

## **EXTERNAL EXAMINER REPORT FORM 2018**

External examiner name:	Dr. Jonathan Woolf		
External examiner home institution:	University of Liverpool		
Course examined:	Honours School of Mathematics, Part C Honours School of Mathematics and Philosophy, Part C		
Level: (please delete as appropriate)	Undergraduate		

# Please complete both Parts A and B.

Par	Part A				
	Please (✔) as applicable*	Yes	No	N/A / Other	
A1.	Are the academic standards and the achievements of students comparable with those in other UK higher education institutions of which you have experience?	Yes			
A2.	Do the threshold standards for the programme appropriately reflect the frameworks for higher education qualifications and any applicable subject benchmark statement? [Please refer to paragraph 6 of the Guidelines for External Examiner Reports].	Yes			
A3.	Does the assessment process measure student achievement rigorously and fairly against the intended outcomes of the programme(s)?	Yes			
A4.	Is the assessment process conducted in line with the University's policies and regulations?	Yes			
A5.	Did you receive sufficient information and evidence in a timely manner to be able to carry out the role of External Examiner effectively?	Yes			
A6.	Did you receive a written response to your previous report?			N/A	
A7.	Are you satisfied that comments in your previous report have been properly considered, and where applicable, acted upon?			N/A	
* If you answer "No" to any question, you should provide further comments when you complete Part B. Further comments may also be given in Part B. if desired, if you answer "Yes"					

or "N/A / Other".

## Part B

### **B1. Academic standards**

a. How do academic standards achieved by the students compare with those achieved by students at other higher education institutions of which you have experience?

Part C courses cover a very wide range of mathematics and are pitched at a high level, at least comparable to MSc courses in most other UK universities, and often exceeding it. The courses reflect the research interests and expertise within the department in an appropriate way. There was very little overlap between questions in the 2017-18 and 2016-17 exams for each unit, which is commendable.

The standard achieved by the students is, on the whole, very high. I looked through a number of scripts across the full range of marks, and also a number of dissertations and mini-projects, and I was impressed. The best students are working at the level of beginning graduate students, and the average students at the level of a good masters student in other UK universities. In particular the best dissertations are very ambitious, often referring to research at the forefront of contemporary mathematics. This is no mean feat since there is a substantial gap between undergraduate mathematics and the research frontier.

b. Please comment on student performance and achievement across the relevant programmes or parts of programmes (those examining in joint schools are particularly asked to comment on their subject in relation to the whole award).

The performance of students is very good, with more than half attaining a first class average, and the vast majority attaining a 2.i or above. This reflects the fact that the incoming cohort is strong, and to some extent that the scaling procedures used refer to previous performance at Parts A and B (see B3 below). The proportion of firsts at Part C is increasing slightly year-on-year, and is roughly 10% higher than the proportion at Part B. This may indicate mild grade-inflation, but could equally be explained by the fact that in Part C students can specialise quite narrowly in the areas of mathematics which interest them most, and in which, consequently, they perform best. Another indicator of this effect is that dissertation marks tend to be slightly higher than the average in examined units. I should emphasise that I have no concern about the standards applied, and that the above comments relate only to the statistical data.

A handful of students struggle badly, at least judging by their exam scripts and results. This is inevitable in any demanding programme with a relatively large number of students (approximately 100), and is often due to factors unrelated to the programme design or delivery. I recommend however that the department analyse the background of any students with very low marks on one or more units to see if there is any discernible pattern (for instance lower marks in Parts A or B) which suggests a way to remedy this (for instance by raising entry requirements).

The small cohort of 11 Mathematics and Philosophy students performed particularly well, with almost all attaining a first class average. Apparently this is an unusually small and strong cohort; more typically there are 18-20 students, including a number of weaker ones.

#### B2. Rigour and conduct of the assessment process

Please comment on the rigour and conduct of the assessment process, including whether it ensures equity of treatment for students, and whether it has been conducted fairly and within the University's regulations and guidance.

The administration of the examination process was very efficient. I was provided with all the materials required to assess papers, and responses to my queries and comments were prompt and satisfactory. The Examiners' Report from the previous year was particularly detailed and helpful. The Guidance for Examiners and the Examination Conventions are clear, and make the process admirably transparent. I would like to thank the administrative staff and the Chair of the Examiners for their help.

The conduct of the final examiners' meeting was professional. The process was clearly explained, and carried out in a fair and consistent manner. Due attention was given to ensuring that raw marks from each examined unit were scaled to make them, so far as possible, comparable to one another so that students were equitably treated. Due attention was also given to each individual student, particularly those at borderlines.

There was also a commendable willingness and ability to provide additional data (gender breakdowns, information from previous years and so on) upon request during the meeting.

#### **B3.** Issues

Are there any issues which you feel should be brought to the attention of supervising committees in the faculty/department, division or wider University?

I would like to raise two issues, for the attention of the department.

1. The recording of marking and reconciliation of dissertations and mini-projects could be improved. In some cases the assessor simply recorded numerical marks in each category with no comments. In other cases the reconciled mark was not recorded on the mark sheets, and when it was recorded there was not always an explanation of how it was obtained (even when there was a large discrepancy in marks given by the two assessors). I recommend that all markers provide comments as well as numerical marks, and that for each dissertation there is a separate sheet for recording the reconciled mark and any justification of it. This latter should refer to the detailed marking descriptors for each mark range.

2. No system of scaling is perfect, and it is particularly difficult to ensure equity where, as in Part C, one has a large number of optional units, each taken by a small number of students. Whilst recognising that a lot of thought and care has gone into the current process, I would like to make some points about it.

Firstly, since the scaling of Part C refers back to performance at Part B, the scaling of which refers in turn to Part A, there is a great burden on the Part A examiners to set the level accurately. Any grade-inflation at Part A will be automatically filtered through to Parts B and C. One way of mitigating this would be to make more explicit reference to comparison of results between Part C units (for instance to the available scatter plots of raw marks on each unit against the same students' average raw marks on other units). This could be used as a criterion for deciding whether any scaling is necessary.

Secondly, the scaling process produces a characteristic rescaling curve for most units in which low marks are raised and high marks lowered. The fact that similar adjustments are applied to most units suggests that the need for much scaling could be removed simply by recalibrating mark schemes. A minor adjustment of how marks are assigned, with slightly more given to the standard first parts of questions and slightly fewer to the challenging last parts, should ensure that raw mark ranges correspond directly to the marking descriptors.

Thirdly, in a very few cases units required very significant scaling up, indicating a failure to set an appropriate exam. Sometimes this is unavoidable – assessors may misjudge the level, particularly where a unit is new or they are teaching it for the first time – but it should not recur with the same unit year after year. Where major scaling has to be applied, the assessor should be clearly informed that the exam should be set differently next year, and the examiners need to ensure that this is done. It might be helpful to explicitly inform external examiners of any such units so that they can pay particular attention to them.

Finally, whilst the examiners' meeting has access to a lot of data it is not in a position to make an academic judgement about whether a particular script satisfies the marking descriptor for a particular class (except in a very small number of cases). It would

therefore be very helpful if all assessors could recommend borderlines on the basis of the marking descriptors, ideally referring to particular scripts which they view as being either below or above the borderline. (It is not particularly helpful for assessors to recommend borderlines with reference to the Part B results of the students since this information is readily available to the final meeting, and to a large extent is automatically accounted for by the initial scaling algorithm.)

#### **B4. Good practice and enhancement opportunities**

Please comment/provide recommendations on any good practice and innovation relating to learning, teaching and assessment, and any opportunities to enhance the quality of the learning opportunities provided to students that should be noted and disseminated more widely as appropriate.

The mini-project on networks requires students to write computer code. Apparently the previous practice was that students need not submit their code. I suggested that it would be good practice for them to submit it (even if it is not directly assessed), and this was done this year. I was very happy with the prompt response.

### **B5.** Any other comments

Please provide any other comments you may have about any aspect of the examination process. Please also use this space to address any issues specifically required by any applicable professional body. If your term of office is now concluded, please provide an overview here.

The detail provided in the Examiners' Report, and the transparency of the process (including the details of any scaling applied), are exemplary. Just one comment: the report contains a large number of tables with numerical data. In many cases, it would be easier to spot patterns, and anomalies, if this data were graphically presented.

Since the procedure for deciding on borderline cases seems to be informally understood (consider students within a few per cent of each classification borderline and move them up or down according to the number of marks they have above or below the borderline) it might be helpful to codify it within the Examination Conventions.

Signed:	Jon Woolf
Date:	27/06/18

Please ensure you have completed parts A & B, and email your completed form to: <u>external-examiners@admin.ox.ac.uk</u>, and copy it to the applicable divisional contact set out in the guidelines.