

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Gareth Alexander
Name of Programme	BSc Mathematics; MSci Mathematics; MSc in Applied Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	
Was the appointment made in a timely manner?	
If you attended an induction day, do you consider that arrangements were sufficient?	
Did the department provide an effective induction to the programme and the specific requirements of your role?	

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

No response required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always
The modules I look at include traditional exam assessments and pure coursework, e.g. data analysis and programming, and extended research projects. I think the mix is excellent.	

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

No response required

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?	Most/Usually

The assessments were uniformly of a high standard and very well prepared. This made the checking process very easy.

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

Did you receive a sufficient number of scripts and other assessed work across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	Yes/All
Significant changes from usual were necessary because of covid, both to exam marking and to the examiners' checking process at the exam board. I thought that what was done worked very well and served to ensure the integrity of the examinations. It was also in line with measures taken at my own institution.	

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always
I thought the quality and uniformity of mark schemes and model answers this year was an improvement on the previous year; and were very good.	

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always
The processes were explained thoroughly and applied with ample consideration of each borderline candidate individually. The process took longer than usual but I was pleased that this was done this year to ensure that the correct decisions were made.	

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	Yes/All
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	Yes/All

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:

--

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:

--

We thank the External for these positive comments. We will try to ensure that responses to Externals' comments are documented for all modules.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always
The board was held virtually this and ran very smoothly.	

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) considered and applied fairly and equitably to all students?	Yes/Always
The processes involving mitigating circumstances were an issue last year (not the fault of the department). This year I felt things ran much better.	

No response required, but we note the comment about the improvement in the application of mitigating circumstances policy.

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

No response required

Overview, Recommendations and Good Practice:

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):

I think the courses overall represent very high-quality teaching but would like to mention two that particularly caught my attention this year: The modules M3A50 Methods of Data Science and MA54 Introduction to Machine Learning were well-prepared with high quality coursework assessments. and are excellent modules to be offering given the developments in these areas and potential job opportunities.
Also, the final year projects are excellent, both in the breadth of topics offered and the quality of undergraduate research achieved.

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

We thanks the External for these positive comments and for his work for the Department in 19/20.

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

Departmental Response: n/a

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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

In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes
I thought the standard of the modules, and exams, was uniformly excellent and I have no doubts that students at Imperial are getting a first class education in mathematics. The proportion of students awarded firsts continues to be high. This is true at other universities also, including my own, but nonetheless something to continue to be aware of and consider.	

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics
Date:	22 January 2021.

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Peter Giesl
Name of Programme	MSc Applied Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	Yes/All
Was the appointment made in a timely manner?	Yes/All
If you attended an induction day, do you consider that arrangements were sufficient?	Yes/All
Did the department provide an effective induction to the programme and the specific requirements of your role?	Yes/All

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: Nothing to respond to.

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response:

Nothing to respond to.

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 across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	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...)?	Yes/All
Was the assessment of such work appropriate and consistent?	Yes/All

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
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

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:

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:

<u>Departmental Response:</u>
Nothing to respond to.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
The exam board was prepared and run very well and efficiently.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: Nothing to respond to.

Response to Your Last External Examiner Report:

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

Departmental Response: Nothing to respond to.

Overview, Recommendations and Good Practice:

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 marking of the dissertations and the moderation between the two markers was done very well and the procedures were robust to ensure a fair outcome.

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

The marking form for the dissertations is designed and is used very well - however, there is one point about the student initiative which the second marker cannot judge (and there were comments along those lines on the forms). I would recommend to redesign this part of the form, perhaps by letting only the supervisor allocate a mark for the student initiative.

Departmental Response: We thank the External Examiner for these comments. Following these remarks, we intend to redesign the marking forms.

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

Departmental Response: Nothing to respond to.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

--

Name and Position of Departmental Respondent:	Dr Ory Schnitzer, Senior Lecturer in Applied Mathematics, Applied MSc Programme Director
Date:	10/02/2021

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Peter Giesl
Name of Programme	BSc and MSci Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	Yes/All
Was the appointment made in a timely manner?	Yes/All
If you attended an induction day, do you consider that arrangements were sufficient?	Yes/All
Did the department provide an effective induction to the programme and the specific requirements of your role?	Yes/All

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: No response required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always
The assessments worked also well in the special circumstances with COVID and I found that the outcomes were not negatively affected.	

Is the assessment load comparable and balanced across modules of the same level?	Most/Usually
Some modules have coursework only assessments, and in some of them students tend to achieve higher marks. Having different types of assessments for different modules is no problem, but in particular for coursework only modules one needs to pay attention to including a challenging aspect.	

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: Coursework - only modules should indeed have an open-ended, challenging aspect to them in order to produce a spread of marks. The Department has been aware of this for several years, but it is still definitely work-in-progress.

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
My comments were taken into account and responded to very well.	

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

Did you receive a sufficient number of scripts and other assessed work across the full grade profile?	Most/Usually
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?	Most/Usually
Was the justification of marks clear on the scripts that you reviewed?	Yes/All
There was 1 module with coursework-only assessment, where - due to the specific COVID 19 situation - the department could only provide me with the submitted (not the marked) coursework submissions, as they were marked in hardcopy. I am sure that next year this will revert to normal.	

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	Yes/All
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	Yes/All

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:

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:

Departmental Response: All scripts can be made available should they be required for confirmation of the moderation process.

--

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: No response required.

Response to Your Last External Examiner Report:

Did you receive the formal written response to your previous External Examiner report (if applicable)	
---	--

Are you satisfied that the issues raised in the previous report have been or are being addressed?	

Departmental Response: n/a

Overview, Recommendations and Good Practice:

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 range of modules offered to students is very broad and enables them to specialise in their chosen area. The range of final year projects likewise is excellent. The marking of exam scripts was done to a high standard with clear indications of why marks were awarded.

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

If online submissions continue next academic year, I would recommend replacing turnitin with a more appropriate platform for marking pdf submissions (for Mathematics); the submission of each question separately looks burdensome for students, it was difficult to read the markers' comments for me and it must have been time consuming to mark them for markers. While the project marking was clear and transparent, I observed that some projects were considerably shorter (around 25 pages) than others (50 pages, as stated in the guidelines); this seemed to depend on the area. It would be nice to see more consistency across different areas.

Departmental Response: The College is likely to use Turnitin/ BB again in 20/21. During the recent reassessment period some modifications were made which improved some, but not all, aspects for staff. We can remind students and supervisors of guidelines on project length; other things being equal, we would normally expect a short project to receive lower marks.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics.
Date:	12 October 2020.

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Jim Griffin
Name of Programme	MSc Statistics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	
Was the appointment made in a timely manner?	
If you attended an induction day, do you consider that arrangements were sufficient?	
Did the department provide an effective induction to the programme and the specific requirements of your role?	

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?	Most/Usually
Did you receive sufficient information about the programmes/modules in order to fulfil your role?	Yes/All

Departmental Response:

Many thanks to the external examiner for the overall positive comments.

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response:

Many thanks to the external examiner for the overall positive comments

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 across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	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...)?	Yes/All
Was the assessment of such work appropriate and consistent?	Yes/All

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	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	

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:

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:

Departmental Response: Many thanks for the positive feedback.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response:

Many thanks for the positive comments.

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:

Many thanks to the external examiner for recognising all our efforts.

Overview, Recommendations and Good Practice:

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):

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

I have a couple of suggestions around the examination process:

- 1) This year's exam board was unusual due to the global pandemic and its effects on assessment. In response, the preliminary board considered comparisons of module marks. I have a couple of suggestions around the calculation and presentation of these marks:**
 - graphs comparing each module marks to the year average marks excluding the module under consideration.
 - subtract a 45 degree line from these graphs so that y-axis is module - year average.
- 2) It would be useful for the external examiner to see the scaling of module marks in the previous year. This would help the examiner to understand how students performed on the previous year's exam and see what adjustments to the level of the exam have been made.**

Departmental Response:

We would like to thank the EE for his valuable comments regarding the examination process. We will take their suggestions into account when running this year's liaison panel for scaling the module marks.

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

Students have performed extremely well across my four years as external examiner. The major innovation in the programme during that time is the introduction of a data science stream. This is timely and has been well-implemented. I also think that it will be very attractive to prospective students. The department has responded well to my suggestions for minor changes to the programme including improved consistency of marks across coursework only and exam-based modules. The pandemic occurred during my final year as external examiner and had a substantial effect on assessment. The team running the MSc responded well to this and worked hard to balance maintaining standards with fairness to all students.

Departmental Response:

We would like to thank you for your overwhelmingly positive comments. We are pleased to know that you think that the MSc in Statistics runs very well.

We would like to thank you for all your hard work these past 4 years. We would like to thank you for all the advice/suggestions that you have offered to us in these four years.

Thank you very much.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	
Date:	

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Christopher Jennison
Name of Programme	BSc / MSci Mathematics Programmes

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: No response required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Most/Usually
Statistics is a branch of Mathematics which has its origins in applications. These days, with the growth of "analytics" and "data science", the use of statistical methods in data analysis, modelling and decision making is greater than ever before. (One only has to look at the wide array of data about the Covid19 epidemic --- and the difficulty in interpreting these data and making good planning decisions.) The curriculum at Imperial College is strongly mathematical and I would recommend a more balanced mixture of theory and application. It is not clear to me that graduates of the BSc and MSci degree courses are well prepared to collect and analyse data in the real world. The skills involved in such work go beyond the "mathematics" of statistical models and theory of statistical inference. I believe that a change of emphasis in some units and adding more applied units that involve data analysis using R (or maybe Python) would challenge the students and lead to graduates who are much better prepared to apply	

their knowledge in the outside world.

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always
The subject benchmarks in mathematics and criteria for professional accreditation are broadly defined. Thus, my comments on the curriculum content stand, even though benchmarks, etc., are met.	

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: Regarding Curriculum content: Curriculum review has involved a major revision of the y1 and y2 Statistics curriculum which embeds the use of R for data analysis from y1. These changes will feed into modifications to the y34 offerings from 21/22. We also note that we have introduced a new module, Statistical Learning, in which students use up-to-the-minute methodology to solve practical problems. Other relevant modules Data Science and the new Network Science module exist outside the Statistics External's remit. Additionally, some modules have coursework elements in which students have more opportunity to show a practical understanding of the methods they are using.

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
I found myself writing lengthy reports to convey my comments and suggestions. I would have preferred it if the internal process had already dealt with issues that I raised.	

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

Did you receive a sufficient number of scripts and other assessed work across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	Yes/All
Moderation of marking is achieved by external examiners reading scripts of candidates at degree class borderlines. Whether any particular unit is taken by one of these candidates is a matter of chance. I believe it would be more efficient for examiners to moderate a unit by looking at scripts with marks at different points on the scale, regardless of whether the candidates writing these scripts are borderline.	

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always
---	------------

--

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	Yes/All
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	Yes/All

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:

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:

Departmental Response: The review of scripts described by the External is more concerned with accurate classification of borderline candidates. As the Department moves to a more algorithmic approach to classification, as required by College policy, it would be natural to re-focus the role of the Externals to one of scrutiny of grade boundaries for individual modules, though the logistics of this will need to be thought through carefully.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always
This year, the final examiners' meeting was held online. The arrangements worked very well, despite the challenge of working with new technology at short notice.	

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: No response required.

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: No response required

Overview, Recommendations and Good Practice:

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):
Good practice: MSci students undertake a final year project. This is usually a substantial piece of work. Some of the reports produced are impressive, showing excellent ability and a good degree of independence.

Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):
With regard to assessment I note that the exams for some units do not test students' depth of understanding of the new material in that unit. Rather, the challenging part of a question may involve using more general mathematical techniques to solve a problem arising in the context of the unit. I would recommend a greater focus on testing how well students understand a unit's content, per se.

Departmental Response: The External makes an interesting distinction between general technical facility which is completely fundamental for much of mathematics, and the application of it in the context of a particular module. The former is embedded in the programme level outcomes, but we should take care that it does not obscure the module level outcomes. We can pass on this point to staff.

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

A major change happened early in my term of office. This led to a more direct relation between marks for exam papers and degree classes, and this was a very positive step.

Other aspects of course provision and student achievement remained broadly constant over the period.

Departmental Response: We would like to thank Professor Jennison for his work, help and advice over the last 4 years.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics.
Date:	12 October 2020.

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Mark Kambites
Name of Programme	MSc Pure Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	
Was the appointment made in a timely manner?	
If you attended an induction day, do you consider that arrangements were sufficient?	
Did the department provide an effective induction to the programme and the specific requirements of your role?	

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: none required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Most/Usually
The usual methods of assessment for the programme are very much suitable. The COVID-19 crisis necessitated some rapid and unexpected changes to assessment methods. These were handled as well as possible in very difficult circumstances, but inevitably resulted in some aspects which would be better avoided given more time to plan. Most notably, papers which were set to be sat under closed conditions were used unchanged as open-book exams: if open book exams are to be used in future then it would clearly be better to set them as such from the start (allowing the setter to take care that, for example, answers are not readily obtained by googling.)	

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: I certainly see the point of this comment. The 2020 exams were open-book but my understanding is that it was a college decision to set them as usual. I expect to have a robust debate of how best to set exam in the future if they will continue to be remote.

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 across the full grade profile?	Most/Usually
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
Was the justification of marks clear on the scripts that you reviewed?	Yes/All
In respect of examinations there were no problems at all in this regard, but dissertation reports were only made available to external examiners the night before the examination board meeting, leaving no real time to review them before the meeting. I understand this may be due to COVID disruption, but in future years earlier access to dissertations would be very helpful.	

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
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

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:

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:

Departmental Response: I acknowledge late communication of written projects to the externals. Due to the covid pandemic it was harder than usual to ensure that marking is done within the required time. The delay was caused by an unresponsive project supervisor. We will send a reminder to all supervisor insisting that marking be done promptly.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: none required

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: none required

Overview, Recommendations and Good Practice:

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 is an excellent example of a traditional, academically rigorous, high quality masters degree programme in pure mathematics.

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

The College (in common with most HEIs) clearly needs to focus right now on ensuring that it can continue to offer high quality programmes in the unusual and challenging situation likely to prevail for the next academic year or so. This is likely to entail a remarkably rapid degree of innovation in teaching (some of which may have long-term benefits), and it is probably not the right time to contemplate further changes on top of all this!

Departmental Response: There is an on-going curriculum review. I expect the externals to be updated about the new programme specifications once these are confirmed.

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

Departmental Response: none required

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor Alexei Skorobogatov, MSc Pure Mathematics Programme Director
Date:	8 January 2021

External Examiner Report (2019-20 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: No response required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always
The content is fairly typical of a traditional, rigorous academic mathematics degree.	

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always
The only relevant external benchmark to my knowledge is the QAA subject benchmark for MSOR; the programme is very much suitable in relation to this.	

--

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always
The usual methods of assessment for the programme are very much suitable. The COVID-19 crisis necessitated some rapid and unexpected changes to assessment methods. These were handled as well as possible in very difficult circumstances, but inevitably resulted in some aspects which would be better avoided given more time to plan. Most notably, papers which were set to be sat under closed conditions were used unchanged as open-book exams: if open book exams are to be used in future then it would clearly be better to set them as such from the start (allowing the setter to take care that, for example, answers are not readily obtained by googling.)	

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: We thank the External for these comments. We will be using open-book TRAs again this year and setters will be asked to ensure that the design of questions takes this into account.

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 across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always
---	-------------------

I was pleased to see the PTEM scaling process generally used effectively to compensate for inevitable differences in the absolute difficulty level of different modules. (This was an improvement on previous years, when I occasionally felt that reluctance to scale by large amounts meant that "outlier" modules were not adjusted by enough.)

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	Yes/All
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	No/None
The only relevant content here (to my knowledge) is the year abroad: students who had taken this were indicated by their programme code. There was no specific discussion of these students at the board (although I am not sure this was necessary).		

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:

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:

Departmental Response: We appreciate the External's support for the way the Department's scaling system was operated this year. Year-abroad marks are not usually available at the time of the main exam board in June.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
I thought the "online" exam board worked remarkably well, and would like to record my thanks to everyone involved in organising and running it, for the hard work they must have put in.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

Were the College procedures governing mitigating circumstances and/or academic misconduct (e.g. plagiarism cases) considered and applied fairly and equitably to all students?	Yes/Always
I repeat my comment of last year (for the attention of the College rather than the Department, since it concerns the procedures themselves rather than their application): 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 year. 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.	

Departmental Response: We thanks the external for the positive comments on our internal processes. We will again highlight at Faculty and College level his concerns about MC procedures and continue to work in the Department to ensure that we can deliver fair outcomes within the processes set at College level.

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?	Most/Usually
I am satisfied that the Department has done everything in its power to address issues raised. One or two issues I have raised concern College procedures (as distinct from the way they are applied by the Department), and are therefore not within the Department's power to address. In these circumstances it might be helpful if there was a procedure for the external examiner to receive a response directly from College level.	

Departmental Response: We ask that the External receives a response from College on this point.

Overview, Recommendations and Good Practice:

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):
I repeat my remarks of last year: 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 outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):
The College (in common with most HEIs) clearly needs to focus right now on ensuring that it can continue to offer high quality programmes in the unusual and challenging situation likely to prevail for the next academic year or so. This is likely to entail a remarkably rapid degree of innovation in teaching (some of which may have long-term benefits), and it is probably not the right time to contemplate further changes on top of all this!

Departmental Response: We thank the External for these comments; also for his support and work for us over the last year. The support for tried and trusted methods is noted!

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics
Date:	12 October 2020.

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Konstantinos Kardaras
Name of Programme	MSc Mathematics and Finance

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	
Was the appointment made in a timely manner?	
If you attended an induction day, do you consider that arrangements were sufficient?	
Did the department provide an effective induction to the programme and the specific requirements of your role?	

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:
None Required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response:
None Required

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 across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	Yes/All	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	Yes/All	Yes/All
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	Yes/All

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:

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:

<u>Departmental Response:</u> None Required
--

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response:
None Required

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:
None Required

Overview, Recommendations and Good Practice:

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):

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

Departmental Response:
None Required

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

The programme has seen quite a number of changes since 5 years ago, and all on the positive side. There has been an amazing amount of work from the part of the director (Dr. Antoine Jacquier) in advancing the MSc in the 5 years that I have been an external examiner, and this should be documented and recognised.

While the standard has always been very high, at the same time there has always been push for novel elements, ones that developed and enhanced the student experience. Especially, I would like to mention the vast network built with industry and alumni, as well as the introduction of many new short and practical courses, which will greatly benefit the programme in the long run.

I have enjoyed my tenure during these years, and only hope I could continue, as the collaboration has been more than ideal.

Departmental Response:
None Required

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.

Yes

In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Jack Jacquier
Date:	8/1/2020

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Eugene Lytvynov
Name of Programme	MSc Pure Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	Yes/All
Was the appointment made in a timely manner?	Yes/All
If you attended an induction day, do you consider that arrangements were sufficient?	Yes/All
Did the department provide an effective induction to the programme and the specific requirements of your role?	Yes/All

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: none required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: none required

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?	Most/Usually

--

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

Did you receive a sufficient number of scripts and other assessed work across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	Yes/All

Practical Examinations:

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

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
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

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:

--

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:

--

Departmental Response: none required

--

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
The virtual Exam Board was very effectively organised and conducted.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: none required

Response to Your Last External Examiner Report:

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

Departmental Response: none required

Overview, Recommendations and Good Practice:

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):

Due to Covid-19, all students of UK universities took their May-June examinations at home. With exception of the Imperial College, all the institutions that I am aware of have significantly increased the allowed time for sitting an exam, from 6 hours up to 24 hours. I personally saw no particular reason for doing this. I was very pleased to learn that the exams at the Imperial had the usual length plus 30 mins to upload the scripts.

I would like to praise the quality of supervision of MSc projects. Top projects were of exceptional quality: excellent presentation, covering a lot of difficult material from hard research papers, computation of new examples, discussion of various new directions to explore. Those projects that scored between 50% and 60% were still very solid and demonstrated the student's good understanding of the chosen topic.

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

For virtual 'open book' exams in the current academic year, I would suggest to exclude straightforward theoretical questions which can be easily copied from Lecture Notes or recommended books. Instead one may use theoretical questions which require from the student to think about them.

Departmental Response: I certainly agree with the last suggestion. The 2020 exams were open-book but my understanding is that it was a college decision to set them as usual. I expect to have a robust debate of how best to set exam in the future if they will continue to be remote.

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

Departmental Response: none required

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor Alexei Skorobogatov, MSc Pure Mathematics Programme Director
Date:	8 January 2021

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Eugene Lytvynov
Name of Programme	BSc/MSci Mathematics, BEng/MEng Joint Mathematics and Computing

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	Yes/All
Was the appointment made in a timely manner?	Yes/All
If you attended an induction day, do you consider that arrangements were sufficient?	Yes/All
Did the department provide an effective induction to the programme and the specific requirements of your role?	Yes/All

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: No response required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: No response required

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?	Most/Usually

--

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

Did you receive a sufficient number of scripts and other assessed work across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	Yes/All

Practical Examinations:

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

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
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

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:

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:

Departmental Response: We will try to ensure that responses to Externals' comments on draft exam papers are always available.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
Despite the unusual format of virtual Exam Boards, they were very effectively organised and conducted.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

Departmental Response: We thanks the External for these positive comments.

Overview, Recommendations and Good Practice:

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):
Due to Covid-19, all students of UK universities took their May-June examinations at home. With exception of the Imperial College, all the institutions that I am aware of have significantly increased the allowed time for sitting an exam, from 6 hours up to 24 hours. I personally saw no particular reason for doing this. I was very pleased to learn that the exams at the Imperial had the usual length plus 30 mins to upload the scripts. As an external examiner, I had a possibility to meet on Teams with a group of students and all of them said that this arrangement had been

completely adequate. If in future, the UK universities will again need to ask their students to sit exams at home, they may use this experience of not increasing the standard length of an exam.

At all the UK universities that I am aware of, students of MSci or MMath start working on their project at the beginning of their final year of studies and submit projects in April-May, so that they work for about 7-8 months on it. The MSci students of Mathematics at the Imperial start working on project in the summer, and as a result they work on it for about 11 months. Even if a student has a job during the summer months, they are still able to achieve some reasonable progress in preparation of their project. I was extremely pleased with the overall quality of the submitted MSci projects.

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

If there will be a further need to run virtual 'open book' exams, I would suggest to exclude from exam papers those questions to which an answer may be given by just looking at the lecture notes. Typical examples of such questions would be 'Give the definition of XXX' or 'Formulate the theorem XXX'.

Departmental Response: We thank the External for the positive comments about the exam arrangements this year. We will be looking closely at how to produce exam papers which are better suited to an open-book format (which will again be running this year).

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics.
Date:	12 October 2020.

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Emilian Parau
Name of Programme	Applied Mathematics

College Induction and Appointment Process:

Did you find the appointment process fit for purpose?	
Was the appointment made in a timely manner?	
If you attended an induction day, do you consider that arrangements were sufficient?	
Did the department provide an effective induction to the programme and the specific requirements of your role?	

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:

Nothing to respond to.

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response:

Nothing to respond to.

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 across the full grade profile?	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
Was the justification of marks clear on the scripts that you reviewed?	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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always
Yes/Always	

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
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

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:

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:

<u>Departmental Response:</u>
Nothing to respond to.

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
---	----------------

Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
The Exam Board process went very smoothly, having all the informations provided to me in time.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
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

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

<u>Departmental Response:</u> Nothing to respond to.
--

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: Nothing to respond to.

Overview, Recommendations and Good Practice:

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 number of topics offered for MSc projects is very large. As always the quality of some of the MSc projects is outstanding.

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

The number of optional modules is impressive, covering many areas of Applied Mathematics, so this should not be reduced.

Departmental Response:

We thank the External Examiner for these comments. There is indeed no intention of limiting the range of topics covered by the programme. On the contrary, new hiring in mathematical biology are expected to allow offering new modules covering additional areas of applied mathematics.

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

The structure of the MSc was largely unchanged during my tenure. The marking of exams was changed at some point, which was an improvement, being made more uniform. The quality of MSc projects is very high. The topics of MSc projects cover large areas of Applied Mathematics. Imperial College has implemented my recommendations during these 4 years. Overall, I had an excellent experience as External at Imperial.

Departmental Response:

We thank the External Examiner for his service.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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

In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Dr Ory Schnitzer, Senior Lecturer in Applied Mathematics, Applied MSc Programme Director
Date:	10/02/2021

External Examiner Report (2019-20 Academic Year)

Name of External Examiner	Emilian Parau
Name of Programme	BSc and MSci 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: None required

Programme and Curriculum Design:

Is the content of the degree programme balanced in relation to stated learning outcomes, e.g. the compulsory modules contain the material you would expect?	Yes/Always

Is the programme coherent and up-to-date with the expectations of the subject field?	Yes/Always

Do you consider that the programme design is suitable in relation to the following, where applicable? *relevant subject benchmarks, *Professional Statutory Regulatory Body (PSRB) *Accrediting Body requirements	Yes/Always

Assessment Strategy:

In your opinion, overall, are the methods of assessment (including unseen written papers, essay/dissertations, orals, clinical examinations) suitable in relation to the level of study and the intended learning outcomes?	Yes/Always

Is the assessment load comparable and balanced across modules of the same level?	Yes/Always

Was the overall assessment load for the programme suitable?	Yes/Always

Departmental Response: None required

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 across the full grade profile?	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

Was the justification of marks clear on the scripts that you reviewed?	Yes/All
The moderation of projects was very clearly explained on the documents I received	

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

Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently?	Yes/Always

Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations?	Yes/Always

Were the grade boundaries for the assessments set at the appropriate level and applied consistency (i.e. the standard required to achieve the threshold mark at each grade boundary)?	Yes/Always

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

	Collaborative Modules (modules undertaken at local partner institutions)	Placement Activity (e.g. some or all of an undergraduate study abroad plan)
--	--	---

Was it clear in advance of the Board that students under consideration had undertaken content away from the College?	N/A	Yes/All
Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?	N/A	Yes/All
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	Yes/All
The Year Abroad programme is run very well despite this year being made harder by Covid19.		

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:

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:

<u>Departmental Response: None required</u>

Board of Examiners Meeting:

Were you invited to attend the meeting?	Yes/All
Were you able to attend the meeting, either in person or via video-conferencing?	Yes/All
Was the meeting conducted appropriately, in your opinion?	Yes/All
Were you satisfied with the decisions of the Board of Examiners?	Yes/All
The online version of Exam Board was organised very well this year. The External Examiners could interact with other External Examiners, members of the Maths Department and students.	

Were the arrangements for degree classification appropriate and applied consistently?	Yes/Always
---	------------

--

Was consideration of borderline performances conducted fairly and equitably, and in line with College procedures?	Yes/Always
The discussion of borderline candidates and of the recommendations of the internal examiners is very useful on making final recommendations before the Board of Examiners.	
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

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

Departmental Response: We thank the External for these positive comments

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: None required

Overview, Recommendations and Good Practice:

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 online assessment for a limited amount of time, plus some added time for uploading, went smoothly.

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

The BSc/MSci in Mathematics is in the middle of a Curriculum change. So far, the Year 1 changes seem positive.

Departmental Response: None required

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

Since I started my tenure as an External Examiner there were a number of changes, such as having a uniform top mark for each question and implementing a new Curriculum, which started this year. This year the assessments had to be changed at very short notice to be online. Overall, the changes I have seen in the last 4 years had a positive impact on the assessment process. The standard of students performance is very high, and in particular the quality of some MSci projects is impressive. My minor recommendations I had in the last 4 years have been implemented. The communication with Imperial before and at the Board was excellent. Overall, my experience as External Examiner was a very positive one.

Departmental Response: We note these very positive comments. We would like to thank Professor Parau for his extremely helpful input and work as an external examiner here over the last 4 years.

Overall Confidence Statements

In my opinion, Imperial College London is maintaining the threshold academic standards set for its awards in accordance with the FHEQ and relevant Subject Benchmarks Statements.	Yes
In my opinion 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
In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.	Yes

Name and Position of Departmental Respondent:	Professor David Evans, DUGS Mathematics
Date:	12 October 2020.

