

External Examiner Report 2016-17

Full name and title	Dr Timo Betcke
Home institution or other affiliation	University College London
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc
Subject and part being examined (e.g. Biology)	Mathematics
Year of Tenure	2

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	No
(ii)	Syllabus or module descriptors including learning outcomes?	No
(iii)	Assessment briefs / marking criteria	Yes
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
Sufficient information about the assessment was provided. Additional information about programme structures on modules was available online.		

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:	
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes; The Mathematics Programme at Imperial is a challenging degree which provides an outstanding and internationally leading education in Mathematics.	
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes; The modules are well balanced and the teaching content is in line with a modern degree in Mathematics.	
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates; Teaching consist of a mixture of traditional lectures, book reading sessions and project based work. All of these methodologies are implemented highly appropriately in their relevant modules, creating a well-rounded learning experience.	

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	The papers that I received were generally of a high standard with very few mistakes. Only few comments with regards to the difficulty levels were necessary. Most exam results were in line with the expected outcomes for the students, with only few outlier exceptions (see below). Overall, the quality of assessment is very high.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	The PTEM Scaling system in Mathematics at Imperial ensures that the assessments in different modules lead to comparable outcomes. An issue was the project assessment, in particular in Scientific Computing. Most students scored a 100% in this module, leading to distortions for students that took this module, which could impact borderline decisions. We had several discussions about project assessment in the future and I am confident that these issues will be resolved. A book reading project for which I was external examiner also lead to very high marks, though these were in line with the overall marks of the participating students and therefore acceptable. The module in Methods 2 also had some scaling issues with close to a 100 students scoring 80% or better. This was an individual outlier in an otherwise well balanced marking schedule.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	The overall weighting with respect to years of programme is appropriate.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	
(i)	Did you receive all of the necessary draft assessments for comment / approval?	Yes
(ii)	Was the nature and level of the questions (or tasks) appropriate?	Yes
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	Yes
(iv)	Did you receive feedback on your comments?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
No comments here. It was overall a very well organised process.		

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	Yes

(ii)	Was the general standard and consistency of marking appropriate?	Yes
(iii)	Was there evidence that assessed work had been second-marked internally?	Yes
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	No
Comments (particularly if you answered 'NO' to the above)		
I noticed in the Exam Board Meeting that a student who had spent some time abroad had a significant drop in his marks for that period. I was told that this occurs frequently due to the different style of teaching and content in Universities in other countries. This should be further investigated to not discourage students from going abroad.		

3(d)	Practical Examinations	
(i)	Were satisfactory arrangements made for the conduct of practical examinations?	Yes
(ii)	Was the general standard and consistency of marking appropriate?	No
Comments (particularly if you answered 'NO' to any of the above)		
Practical examinations consisted mainly of project based assessment. As remarked above, there were problems with the Scientific Computing Projects, which will be addressed in the future.		

3(e)	Oral Assessments (including Viva Voce Examinations)	
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?	N/A
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?	N/A
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A
(iv)	Was the assessment of such work appropriate and consistent?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(f)	Please comment on the assessment process, marking and moderation in relation to:	
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;	
	Marking schemes and criteria were suitable described and consistent.	
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;	
	In case of deviations from the default PTEM scaling values it could be made clearer to the External Examiners why a different scaling was applied.	
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;	
	These are appropriate and consistent.	

(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations
	The overall assessment process is very rigorous and I have no doubt that it is fair and appropriate with regards to the College policies.

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a)	Board of Examiners' Meeting	
(i)	Were you invited to attend the meeting?	Yes
(ii)	Were you able to attend the meeting?	Yes
(iii)	Was the meeting conducted to your satisfaction?	Yes
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
It was a very well organised and streamlined meeting that discussed the important borderline cases with sufficient detail without becoming lengthy or cumbersome.		

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:	
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;	
	There were very thorough discussions about mitigating circumstances and borderline cases. Nothing to criticise here.	

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:	
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);	
	The standards at Imperial Mathematics are world class, which was noticeable in the examination process.	
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;	

	Most exams were at a very high level, and I am impressed how well the students are coping with the standards set. I am convinced that the Mathematics education at Imperial is on an outstanding level in any international comparison.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	Apart from the outliers discussed above, all modules were of high quality with comparable standards.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	Yes.

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	
(i)	Did you receive a formal written response to the previous year's External Examiner report?	Yes
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
Overall, it was again a very well organised examination process with few issues and some suggestions for improvements which I am going to discuss below.	
7(b)	Recommendations / Suggestions for Enhancement
- There should be a robust scheme in place to ensure that outlier courses in terms of student performance, are brought in line in subsequent years. This could for example be done by additional checking and support of the corresponding lecturer by another Imperial academic who is familiar with the	

subject.

- Larger modules should have a target average in line with a good upper second degree (e.g. around 65%). Most averages seem closer to a first.
- Comments by lecturers on the outcomes of individual exam questions are very welcome. However, in some exams only few or no comments at all were given. Also, they should be typeset as some of the hand written comments were impossible to read.
- Bonus marks are confusing and I am happy that the department is abandoning them from next year onwards. A more suitable system is to ensure that the last part of each exam questions is something that is of higher difficulty level than the rest of the questions to distinguish between good and very good students.

7(c) Examples of good and/or innovative practice in learning, teaching and assessment

- I am happy that the PTEM system is now percentage based.
- It is good to see that in the advanced modules more teaching is done in the form of projects.

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a) Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department

For external examiners in their final year of office – Final Exit Report

8(b) Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
T Betcke	11/07/2017

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Professor Anthony Carbery
Home institution or other affiliation	University of Edinburgh
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc/MSci Mathematics BSc/MSci JMC
Subject and part being examined (e.g. Biology)	Analysis and Geometry
Year of Tenure	2

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	Yes
(ii)	Syllabus or module descriptors including learning outcomes?	Yes
(iii)	Assessment briefs / marking criteria	Yes
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:	
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes; As last year, this is still fine.	
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes; As last year, this is still fine.	
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates; Imperial continues to have high standards and high expectations. The students we met were uniformly appreciative of the high quality of teaching and lecturing.	

Departmental response to issues and suggestions raised in Section 1	

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:	
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;	

	With a very small number of exceptions of which the department is aware, this is to be commended.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	There has been a helpful improvement in the procedures to moderate project marks and I am happy with how the issue of comparability of projects has been handled this year. A little more clarity on how PTEM scalings are arrived at for individual modules would be welcome.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	This is fine.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments
(i)	Did you receive all of the necessary draft assessments for comment / approval? Yes
(ii)	Was the nature and level of the questions (or tasks) appropriate? Yes
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments? Yes
(iv)	Did you receive feedback on your comments? Yes
Comments (particularly if you answered 'NO' to any of the above)	
As last year, there are still some papers which were not prepared with an adequate degree of professionalism, (though overall standards are high). The department is aware of the individual courses involved. Feedback on my comments was still patchy (in terms of existence and quality) and the department should work for improvement next session.	
There are still some issues concerning mastery questions of which the department is aware.	

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny? Yes
(ii)	Was the general standard and consistency of marking appropriate? Yes
(iii)	Was there evidence that assessed work had been second-marked internally? Yes
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks? Yes
Comments (particularly if you answered 'NO' to any of the above)	
It would perhaps be helpful to have a smattering of scripts just above important borderlines readily available for comparison with the borderline scripts we are asked to look at. (However, I can see that doing this may pose logistical difficulties which outweigh the benefits.)	

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)
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(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	Yes
Comments (particularly if you answered 'NO' to the above) There was no particular discussion on this issue and I have nothing to add to what I said last year.		

3(d) Practical Examinations		
(i)	Were satisfactory arrangements made for the conduct of practical examinations?	N/A
(ii)	Was the general standard and consistency of marking appropriate?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(e) Oral Assessments (including Viva Voce Examinations)		
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?	N/A
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?	N/A
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A
(iv)	Was the assessment of such work appropriate and consistent?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(f) Please comment on the assessment process, marking and moderation in relation to:		
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;	
	With a small number of exceptions these were of very good or exemplary standard. The department is aware of the exceptions.	
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;	
	These are fine.	
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;	
	These are fine though I welcome the streamlining of scaling procedures which will come into effect in 2017/18. I do not believe that algorithmic profiling (e.g. predetermining the proportion of marks of a given class) is appropriate at an institution such as Imperial.	
(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations	
	I believe that this is fully achieved.	

Departmental response to issues and suggestions raised in Section 3		

4. Board of Examiners

4(a)	Board of Examiners' Meeting	
(i)	Were you invited to attend the meeting?	Yes
(ii)	Were you able to attend the meeting?	Yes
(iii)	Was the meeting conducted to your satisfaction?	Yes
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
The conduct of the meetings was excellent.		

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;
	Very much so. It is apparent that great care is taken at every stage of the process.

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);
	As last year, absolutely consistent with the highest standards.
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;
	Imperial's student body continues to be exceptionally strong.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	All well-balanced across my remit.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	Yes, very much so, except that I found the project work to be slightly less impressive overall this year than last.

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	
(i)	Did you receive a formal written response to the previous year's External Examiner report?	Yes
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	No
Comments (particularly if you answered 'NO' to any of the above) I was disappointed that the issues I raised at College level last year have not been addressed (at least as far as I am aware). These are: • Awkwardness of exclusive reliance on Microsoft technology when some EEs never use it in any other situations • Lack of flexibility for nuanced answers in the drop-down menus • The proportionality of the fee to the number of students involved rather than the number of modules examined or the amount of work actually involved. Most of the issues for the department have been addressed over the last year. A few that could do with further consideration are: • Rationalisation of courses in analysis • Further steps to ensure a uniformly high quality of exam questions and solutions • More readily available information on scaling • Closing the "comments on comments" trail loop more effectively I have provided more detail for the department on these and a couple of other issues.		

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
Many thanks to the departmental team who organised everything efficiently. I continue to be impressed with the level of academic excellence which Imperial's students achieve. The new moderation procedures for projects worked very well.	
7(b)	Recommendations / Suggestions for Enhancement
Nothing further to add.	
7(c)	Examples of good and/or innovative practice in learning, teaching and assessment

It was good to meet a handful students whose enthusiasm about mathematics, the lecturing they had experienced, and about Imperial generally shone through.

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a) Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department

For external examiners in their final year of office – Final Exit Report

8(b) Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
A.Carbery	5/7/17

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			

Further action required by Department	
Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Professor Mark Dennis							
Home institution or other affiliation	School of Physics, University of Bristol							
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc, MSci, MSc							
Subject and part being examined (e.g. Biology)	Mathematics (Applied); Ancillary Mathematics							
Year of Tenure	1*:		2:		3:		4*:	X
							5*:	

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	Yes	No	N/A
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	X		
(ii)	Syllabus or module descriptors including learning outcomes?	X		
(iii)	Assessment briefs / marking criteria	X		
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	X		
Comments (particularly if you answered 'NO' to any of the above)				

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes; The content and balance is entirely appropriate for degrees at the level considered. As I have mentioned previously, more could probably be done to integrate separate modules into an integrated "programme".
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes; I am impressed in the high standard and quality of assessments in the small number of compulsory modules that I have seen.
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates; The teaching seems to be of a very high standard, and the students appear to be very capable, both in applying what they have been taught directly, and thinking in an original way about previously unseen problems.

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	The assessments for modules I am responsible are mainly examination based. The questions are challenging, and seem to differentiate well between different levels of students. I feel that some questions focus more on raw calculation than giving students the opportunity to demonstrate a synoptic understanding of the material (which could be in the form of more text-based answers). The internal checking procedure continues to work well in a collegial way. The process of monitoring assessment of projects continues to improve, and I was very impressed with the level of the projects and the marking procedure and feedback on them. I think yet more could be done within individual exams to differentiate the marking. Too many exam questions seem to be at a uniformly, homogeneously challenging level, rather than being tapered, with different parts testing knowledge and understanding of the course material rather than ability to work with new, previously unseen concepts (this was also a comment from some of the students I spoke to). This might require encouragement from the Director of Undergraduate Studies and his team.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	The papers and assessments I have been sent are highly appropriate within mathematics. As I have commented in previous years, the optional courses which I have been sent in applied maths and mathematical physics seem to be somewhat less popular, on average, than other units offered by the department. I had a small concern that the marking of optional modules which are 100% coursework based is at a similar level of rigour to those which are examination based. Although subtly different skills are assessed in continuous assessment, I would expect the marking to make a similar differentiation amongst the class as an examination.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	This seems OK, and is consistent with previous years.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	Yes	No	N/A
(i)	Did you receive all of the necessary draft assessments for comment / approval?	X		
(ii)	Was the nature and level of the questions (or tasks) appropriate?	X		
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	X		
(iv)	Did you receive feedback on your comments?	X		
Comments (particularly if you answered 'NO' to any of the above)				

The arrangements went very smoothly and communications with me over these were extremely competently and expeditiously handled by the various responsible members of the department.

I had some difficulty with the new computer-based issuing of papers rather than hard copies, but hopefully these problems are now resolved.

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	Yes	No	N/A
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	X		
(ii)	Was the general standard and consistency of marking appropriate?	X		
(iii)	Was there evidence that assessed work had been second-marked internally?	X		
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	X		

Comments (particularly if you answered 'NO' to any of the above)

I was pleased with the scripts I was shown, and, as noted above, was particularly impressed by the obvious effort in the past year in leading to a robust process for project assessment, which incorporates input from two markers in a sensible and justified way.

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	Yes	No	N/A
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?			X

Comments (particularly if you answered 'NO' to the above)

3(d)	Practical Examinations	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of practical examinations?			X
(ii)	Was the general standard and consistency of marking appropriate?			X

Comments (particularly if you answered 'NO' to any of the above)

3(e)	Oral Assessments (including Viva Voce Examinations)	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?			X
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?			X
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?			X
(iv)	Was the assessment of such work appropriate and consistent?			X

Comments (particularly if you answered 'NO' to any of the above)

3(f)	Please comment on the assessment process, marking and moderation in relation to:
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;
	The marking schemes for examinations submitted to me were all of a high standard, and the neatness and completeness of the handwritten solutions were particularly appreciated. As I have mentioned before, not all examiners include the context of the question (e.g. example in lecture, homework problem, etc). At least one examination I saw was set by a colleague with rather less experience than the others; I would expect appropriate support and guidance to be offered for less experienced colleagues setting their first examination paper.
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;
	Yes; the changes to the PTEM assessment scheme seem to be much an improvement.
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;
	This seems appropriate and fair.
(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations
	This seems appropriate and in keeping with College policy. I continue to be impressed at the level of engagement of the Head of Department takes a keen interest in this, and he supports procedures which strongly encourages members of the department themselves to engage strongly in the process.

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a)	Board of Examiners' Meeting	Yes	No	N/A
(i)	Were you invited to attend the meeting?	X		
(ii)	Were you able to attend the meeting?	X		
(iii)	Was the meeting conducted to your satisfaction?	X		
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	X		
Comments (particularly if you answered 'NO' to any of the above)				

(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;
	The procedures seem to be maintained fairly and equitably. There still seems to be more reliance than I would prefer on recommendations from the external examiners for borderline cases.

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);
	The standards set seem to be in keeping with the appropriate frameworks, and the high reputation of the College for education in Mathematics.
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;
	The standards of student performance seem comparable with students on similar programmes in the UK.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	The standards between different modules that I saw seem comparable.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	Standards seem consistent with what I saw last year in my previous years of appointment.

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	Yes	No	N/A
(i)	Did you receive a formal written response to the previous year's External Examiner report?	X		
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	X		
Comments (particularly if you answered 'NO' to any of the above)				

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a) Overview Comments

I am pleased that the academic standards of the degrees in Mathematics are maintained at the highest level, and in such a way that all teaching members of the school feel invested in the assessment process.

As previously, I found the material prepared for externals before arrival for the scrutiny day extremely helpful both in preparing me for the tasks required and giving a feeling for the assessment culture in the department.

7(b) Recommendations / Suggestions for Enhancement

The assessment process continues to be based on handwritten paper documents. Moving to a computer-based system would surely save a lot of time and space, and would also enable a better overview of the process, with anomalies and problems being able to be picked up earlier in the process.

At the decisions for degrees, it seems there is a degree of discussion in which it is not easy to be consistent. I would recommend introduction of a consistent 'secondary rule' to deal with borderline cases, rather than extended discussion on a case-by-case basis in the examiners meeting.

I feel that there is too much focus on a 'bottom up' approach where most teaching staff are focused only on the handful of modules they teach, rather than the department taking a wider view of the teaching received by students on the overall programme. This could be done with a greater degree of communication and discussion between lecturers teaching similar material, both within the same year group and across different years of study.

This was reflected in the comments of the small number of undergraduates with whom we had the opportunity to speak. They were very happy with the level and quality of teaching they received at all levels, but felt that more guidance could have been given on the choice of different modules for options, especially outside the specialist area of the academic adviser.

7(c) Examples of good and/or innovative practice in learning, teaching and assessment

The quality of the exams was high, and the collegiality of the exam checker, high quality of marking with annotations on the scripts were all very impressive.

The incorporation of the Masters level 'Mastery' questions into the relevant exams, rather than as a separate paper, seems to have worked well, and these questions continue to do a good job in bridging the gap between undergraduate and graduate level assessment.

I appreciated the clear way in which the Ancillary Mathematics modules were managed by the department, and am confident that Mathematics is providing an excellent service to the Physics and Chemistry departments in providing these units.

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a)	Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department
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For external examiners in their final year of office – Final Exit Report

8(b)	Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)
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Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
Professor Mark Dennis	11/10/17

INTERNAL USE ONLY

Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Professor Christopher Jennison
Home institution or other affiliation	University of Bath
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc / MSci Mathematics programmes
Subject and part being examined (e.g. Biology)	Statistics
Year of Tenure	1*

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	Yes
(ii)	Syllabus or module descriptors including learning outcomes?	No
(iii)	Assessment briefs / marking criteria	Yes
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	Yes
Comments (particularly if you answered ‘NO’ to any of the above)		
Assessment criteria: I was directed to a web site with links to pages containing the relevant information. It would have helped if I had been pointed specifically to the topic “How examination marks are determined” on pages 32 and 33 of the Maths U/G Handbook. Even after seeing that material, I did not appreciate its implications until I saw the methods in actual use. In consequence, my comments on the level of difficulty of draft papers were not based on a good understanding of how the raw marks would be modified before decisions on degree classes were made. Learning outcomes: Programme level objectives are set out in the various Programme Specifications but learning outcomes for individual modules are not provided in many of the unit descriptions in the Year Level Guides.		

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:	
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes;	
	Students who choose to specialise in Statistics are able to reach a reasonable quantity of material at a suitable level.	
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes;	
	The programme is coherent. Access to more Probability and Statistics units in Years 1 and 2 would allow students choosing this area of specialisation to progress further in later years.	
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates;	
	Teaching appears to be good.	

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	Exam papers were rigorous and could be deemed appropriate to the level of study. I shall explain my concerns about the translation of marks to degree classes in 3(f). There is scope to include a greater amount of challenging material in many of the papers I saw.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	Balance was OK.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	Weighting was OK.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	
(i)	Did you receive all of the necessary draft assessments for comment / approval?	Yes
(ii)	Was the nature and level of the questions (or tasks) appropriate?	Yes
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	Yes
(iv)	Did you receive feedback on your comments?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
In reviewing draft questions, it would have been very helpful for all solutions to be annotated to show which parts were “seen”, “similar to a seen problem”, “unseen”. With regard to feedback, a paper trail was available to say that my comments had been acted upon. I do not recall seeing a point by point response to my remarks.		

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	Yes

(ii)	Was the general standard and consistency of marking appropriate?	Yes
(iii)	Was there evidence that assessed work had been second-marked internally?	Yes
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
I was provided with a large number of scripts. These were for candidates with borderline performances overall but the scripts I saw were not necessarily at borderlines. I would have preferred to sample scripts from a given unit to assess whether final marks (after the post-marking processing) were commensurate with the degree class corresponding to such a mark. As long as the marks on each unit have this property, I am happy to let the overall averages for each year determine the degree class awarded.		

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A
Comments (particularly if you answered 'NO' to the above)		

3(d)	Practical Examinations	
(i)	Were satisfactory arrangements made for the conduct of practical examinations?	N/A
(ii)	Was the general standard and consistency of marking appropriate?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(e)	Oral Assessments (including Viva Voce Examinations)	
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?	N/A
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?	N/A
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A
(iv)	Was the assessment of such work appropriate and consistent?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(f)	Please comment on the assessment process, marking and moderation in relation to:	
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;	
	As noted earlier, in reviewing draft questions, it would have been very helpful for all solutions to be annotated to show which parts were "seen", "a variation on a seen problem", "unseen". I shall comment in (iii) below on the process by which raw marks are modified before they are used to determine degree classes. Given that such modification will occur by default, it is difficult to judge whether the marking criteria accompanying the draft papers are appropriate. From my perspective, I would like to see a marking scheme that will produce the final marks for an examination paper. (I recognise that exceptional cases may arise where some post-hoc scaling of marks is necessary but the point is that these should be exceptional.) I would then have the relatively simple task of assessing whether a score of 8/20 per question merits a pass, and whether scoring 14/20 per question indicates a competent answer containing some first class work. Then, as long as the marks remain unchanged, I can have confidence that, when degree boundaries of 40% for a	

	pass and 70% for a first are applied to average marks, appropriate outcomes will follow. I would expect the simple process I have just described would also help lecturers in setting their exam papers.
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;
	Procedures were suitable and applied consistently.
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;
	I do have a concern that after applying the Department's processes, the final mark gives a rather inflated picture of the level of a candidate's performance. (1) Following the "PTM" approach described on page 32 of the Maths U/G Handbook, the raw marks are increased systematically. The precise way in which this is done varies from paper to paper but, under the default option, raw marks between 45% and 60% are increased by 15% (and other, smaller adjustments are applied outside this range). The averages of the modified marks were then compared with boundaries at 30% (3rd), 45% (2.2), 55% (2.1) and 70% (1st). (Although the u/g handbook states that the threshold for a 2.1 is 60%, the figure of 55% was applied.) (2) In assessing the levels of draft papers I had assumed the raw marks would be compared with the standard degree class boundaries of 40% (3rd), 50% (2.2), 60% (2.1) and 70% (1st). I deemed that this would lead to degree class outcomes comparable to those awarded in other UK institutions. Given the substantial differences between the approaches described (1) in (2), I can only conclude that the degree classifications awarded were generous. (I should note that the above comments ignore the effects of the system of "bonus marks" used in the Department. These have a rather complicated effect on final marks: this is on a modest scale and my impression is that the overall effect is to offset a small part of the increase in marks arising from the PTM methodology.)
(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations
	See my above comments

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a)	Board of Examiners' Meeting	
(i)	Were you invited to attend the meeting?	Yes
(ii)	Were you able to attend the meeting?	Yes
(iii)	Was the meeting conducted to your satisfaction?	Yes
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	No
Comments (particularly if you answered 'NO' to any of the above)		
I have noted above that I believe the marks on which decisions were made were already generous.		

I made comments to this effect in relation to several borderline candidates taking primarily Statistics papers but additional generosity was evident in the decisions taken by the Board of Examiners.

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;
	Procedures were applied fairly

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);
	Standards were in keeping with the Framework for HE Qualifications.
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;
	Students performed well and I would rate their overall performances in assessment as broadly comparable to the performances of students at other UK institutions. However, see my comments under 3(f) (iii) on the comparability of degree classes awarded with those gained by students performing at a similar level in other UK institutions.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	Performance was comparable across modules.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	N/A

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	
(i)	Did you receive a formal written response to the previous year's External Examiner report?	N/A
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
The modules I have seen have good content which is well taught. The students displayed some good understanding.	

7(b)	Recommendations / Suggestions for Enhancement
I re-iterate some of my comments in 3(f) (i): In reviewing draft questions, it would have been very helpful for all solutions to be annotated to show which parts were "seen", "a variation on a seen problem", "unseen". I would like to see a marking scheme that will (usually) produce the final marks for an examination paper. Then, if standard degree class boundaries are applied, one knows that a score of 8/20 per question should correspond to a bare pass, and scoring 14/20 per question should indicate a competent answer containing some first class work.	

7(c)	Examples of good and/or innovative practice in learning, teaching and assessment
Final year projects for MSci candidates were of high quality. The moderation process for ensuring equity in awarding marks for projects appeared to be conducted carefully and fairly.	

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a)	Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department
I did not attend an induction day.	

For external examiners in their final year of office – Final Exit Report

8(b)	Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
C Jennison	19 July 2017

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Dr. Ionica Emilian Parau								
Home institution or other affiliation	University of East Anglia								
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc and MSc								
Subject and part being examined (e.g. Biology)	Mathematics								
Year of Tenure	1*:	x	2:		3:		4*:		5*:

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	Yes	No	N/A
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	x		
(ii)	Syllabus or module descriptors including learning outcomes?	x		
(iii)	Assessment briefs / marking criteria	x		
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	x		
Comments (particularly if you answered 'NO' to any of the above)				
I did receive clear information about programmes and about marking and assessment criteria.				

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes; The BSc in Mathematics and the MSci programme have a good mix of Pure, Applied, Statistics and Computational projects, ensuring the achievement of learning outcomes
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes; The structure of core modules in the first two years, followed by optional modules in the last year is appropriate. The possibility to do projects in each year I found it very valuable. The large number of optional modules in Years 3 and 4 is a particular strength of the programmes.
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates; The methods of teaching seem to be adequate and suitable, as proved by the standards achieved by candidates.

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	The methods of assessment (written examination, coursework, projects) are appropriate and rigorous.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	The assessment methods were of similar standard on the Applied modules of the same level I supervised. The overall assessment load for the programme is fine.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	At Imperial, unlike other places, the first year of study count towards the final classification, but this seems to be fine.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	Yes	No	N/A
(i)	Did you receive all of the necessary draft assessments for comment / approval?	x		
(ii)	Was the nature and level of the questions (or tasks) appropriate?	x		
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	x		
(iv)	Did you receive feedback on your comments?	x		
Comments (particularly if you answered 'NO' to any of the above)				
I have received all the draft assessment and given enough time to read and make comments. The feedback on my comments was available to me at the Exam Board meeting				

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	Yes	No	N/A
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	x		
(ii)	Was the general standard and consistency of marking appropriate?	x		
(iii)	Was there evidence that assessed work had been second-marked internally?	x		
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	x		
Comments (particularly if you answered 'NO' to any of the above)				
The dissertation/projects have been second-marked. The exam scripts have been checked by a second person.				

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	Yes	No	N/A
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	x		
Comments (particularly if you answered 'NO' to the above)				

3(d)	Practical Examinations	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of practical examinations?			x
(ii)	Was the general standard and consistency of marking appropriate?			x
Comments (particularly if you answered 'NO' to any of the above)				

3(e)	Oral Assessments (including Viva Voce Examinations)	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?			x
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?			x
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?			x
(iv)	Was the assessment of such work appropriate and consistent?			x
Comments (particularly if you answered 'NO' to any of the above)				

3(f)	Please comment on the assessment process, marking and moderation in relation to:
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied; The marking schemes were generally well-designed and clear.
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied; After seeing a number of marked scripts, the marking was consistent between different scripts and different modules. The comments of the markers for projects were quite helpful. The moderation of marks for different modules using PTEM scheme was done consistently to reduce some disparities between same-level modules. This is useful in cases where the module mean is outside the
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently; These degree classification arrangements are at the appropriate level and are applied consistently.
(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations They do to a great extent.

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a)	Board of Examiners' Meeting	Yes	No	N/A
(i)	Were you invited to attend the meeting?	x		
(ii)	Were you able to attend the meeting?	x		
(iii)	Was the meeting conducted to your satisfaction?	x		
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	x		
Comments (particularly if you answered 'NO' to any of the above)				
The Board of Examiners' Meeting was conducted very efficiently and it was very useful, especially on discussing borderline candidates.				

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;
	The College procedures for mitigating circumstances on borderline cases were applied fairly and equitably. Decisions of the Board were taken based on them.

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);
	The standards are appropriate, as defined on the QAA Benchmarks for Mathematics.
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;
	There are very high academic standards for written examinations and projects, comparable with other top institutions in the UK. In particular, some projects were impressive, almost in publishable form.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	The academic standards across modules are comparable. Overall, the student performance was also comparable, but there were a few exceptions where a higher than usual mean was obtained, despite the moderation.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	N/A

Departmental response to issues and suggestions raised in Section 5**6. Response to previous year's External Examiner Report**

6.	Response to previous year's report	Yes	No	N/A
(i)	Did you receive a formal written response to the previous year's External Examiner report?			x
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?			x
Comments (particularly if you answered 'NO' to any of the above)				
It was my first year as External Examiner				

Departmental response to issues and suggestions raised in Section 6**7. Overview Comments, Recommendations and Good Practice**

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
The Applied modules for which I was responsible have shown very high academic standards for projects and written examinations. Overall, the BSc in Mathematics at Imperial is of excellent quality. The marking of projects and exams is consistent across modules and the moderation process is done on an appropriate way. I had very good communication with Imperial prior to Board of Examiners and during the Board and the whole process was very well organised.	
7(b)	Recommendations / Suggestions for Enhancement
After meeting the students from Imperial, one observation was that the Master-only question is in some exams easier than the other questions. This can be easily addressed by module organisers in the future. Otherwise, no other recommendations.	
7(c)	Examples of good and/or innovative practice in learning, teaching and assessment
The comments of lecturers after the exam for each questions are quite useful. Also, the comments of project markers.	

Departmental response to comments and recommendations in Section 7**8. For Examiners completing their first or final year in office only****For external examiners in their first year of office**

8(a) Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department

I did not attend an external examiner induction day. The emails and documents about the whole process were clear enough.

For external examiners in their final year of office – Final Exit Report

8(b) Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
E Parau	07/07/2017

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			

Further action required by Department	
Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Prof. Leonard H. Soicher
Home institution or other affiliation	Queen Mary University of London
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc/MSci/MSc
Subject and part being examined (e.g. Biology)	Mathematics: Algebra and Number Theory
Year of Tenure	4*

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	No
(ii)	Syllabus or module descriptors including learning outcomes?	No
(iii)	Assessment briefs / marking criteria	Yes
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	Yes
Comments (particularly if you answered ‘NO’ to any of the above)		
All the information I required was available from the Imperial College Mathematics Department website or by asking appropriate members of staff.		

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:	
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes;	
	As in previous years, I was impressed at the quantity, breadth and depth of the modules offered in both Algebra and Number Theory, especially the third- and fourth-year modules. I also thought that the first- and second-year modules in these areas covered a good range of topics to sufficient depth for preparation for the third and fourth years of study.	
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes;	
	The overall programme in Algebra and Number Theory is demanding and coherent.	
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates;	
	As in previous years, there was a suitably wide range of achievement, with many very good or excellent candidates. As before, this is to be expected given the very high entry standards for the mathematics programmes at Imperial College. The results indicate that the teaching methods are adequate.	

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	The main assessment method for each taught module was a written examination consisting of four compulsory multi-part questions, with fourth-year students also answering a fifth “mastery question”. This is appropriate. In addition, fourth-year students submitted a project dissertation. I was broadly satisfied with the overall quality of the exams and their assessment, and with the fourth-year projects and their assessment.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	This all looked reasonable.
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	This was appropriate.

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	
(i)	Did you receive all of the necessary draft assessments for comment / approval?	Yes
(ii)	Was the nature and level of the questions (or tasks) appropriate?	Yes
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	Yes
(iv)	Did you receive feedback on your comments?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	Yes
(ii)	Was the general standard and consistency of marking appropriate?	Yes
(iii)	Was there evidence that assessed work had been second-marked internally?	Yes
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A
Comments (particularly if you answered 'NO' to the above)		

3(d)	Practical Examinations	
(i)	Were satisfactory arrangements made for the conduct of practical examinations?	N/A
(ii)	Was the general standard and consistency of marking appropriate?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(e)	Oral Assessments (including Viva Voce Examinations)	
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?	N/A
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?	N/A
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A
(iv)	Was the assessment of such work appropriate and consistent?	N/A
Comments (particularly if you answered 'NO' to any of the above)		

3(f)	Please comment on the assessment process, marking and moderation in relation to:	
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;	
	This all seemed suitable.	
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;	
	This all seemed suitable.	
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;	
	These were set at the appropriate level and applied consistently.	

(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations
	The examinations were demanding and rigorous.

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a)	Board of Examiners' Meeting	
(i)	Were you invited to attend the meeting?	Yes
(ii)	Were you able to attend the meeting?	Yes
(iii)	Was the meeting conducted to your satisfaction?	Yes
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
As last year, I was pleased not to have to attend the morning progression meeting. The afternoon meeting (mainly for degree classification) was run efficiently.		

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:	
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;	
	As far as I am aware, this was done.	

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:	
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);	
	The standards were high and appropriate.	
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;	
	Mathematics students at Imperial College are taught more advanced material and write more challenging exams than at Queen Mary University of London. This is appropriate given the very high entry requirements at Imperial, and the need to challenge and differentiate their higher performing students.	

(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	This year, there seemed to be more variability of marks between some of the modules than I remember from previous years. I believe more effort should be made in moderating the setting of exams, including the mastery questions.
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	The overall standards are comparable with previous years.

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	
(i)	Did you receive a formal written response to the previous year's External Examiner report?	Yes
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	Yes
Comments (particularly if you answered 'NO' to any of the above) Following my repeated requests, I appreciate that efforts have been made to produce an information sheet for each borderline candidate, showing a transcript of their marks (on the Department of Mathematics scale). However, it is important that each such sheet covers all of a student's years of study at Imperial, shows both yearly averages and the final weighted average, and explicitly gives the names of the modules taken by a student (not just the module codes). Hopefully, a better student database can be implemented in the Department of Mathematics to make the production of such useful information sheets easy and routine. These sheets (with a student code to preserve anonymity) should be available to external examiners looking at the scripts of borderline candidates and to all at the examiners' meeting determining degree classification. In addition, I still believe that although external examiners are given a huge amount of information, more thought needs to go into the structuring of this information. For example, for each exam box an external looks at in June, it should be very easy for the external to locate their comments on the draft exam, the examiner's replies and actions with respect to these comments, the PTEM numbers for that exam, and any comments or justifications if these are outside the normal ranges, any invigilator reports or problems with the exam, actions taken with respect to these reports or problems, and any particular comments on overall student performance.		

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are

responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
Clearly, there are many very good mathematics students at Imperial who learn a lot, especially by doing projects. I am impressed.	

7(b)	Recommendations / Suggestions for Enhancement
From the lunch meeting with students this June, I have the following suggestions: • it may be useful to publish “subject streams”, showing how modules in a given subject area (such as Algebra, or even Pure Mathematics) connect to each other; • shared MSc and 4th-year MSci facilities may help to facilitate discussions and interactions between these students; • students (and externals) should clearly be told how any mistakes found in a sat exam have been handled.	

7(c)	Examples of good and/or innovative practice in learning, teaching and assessment
It was again interesting and informative for the external examiners to meet and talk to students over lunch. Please keep this arrangement in future years.	

Departmental response to comments and recommendations in Section 7	

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a)	Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department

For external examiners in their final year of office – Final Exit Report

8(b)	Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)

Over the four years during which I have been an external examiner, I have remained impressed by the range of modules, the challenging exams, the high standards, and high student performance in Algebra and Number Theory at Imperial.

There has been good improvement over the years in the efficiency and smooth running of the Exam Board meetings, and working to ensure as much student anonymity as is possible. There are still problems, in my view, with the structure and clarity of the data presented to the external examiners when they consider exam performance, borderline candidates, and at Exam Board meetings.

I would like to thank all those I have been involved with as an external examiner at Imperial over the last four years for their unfailing helpfulness, hospitality, and hard work. I wish the next external for Algebra and Number Theory all the best.

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
Leonard Soicher	4 September 2017

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Dr Mark Blyth									
Home institution or other affiliation	University of East Anglia									
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	Ancillary Mathematics									
Subject and part being examined (e.g. Biology)	Mathematics									
Year of Tenure	1*:		2:		3:		4*:	X	5*:	

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	Yes	No	N/A
(i)	Programme handbook(s) / programme specification including programme learning outcomes?			x
(ii)	Syllabus or module descriptors including learning outcomes?	x		
(iii)	Assessment briefs / marking criteria	x		
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	x		
Comments (particularly if you answered 'NO' to any of the above)				

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes; NA
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes; NA
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates; These are appropriate and of high quality, and this is clearly reflected in the results produced by the students in the examinations.

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen

	written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	Absolutely fine. I have no concerns.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	NA
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	NA

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	Yes	No	N/A
(i)	Did you receive all of the necessary draft assessments for comment / approval?	x		
(ii)	Was the nature and level of the questions (or tasks) appropriate?	x		
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	x		
(iv)	Did you receive feedback on your comments?	x		
Comments (particularly if you answered 'NO' to any of the above)				

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	Yes	No	N/A
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	x		
(ii)	Was the general standard and consistency of marking appropriate?	x		
(iii)	Was there evidence that assessed work had been second-marked internally?	x		
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	x		
Comments (particularly if you answered 'NO' to any of the above)				

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	Yes	No	N/A
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?			x
Comments (particularly if you answered 'NO' to the above)				

3(d)	Practical Examinations	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of practical			x

	examinations?			
(ii)	Was the general standard and consistency of marking appropriate?			x
Comments (particularly if you answered 'NO' to any of the above)				

3(e)	Oral Assessments (including Viva Voce Examinations)	Yes	No	N/A
(i)	Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)?			x
(ii)	Were suitable arrangements made for you to conduct viva voce examinations?			x
(iii)	Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?			x
(iv)	Was the assessment of such work appropriate and consistent?			x
Comments (particularly if you answered 'NO' to any of the above)				

3(f)	Please comment on the assessment process, marking and moderation in relation to:			
(i)	The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied;			
	This is all fine. Clearly laid out model solutions, with mark schemes, are provided, and it is clear these are being used appropriately in the marking.			
(ii)	The suitability of the procedures for marking and moderation and the consistency with which these were applied;			
	The procedures are suitable. I looked at only two papers but the manner in which marks were recorded on the scripts on one of these was unorthodox and not so transparent. This did not compromise the process, but it made reviewing scripts trickier, and it seems best for everyone to do things the same way.			
(iii)	Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently;			
	NA			
(iv)	The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations			
	This is fine; no concerns. Exam questions contain sufficient material to assess the intended learning outcomes and to differentiate between students of differing ability.			

Departmental response to issues and suggestions raised in Section 3				

4. Board of Examiners

4(a)	Board of Examiners' Meeting	Yes	No	N/A
(i)	Were you invited to attend the meeting?	x		
(ii)	Were you able to attend the meeting?	x		
(iii)	Was the meeting conducted to your satisfaction?	x		
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	x		

Comments (particularly if you answered 'NO' to any of the above)

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;
	These did not arise.

Departmental response to issues and suggestions raised in Section 4

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);
	NA
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;
	Fine, and entirely as expected and in line with comparable modules at other UK institutions.
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;
	NA
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;
	Yes.

Departmental response to issues and suggestions raised in Section 5

6. Response to previous year's External Examiner Report

6.	Response to previous year's report	Yes	No	N/A
(i)	Did you receive a formal written response to the previous year's External Examiner report?	x		
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	x		
Comments (particularly if you answered 'NO' to any of the above)				

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
I looked at two modules for the ancillary Mathematics for Engineers, AE34-10 and ME3-HMTH. I am entirely happy with the way these modules are run, and the mathematical content.	

7(b)	Recommendations / Suggestions for Enhancement
This year there were no issues arising that were a cause for concerns. With no problems, I have no suggestions for enhancement.	

7(c)	Examples of good and/or innovative practice in learning, teaching and assessment

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a)	Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department

For external examiners in their final year of office – Final Exit Report

8(b)	Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)
-------------	--

This is my fourth and final year acting as External Examiner for these ancillary modules. I have seen a consistent maintenance of high academic standards over this time and, where issues have arisen, a willingness to make changes to correct them. These are high quality modules delivered by excellent lecturers who are clearly engaging the students and pushing them to get good results. On the administrative side, everything I have been involved with has been run very efficiently and it has been clear at every stage what is going on, what the processes are etc. I would like to thank first Chris Ford and then Daniel Mortlock for facilitating this and for their help and hospitality during my visits.

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
M Blyth	30/6/17

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Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	

External Examiner Report 2016-17

Full name and title	Professor Tom Fearn
Home institution or other affiliation	UCL
Degree being examined (e.g. BSc/GEP/MBBS/MEng/MSc/MRes)	BSc
Subject and part being examined (e.g. Biology)	Mathematics for Engineers (Statistics)
Year of Tenure	2

* If this is your first or final year of office please ensure you complete Section 8 of this report.

1. Programme / Curriculum

1(a)	Programme and Module Information – did you receive:	
(i)	Programme handbook(s) / programme specification including programme learning outcomes?	N/A
(ii)	Syllabus or module descriptors including learning outcomes?	Yes
(iii)	Assessment briefs / marking criteria	Yes
(iv)	Sufficient information about the programme(s) / modules in order to fulfil your role?	Yes
Comments (particularly if you answered 'NO' to any of the above)		

1(b)	Please comment on the strengths and weaknesses of the Degree Programme in relation to:	
(i)	The balance and content of the degree programme(s) in relation to stated learning outcomes;	
	I am external for two Statistics modules offered to students on Computer Science and Mechanical Engineering programmes. In this context the level and content of these two modules seems appropriate to me. I cannot comment on the programmes as a whole.	
(ii)	Coherence and currency of the programme(s) and the appropriateness of compulsory modules/units in relation to stated learning outcomes;	
	N/A	
(iii)	Suitability of methods and adequacy of teaching as reflected by the standards achieved by candidates;	
	The standards achieved by the candidates in both modules were high. There were very few fails and some very nice papers at the top end. The lecturers are clearly communicating the material well.	

Departmental response to issues and suggestions raised in Section 1

2. Assessment Strategy

2.	Please comment on the assessment strategy in relation to:
(i)	The rigour, appropriateness and overall quality of the methods of assessment (unseen written papers, essays/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes;
	The main assessment in both modules is an unseen examination paper. These papers were well-designed, combining some straightforward questions and some more challenging material, and I would judge them to be entirely appropriate at this level.
(ii)	The balance and comparability of assessment methods across modules of the same level and the suitability of the overall assessment load for the programme(s);
	N/A
(iii)	The weighting in the final assessment between years of the programme(s) and in relation to the number of programme modules completed;
	N/A

Departmental response to issues and suggestions raised in Section 2

3. Assessment Process, Marking and Moderation

3(a)	Draft assessments	
(i)	Did you receive all of the necessary draft assessments for comment / approval?	Yes
(ii)	Was the nature and level of the questions (or tasks) appropriate?	Yes
(iii)	Were suitable arrangements in place to consider your comments on the draft assessments?	Yes
(iv)	Did you receive feedback on your comments?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
The system is efficient and sound.		

3(b)	Marking and Moderation of scripts (examination, assessed coursework, dissertation/project reports)	
(i)	Did you receive a sufficient number of scripts and other assessed work, including those of first class, distinction, borderline and failed candidates, for scrutiny?	Yes
(ii)	Was the general standard and consistency of marking appropriate?	Yes
(iii)	Was there evidence that assessed work had been second-marked internally?	Yes
(iv)	Were the scripts marked in such a way as to enable you to see the reasons for the award of given marks?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
I was given access to all the scripts and very useful summary paperwork. The examples I chose to look at were fairly and accurately marked.		

3(c)	Parts of programmes taken at another institution (e.g. a collaborative partner institution, a year abroad, a year in industry, or under an International Exchange Scheme)	
(i)	Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A

Comments (particularly if you answered 'NO' to the above)

3(d) Practical Examinations

- | | | |
|------|--|-----|
| (i) | Were satisfactory arrangements made for the conduct of practical examinations? | N/A |
| (ii) | Was the general standard and consistency of marking appropriate? | N/A |

Comments (particularly if you answered 'NO' to any of the above)

3(e) Oral Assessments (including Viva Voce Examinations)

- | | | |
|-------|--|-----|
| (i) | Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations etc...)? | N/A |
| (ii) | Were suitable arrangements made for you to conduct viva voce examinations? | N/A |
| (iii) | Was the purpose for conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear? | N/A |
| (iv) | Was the assessment of such work appropriate and consistent? | N/A |

Comments (particularly if you answered 'NO' to any of the above)

3(f) Please comment on the assessment process, marking and moderation in relation to:

- | | |
|-------|--|
| (i) | The suitability of marking schemes / marking criteria and, where appropriate, model answers and the consistency with which these were applied; |
| | When I was sent the papers in advance the model answers and marking schemes were provided. These were clear and were consistently applied in marking the scripts. |
| (ii) | The suitability of the procedures for marking and moderation and the consistency with which these were applied; |
| | All fine. |
| (iii) | Whether the arrangements for degree classification (e.g. the scheme for the award of honours [UG] / scheme for the award of pass, merit or distinction [PG] – whichever is relevant) are set at the appropriate level and applied consistently; |
| | N/A |
| (iv) | The extent to which the assessment process measures student achievement rigorously and fairly against the intended outcomes of the programme(s) and is conducted in line with College policies and regulations |
| | Completely |

Departmental response to issues and suggestions raised in Section 3

4. Board of Examiners

4(a) Board of Examiners' Meeting

- | | | |
|------|---|-----|
| (i) | Were you invited to attend the meeting? | Yes |
| (ii) | Were you able to attend the meeting? | Yes |

(iii)	Was the meeting conducted to your satisfaction?	Yes
(iv)	Were you satisfied with the recommendations of the Board of Examiners?	Yes
Comments (particularly if you answered 'NO' to any of the above)		
Very efficiently run, with good clear paperwork.		

4(b)	Please comment on the following aspect related to Boards of Examiners' Meetings:	
(i)	Whether the College procedures governing mitigating circumstances, academic misconduct (e.g. plagiarism cases) and borderline performances were considered and applied fairly and equitably to all students;	
	No such cases arose.	

Departmental response to issues and suggestions raised in Section 4	

5. Academic Standards

5(a).	Please comment on academic standards and student achievement with regard to:	
(i)	The appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any additional Professional, Statutory and Regulatory Body requirements (where relevant);	
	I can only comment on two modules I saw and not the degree programmes they form part of. The content and level were consistent with UK standards, and the level of achievement shown by the students is what one would expect to see in an institution of the standing of Imperial College.	
(ii)	The standards of student performance in the programme(s) or parts of programmes and whether these are comparable with standards achieved by students on similar programmes or parts of programmes in other UK higher education institutions of which you have experience;	
	N/A	
(iii)	The extent to which the academic standards and standards of student performance across modules within the programme(s) are comparable;	
	N/A	
(iv)	For external examiners <u>not</u> in their first year of appointment – are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts;	
	N/A	

Departmental response to issues and suggestions raised in Section 5	

6. Response to previous year's External Examiner Report

6.	Response to previous year's report
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(i)	Did you receive a formal written response to the previous year's External Examiner report?	N/A
(ii)	Are you satisfied that the issues raised in the previous report either have been, or are being, addressed?	N/A
Comments (particularly if you answered 'NO' to any of the above) I was perfectly happy with what I saw last year, so this doesn't arise.		

Departmental response to issues and suggestions raised in Section 6

7. Overview Comments, Recommendations and Good Practice

Please provide an overview of your assessment of the programme(s) and modules for which you are responsible as External Examiner. Please identify any specific matters relating to the academic standards of the awards and/or the quality of learning opportunities provided to students that should be addressed. Please also highlight any examples of good and/or innovative practice that you consider to be worthy of wider dissemination within the College.

7(a)	Overview Comments
These modules seem to be working well. I was therefore somewhat saddened to learn that COMP245 is being handed over to Computer Science from next year. I'm not sure whether the driver for this is financial or a feeling amongst the computer scientists that they can teach Statistics better than the statisticians, but either way it seems to me disappointing when an opportunity for cross-disciplinary teaching disappears.	

7(b)	Recommendations / Suggestions for Enhancement
None.	

7(c)	Examples of good and/or innovative practice in learning, teaching and assessment
Not aware of anything innovative, though I haven't looked in detail at how the modules are delivered.	

Departmental response to comments and recommendations in Section 7

8. For Examiners completing their first or final year in office only

For external examiners in their first year of office

8(a)	Please comment on the effectiveness of the arrangements for your induction as an external examiner by the College (if you attended the external examiner induction day) and by the Department
N/A	

For external examiners in their final year of office – Final Exit Report

8(b)	Please provide an overview of your term of office. This should ideally include comment on any changes in standards of student performance over time, major developments in the provision during your tenure, the implementation of any recommendations for enhancement (this is not an exhaustive list and examiners are welcome to comment on any matters they consider appropriate)
N/A	

Departmental response to comments in Section 8

External Examiner Signature (an electronic signature is acceptable):	Date of submission:
T Fearne	30 June 2017

INTERNAL USE ONLY

Name and title of Department Respondent	
Position:	e.g. Director of Undergraduate Studies, Programme Director, Programme Coordinator etc.
Date:	

Read by Vice Provost (Education)		Date:	
Comments			
Further action required by Department			

Response to Vice Provost Comments / Further Action:	
Date:	