

A Year in the Life of First Year Physics

Supporting Level 1 Physics & Astronomy Undergraduates at the
University of Glasgow

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Introduction

Physics & Astronomy at the University of Glasgow

- Faculty Entry.
- Physics 1X/1Y.
- Retention and progression.
- The role of *Director of Learning Support*.

Historical Issues in Physics 1X/1Y

Pass Rates

- 5-year averages: 77.2% (P1X) and 72.4% (P1Y)
- Would like to:
 - Raise both pass rates.
 - Narrow the gap between Physics 1X and Physics 1Y.

Retention & Progression

- Typically $\sim 40\%$ of students in Physics 1 progress to Physics 2.
- Would like to:
 - Understand the trends.
 - Improve the progression rate. . . if possible.

New Initiatives in Academic Year 2007-08

Vigorous Pursuit of Non-attenders

- Improve 'minimal' attendance at workshops and labs.
- Students contacted in person and by SMS, email and snail-mail.

Provision of Drop-in Tutorials in Semester 2

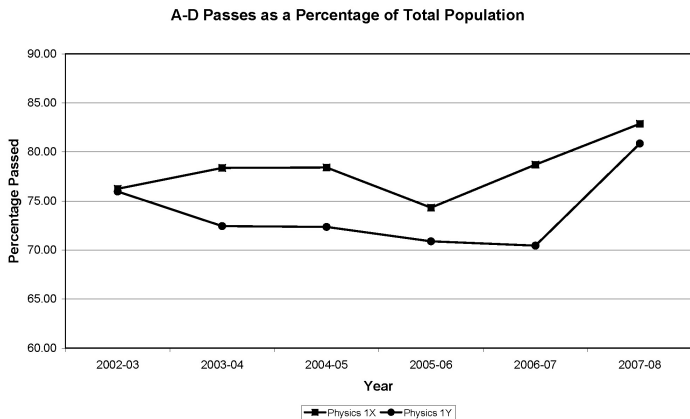
- Address the historic drop in pass-rate between P1X and P1Y.
- Improve the performance of the weaker students (C/D grades).

New Initiatives: Drop-in Tutorials

Optional Extra Tutorials in Semester 2

- Open to all students.
- Students falling into 'fail' categories sent a personal invitation.
- Attendance was $\sim 10\%$, primarily B-D grade students.
- Students who attended had an average increase of 2.9% between their P1X and P1Y marks.
 - The whole class averaged a drop of 1.6% between P1X and P1Y.
- When questioned, students who 'opted-in' found the tutorials useful.

Whole Class Pass Rates: Physics 1X/1Y



Physics 1X/1Y: Grade Slipping

Assessment Tasks in Each Module

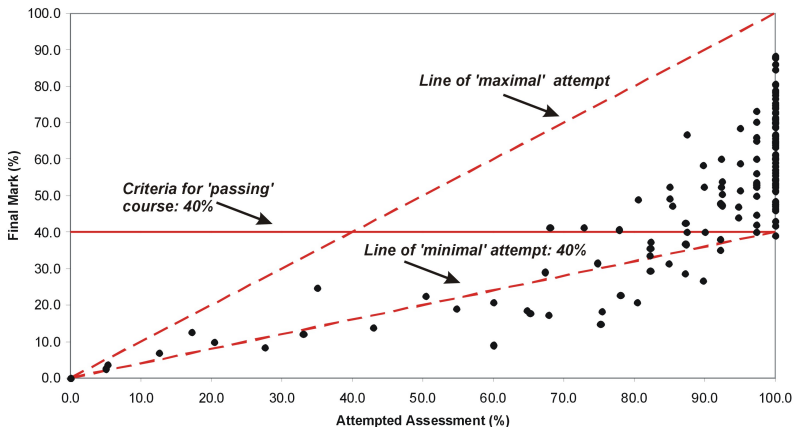
- Workshop tests: 20% (5% each)
- Laboratory class: 20% (2.6% for a lab record, 4.4% for the end-of-semester report (Physics 1Y))
- Degree exam: 60% (7.5% per question)

Problem?

- Students slip grades at **all levels** due to missing out the odd lab, workshop or degree exam question.
- Performance in Physics 1Y is uncorrelated with pre-entry qualifications. (Correlation coefficient = 0.4.)

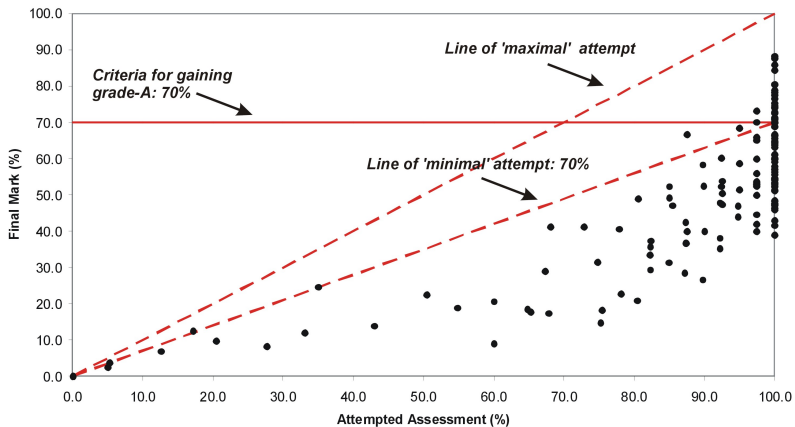
Effect of Grade-slipping in Physics 1Y: D/E boundary

Physics 1Y: Performance versus Assessment Tasks Attempted



Effect of Grade-slipping in Physics 1Y: A/B boundary

Physics 1Y: Performance versus Assessment Tasks Attempted



Progression

Data-Tracking

- Students' intentions and perceptions tracked throughout the year.
- Address the anecdotal belief that taking Physics 1X/1Y causes students to decide *not* to study for a physics degree!

Progression to Physics 2

- At start of first semester 50% of students self-identified an intention to pursue physics beyond first year – the effects of a Faculty Entry system.
 - Percentage did not change significantly by end of first year.
 - 'Intention' is distributed uniformly over 'ability'.
- Attrition from P1X to P1Y in 2007-08 remained constant at 90%.

Retention & Progression

Progression to Physics 2

- Dependent on passes in Physics 1X, Physics 1Y *and* Level 1 Maths.
- After second semester results, of those eligible to progress:
 - 75.2% passed P1X and P1Y but... 17.3% of these students had failed first semester Maths.
 - Rest of students who passed both Physics 1X/1Y are those who *cannot* progress to Physics 2 due to lack of sufficient maths courses – another effect of the Faculty Entry system.

Physics 1X/1Y: 2008-09

Next Year . . .

- Continue pursuit of non-attenders of continuous assessment (CA) components (to minimise effects of grade-slipping).
 - CA becomes more important due to changes in academic year.
 - Physics 1X/1Y will be combined to become a single module.
- Extend drop-in tutorials to first semester.
- Extend data-tracking and processing techniques to Physics 2.
 - Track last year's first year class through second year and beyond.

And finally...

- Thank you for listening!