

**FACULTY OF SCIENCE, TECHNOLOGY AND ENGINEERING  
QUALITY ASSURANCE OF UNITS**

**Report by Unit Co-ordinator**

<b>Unit code:</b> MAT1CLA	<b>Year:</b> 2008	<b>Campus:</b> Bundoora
<b>Unit coordinator:</b> Katherine Seaton		
<b>Teaching staff: Lectures:</b> Katherine Seaton (Linear Algebra) Grant Cairns (Calculus) <b>Tutorials:</b> KS, GC, Geoff Prince, Narwin Perkal, Peter van der Kamp		

**SECTION A: NUMERICAL INFORMATION**

Number enrolled: 144 (127 attempted the exam)

Number completing the QAU questionnaire: 60

Grade distribution (prior to specials/supps): A: 23; B: 14; C: 17; D: 19; SA-E: 9; N: 39; NS: 12; SP-E: 9

MAT1CLA is now taken by students who previously took MAT1FEN, so comparison is given with both.

Grade distribution last year (CLA): A:21; B: 15; C: 20; D: 26; SA/SP-E: 15; N: 10; NS: 16

Grade distribution last year (FEN): A:5; B: 8; C: 10; D: 12; SA/SP-E: 14; N: 19; NS: 3

Pass rates: 2008: 65% (of 112 finalised so far) 2007: 80%(CLA), 65%(FEN) 2006: 67% (CLA)

Pass rate (of all students who sat exam) Section A: 38% Section B: 69%

**SECTION B: STUDENT RESPONSES TO THE QUESTIONNAIRE**

		<b>Current Mean</b>	<b>Last Year's Mean (FEN)</b>	<b>Last Year's Mean (CLA)</b>
a	The unit helped me develop my ability to work as a team member			
b	Work in this unit enhanced my analytic skills		3.8	
c	Learning in this unit helped me develop my problem-solving skills	4.1	4	4.2
d	I have developed my skills in written communication in this unit	3.7	3.2	3.9
e	The unit has helped enhanced my confidence in tackling unfamiliar problems	3.7	3.5	4.1
f	The unit helped me develop my capacity to plan my work	3.5		3.6
g	I have improved my oral communication skills			
1	The aims of the unit were made clear at the start	4.3	4.2	4.4
2	The teaching staff put a lot of time into commenting on my work	3.9	3.7	4.1
3	I was generally given enough time to understand the things I had to learn	3.7	3.8	3.9
4	The staff made a real effort to understand difficulties I might be having with my work	3.7	3.8	4.2
5	Appropriate forms of assessment were used in this unit	4.1	4.3	4.2
6	The teaching staff gave me helpful feedback	3.8	4	4.1
7	My teaching staff were extremely good at explaining things	4.0	4	4.3
8	The workload was manageable	4.0	4	4.1
9	The teaching staff worked hard to make this unit interesting	3.7	3.8	3.9
10	I was able to access the learning resources	4.3	4.3	4.3
11	The teaching staff of this unit motivated me to do my best work	3.6	3.3	4.0
12	Overall, I was satisfied with the quality of this unit	4.1	3.5	4.3
13	<i>Overall, I was satisfied with the Calculus component</i>	4.0		
14	<i>Overall, I was satisfied with the Linear Algebra component</i>	3.8		

15	<i>The lecture/workshops were effective.</i>	3.9		
16	<i>I found the HAC helpful</i>	4.1		
17	<i>The Quizzos gave me useful feedback</i>	3.5		
18	<i>The assignments were effective</i>	4.3		
19	<i>I used the Calculus text regularly</i>	3.4		
20	<i>I used the Linear Algebra text regularly</i>	3.3		
21	<i>The tutorials were effective</i>	4.4		

### **(b) Summary of student comments on best aspects (47)**

The lecturers (many), and the other teaching staff (especially Narwin), the real-world Linear Algebra workshop and the history included in calculus received favourable comments, as did the HACS and tutorials (many) and the assignments as keeping them up-to-date or giving feedback. The challenge questions also received three positive comments as did the coordination of lecture/tutorial/assignment material. While some comments were a single word, some students used all the space available to list things they liked or use glowing adjectives such as “awesome”.

### **(c) Summary of student comments on needed improvements (23)**

These comments were all politely worded (!) and constructive, though some indicated that they didn't understand the purpose of low-stakes assessment during semester. (The student who said that each assignment freaked them out thought they were each worth too much!) The other comments included: more active calculus lectures, feeling rushed by the volume of new content, the running of the quizzes (rather than the quizzes per se), and the lecturers (but not as many as the positive comments above). The unit texts were indicated by two students as needing improvement, particularly in terms of examples provided. Two students thought that the lecture and tutorial examples were not as hard as the assignments.

## **SECTION C: UNIT COORDINATOR'S COMMENTS**

### **Last year's suggested improvements**

- No recommendations related to content, due to unit re-design.
- Strongly recommended that the HAC and the quizzos be continued, with quizzos applied in the lecture workshops to improve attendance.
- Swot-vac revision sessions be repeated, with careful placement (e.g. 3 days prior to exam).

### **Were they implemented?**

HACs, quizzes and a swot-vac HAC were all held.

Running quizzes in the lecture-workshops caused some problems, with students arriving throughout the hour or even in the final ten minutes, which distracted other students and also the person trying to present the workshop. Two students wrote at length about this on their questionnaires.

The attendance at quizzes was: 113, 126, 82, 99 (3 and 4 were not announced). For students who actually did the quizzes, the pass rates were 88%, 81%, 88% and 78% respectively, but only 80 students passed the quizzes overall. We believe the standard of questions is about right, but that the implementation of the quizzes needs fine-tuning. We prefer not to run them in tutorials, which could detract from their great effectiveness (4.4 on QAU) but perhaps some on-line option should be considered.

The first two regular fortnightly HACs were attended by about 30 students, but the four later ones by between 12 and 17 students. The three-hour drop-in swot-vac HAC was attended by only 13 students (despite the class being consulted as to timing and emailed to remind them it was on.)

### **(e) Unit coordinator's comments on the unit this year**

The solid questionnaire results (including overall satisfaction 4.1 for which we received a letter of congratulation from the Dean) did not prepare us for the somewhat disappointing pass-rate. Of particular concern is the pass-rate in the Calculus section – which was well-received by the students who completed the QAU survey – though the comments from first semester lecturers were some warning.

This year the assignment questions on the survival skills were drawn from a variety of necessary skills, while in the past they had always focussed on integration. While the problems in the calculus section of the exam were wide-ranging, we should focus more on integration again next year. The assignments were marked using the criteria (maths/completeness/communication) set up in first semester, and received a rating of 4.3 for effectiveness.

We also provided Challenge Questions (in the non-assignment weeks) which were done by a regular handful of the keenest students. These students put a great deal of work, thought and effort into their answers, and we would encourage other lecturers to use this idea, particularly with mixed-ability groups of students to extend and interest the better students. The best answers were given a book and this was valued by the students.

Joining together the two groups of students who previously took MAT1CLA and MAT1FEN, and at the same time redesigning the teaching style (introducing lecture-workshops and the twice-weekly tutorials) and supplying the attendant teaching materials was a big job, but most of the work is done. All lecture slides were made available in advance in LMS (again a big job the first time around, as was converting all linear algebra materials into standard LaTeX). We would hope to be able now to consolidate the unit and focus on building up the pass-rate, active participation and student (and staff) satisfaction.

### **(f) Unit coordinator's suggestions for improvements next year (pass rates less than 70% require detailed measures for improvement of the pass rate)**

There are some particular groups of students who did extremely poorly this year:

- Students admitted with marks of 47-49 in the pre-requisites (7: none passed, 1 SP). We recommend that the pre-requisite no longer be waived.
- Students who had previously failed MAT1CLA or MAT1FEN (26: 6 passed, 4 SA/SP, 8 NS). We recommend that these students be identified as being in particular risk and emailed with advice early in semester, and close to census date, and again if they choose to continue in the unit. They did not benefit from the embedding of survival skills in first semester this year, and their calculus is rusty.
- Students admitted with advanced standing (4: 1 passed).

(If these three groups of students were excluded, or were smaller in size, the unit would probably have had a pass-rate of 70%!)

Concrete suggestions:

Intensive integration follow-up for students with low passing grades in first semester overall and especially low mark for calculus section (i.e. targeted remediation). This should also include all repeat students, and be offered to all students (as an equity measure). The existing lecture/workshop on this topic could be the basis for a more active practical session. Consider holding this in the week before semester. Positive flow-on effect to MAT2VCA were integration is also an assumed skill.

Consider re-wording the calculus exam questions in a style more similar to the linear algebra (and used in second year in vector calculus). This could mean breaking the tasks into a series of steps plus consolidation.

Active encouragement (e.g. emails) to remind students about things like HACs. These are not being utilized to their maximum potential.

Reconsider conduct of lecture/workshops to be more interactive and thus hopefully better attended. Again, their potential as a third teaching method (c.f. lecture or tutorial) is not being maximised.

No further mass changes – consolidation.

**SECTION D: COMMENTS BY HEAD OF SCHOOL OR NOMINEE**

**Signed**

**(Head of School)**

**Date**