:

1. Understanding of concepts, laws, models and theories is started in lectures, and developed in private study and at tutorials, with a small contribution from practical work.
2. Observations and measurements are developed primarily in practical work, with a small contribution from lectures and tutorials.
3. Common physical phenomena are discussed in lectures and explored in tutorials and private study.
4. Critical thinking and problem solving and are enhanced in tutorials and practicals; independent learning is developed in private study; and communication is enhanced in tutorials and practical work.

Time and effort

Our Faculty has an expectation that students will spend a total of 55 hours per unit on each subject. Since Physics I is a 6 unit subject (3 units per semester) that amounts to a total of 165 hours per semester. Table 1 gives an indication of the way students are expected to spend their time in First Semester. The percentages of total time are shown in brackets.

We all know that students cut corners, and the time spent does not quite meet expectations. The probable times listed in Table 1 are deduced from a range of evidence:

Component		Expected time in hours	Probable time in hours
Practical work incl. preparation	Prep: 5 × 3 hrs; prac: 5 × 3 hrs	30 (18%)	25 (20%)
Lectures	35 lectures	35 (21%)	32 (25%)
Tutorials	12 tutorials	12 (7%)	10 (8%)
Private study	5 hrs per week	60 (37%)	36 (28%)
Revision and exam	24 + 3 hrs	27 (16%)	25 (20%)
Total		164	128

Table 1: Indication of the time spent by students on each component of the subject.

Practical work: Lab attendance is compulsory, but we expect students to skimp on preparation time.

Lectures: About 10% of students miss each lecture.

Tutorials: Most students attend most tutorials, but a few come rarely or never.

Private study: Surveys in the past have indicated that the median time is about 3 hours per week.

Revision: The time indicated is consistent with burning the midnight oil for 2 weeks on 4 subjects

Aligning the assessment

In Table 2, the time spent on each component is compared with the assessment weighting. Course work and practical work are assessed separately in each semester because practical work addresses mainly the second aim, while lectures, tutorials, private study and the examination relate mainly to aims 1, 3 and 4. However, there is some overlap in that the content of practical work is drawn from the lecture material, and the principles of errors in measurement are discussed in lectures.

Component	Expected time in hours	Probable time in hours	Assessment Weighting
Practical work including preparation	30 (18%)	25 (20%)	20%
Lectures	35 (21%)	32 (25%)	assessed in exam
Tutorials	12 (7%)	10 (8%)	up to 6%
Private study including tutorial preparation	60 (37%)	36 (28%)	assessed in exam
Revision and exam	27 (16%)	25 (20%)	74 to 80%
Total	164	128	100%

Table 2: Comparison of time spent on each component with assessment weighting.

The 20% weighting for practical work is comparable with the percentage of time devoted to that component.

The remaining components develop the knowledge, understanding and skills assessed in the examination. The appropriate weighting for the tutorial component deserves some consideration. A substantial fraction of private study time could be considered as preparation for tutorials, so a higher weighting may be appropriate. However, it is time-consuming to assess this component reliably and validly. We allocate a small assessment weighting to the tutorials so that students have an immediate reward for tutorial preparation and attendance; most of the reward for this effort is provided by the examination assessment. However, we are reluctant to doubly-penalize students who don't attend tutorials – once for missing the opportunity of improving their understanding, and again by losing the 6% tutorial assessment. Therefore any shortfall in tutorial mark for a given student is compensated by increasing the weighting of that student's exam mark.

Conclusion

This analysis demonstrates one way of aligning the aims of a subject to the semester activities, and developing an assessment scheme which is fairly consistent with the way students spend their study time.