

External Examiner Report (2018-19 Academic Year)

Name of External Examiner	Timo Betcke
Name of Programme	Mathematics Undergraduate

Programme and Module Information (supplied directly or via a link to an online portal):

Did you receive programme handbooks/specifications (including programme learning outcomes)?	Yes/All
Did you receive syllabus or module descriptors including learning outcomes at module level?	Yes/All
Did you receive details of the assessments?	Yes/All
Did you receive sufficient Information about the programmes/modules in order to fulfil your role?	Yes/All

Departmental Response:

Programme and Curriculum Design:

Please comment on the balance and content of the degree programme(s) in relation to stated learning outcomes:
The Imperial Mathematics Undergraduate Programme provides a well balanced, comprehensive and world leading education in Mathematics with highly valued graduates across research and industry.

Please comment in the coherence and currency of the programmes and the appropriateness of compulsory modules/units in relation to stated learning outcomes:
The Mathematics Undergraduate Programme provides a well established set of compulsory modules that provide the foundations for a wide variety of optional modules in later years.

Please comment on the suitability of the programme design in relation to the following, where applicable: *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements
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I trust that all relevant criteria with regards to these bodies and benchmarks are satisfied.

Where applicable, please comment on the relevance and integration of placements (provision at a Placement Provider, for example, undergraduate Year Abroad or Year in Industry; placement activity contributing to delivery of a postgraduate project) to the overall programme and their contribution to the programme learning outcomes:

Not applicable

Where applicable, please comment on the relevance and integration of any collaborative modules (modules undertaken at other approved UK HEIs) to the overall programme and their contribution to the programme learning outcomes:

Not applicable

Assessment Strategy:

Please comment on the rigour, appropriateness and overall quality of the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes:

Across the exams that I have checked the level was very high and exemplary not only for the UK but internationally.

Please comment on the balance and comparability of assessment methods across modules of the same level:

The department has in recent years moved to having more project based modules. In previous years there were misbalances in the grade averages between project modules and exam based modules. I was happy to see this year that as project based modules are refined, these differences are disappearing and I am optimistic for the further development of project based modules.

Please comment on the suitability of the overall assessment load for the programme:

While the assessment load is high compared to other UK institutions and many exams are challenging, it is a testament to the high quality of the students and the teaching at the Mathematics Department at Imperial that the outcomes are generally good to very good.

Departmental Response:

Drafting of Assessments:

Did you receive all of the necessary draft assessments for comment/approval?	Yes/All
Were the nature and level of the tasks appropriate?	Yes/All
Were suitable arrangements in place to consider your comments on the draft assessments?	Yes/All
Did you receive feedback on your comments?	Yes/All

Marking and Moderation (of examination scripts, assessed coursework, dissertation/project reports, etc.)

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/All
Was the general standard and consistency of marking appropriate?	Yes/All
Was there evidence that assessed work had been moderated internally, either through check marking or second marking?	Yes/All
Were the scripts marked in such a way as to enable you to see the reasons for the award of marks given?	Yes/All

Practical Examinations:

Were satisfactory arrangements made for the conduct of practical examinations?	N/A
Was the general standard and consistency of marking appropriate?	N/A

Oral Examinations:

Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations, etc...)?	N/A
Was the assessment of such work appropriate and consistent?	N/A

Please comment on the suitability of marking schemes/criteria and, where appropriate, model answers and the consistency with which these were applied:

Marking schemes were generally consistent and good model answers provided.

Please comment on the suitability of procedures for marking and moderation and the consistency with which these were applied:

The procedures for marking and moderation are well established in the department and I was fully satisfied about their robustness.

Please comment as to whether grade boundaries for the assessments are set at the appropriate level and applied consistency:

In the exams that I have checked I have seen no issues with respect to grade boundaries.

Please comment on 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 established procedures for setting exams, marking and moderation ensure that achievements are measured fairly.

Programme Content Which Has Been Delivered and Assessed by Another Institution:

	Placement Activity (e.g. some or all of an undergraduate study abroad plan)	Collaborative Modules (modules undertaken at local partner institutions)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	N/A
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	Most/Usually	N/A
Was any such provision discussed at the Board of Examiners, particularly in relation to progression/award decisions, overall value and consistency with regards to the programme(s) of study?	Most/Usually	N/A
There was no particular discussion about overseas mark this year. But I remember corresponding discussions in previous years and corresponding cases were handled fairly with good procedures.		

Departmental Response:

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting?	Yes/All
Was the meeting conducted to your satisfaction?	Yes/All
Were you satisfied with the recommendations of the Board of Examiners?	Yes/All
The exam board meeting was conducted efficiently and to high standards.	

Were arrangements for degree classification (e.g. the scheme for the award of honours [UG] / the scheme for the award of pass, merit or distinction [PG]) are set at the appropriate level and applied consistently?
Yes

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) were considered and applied fairly and equitably to all students?
Yes

Was consideration of borderline performances conducted fairly and equitably and in line with College Procedures?	
Yes	
If viva voce of potential borderline candidates were used,	
Were suitable arrangements made for you to conduct viva voce examinations?	N/A
Was the purpose of conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A

<u>Departmental Response:</u>

Academic Standards:

Please comment on the appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any Professional Statutory and Regulatory Body (PSRB) or accrediting body requirements where relevant:
I trust that all relevant standards were adhered to.

Please comment on 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 are not only comparable to other students but to my impression exceed those of most UK and international institutions.

Please comment on the extent to which academic standards and standards of student performance across modules within the programme(s) are comparable:

The modules are well calibrated against each other with comparable outcomes.

(For External Examiners not 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:

Response to Your Last External Examiner Report:

Did you receive the formal written response to your previous External Examiner report (if applicable)	Yes/All
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Are you satisfied that the issues raised in the previous report have been or are being addressed?	Yes/All
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Departmental Response:

Overview, Recommendations and Good Practice:

Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):

I think that the Imperial Mathematics Programme is on a good track record and I would welcome if it continues to invest in project based modules.

Please outline any examples of good or innovative practice in learning, teaching and assessment you would like to highlight with regards to these programme(s):

There is generally a very high standards across the modules that I was responsible for. I was particularly impressed by the learning notes on finite element methods that I saw within the merit of my modules.

Please provide an overview of the programme(s) and modules for which you are responsible as External Examiner, particularly in reference to the academic standards of the awards and/or the quality of learning opportunities provided to students:

I was responsible for a subset of the Applied Mathematics Module, mainly with respect to Numerics and Dynamical Systems. In all modules that I was responsible for, the standard was very high and exemplary for other institutions.

Departmental Response:

Final Exit Report:

Please provide an overview of your term of office, including:

- *any changes in standards of student performance over time
- *major developments in the provision during your tenure
- *the implementation of any recommendations for enhancement
- * any other matters you consider appropriate

When I started the Department was still using its internal scale system. I was very pleased to see the move to the college scale system. I was also particularly happy with the continuous development of more practical project based modules, in particular in Scientific Computing, my own area of specialisation. The student standard was consistently high during my tenure and I did not observe any significant trend towards grade inflation.

My main issue over the years was the handling of borderline cases, which occupies a considerable time of the external examiners. Borderline cases are individually discussed and decided between the external examiners and the exam board based on previous performance, averages and mitigating circumstances.

I think that there are two significant issues with the handling of borderline cases.

- 1.) Decisions are done non-algorithmically based on discussions among the examiners. I consider this process to be intransparent. It would be hard to explain to students why certain borderline cases were approved and others were not while differences in student performance are often very small. I think that any procedure should be fully transparent in the sense that everybody should be able to easily understand how decisions are derived. I don't see this happening with the current system. I therefore strongly believe that any borderline case handling should essentially be algorithmic. While this creates cut-off points, in practice in our discussions we are also creating cut-off points. However, they are less transparent than what an algorithmic system would have.**

2.) External examiners play too much of a role in determining the borderline cases grades. The role of external examiners should be to supervise procedures and not to be actively involved in individual decisions with respect to students. The department knows its students best and is best equipped to make decisions on borderline cases. The external examiners should then supervise the decision and be convinced that the process was fair and does not introduce artificial grade inflation, not less and not more.

Departmental Response:

Overall Confidence Statements

The degree awarding body is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
The assessment process measures student achievement rigorously and fairly against the intended learning outcomes of the programme and is conducted in line with the College's policies and regulations.	Yes
The academic standards and the achievements of students are comparable with those in other degree awarding bodies of which you have experience.	Yes

Name and Position of Departmental Respondent:	
Date:	

External Examiner Report (2018-19 Academic Year)

Name of External Examiner	Anthony Carbery
Name of Programme	BSc/MSci Mathematics and JMC

Programme and Module Information (supplied directly or via a link to an online portal):

Did you receive programme handbooks/specifications (including programme learning outcomes)?	Yes/All
Did you receive syllabus or module descriptors including learning outcomes at module level?	Yes/All
Did you receive details of the assessments?	Yes/All
Did you receive sufficient Information about the programmes/modules in order to fulfil your role?	Yes/All
Nothing further required.	

Departmental Response:

Programme and Curriculum Design:

Please comment on the balance and content of the degree programme(s) in relation to stated learning outcomes:
This continues to be fine.

Please comment in the coherence and currency of the programmes and the appropriateness of compulsory modules/units in relation to stated learning outcomes:
This also continues to be fine.

Please comment on the suitability of the programme design in relation to the following, where applicable: *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements
Not strictly applicable; but overall the design of the programme generally continues to elicit high expectations and standards in comparison with other institutions.

Where applicable, please comment on the relevance and integration of placements (provision at a Placement Provider, for example, undergraduate Year Abroad or Year in Industry; placement activity contributing to delivery of a postgraduate project) to the overall programme and their contribution to the programme learning outcomes:

This topic did not arise explicitly this year.

Where applicable, please comment on the relevance and integration of any collaborative modules (modules undertaken at other approved UK HEIs) to the overall programme and their contribution to the programme learning outcomes:

N/A.

Assessment Strategy:

Please comment on the rigour, appropriateness and overall quality of the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes:

This is generally to be commended. Some of the exam papers this year were a little less demanding than in the past.

Please comment on the balance and comparability of assessment methods across modules of the same level:

There was a little more variation in difficulty of exam papers across different modules in comparison with previous years. Overall there was a tendency for them to be a little less demanding than in the past (but on the other hand the papers for some modules were rather difficult).

The students we met indicated some dissatisfaction with the variability of difficulty of the "Mastery" question across the modules.

Further progress has been made on rationalising the scaling system employed and it is now much more transparent.

However, the improvements to the processes surrounding moderation of projects upon which I commented very favourably last year appear to have stalled somewhat. I am not aware of the precise detail of how moderation was carried out this year, but I strongly suggest that a Project Moderation Board be set up and charged with ensuring that the global picture of project marks and rankings which emerges is robust. This is particularly relevant for the projects of candidates whom the system has identified as "borderline" but of course should apply across the board.

Please comment on the suitability of the overall assessment load for the programme:

This is fine.

Departmental Response:

Drafting of Assessments:

Did you receive all of the necessary draft assessments for comment/approval?	Yes/All
Were the nature and level of the tasks appropriate?	Most/Usually
Were suitable arrangements in place to consider your comments on the draft assessments?	Yes/All
Did you receive feedback on your comments?	Most/Usually
Staff input into closing the feedback loop of confidence (beginning with my comments on the papers) was again a bit patchy. Well-considered comments (by exam markers) for students are particularly helpful and feed into a virtuous circle. A couple of papers I had identified as being rather hard in my feedback; it turned out that the exam mark statistics in these cases bore out my remarks. (Interestingly, these same papers were identified by the students we met as having been regarded as excessively hard.) Had my initial comments been acted upon this might have been avoided to some extent. One paper was prepared with extreme haste and unfortunately a couple of typos survived into the final draft which the students sat. Taking care and time to prepare exams is essential. Further thought might be given to ensure that Mastery questions are designed with the same purpose across different modules.	

Marking and Moderation (of examination scripts, assessed coursework, dissertation/project reports, etc.)

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/All
Was the general standard and consistency of marking appropriate?	Most/Usually
Was there evidence that assessed work had been moderated internally, either through check marking or second marking?	Most/Usually
Were the scripts marked in such a way as to enable you to see the reasons for the award of marks given?	Most/Usually
My hesitation here relates to project marking and moderation; the main exam diet was handled thoroughly and professionally. I was impressed that when a relatively inexperienced marker	

made an incorrect judgement call on one exam question, this was detected early and appropriate steps were taken to ensure remarking before any adverse consequences ensued.

Practical Examinations:

Were satisfactory arrangements made for the conduct of practical examinations?	N/A
Was the general standard and consistency of marking appropriate?	N/A
N/A	

Oral Examinations:

Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations, etc...)?	N/A
Was the assessment of such work appropriate and consistent?	N/A
N/A	

Please comment on the suitability of marking schemes/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. See above.

Please comment on the suitability of procedures for marking and moderation and the consistency with which these were applied:

See comments above concerning project moderation.

Please comment as to whether grade boundaries for the assessments are set at the appropriate level and applied consistency:

This is fine. The improved transparency in scaling is to be commended.

Please comment on 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 continues to be fully achieved.

Programme Content Which Has Been Delivered and Assessed by Another Institution:

	Placement Activity (e.g. some or all of an undergraduate study abroad plan)	Collaborative Modules (modules undertaken at local partner institutions)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	N/A
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	N/A
Was any such provision discussed at the Board of Examiners, particularly in relation to progression/award decisions, overall value and consistency with regards to the programme(s) of study?	N/A	N/A
N/A		

Departmental Response:

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting?	Yes/All
Was the meeting conducted to your satisfaction?	Yes/All
Were you satisfied with the recommendations of the Board of Examiners?	Yes/All
If previously identified typographical errors are present in the marks being approved, they should ideally be brought to the attention of the board rather than just fixed later.	

Were arrangements for degree classification (e.g. the scheme for the award of honours [UG] / the scheme for the award of pass, merit or distinction [PG]) are set at the appropriate level and applied consistently?

Yes.

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) were considered and applied fairly and equitably to all students?

Yes.

Was consideration of borderline performances conducted fairly and equitably and in line with College Procedures?	
Yes. (In one case an ineffective moderation of a project of a borderline candidate which came to light rather late caused a little difficulty.)	
If viva voce of potential borderline candidates were used,	
Were suitable arrangements made for you to conduct viva voce examinations?	N/A
Was the purpose of conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A

Departmental Response:

Academic Standards:

Please comment on the appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any Professional Statutory and Regulatory Body (PSRB) or accrediting body requirements where relevant:
As far as this applies, everything is fine.

Please comment on 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 performance of Imperial students continues to be at the highest level in comparison with that of students at other UK institutions.

Please comment on the extent to which academic standards and standards of student performance across modules within the programme(s) are comparable:
Overall things are well-balanced, but one notices that some modules are consistently a little less demanding than others.

(For External Examiners not in their first year of appointment) - Are the standards of student performance across modules within the programme(s) comparable to those in previous cohorts?
As I mentioned above, there was a slight overall tendency this year towards less challenging exams. This is not a concern in itself, just something to keep an eye on.

Departmental Response:

Response to Your Last External Examiner Report:

Did you receive the formal written response to your previous External Examiner report (if applicable)	Yes/All
Are you satisfied that the issues raised in the previous report have been or are being addressed?	Yes/All
I believe there was some discussion in previous years about the unfairness of making final year students who need to resit a small number of exams wait a whole year to do so. I forgot to follow up on this this year but it shouldn't be forgotten.	

Departmental Response:

Overview, Recommendations and Good Practice:

Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):
Overall I continue to be very happy with the systems and procedures in place. I do urge a further tightening of project moderation procedures.

Please outline any examples of good or innovative practice in learning, teaching and assessment you would like to highlight with regards to these programme(s):
Nothing further to add.

Please provide an overview of the programme(s) and modules for which you are responsible as External Examiner, particularly in reference to the academic standards of the awards and/or the quality of learning opportunities provided to students:
The academic standards of the awards continue to be very high and comparable with those of the very best UK institutions. Students have a great opportunity to learn mathematics in an environment characterised by scholarship at the highest level. It was clear from the comments of the students we met that this is very much valued by the student body -- interaction with the academic staff was highlighted as the single best thing about the Imperial experience.

Departmental Response:

Final Exit Report:

Please provide an overview of your term of office, including:

- *any changes in standards of student performance over time
- *major developments in the provision during your tenure
- *the implementation of any recommendations for enhancement
- * any other matters you consider appropriate

I believe student performance has been largely consistent over the last four years.

The overhaul of the scaling system is a very welcome development.

Project moderation procedures still need some attention.

A couple of observations from the students we met::

- (i) they found it a bit intimidating to have to find a project supervisor -- might a list of potential supervisors and projects be provided?
- (ii) (ii) considerable kudos is attached to being on the Dean's list -- how carefully is the borderline between Dean's list and non-Dean's list monitored?

Overall I commend the mathematics department for providing its students with a first-class education.

Departmental Response:

Overall Confidence Statements

The degree awarding body is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
The assessment process measures student achievement rigorously and fairly against the intended learning outcomes of the programme and is conducted in line with the College's policies and regulations.	Yes
The academic standards and the achievements of students are comparable with those in other degree awarding bodies of which you have experience.	Yes

Name and Position of Departmental Respondent:	
Date:	

External Examiner Report (2018-19 Academic Year)

Name of External Examiner	Mark Kambites
Name of Programme	Undergraduate programmes in mathematics

Programme and Module Information (supplied directly or via a link to an online portal):

Did you receive programme handbooks/specifications (including programme learning outcomes)?	Yes/All
Did you receive syllabus or module descriptors including learning outcomes at module level?	Yes/All
Did you receive details of the assessments?	Yes/All
Did you receive sufficient Information about the programmes/modules in order to fulfil your role?	Yes/All

Departmental Response:

Programme and Curriculum Design:

Please comment on the balance and content of the degree programme(s) in relation to stated learning outcomes:
The content and balance of the degree programme is fairly standard for a rigorous academic mathematics degree, and well suited to the ability level of the students (which is high by the standard of most UK HEIs). It is therefore entirely appropriate.

Please comment in the coherence and currency of the programmes and the appropriateness of compulsory modules/units in relation to stated learning outcomes:
The programme is very coherent and well thought-out, and entirely appropriate for its learning outcomes.

Please comment on the suitability of the programme design in relation to the following, where applicable: *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements
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The only applicable standard of which I am aware is the QAA subject benchmark for MSOR; the programme is very much suitable in relation to this benchmark.

Where applicable, please comment on the relevance and integration of placements (provision at a Placement Provider, for example, undergraduate Year Abroad or Year in Industry; placement activity contributing to delivery of a postgraduate project) to the overall programme and their contribution to the programme learning outcomes:

The year abroad (as part of the dedicated G104 MSci programme) provides a valuable opportunity for students to broaden their mathematical and life experience. Integrating the year abroad into the programme structure is non-trivial but has been well thought-out and successfully accomplished.

Where applicable, please comment on the relevance and integration of any collaborative modules (modules undertaken at other approved UK HEIs) to the overall programme and their contribution to the programme learning outcomes:

n/a

Assessment Strategy:

Please comment on the rigour, appropriateness and overall quality of the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) in relation to the level of study and the intended learning outcomes:

The methods of assessment used (for most modules unseen written papers supplemented with a small amount of coursework; for a few modules more extensive projects) are standard for a rigorous academic mathematics degree programme, and as such are entirely appropriate.

Please comment on the balance and comparability of assessment methods across modules of the same level:

The assessment methods are largely standardised, and the PTEM scaling system is largely effective in ensuring comparability of marks even where assessments differ in absolute difficulty.

Please comment on the suitability of the overall assessment load for the programme:

The assessment carried out is clearly adequate to achieve its purpose of assessing student achievement to allow decisions on progression, degree award and classification. On the other hand, the amount of it does seem excessive compared with other HEIs with which I am familiar. So I think overall the load is probably about right.

Departmental Response:

Drafting of Assessments:

Did you receive all of the necessary draft assessments for comment/approval?	Yes/All
Were the nature and level of the tasks appropriate?	Yes/All
Were suitable arrangements in place to consider your comments on the draft assessments?	Yes/All
Did you receive feedback on your comments?	Yes/All

Marking and Moderation (of examination scripts, assessed coursework, dissertation/project reports, etc.)

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/All
Was the general standard and consistency of marking appropriate?	Yes/All
Was there evidence that assessed work had been moderated internally, either through check marking or second marking?	Yes/All
Were the scripts marked in such a way as to enable you to see the reasons for the award of marks given?	Yes/All

Practical Examinations:

Were satisfactory arrangements made for the conduct of practical examinations?	N/A
Was the general standard and consistency of marking appropriate?	N/A

Oral Examinations:

Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations, etc...)?	N/A
Was the assessment of such work appropriate and consistent?	N/A

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Please comment on the suitability of marking schemes/criteria and, where appropriate, model answers and the consistency with which these were applied:

Marking schemes were generally clear and detailed, and were consistently applied.

Please comment on the suitability of procedures for marking and moderation and the consistency with which these were applied:

Marking and moderation procedures were suitable and consistently applied.

Please comment as to whether grade boundaries for the assessments are set at the appropriate level and applied consistency:

The PTEM scaling process was generally used to set appropriate and consistent boundaries. Last year I commented on a general reluctance to scale by large amounts. The effect of this was that where raw module marks were far out of line with expectations, the scaling applied was typically not quite sufficient to compensate and ensure complete consistency with other modules. I think there is still an element of this effect, although it is was perhaps not so pronounced as last year.

Please comment on 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:

To the best of my knowledge, all assessment was fair, rigorous and in line with appropriate policies and regulations.

Programme Content Which Has Been Delivered and Assessed by Another Institution:

	Placement Activity (e.g. some or all of an undergraduate study abroad plan)	Collaborative Modules (modules undertaken at local partner institutions)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	Yes/All	N/A
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	Most/Usually	N/A
Was any such provision discussed at the Board of Examiners, particularly in relation to progression/award decisions, overall value and consistency with regards to the programme(s) of study?	No/None	N/A

The only relevant content here (to my knowledge) is the year abroad: students who had taken this were indicated by their programme code. This year I do not recall receiving any information about procedures for incorporating marks, and they were not discussed in the board of examiners which I attended. (However, issues with marks for these students have been drawn to my attention on a previous occasion, so I have confidence that I would have been informed had there been anything anomalous or deserving of particular scrutiny.)

Departmental Response:

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting?	Yes/All
Was the meeting conducted to your satisfaction?	Yes/All
Were you satisfied with the recommendations of the Board of Examiners?	Yes/All

Were arrangements for degree classification (e.g. the scheme for the award of honours [UG] / the scheme for the award of pass, merit or distinction [PG]) are set at the appropriate level and applied consistently?

Yes.

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) were considered and applied fairly and equitably to all students?

College procedures were consistently applied.

However, I think there is a serious weakness in the College's new procedures for mitigating circumstances. Specifically it seems that the procedures no longer permit any judgement to be made (and communicated to the board of examiners) on the severity of the circumstances or of their likely impact. In my view it is impossible to ensure fair treatment of a student with mitigating circumstances without further information, when those circumstances could represent anything from (at one extreme) a minor self-certified health problem causing mild discomfort during the exam period to (at the other) a critical illness seriously impeding the students' studies throughout the entire term. I appreciate the difficulties and sensitivities around reaching judgements on severity, but to completely avoid making any such judgements seems like an abdication of responsibility rather than a credible solution to the problem.

Was consideration of borderline performances conducted fairly and equitably and in line with College Procedures?	
Yes.	
If viva voce of potential borderline candidates were used,	
Were suitable arrangements made for you to conduct viva voce examinations?	N/A
Was the purpose of conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A

Departmental Response:

Academic Standards:

Please comment on the appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any Professional Statutory and Regulatory Body (PSRB) or accrediting body requirements where relevant:
The standards are appropriate.

Please comment on 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 are extremely high, and at least comparable with those of other UK HEIs of which I have experience.

Please comment on the extent to which academic standards and standards of student performance across modules within the programme(s) are comparable:
Academic standards appear to be consistently high, and the standard of student performance is generally impressive. It is difficult to directly compare performance across modules because some modules are (by the inherent nature of the material) harder than others, and some modules tend to attract stronger students than others. But the performance across all modules is at least at the level I would expect, and the PTEM scaling system is for the most part effective in ensuring that comparable performance results in comparable marks.

(For External Examiners not 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:

Response to Your Last External Examiner Report:

Did you receive the formal written response to your previous External Examiner report (if applicable)	Yes/All
Are you satisfied that the issues raised in the previous report have been or are being addressed?	Yes/All

Departmental Response:

Overview, Recommendations and Good Practice:

Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):
I recommend that the College should - revisit the new mitigating circumstances policy, to once again allow the board of examiners to be informed about the severity of a student's mitigating circumstances and/or the severity of their impact; and - continue to work to ensure that reluctance to scale by large amounts does not result in insufficient scaling being applied to modules where the assessment was significantly easier or more difficult than intended.

Please outline any examples of good or innovative practice in learning, teaching and assessment you would like to highlight with regards to these programme(s):
The programme (and especially the parts of it for which I am responsible) is quite traditional in structure and in methods of delivery and assessment. There is a lot of good practice, especially in the simple but important form of high quality and effective use of tried and trusted methods to deliver a traditional mathematics education.

Please provide an overview of the programme(s) and modules for which you are responsible as External Examiner, particularly in reference to the academic standards of the awards and/or the quality of learning opportunities provided to students:
The programme is a longstanding, respected and successful one in a traditional subject area. The methods of learning and assessment are chiefly those traditional in the field, but I do not view this as a weakness: there is a strong case here for focussing on perfecting established and highly effective methods, rather than attempting to innovate for innovation's sake. Academic standards are very high, with the students experiencing an intellectually challenging curriculum

which equips them well both for graduate study and for transition to careers in a variety of fields.

Departmental Response:

Overall Confidence Statements

The degree awarding body is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
The assessment process measures student achievement rigorously and fairly against the intended learning outcomes of the programme and is conducted in line with the College's policies and regulations.	Yes
The academic standards and the achievements of students are comparable with those in other degree awarding bodies of which you have experience.	Yes

Name and Position of Departmental Respondent:	
Date:	

External Examiner Report (2018-19 Academic Year)

Name of External Examiner	Ionica Emilian Parau
Name of Programme	BSc in Mathematics

Programme and Module Information (supplied directly or via a link to an online portal):

Did you receive programme handbooks/specifications (including programme learning outcomes)?	Yes/All
Did you receive syllabus or module descriptors including learning outcomes at module level?	Yes/All
Did you receive details of the assessments?	Yes/All
Did you receive sufficient Information about the programmes/modules in order to fulfil your role?	Yes/All

Departmental Response:

Programme and Curriculum Design:

Please comment on the balance and content of the degree programme(s) in relation to stated learning outcomes:
The BSc/MSci Mathematics programmes are balanced, with content covering most of the Pure, Applied, Statistics and Computational areas, ensuring the achievement of learning outcomes.

Please comment in the coherence and currency of the programmes and the appropriateness of compulsory modules/units in relation to stated learning outcomes:
The compulsory core modules in the first two years are coherent and are a good basis for the optional modules in the last year(s). They are adequate and similar to other BSc/MSci programmes in the country.

Please comment on the suitability of the programme design in relation to the following, where applicable: *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements
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The programme design follows the Maths subject benchmarks.

Where applicable, please comment on the relevance and integration of placements (provision at a Placement Provider, for example, undergraduate Year Abroad or Year in Industry; placement activity contributing to delivery of a postgraduate project) to the overall programme and their contribution to the programme learning outcomes:

The Year Abroad is very valuable and offer an excellent contribution to the overall Mathematical education of students.

Where applicable, please comment on the relevance and integration of any collaborative modules (modules undertaken at other approved UK HEIs) to the overall programme and their contribution to the programme learning outcomes:

N/A

Assessment Strategy:

Please comment on the rigour, appropriateness and overall quality of the methods of assessment (including unseen written papers, essay/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.

Please comment on the balance and comparability of assessment methods across modules of the same level:

As in the previous years, the assessment methods were comparable (exams, CW or projects) and of similar standard overall for the modules of the same level.

Please comment on the suitability of the overall assessment load for the programme:

The overall assessment load for the programme is suitable for this type of programs in Mathematics.

Departmental Response:

Drafting of Assessments:

Did you receive all of the necessary draft assessments for comment/approval?

Yes/All

Were the nature and level of the tasks appropriate?	Yes/All
Were suitable arrangements in place to consider your comments on the draft assessments?	Yes/All
Did you receive feedback on your comments?	Yes/All
I have received the draft assessment well in advance and I had the opportunity to comment on them. At the meeting before the exam I could see that the lecturers have acted upon my comments.	

Marking and Moderation (of examination scripts, assessed coursework, dissertation/project reports, etc.)

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/All
Was the general standard and consistency of marking appropriate?	Yes/All
Was there evidence that assessed work had been moderated internally, either through check marking or second marking?	Yes/All
Were the scripts marked in such a way as to enable you to see the reasons for the award of marks given?	Yes/All
The dissertation/projects have been marked independently by two markers. The moderation panel then decided the final mark, paying special attention to the cases where the difference between two markers was significant. The fact that the two markers didn't have to agree a mark between them, and the moderation panel saw the raw marks of them is very positive. On the exam scripts, the marks have been checked by a second person.	

Practical Examinations:

Were satisfactory arrangements made for the conduct of practical examinations?	N/A
Was the general standard and consistency of marking appropriate?	N/A

Oral Examinations:

Were satisfactory arrangements made for the conduct of oral assessments (e.g. presentations, poster presentations, etc...)?	Yes/All
Was the assessment of such work appropriate and consistent?	Yes/All

Please comment on the suitability of marking schemes/criteria and, where appropriate, model answers and the consistency with which these were applied:

The marking schemes and the model answers were suitable and they were applied consistently.

Please comment on the suitability of procedures for marking and moderation and the consistency with which these were applied:

The marking and moderation was done in a consistent way across the modules.

Please comment as to whether grade boundaries for the assessments are set at the appropriate level and applied consistency:

The grade boundaries were at the appropriate level in most cases, with the help of PTEM system. The Internal Exam Board had overseen this process with very good results.

Please comment on 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 assessment process is well designed and they fulfil very well the job of measuring the student achievement.

Programme Content Which Has Been Delivered and Assessed by Another Institution:

	Placement Activity (e.g. some or all of an undergraduate study abroad plan)	Collaborative Modules (modules undertaken at local partner institutions)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	Yes/All	N/A
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	Yes/All	N/A
Was any such provision discussed at the Board of Examiners, particularly in relation to progression/award decisions, overall value and consistency with regards to the programme(s) of study?	Yes/All	N/A

Departmental Response:

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting?	Yes/All
Was the meeting conducted to your satisfaction?	Yes/All
Were you satisfied with the recommendations of the Board of Examiners?	Yes/All
The exam board meetings were conducted very professionally, giving us all the information we needed in reaching decisions.	

Were arrangements for degree classification (e.g. the scheme for the award of honours [UG] / the scheme for the award of pass, merit or distinction [PG]) are set at the appropriate level and applied consistently?
Yes, the arrangements for degree classification are set a the right level and were applied consistently.

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) were considered and applied fairly and equitably to all students?
The change in the report of mitigating circumstances for various students, by removing the level of severity (0,1,2 from before) made the work of the Exam Board more difficult in reaching decisions.

Was consideration of borderline performances conducted fairly and equitably and in line with College Procedures?	
As in the previous years, the borderline candidates were considered in great detail, with External looking in great detail at their exam scripts and projects. They were treated fairly and equitably. As mentioned before, the change in regulation for mitigating circumstances made the discussion of some borderline cases more complicated than before.	
If viva voce of potential borderline candidates were used,	
Were suitable arrangements made for you to conduct viva voce examinations?	N/A
Was the purpose of conducting a viva voce examination and the criteria for selecting candidates for a viva voce clear?	N/A

Departmental Response:

Academic Standards:

Please comment on the appropriateness of the standards set for the awards in relation to the Framework for Higher Education Qualifications, national subject benchmarks and any Professional Statutory and Regulatory Body (PSRB) or accrediting body requirements where relevant:

The standards are appropriate for BSc/MSc in Mathematics, as defined on the QAA Benchmarks for Mathematics.

Please comment on 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 at Imperial College London are very high and they compare favourably with standards at different Universities in UK.

Please comment on the extent to which academic standards and standards of student performance across modules within the programme(s) are comparable:

There are some modules where students performed better than anticipated, and some where the results were poorer. However, the PTEM scaling removed most of these differences, so overall the student marks on the modules were comparable.

(For External Examiners not 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, they are.

Departmental Response:

Response to Your Last External Examiner Report:

Did you receive the formal written response to your previous External Examiner report (if applicable)	Yes/All
Are you satisfied that the issues raised in the previous report have been or are being addressed?	Yes/All

Again, the communication with Imperial College in relation to the Exams papers was excellent. The Board of Examiners was very well organised. The lunch with students before the Exam Board revealed that they are quite happy with how the programme and the modules are run at ICL. They appreciated the tutorials with lecturers and with peer students from higher years.

Departmental Response:

Overview, Recommendations and Good Practice:

Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):

The programme seems to be running smoothly, so no suggested changes.

Please outline any examples of good or innovative practice in learning, teaching and assessment you would like to highlight with regards to these programme(s):

The diversity of optional modules in Year 3 and 4 is a very strong point of the programme. Also, the diversity of the dissertation/projects topics which is offered in Year 4 in Pure/Applied/Statistics is very valuable.

Please provide an overview of the programme(s) and modules for which you are responsible as External Examiner, particularly in reference to the academic standards of the awards and/or the quality of learning opportunities provided to students:

The 3rd/4th year Applied modules which are in my area of responsibility offer plenty of opportunities for students to have a very good introduction in diverse areas of Applied Mathematics. Overall, the BSc or MSci in Mathematics at ICL are of high academic standard.

Departmental Response:

Overall Confidence Statements

The degree awarding body is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
The assessment process measures student achievement rigorously and fairly against the intended learning outcomes of the programme and is conducted in line with the College's policies and regulations.	Yes
The academic standards and the achievements of students are comparable with those in other degree awarding bodies of which you have experience.	Yes

Name and Position of Departmental Respondent:	
Date:	