

School of Chemistry

Course Review: Unit Self-Evaluation 2014/15

SUMMARY RESPONSES – YEAR 2

Unit code: CHEM20212	
Unit Title: Physical Chemistry	
Unit co-ordinator: Peter Gorry	
No of students taking unit: 215	
Other teaching staff: Paul Popelier, Neil Burton	
Response Rate: 38.14% (82/215)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	4.04
The feedback that I received on my work was helpful	3.85
This unit was well organised	4.40
The eLearning resources provided in this unit enhanced my learning experience	4.07
I found the tutorials linked to this course useful	4.32
<i>Please summarise student comments and provide feedback:</i>	
<p>With over 130 individual comments it's difficult to summarise. In many cases the same topic appears as both positive and negative depending on the student: Large handouts vs concise ones, maths – not enough or too much, example classes – throughout course, at the end...</p>	
<p>Overall we are very pleased with the student feedback. In all questions the top two grades (agree, mostly agree) are by far the largest category. The percentages in the top two bands are:</p>	
Q1 Overall, I would rate this unit as being excellent : 84.1%.	
Q2 The feedback that I received on my work was helpful: 64.6%.	
Q3 The unit was well organised: 98.8%.	
Q4 The eLearning resources provided in this unit were helpful: 82.9%.	
Q10 I found the tutorials linked to this course useful: 87.8%.	
Q7 All Staff – content was excellent: 91.2%.	
Q8 All Staff – delivery was excellent: 91.3%.	
<p>The question on feedback has the poorest rating. However, the main feedback mechanism for this course is outside the lectures - via the three physical chemistry tutorials during semester 2 (and some PASS questions). These are an extensive set of questions covering all sections of the course, and feedback should be at the 'near personal' level in small group tutorials. Indeed many students did single out tutorials as a positive feature. Within the course itself the main form of feedback is in the form of (optional) online tests – which are generally well received.</p>	

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With regards to tutorials - some comments were made about the inclusion of 1st year revision material in the first tutorial, the inclusion of derivations and 'more complex questions than the exam'. These comments miss several key points. The first tutorial is in week 2 – so sheets are handed out before any lectures in 2012 have been given. Hence revising key thermodynamic concepts relevant to the course is a good use of resources. Many Students asked for more formal derivations in the responses. Finally, tutorials should allow students/staff to explore the material in greater depth than the exams.

The issue of the mathematical content was raised several times. Physical chemistry is by definition the application to mathematical models to physical phenomena – so it is inescapable. We feel that the balance is about right.

Handouts again divide the class – probably the majority favour large comprehensive notes, but a significant number prefer concise ones – with key equations – especially at revision time. Some like having bits they have to complete – some think this a waste of time. Overall there is no clear preference and this remains left to individual lecturers.

The examples/revision classes also came up several times – most found them useful, especially for exams and many students wanted more of them. Some appreciated them being at the end (close to revision) others wanted them distributed throughout the course - closer to the actual lectures. Overall we feel that having the classes after the Easter break (and after students have started their revision) giving a clear idea of what constitutes a good answer is the more helpful

Finally, the topic of the computational computer session was raised, some were critical of its usefulness, others felt more such classes would be better. Overall, the computational part is bedding down well and many students find it particularly stimulating. The feedback on Dr Burton's content and delivery is very good. One thing is clear - computational chemistry is a very important topic now – the 2013 chemistry Nobel prize went to pioneers in this area and the Nobel committee stated "Today the computer is just as important a tool for chemists as the test tube. Simulations are so realistic that they predict the outcome of traditional experiments".

Please provide generic feedback on exam performance (eg questions which were particularly well/poorly answered, common mistakes)

No specific problems were flagged by any examiners. The questions were a good split between a or b in all three questions. The questions averaged a 1st, a 2.1 and a 2.2. With a paper average in the 2.1 band. In many cases the 'easy bookmark' material was more poorly done than the 'difficult calculation' parts. Some students scored very highly (90+) and clearly were on top of the material in all three topics. However, there was a small cohort of students with very poor marks across the board – they simply had not engaged with the course.

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Unit code: CHEM20312	
Unit Title: Inorganic Chemistry	
Unit co-ordinator: Mark Whiteley	
No of students taking unit: 215	
Other teaching staff: Mike Ingleson, Eric McInnes	
Response Rate: 36.28% (78/215)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	4.49
The feedback that I received on my work was helpful	4.24
This unit was well organised	4.63
The eLearning resources provided in this unit enhanced my learning experience	4.12
I found the tutorials linked to this course useful	4.60
<i>Please summarise the main themes from students' comments</i>	
The main issues raised were as follows: <ul style="list-style-type: none">• Additional workshops and on-line questions would be helpful to consolidate understanding.• Students appreciated lecture breaks in Dr. Ingleson's course but found the quantity of material covered quite extensive.• Students appreciated the interactive task of completing handouts with blanks but found some slides in Dr Whiteley's course contained too much text to copy down in the time available.	
<i>Please provide feedback to students comments:</i>	
<ul style="list-style-type: none">• Additional Workshops/ on-line material: We will explore the possibility of an additional workshop and the development of on-line questions for Prof. McInnes' course which was noted as the most challenging part of the unit (from students' comments and exam performance).• Handout blanks: The content of slides for the Organometallics unit will be revised to eliminate excessive blocks of text.	
<i>Please provide generic feedback on exam performance (eg questions which were particularly well/poorly answered, common mistakes).</i>	
In general, the CHEM 20312 exam was well answered and returned an overall average around 60%. Questions from Dr. Ingleson and Dr. Whiteley returned similar results to previous years. However the answers to Prof. McInnes' question revealed some weaknesses in students' understanding of foundation concepts such as d-electron configurations. There was some concern that around 30 students appeared not to have engaged with the course.	

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Unit code: CHEM20412	
Unit Title: Structure and Reactivity of Organic Molecules	
Unit co-ordinator: Jonathan Clayden	
No of students taking unit: 216	
Other teaching staff: Gavin Miller, Perdita Barran	
Response Rate: 34.26% (74/216)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	3.97
The feedback that I received on my work was helpful	3.78
This unit was well organised	4.00
The eLearning resources provided in this unit enhanced my learning experience	3.78
I found the tutorials linked to this course useful	4.12
<i>Please summarise the main themes from students' comments</i>	
<p>Largely positive response to content: <7% negative responses on Q1-4; <4% negative on Q7; <3% negative on tutorial question (Q10)</p> <p>A little less positive on delivery.</p> <p>Structure, clarity of content and handouts were liked. Several requests to have less further material to add to the Chromatography handouts.</p> <p>Quizzes/workshops requested</p> <p>Lack of coherence? Title? Is chromatography out of place here?</p> <p>Make the biological part of the course go further / repeat less stereochemistry</p>	
<i>Please provide feedback to students comments:</i>	
<p>The varied topics in this course do not lend themselves readily to an overall title – the course this year is a product of the need to move stereochemistry to Sem 1. The course was deliberately designed to be 'cross sectional'. Separation science is a key component of Organic Chemistry and we are keen to emphasize this throughout the chemistry degree program. We will rethink the order of modules/title for next year.</p> <p>The individual lecturers will take into account detailed comments from the students.</p> <p>Prof Clayden's lectures next year will be given by another member of staff, though the students were largely happy with the content.</p> <p>Prof Barran comments that she will attempt next year to summarise the content on her</p>	

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visualizer slides more succinctly, but that students should note that full notes are on Blackboard

Dr Miller comments that next year he would remove some more of the recovering of amino acid functional groups and show real examples of them in action (chymotrypsin etc). He will review the presentation of carbohydrate chemistry and will include more “bio” examples and carbohydrate chemistry in action.

Please provide generic feedback on exam performance (eg questions which were particularly well/poorly answered, common mistakes)

Exam performance was generally good – some high marks and a relatively high average (64%). That said, there is a clearly a sub-group of say 20-30 who really have not grasped the material and I suspect have not attended many lectures.

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Unit code: CHEM20500	
Unit Title: Transferable Skills for Chemists	
Unit co-ordinator: Richard Henschman	
No of students taking unit: 215	
Other teaching staff: various	
Response Rate: 30.23% (65/215)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	3.69
The feedback that I received on my work was helpful	3.75
This unit was well organised	4.22
The eLearning resources provided in this unit enhanced my learning experience	4.02
Course specific questions	
I found the Web of Science exercise to be useful	3.58
I found the Scientific Review exercise to be useful	4.06
I found the Presentation exercise to be useful	4.23
I found the Maths exercises to be useful	4.29
I found the session on interviews and applications to be useful	3.72
I think that the workload for this 10 credit course unit was appropriate	4.31
Sufficient time was given in order to complete each exercise	4.11
<i>Please summarise the main themes from students' comments</i>	
There is balanced response from students with comments both in favour and critical. Generally they are on the favourable side based on the overall scores. All the modules scored well for relevance. Both the lowest-scoring parts of the course, Web of Science (3.58) and Interview/Applications (3.72) will be updated next year. The timetabling and time allocated for each task is sufficient and the workload appropriate.	

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Please provide feedback to students comments:

Running workshops for the Interview/Applications part of the course will provide more opportunity for group work.

The essays next year will be marked by a single staff member which will help bring about consistency in marking. However, this will inevitably make it harder to give personal feedback as a personal tutor could give, and likewise feedback to the tutor about student performance.

While some of the points about using Powerpoint may seem trivial to some students, it is important that they are made so as to minimise their occurrence. The overall presentation takes only about 25 minutes. The remaining time of the hour was about interviews as delivered by the Careers Service.

The deadline for the WOS exercise was both advertised and set to 11:59 pm October 19. Thus the student could not have been given zero because of an am/pm mixup.

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Unit code: CHEM20712	
Unit Title: Environmental and Green Chemistry	
Unit co-ordinator: Peter Quayle	
No of students taking unit: 130	
Other teaching staff: Alan Brisdon, Frank Mair, Peter Gorry	
Response Rate: 34.62% (45/130)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	3.67
The feedback that I received on my work was helpful	3.00
This unit was well organised	4.00
The eLearning resources provided in this unit enhanced my learning experience	3.69
<i>Please summarise the main themes from students' comments</i>	
<p>The structure of this course was changed significantly this year. The course content was well received by students who found it interesting to see how chemical interfaces with the environment. The lectures given by BP were well received. Some students thought that the introduction of new material close to the examinations made revision difficult.</p> <p>Indeed, a number of students remarked that the expansive nature of the module made revision a little difficult; more problems (with solutions) could be uploaded to Blackboard and introduction of a problem class would be useful in order to gain some feedback.</p>	
<i>Please provide feedback to students comments:</i>	
Preamble	
<ul style="list-style-type: none">• Students who responded to questionnaires seem to be happy with the revised course structure which is now more cohesive and includes vignettes (non-examinable) from industrial collaborators;• Relatively few students availed themselves of the opportunity to attend the revision class which may have some bearing on the number of students (9 in total) who failed the examination;• Personnel changes this year have meant that the course structure and content has become more coherent: the contributions given by Alan Brisdon and Frank Mair and Peter Gorry on “atmospheric chemistry” renewable resources are now much more in keeping in keeping with the overall ethos of this unit;• Two lectures were presented this year by senior scientific officers from BP (during week 12 of semester 2): this provided direct industrial input/relevance and also generated a timely “breathing space” for the students prior to the May examinations;• We will look into the provision of additional problem classes with a view to providing more feedback on student progression. Uploading of problems/worked solutions on Blackboard will also be investigated.	

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Please provide generic feedback on exam performance (eg questions which were particularly well/poorly answered, common mistakes)

- 128 students took this optional paper;
- Average mark of 63.86% (9 candidates failed; 12 3rd; 27 2ⁱⁱ; 29 2ⁱ; 50 1st; 7 students > 90%);
- Students who responded to questionnaires seem with the revised course structure which is now more cohesive and includes vignettes (non-examinable) from industrial collaborators;
- Relatively few students availed themselves of the opportunity to attend the revision class which may have some bearing on the number of students (9 in total) who failed the examination;
- Students were less confident in answering the part question which involved the manipulation of simple mathematical formulae (Gorry);
- Although the overall mark for this paper was in line with other 2nd year papers it was apparent that many students displayed poor problem-solving skills.

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Unit code: CHEM22600	
Unit Title: Practical Chemistry	
Unit co-ordinator: Peter Quayle/Neil Burton	
No of students taking unit: 215	
Other teaching staff: n/a	
Response Rate: 34.88% (75/215)	
General University Questions	Mean score
Overall, I would rate this unit as being excellent	3.80
The feedback that I received on my work was helpful	2.97
This unit was well organised	3.15
The eLearning resources provided in this unit enhanced my learning experience	3.55
Synthesis Lab	
The experiments consolidated material delivered in lectures	3.97
The uploading/marking process in Blackboard was straightforward	3.43
Feedback was delivered in a timely fashion	1.44
Demonstrators and lab technical staff were helpful	3.89
Measurements Lab	
I found the work to be interesting and enjoyable	3.61
The equipment I needed was readily available	4.01
My demonstrator was helpful	3.89
The lab technicians were helpful	4.35
<i>Please summarise the main themes from students' comments</i>	
<p>MLAB: Generally happy with organisation, feedback and academic content. The main concerns are that the write-ups are clearly challenging (both time and effort) and questions were raised about assessment, especially for 80%+. Inevitably, some minor demonstrator issues.</p> <p>SLAB: Although the students apparently gained much from unit, and were in tune with the overall aims, content and ethos, there were concerns over specific aspects of its delivery. The key student concern centred upon delayed feedback especially with regards to assessed practical write-ups. Students also raised the question of the, anecdotal, variability of marking standards and demonstrator suitability/performance. A number of students indicated that it was difficult to contact PQ.</p>	
<i>Please provide feedback to students comments:</i>	
<p>MLAB: General queries regarding the variation in marking and mark schemes are openly addressed in the course FAQ on Blackboard. It is important to note that each experiment is</p>	

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marked independently of all other experiments so that all students are treated as equivalently as practically possible, and hence a different minimal pool of only 1-3 markers are used for each experiment. The marking guidelines are posted in the MLAB. There are two reasons why “traditional” hand-written lab books are used: (a) we wish the assessment to be based on quality of content and not presentation, and it is not efficient to electronically present all mathematical working, tables of numbers and illustrative figures and spectral annotation in the time available; and (b) we would like to maintain some educational emphasis on the completion of a full written report, rather than a brief summary or completion of a pro-forma used in other laboratories where greater emphasis is placed on practical effort.

We believe that there may be a slight misconception regarding the assessment of coursework at degree level and that most students expect to perform (considerably) better than in examinations (i.e. obtain marks 70-100%) assuming that only more effort is required, rather than originality or depth and breadth of knowledge. Are all students on average '1st class'? If not, then the average mark must be less than 70%. In CHEM22600 the course credits dictate a total study time of about 13 hours in total per experiment (including lab time) on average. In this time we expect a '2.1 student' to be able to return a '2.1 standard' report; in the same time a '1st class' student should be able to return a '1st class report'. For example, whilst a '2.1 student' may be capable of returning a '1st class' or 'outstanding' report, it should be necessary, at the student's discretion, to put in considerable additional work to achieve this.

It is important to note that the mark distribution for the laboratory course must conform to the same guidelines as for any other course which contributes to the final degree classification; thus the class average and distribution is strictly controlled by the School and marks greater than 80% (16/20) should only be awarded for outstanding work. This year the average mark for the MLAB component is 65.4% and the standard deviation of the 11 experiment averages from this mean is 2.6%. This year from the ~2270 MLAB reports submitted, ~1050 write-ups were graded as first class; of these ~400 were graded outstanding and 80 were graded at or above 90%. I must commend the students on their overall performance since, as you are now aware, we set the standards high.

S-LAB

Preamble

The synthesis laboratory course attempts to exemplify elements of theory and the application of spectroscopic techniques in a structure, practical setting. Over the past 5 years we have embarked upon a rolling programme of experiment re-evaluation in order to generate a laboratory course which serves to augment more effectively the material presented in theory classes. The laboratory is a busy place: upwards of 110 students are housed in a laboratory which is serviced by two full-time technicians. Students are required to complete 10 structured experiments, one unknown exercise and plan and execute the synthesis of a target compound.

- Outcomes were excellent this year. Average mark of 76.95 – slightly higher than in previous years (2013/2014: 72.9%; 2012-2013: 70.5%). In general the marks from CHEM22600S appear to be inflated compared to class/exam averages. These “natural” marks reflect the nature of the continuous assessment process, the skill-

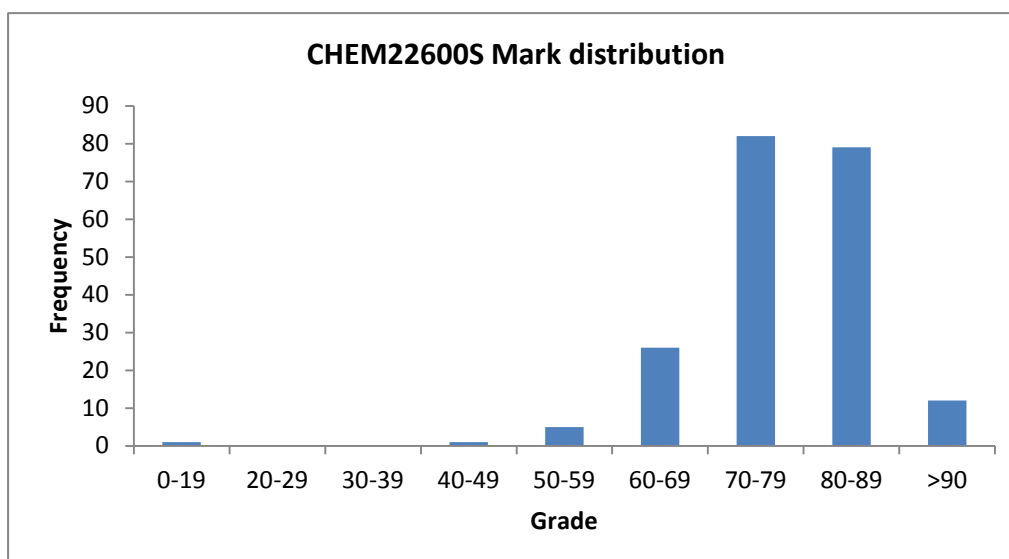
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sets under assessment and the implementation of a linear, 0-100%, marking scheme.

Year	CHEM22600 (combined M+S)	CHEM22600S	2 nd year average mark
2010-2011	68.1	72.2%	61.2%
2011-2012	71.3%	79.4%	62.6
2012-2013	68.5%	70.5%	62.7%
2013-2014	70.1%	72.9%	65.5%
2014-2015	71.2%	76.95	63.5%
Average	69.8	74.4%	63.1%

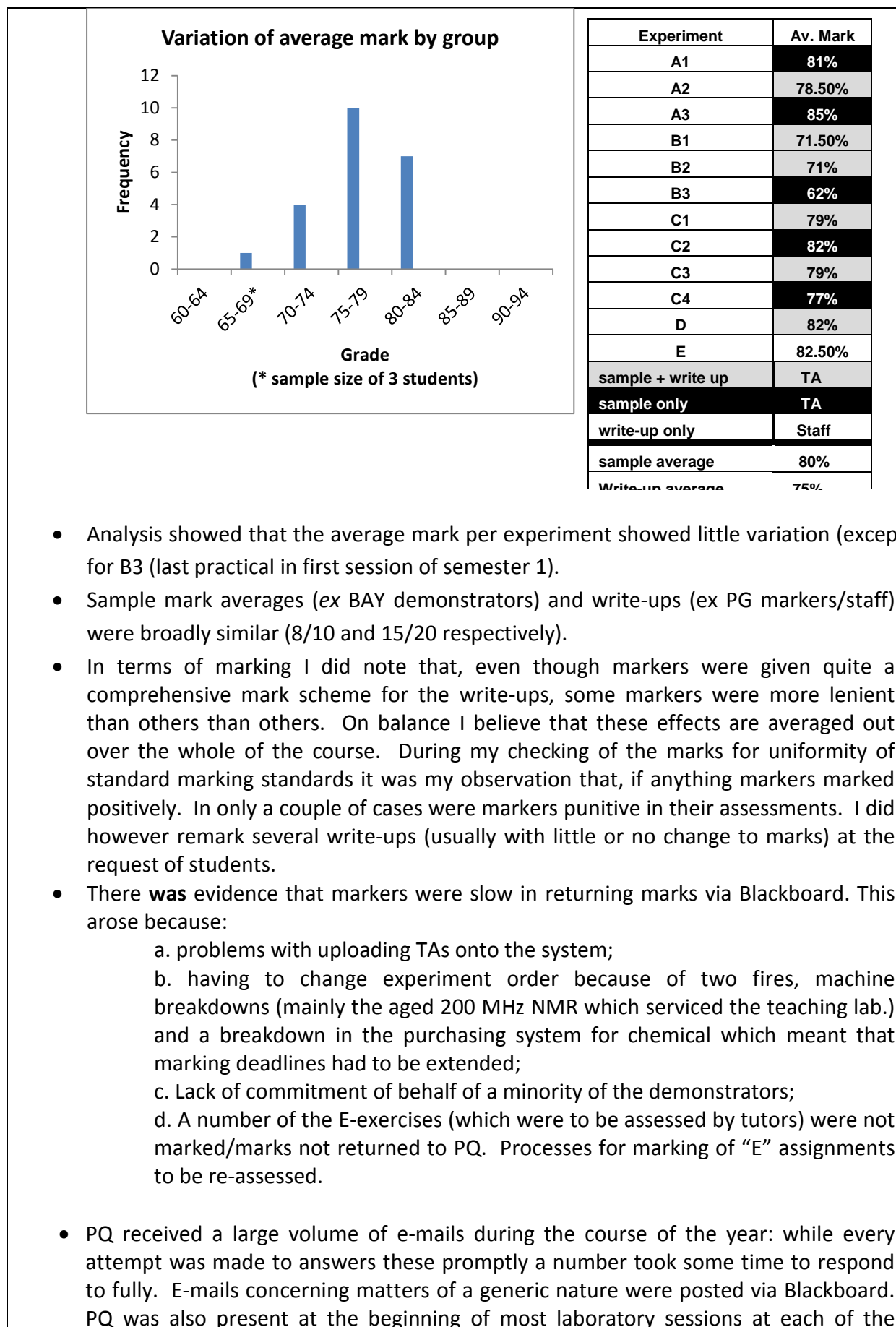


- Fears that poor feedback or inconsistencies in marking would have a negative effect on grades were not substantiated. I can find little evidence to support the notion that any BAY was disadvantaged because of their demonstrator.
- The average mark per BAY was relatively uniform (variation of $\pm 6.5\%$ compared to the average mark).

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sessions on Tuesday and Wednesday. PQ frequently used the Tuesday morning sessions to brief the students on experiments general matters arising. A number of students missed these briefing sessions on a regular basis requiring them to seek additional advice from demonstrators or PQ. PQ to look into greater use of Blackboard to respond to comments by students.