

## External Examiner Report (2020-21 Academic Year)

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|---------------------------|-----------------------------------------------------------------|
| Name of External Examiner | Gareth Alexander                                                |
| Name of Programme         | Mathematics (BSc, MSci; Applied); Mathematics Ancillary Courses |

### Appointment Process:

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|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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:

|                                                                                                                                                             |            |
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| 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 |

**The module provisions of the applied programme is excellent.**

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

#### Assessment Strategy:

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| 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? | <b>Yes/Always</b> |
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| Is the assessment load comparable and balanced across modules of the same level? | <b>Yes/Always</b> |
|----------------------------------------------------------------------------------|-------------------|

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|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
|-------------------------------------------------------------|-------------------|

**Departmental Response: None required**

#### Drafting of Assessments:

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

**The exam papers were uniformly very well prepared, with well constructed questions and detailed model solutions. This made the process of checking the exams painless; any small comments I made were always responded to promptly.**

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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|-------------------------------------------------------------------------------------------------------------|-------------------|
| Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently? | <b>Yes/Always</b> |
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|---------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations? | <b>Yes/Always</b> |
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| 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)?    | <b>Yes/Always</b> |
| <b>This year I paid particular attention to the project work and found the projects that I looked at to be excellent and of a very high standard, consistent with the marks awarded.</b> |                   |

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?                                                                          | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
| Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?                                                                       | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
| 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? | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
|                                                                                                                                                                                               |                                                                          |                                                                             |

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? | <b>Yes/All</b> |
|-----------------------------------------|----------------|

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|---------------------------------------------------------------------------------------|-------------------|
| Were you able to attend the meeting, either in person or via video-conferencing?      | <b>Yes/All</b>    |
| Was the meeting conducted appropriately, in your opinion?                             | <b>Yes/All</b>    |
| Were you satisfied with the decisions of the Board of Examiners?                      | <b>Yes/All</b>    |
| Were the arrangements for degree classification appropriate and applied consistently? | <b>Yes/Always</b> |
|                                                                                       |                   |

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

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

**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) | <b>Yes/All</b> |
| Are you satisfied that the issues raised in the previous report have been or are being addressed?     | <b>Yes/All</b> |
|                                                                                                       |                |

**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):

**For the applied modules that I looked at the provisions and standards continue to be excellent and I did not find any concerns. I found this year that the examiner's reports were more detailed, and more uniform in standard, than in previous years and I thought this represented a very good improvement to your practices. I would like to say again this year that the provision offered through your ancillary modules is excellent.**

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

**Departmental Response: We thank the external for these positive comments.**

### 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: | <b>Chris Hallsworth, Director of Undergraduate Studies in Mathematics</b> |
| Date:                                         | <b>14/12/2021</b>                                                         |

## External Examiner Report (2020-21 Academic Year)

|                           |                         |
|---------------------------|-------------------------|
| Name of External Examiner | Tiziano De Angelis      |
| Name of Programme         | Mathematics and Finance |

### Appointment Process:

|                                                       |         |
|-------------------------------------------------------|---------|
| Did you find the appointment process fit for purpose? | Yes/All |
| Was the appointment made in a timely manner?          | 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 |



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

#### 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? | <b>Yes/Always</b> |
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| Is the assessment load comparable and balanced across modules of the same level?               | <b>Yes/Always</b> |
| <b>I made some specific comments when I reviewed the exam papers and I have nothing to add</b> |                   |

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|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
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| <b>Departmental Response:</b><br>None required |
|------------------------------------------------|

#### Drafting of Assessments:

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

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?                | <b>Most/Usually</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b>      |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b>      |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b>      |
|                                                                                                                      |                     |

Practical Examinations:

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

Oral Examinations:

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

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

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

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
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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:

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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:

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**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?                                                              | <b>Yes/All</b>    |
| Were you satisfied with the decisions of the Board of Examiners?                                                       | <b>Yes/All</b>    |
| Were the arrangements for degree classification appropriate and applied consistently?                                  | <b>Yes/Always</b> |
| <b>It emerged this year the need for clearer guidance on the award of prizes to the best students in the programme</b> |                   |

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

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

**Departmental Response:**

The department will clarify the prize details for the next years.

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:**

## 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):

**Assessment was of very high standards. Students' knowledge was tested thoroughly on both theoretical and applied aspects of mathematical finance. That includes some of the most recent developments of applications of machine learning and deep learning in finance.**

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

**It seems a very good programme already. Small comments I made in the review of exam papers may be helpful for the preparation of exam papers next year.**

### Departmental Response:

None required

## Final Exit Report:

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

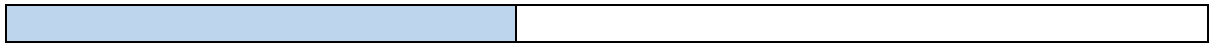
- \*any changes in standards of student performance over time
- \*major developments in the provision during your tenure
- \*the implementation of any recommendations for enhancement
- \* any other matters you consider appropriate

### Departmental Response:

## 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: | <b>Jack Jacquier &amp; Eyal Neumann, MSc Maths Finance Directors</b> |
| Date:                                         | <b>8/11/2021</b>                                                     |



## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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 |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Do you consider that the programme design is suitable in relation to the following, where applicable?<br>*relevant subject benchmarks,<br>*Professional Statutory Regulatory Body (PSRB)<br>*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 |
|                                                                                                                                                                                                                             |            |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Is the assessment load comparable and balanced across modules of the same level?                                                                                                                                                                                                                                                                       | Most/Usually |
| Some modules with only coursework assessments seem to still have higher marks on average, and sometimes the amount of coursework seems to vary between modules. This is less a problem for the marks due to the scaling but probably more for the student numbers in modules since it might be that some are more popular than others because of this. |              |

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

**Departmental Response:** Coursework-only modules such as Data Science and Scientific Computing are indeed popular with our cohort – perhaps to be expected given the current premium in the jobs market for the skills developed in these modules. The outstanding questions for the Department here are 1) how to ensure equitable scaling of such modules, 2) how best to structure deadlines so that workload is managed across all modules 3) how to guarantee academic integrity. These questions will be discussed within the Department’s Teaching Strategy Committee in the year ahead.

Currently, students are only able to take one coursework-only module each term, unless permission is sought from the Senior Tutor. This reflects the substantial workload for coursework-only modules during the term, which can impact other modules as well as the research project.

### 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 |
| <b>The marking and checking was done to a very high standard. My only comment is that due to the software used for marking (and submission) it is very hard to read. If next year's submissions are still online, it might be worth re-thinking the software (e.g. submitting each exam question separately and reading all comments at the end makes it hard to submit, mark and read).</b> |         |

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? | <b>Yes/Always</b> |
|                                                                                                             |                   |

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

|                                                                                                                                                                                                                               |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)?                                         | <b>Yes/Always</b> |
| <b>I am perfectly happy with the standards for the grades, however, there is a very high number of First class degrees (more than half of the students). It might be that the scaling at the high end could be looked at.</b> |                   |

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?                                                                          | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
| Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?                                                                       | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
| 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? | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
|                                                                                                                                                                                               |                                                                          |                                                                             |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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: |
|                                                                                                                                                                                                                                                                                                                                            |

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| 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: |
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**Departmental Response: Our current expectation is that exams will take place in person this year, meaning paper scripts will be marked directly. In the event of a return to timed remote assessments, we will improve the workflow for electronic marking, based on suggestions from staff and externals. Within the Department, we have limited control over software choices, but there is an ongoing dialogue with the Learning Technology team about how best to use the tools available.**

**In the last two years, the proportion of first-class degrees has been higher. The proportions for the past three years were 59% (2020-21), 64% (2019-20), 54% (2018-19). It seems plausible that some of this increase can be attributed to the use of closed-book exams in an open book setting in 2019-20, and to the College's safety net policy. We will continue to monitor the proportions of degrees awarded in each class.**

**Scaling is applied carefully, with reference to students' marks in other modules, as well as to historical information on the module. The reasoning for each scaling decision is noted in the minutes of the Liaison Panel, and shared with external examiners.**

#### 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 |
| <p><b>I have one comment about project marking - I understand that if there is a large discrepancy between the marks of both markers, then a committee looks closely at the marks and agrees on the overall mark. It would be helpful for external examiners if the rationale and thoughts in this process were recorded (just with a sentence or two) to understand the process and the final mark better.</b></p> |         |

**Departmental Response: We thank the external for this suggestion. For future years, the rationale for moderation of individual project marks will be documented and made available to external examiners.**

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):                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>In discussion with the students many positive comments, but also some negative points were raised. In particular, it seems that while many lecturers went above and beyond in their teaching, some were less well received. A uniform baseline level of what students can expect would be helpful, perhaps supported with peer review of teaching so that good practice can be shared. It was also highlighted by students that complaints about some lecturers were raised year after year and nothing changes, so again, it would be good to look at such issues.</b></p> |

**Departmental Response:**

Overall, students responded very positively to the rapid and effective changes that staff made in response to the pandemic. We were happy to see this reflected in strong NSS results. The Department did indeed put in place a uniform baseline along the lines the external suggests - lecturers were asked to produce complete typed notes unless a textbook was being followed closely. The re-development of each module was subject to peer review by another member of the appropriate section.

Student concerns regarding teaching quality are treated very seriously. Most issues are resolved quickly, thanks to open channels of communication between student representatives and the team who support undergraduate teaching. The department holds student-staff committee meetings twice each term, where student representatives work with staff to identify areas of improvement. Serious ongoing concerns are rare, but where these arise, the Department follows established College processes.

#### 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                                                            |
|-----------------------------------------------|------------------------------------------------------------|
| Name and Position of Departmental Respondent: | <b>Chris Hallsworth, Director of Undergraduate Studies</b> |
| Date:                                         | <b>6 Feb 2022</b>                                          |

## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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 |

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

#### 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? | <b>Yes/Always</b> |
|                                                                                                                                                                                                                             |                   |

|                                                                                  |                   |
|----------------------------------------------------------------------------------|-------------------|
| Is the assessment load comparable and balanced across modules of the same level? | <b>Yes/Always</b> |
|                                                                                  |                   |

|                                                             |                   |
|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
|                                                             |                   |

|                                                            |
|------------------------------------------------------------|
| <b><u>Departmental Response: Nothing to respond to</u></b> |
|                                                            |

#### Drafting of Assessments:

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

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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

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

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|



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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:

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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:

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**Departmental Response: Nothing to respond to**

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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 |
| <b>The exam board was very well prepared and conducted. I understand that from next year the borderline decisions will be algorithmic and I look forward to the precise rules.</b> |            |

|                                                                                                                        |            |
|------------------------------------------------------------------------------------------------------------------------|------------|
| 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: The External Examiner is correct regarding the move to a more algorithmic approach to borderline cases. The specifics for the MSc Applied Mathematics are currently being finalised and will be forwarded to the external examiners in due course.**

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 |
| <b>Thanks for taking my previous comments on board and adding clarifications to the marking criteria for projects!</b> |         |

**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):

**Many of the projects were of extremely high quality and enabled the students to do research, giving them a taste of a possible PhD project. The range of topics is impressive.**

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

**This year there were more resits and struggling students, which might be caused by the pandemic and larger cohort sizes, but maybe it would be good to have (more) monitoring mechanisms to spot and support these students before they fail.**

**Departmental Response: We agree with the external examiner regarding the extremely high quality, on average, of the research projects. Indeed owing to the pandemic more students have had difficulties; following the PG CR, starting this year there will be an early feedback/monitoring mechanism, where the students submit a preliminary report to their supervisor early in the summer.**

## 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                                                                                                                |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Name and Position of Departmental Respondent: | <b>Dr Ory Schnitzer, Senior Lecturer in Applied Mathematics and MSc Applied Mathematics Programme Director</b> |
| Date:                                         | <b>26/02/2022</b>                                                                                              |

## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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: Thank you for your feedback.**

### 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 |

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

#### 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? | <b>Yes/Always</b> |
|                                                                                                                                                                                                                             |                   |

|                                                                                  |                   |
|----------------------------------------------------------------------------------|-------------------|
| Is the assessment load comparable and balanced across modules of the same level? | <b>Yes/Always</b> |
|                                                                                  |                   |

|                                                             |                   |
|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
|                                                             |                   |

|                                                            |
|------------------------------------------------------------|
| <b>Departmental Response:</b> Thank you for your feedback. |
|                                                            |

#### Drafting of Assessments:

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

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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

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

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
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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:

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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:

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**Departmental Response:** Thank you for your feedback.

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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?                                                                                                                                                          |  |
| <b>I believe these procedures were correctly applied, although we as external examiners did not receive much information about this. This contrasts slightly with my experience as an undergraduate examiner, where cases with mitigating circumstances are usually explicitly highlighted and considered in the examiners meeting.</b> |  |

**Departmental Response:** Thank you for your feedback. We will make sure to pay attention next time to provide information on mitigating circumstances cases to external examiners before the meetings, and to point out these cases (without providing details) during the meeting.

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:** Thank you for your feedback.

### 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):

**I am satisfied that previous recommendations during my tenure have been considered and addressed, and I do not have any further recommendations to make at this time.**

**Departmental Response:** Thank you for your feedback.

### 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 department have done an excellent job of maintaining standards of provision and student performance through the exceptionally difficult circumstances caused by the COVID-19 pandemic. The programme remains a very strong one, managing to retain a traditional, academically rigorous approach (which is entirely appropriate for this subject) while still remaining responsive to student needs and open to change where there is good reason for it. I have no doubt it will continue to be successful and popular in the future.**

**Departmental Response:** Thank you for your feedback.

### 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                        |
|-----------------------------------------------|------------------------|
| Name and Position of Departmental Respondent: | <b>Travis Schedler</b> |
| Date:                                         | <b>17 January 2022</b> |

## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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 |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Do you consider that the programme design is suitable in relation to the following, where applicable?<br>*relevant subject benchmarks,<br>*Professional Statutory Regulatory Body (PSRB)<br>*Accrediting Body requirements | Yes/Always |
| As far as I know the only relevant benchmark here is the QAA subject benchmark for MSOR; the programme design is very much suitable in relations 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?                                                                                                                                                                                                                 | Most/Usually |
| The usual methods (chiefly closed, unseen written papers) are very much suitable. The open book examinations used during the COVID crisis are probably not as well suited to examining (at least some of) the intended learning outcomes. I think they have been conducted as well as possible in very difficult circumstances, but I would expect to see a return to a significant number of closed examinations when circumstances allow. |              |

|                                                                                  |            |
|----------------------------------------------------------------------------------|------------|
| 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 |
|                                                             |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <u>Departmental Response: We agree that, on the whole, the timed remote assessments are not as well suited as our traditional examinations for examining all learning outcomes. However, our experience of remote assessments has led to significant innovation, e.g. in the design of questions to test understanding of simple definitions. In our view, the difficulties with TRAs arise because they are remote, and not because they are open-book. We join the external in anticipating a return to more controlled modes of assessment, although (at least initially) we see a place for open-book assessment.</u> |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

#### 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? | <b>Yes/All</b> |
| Did you receive feedback on your comments?                                              | <b>Yes/All</b> |
|                                                                                         |                |

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?                                                                                                                                                                                                                                                                      | <b>Yes/All</b>      |
| Was the general standard and consistency of marking appropriate?                                                                                                                                                                                                                                                                                                           | <b>Yes/All</b>      |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking?                                                                                                                                                                                                                                                       | <b>Yes/All</b>      |
| Was the justification of marks clear on the scripts that you reviewed?                                                                                                                                                                                                                                                                                                     | <b>Most/Usually</b> |
| <b>There were some technical problems with viewing some scripts as PDF files (annotations did not reliably appear to me the same as they presumably did for the marker - in some cases I could see HTML codes which I think were supposed to be ticks and crosses), but overall I still felt I could gather enough information to be confident of the marking quality.</b> |                     |

Practical Examinations:

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

Oral Examinations:

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

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

|                                                                                                                                 |            |
|---------------------------------------------------------------------------------------------------------------------------------|------------|
| 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 |
| <b>I was pleased to see that the PTEM scaling process continues to be used effectively to compensate for inevitable differences in the absolute difficulty level of different modules. (This was an improvement on the earlier years of my tenure, when I occasionally felt that reluctance to scale by large amounts meant that "outlier" modules were not adjusted by enough.)</b> |            |

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? |                                                                          | No/None                                                                     |
|                                                                                                                                                                                               |                                                                          |                                                                             |

|                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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:                                                                              |
| <b>As far as I know the only relevant content here is the year abroad. I believe students who had taken this were distinguished by their programme code. There was no specific discussion of these students, but in previous years where there have been issues with such students these have always been brought to my attention, and I am confident this would have happened again so I do not have any concerns.</b> |

|                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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    |
| Were the arrangements for degree classification appropriate and applied consistently?                                                                                                                                                                                                                                                                                                                                                                                                                                  | Yes/Always |
| <b>I have occasionally gained a sense that some staff are less concerned with maintaining standards at the 2:2/3rd borderline than at the higher borderlines. I think it is important to remember that a 2:2, while sometimes regarded as having limited value within academia, does have a value in the real-world, and that those who have earned it are entitled to expect that value to be protected. (Note that I am NOT suggesting that any classification decisions eventually reached were inappropriate.)</b> |            |

|                                                                                                                        |            |
|------------------------------------------------------------------------------------------------------------------------|------------|
| 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?                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Most/Usually |
| <b>The college procedures governing mitigating circumstances were correctly followed. (I remain sceptical about the fairness of the "new" mitigating circumstances procedures - while I understand the difficulties inherent in classifying the severity of a particular student's circumstances, I don't think a blanket refusal to consider severity is a viable or proportionate response - but I realise this is outside the Department's control.). I know nothing about the application of academic misconduct procedures; indeed I was not aware that these fell within my remit to consider as an external examiner.</b> |              |



**Departmental Response: In respect of borderlines, we expect that the move to an algorithmic approach for considering borderline candidates will mean that the basis of classification decisions will be clearer. The same approach to classification will be used at each borderline.**

**We agree that the current mitigating circumstances policy makes it more difficult to arrive at classification decisions. The comments above regarding mitigating circumstances will be passed to the Faculty Senior Tutor and Vice Dean for Education.**

#### Response to Your Last External Examiner Report:

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

**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 response to the pandemic has entailed a quite extraordinary level of "innovation" across learning, teaching and assessment practice; it will be some time before the dust settles enough to know which aspects are worth keeping for the long-term, but doubtless some of it will be.**

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

**The programme per se is not in need of major changes, and I think the priority in the immediate future has to be recovery from the pandemic. In doing so, it obviously makes sense to objectively evaluate the various innovations which have been introduced in response to the pandemic, with a view to identifying where they can be of long-term benefit.**

**Departmental Response: We thank the external for these comments, and we agree that recent innovations will shape future teaching and assessment practice.**

#### 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 programmes provide an outstanding example of a traditional, high quality university education in mathematics. The College has been extremely successful at maintaining and developing the academic rigour of the programmes, with the pure mathematics component in particular containing some really challenging material which really pushes the strongest students to achieve to their full potential. This is evidenced especially by the projects produced by the stronger final year M.Sci. students, some of which are of truly exceptional quality. Of course, the programme also needs to have (and does have) some material accessible and of benefit to weaker students. The combination of these factors means that there are inevitably some significant disparities between the absolute difficulty level of different options which students can choose. However the PTEM scaling system is generally used very effectively to ensure comparability of grades between students who have chosen different options, so I don't really view this as a weakness.

In terms of developments in provision, a new curriculum was introduced for incoming students during my tenure. It is a little early to confidently judge its success, since those students following it have yet to reach their final year, but early signs seem positive.

Of course, any planned changes to the programmes have been dwarfed by the unplanned changes entailed by the COVID pandemic. I know that staff have put a huge amount of work into finding innovative ways to maintain the best possible teaching quality and examination standards in tremendously difficult circumstances. Unfortunately, I don't think even this effort has been able to fully mitigate the impact on students, who have not had the educational experience they were expecting and many of whom clearly feel very negatively about their studies at present. The big challenge over the next few years will be to bring the student community fully back on board, and ensure they regain the excellent levels of engagement and the positive student culture which has characterised the programmes in past times. But with the support of the College and the continued efforts of staff, I'm sure the Department is well-placed to meet this challenge.

In conclusion, I'd just like to thank staff (and also those students whom I got the chance to meet) for their hospitality and the constructive way in which they have engaged with me over the past four years, and to wish the Department and the College every success in the future.

**Departmental Response: We thank the external for these comments, and for his support and counsel over the course of his tenure. We recognise the challenge of recovery from the pandemic, especially in rebuilding the student community. We will work with students, and particularly with their elected representatives, to identify activities that will support cohesion within the cohort.**

### 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 |

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|-----------------------------------------------|---------------------------------------------------------------------------|
| Name and Position of Departmental Respondent: | <b>Chris Hallsworth, Director of Undergraduate Studies in Mathematics</b> |
| Date:                                         | <b>14 December 2021</b>                                                   |

## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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: Thank you for your feedback.**

### 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 |

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

#### 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? | <b>Yes/Always</b> |
|                                                                                                                                                                                                                             |                   |

|                                                                                  |                   |
|----------------------------------------------------------------------------------|-------------------|
| Is the assessment load comparable and balanced across modules of the same level? | <b>Yes/Always</b> |
|                                                                                  |                   |

|                                                             |                   |
|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
|                                                             |                   |

|                                                            |
|------------------------------------------------------------|
| <b>Departmental Response:</b> Thank you for your feedback. |
|                                                            |

#### Drafting of Assessments:

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

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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

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

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|

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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:

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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:

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**Departmental Response:** Thank you for your feedback.

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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?                             | <b>Yes/All</b>    |
| Were you satisfied with the decisions of the Board of Examiners?                      | <b>Yes/All</b>    |
| Were the arrangements for degree classification appropriate and applied consistently? | <b>Yes/Always</b> |
|                                                                                       |                   |

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

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

**Departmental Response: Thank you for your feedback.**

Response to Your Last External Examiner Report:

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

**Departmental Response:**



### 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 was again happy that the length of all the online examinations was exactly the same as it used to be for similar in-person exams in previous years, with addition of a short period of time for uploading solutions.**

**Compared with the online examinations of the academic year 2019/2020, there were no questions in the exam papers that were straightforward bookwork, even the simplest (Category A) questions required from students good understanding of the studied material.**

**Once again I am happy about the quality of supervision of MSc projects. The top-scoring projects were of exceptionally high quality, while the general standard of the projects was very good.**

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

**I do not have any particular suggestions for enhancement. I would like to wish the Department to keep up the very high standard of the MSc programme.**

**Departmental Response:** Thank you for your feedback.

### 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:** Not applicable

### 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                        |
|-----------------------------------------------|------------------------|
| Name and Position of Departmental Respondent: | <b>Travis Schedler</b> |
| Date:                                         | <b>17 January 2022</b> |

## External Examiner Report (2020-21 Academic Year)

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

### Appointment Process:

|                                                       |  |
|-------------------------------------------------------|--|
| Did you find the appointment process fit for purpose? |  |
| Was the appointment made in a timely manner?          |  |
|                                                       |  |

### 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 |

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

#### 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? | <b>Yes/Always</b> |
|                                                                                                                                                                                                                             |                   |

|                                                                                  |                   |
|----------------------------------------------------------------------------------|-------------------|
| Is the assessment load comparable and balanced across modules of the same level? | <b>Yes/Always</b> |
|                                                                                  |                   |

|                                                             |                   |
|-------------------------------------------------------------|-------------------|
| Was the overall assessment load for the programme suitable? | <b>Yes/Always</b> |
|                                                             |                   |

|                                                    |
|----------------------------------------------------|
| <b><u>Departmental Response: None required</u></b> |
|----------------------------------------------------|

#### Drafting of Assessments:

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

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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|-------------------------------------------------------------------------------------------------------------|-------------------|
| Were the marking schemes/criteria and, where appropriate, model answers, suitable and applied consistently? | <b>Yes/Always</b> |
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| Were the procedures for marking and moderation suitable and applied consistently in line with College policies and regulations? | <b>Yes/Always</b> |
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| 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)? | <b>Yes/Always</b> |
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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:

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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:

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**Departmental Response: None required**

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Board of Examiners Meeting:

|                                                                                  |         |
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| 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?                             | <b>Yes/All</b>    |
| Were you satisfied with the decisions of the Board of Examiners?                      | <b>Yes/All</b>    |
| Were the arrangements for degree classification appropriate and applied consistently? | <b>Yes/Always</b> |
|                                                                                       |                   |

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

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

**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) | <b>Yes/All</b> |
| Are you satisfied that the issues raised in the previous report have been or are being addressed?     | <b>Yes/All</b> |
|                                                                                                       |                |

**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):

**In the past academic year, all lectures delivered to students of Mathematics were pre-recorded. The meeting with the student reps has confirmed that most of these lectures were of good quality. It is interesting to note that we were told that about a half of all students of mathematics would now probably prefer good quality pre-recorded lectures to standard 'in-person' lectures. This does not imply of course that all standard lectures should in future disappear, but it definitely shows that many students find good quality online resources very useful.**

**Students also praised problem classes and office hours. These provided a possibility to discuss with the lecturer any questions they had either in small groups or individually.**

**Once again, this year I was glad to learn that the available time for solving the exam paper was exactly the same as in the pre-Covid times. (I am not aware of any other UK university that has not increased the available time, at least by one hour.) The exam papers were all very carefully prepared and their difficulty was always at the appropriate level. In particular, the problems in the most difficult category were very challenging.**

**Students liked that they were able to use the available resources when solving the exam problems. One may think whether one should allow in future the use of some resources during the exams. I was told that there are discussions in the Department about allowing students to bring in to the exam venue a few pages of notes. I think this is a very interesting idea that requires a further careful thinking.**

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

**When preparing an exam paper, one should carefully think whether the paper is of appropriate length. In principle, a proper scaling can always bring the raw outcome of the exam to the expected range. However, the student reps told the external examiners that a too long exam paper creates psychological problems for many students, and as a result they perform not as well as they could. I believe the main issue here is that, until last year, the exam papers contained bookwork questions and those students who knew the answer would quickly write it. This year, the bookwork part was replaced by problems that were supposed to be relatively easy. However, many students found some of these problems rather challenging and spent much more time on them than they would normally spend on a bookwork question.**

**Departmental Response: We thank the external for these comments and suggestions. The vast majority of timed remote assessments worked well and required no more scaling than has been applied in recent years. Our guidance to examiners and exam editors will continue to advise careful consideration of timing and difficulty. We will ask examiners to reflect on scaling decisions in earlier years when setting future papers, so as to gauge the difficulty.**

## 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



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**Departmental Response: None required**

#### Overall Confidence Statements

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 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: | Chris Hallsworth, Director of Undergraduate Studies in Mathematics |
| Date:                                         | 14/12/2021                                                         |

## External Examiner Report (2020-21 Academic Year)

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Name of External Examiner | Matthias Troffaes                                                       |
| Name of Programme         | BSc and MSci programmes in Mathematics (area: Statistics & Probability) |

### Appointment Process:

|                                                       |         |
|-------------------------------------------------------|---------|
| Did you find the appointment process fit for purpose? | Yes/All |
| Was the appointment made in a timely manner?          | 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 |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Do you consider that the programme design is suitable in relation to the following, where applicable?<br>*relevant subject benchmarks,<br>*Professional Statutory Regulatory Body (PSRB)<br>*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 |
| <b>Mostly, load appeared to be well balanced. I very much like the system where certain fractions of marks are for certain levels of material (which is one of the most detailed of such systems I've seen across any institution I know of). This makes for very balanced and fair assessments across different modules.</b> |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Was the overall assessment load for the programme suitable?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Yes/Always |
| <b>One minor observation I made when checking the exams is to keep an eye on the length (i.e. amount of questions) in relation to the time the student has to solve the exam. In one case the length of an exam seemed excessive on checking. My general impression is the exams are a little longer than what I am used to at my own institution. Although shorter exams may fail to test every aspect of a module, I believe it is better to test student's ability to master the material, rather than their ability to go as fast as possible. Anyway, this is not a major concern, but it may be something to consider by the school.</b> |            |

|                                                                                                                                                                                                                              |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b><u>Departmental Response: We thank the external for these positive comments and suggestions. Examiners, checkers and exam editors will be reminded of the need to give careful consideration to expected timings.</u></b> |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

#### 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 |
| <b>The exam setting process was generally very diligent.</b>                            |         |

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 |
| <p><b>Good processes are in place to ensure consistent marking. I particularly enjoyed the general feedback to students about each individual question for each exam, which reflects excellent practice. I commend the level of detail at which lecturers comment on each question. Feedback on projects was similarly excellent.</b></p> <p><b>One thing that was not so clear to me was whether scaling was done to marking standards or to satisfy appropriate statistics of the scatter plots? I feel it is fine to deviate somewhat from the perfect scatterplot provided an academic justification is given. Reference to individual scripts at borderlines to set scaling points can be helpful, in particular because the liaison panel (who decides on the final scaling) does not look at individual scripts. Finally, some systems such as gradescope allow readjusting weights on sub-questions. I don't know if your systems allow this, but at Durham we've found it better to make small readjustments to marking schemes during marking, to reduce the need to adjust scaling points. I'm not sure if this happened, but if not, it may be something to consider in some cases. Generally however I must commend the very soft use of scaling and the diligence by which each individual module is looked at.</b></p> |         |

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 |

**Presentations were marked by consensus between two markers, which reflects excellent practice.**

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

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

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|

**Through the setting of questions, definitely. I noted elsewhere that it may be useful to reference specific borderline scripts to set scaling thresholds (this is particularly useful if scaling is more severe, or if the scatterplot deviates more from the "perfect" scenario).**

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?                                                                          | <b>N/A</b>                                                               | <b>N/A</b>                                                                  |
| Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?                                                                       | <b>N/A</b>                                                               | <b>N/A</b>                                                                  |
| 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? | <b>N/A</b>                                                               | <b>N/A</b>                                                                  |
|                                                                                                                                                                                               |                                                                          |                                                                             |

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 are grateful for these thoughtful comments on scaling and moderation. From 2021 onwards, borderline classifications will be made algorithmically, meaning that external examiners may have more input at the module level. We expect that scaling decisions will continue to be made on the basis of 'scatter plots' comparing student performance across 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 |
| <p><b>I'm always slightly worried about the use of "discretion" for borderline candidates, as discretion is prone to quite a bit of subjective interpretation of marks. I understand imperial will move to an algorithmic method in future years for deciding borderl The examination team did a truly excellent job.</b></p> <p><b>My only minor comment is that at the start of the board, I assume due to regulations, we sat for 20 minutes scrolling through pages of marks. Although it is important to have some check in place, I felt this was not good use of time for the entire board to sit through.</b></p> |            |

|                                                                                                                        |            |
|------------------------------------------------------------------------------------------------------------------------|------------|
| 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 thank the external for these comments, and agree that the move to a classification algorithm at borderlines will streamline decision making. We hope that this will leave more time for the consideration of individual scripts.

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):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>I very much commend the setting of exams by means of categories of difficulty. This is a great practice: it ensures a balance in the questions set, and helps reduce the need for scaling. I also commend the detailed feedback given to students after the examination process. Finally, I commend the department's decision to allow quite a bit of time for student representatives to interact with the externals. This was very insightful. Students appeared very open to talk to academic staff from other institutions. For the most part, excellent comments were had about staff dedication and teaching quality, although a few concerns were raised about online teaching, quality of videos, open book style exams, etc. This said, these issues are very similar in my own institution, and I'm aware these issues are being worked on. I think it's excellent practice to add to the student voice and to engage with them.</b></p> |

|                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):                                                                   |
| <p><b>As a minor comment, I would encourage the school to consider exam length, to avoid excessively long exams, although I only noted one instance where I was concerned on checking.</b></p> |

**Departmental Response: We thank the external for these comments, particularly in respect of strong student representation. We agree that this provides insight, as well as empowering students to contribute to the development of the programme.**

**In respect of exam length, we will encourage examiners, checkers and section editors to be mindful of the time required to complete exam problems. Examiners will be encouraged to review the scaling that was required in earlier years, to aid with judicious setting of future papers.**

#### 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                                                                           |
|-----------------------------------------------|---------------------------------------------------------------------------|
| Name and Position of Departmental Respondent: | <b>Chris Hallsworth, Director of Undergraduate Studies in Mathematics</b> |
| Date:                                         | <b>14/12/2021</b>                                                         |



## External Examiner Report (2020-21 Academic Year)

|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| Name of External Examiner | Matthew Turner                                         |
| Name of Programme         | UG BSc/MSci Mathematics PGT MSc in Applied Mathematics |

### Appointment Process:

|                                                       |         |
|-------------------------------------------------------|---------|
| Did you find the appointment process fit for purpose? | Yes/All |
| Was the appointment made in a timely manner?          | 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)?                                                                                                                                                                                    | No/None      |
| Did you receive syllabus or module descriptors including learning outcomes at module level?                                                                                                                                                                                    | No/None      |
| Did you receive details of the assessments?                                                                                                                                                                                                                                    | No/None      |
| Did you receive sufficient information about the programmes/modules in order to fulfil your role?                                                                                                                                                                              | Most/Usually |
| <b>Most of the information I got was from the 2 day external examiners meeting. It would have been good to have also got module descriptors etc prior to checking the exam scripts. This would have been helpful in order to check the correct material is being examined.</b> |              |

**Departmental Response: In future years, we will arrange for access to module specifications well in advance of the exam board.**

### 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 |
| <b>Looking at the module/s I checked, the answer is yes, but I haven't had an overview of what all the modules are on the degree programmes, nor which ones are compulsory and which are elective.</b> |            |
| Is the programme coherent and up-to-date with the expectations of the subject field?                                                                                                                   | Yes/Always |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Do you consider that the programme design is suitable in relation to the following, where applicable?<br>*relevant subject benchmarks,<br>*Professional Statutory Regulatory Body (PSRB)<br>*Accrediting Body requirements | Yes/Always |
| <b>Comparing with my knowledge of mathematics degrees around the country, the programme design is suitable in relation to the industry standard.</b>                                                                       |            |

#### 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?                                                                                                                                                                                                                 | Most/Usually |
| <b>For those applied modules I have checked, yes. But when talking to your undergraduate students they did highlight a slight imbalance between pure and applied mathematics assessment loads at the same level. This apparently is not a new thing and the department is looking into this.</b> |              |

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

**Departmental Response: We thank the external examiner for these useful comments. We will supply a copy of the programme specification and handbook, so that he is better able to understand the breadth and depth of the programme. We note the comment about assessment loads – we have ongoing work, involving student representatives, which aims to balance student workload.**

#### 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 |
| Someof the modules I checked (mainly the second semester ones) the exam papers were very late in getting to me and I was given just a few days to check them. This year I was able to do this, but clearly I could not do it to the level I would have liked. Having definitive hand-in dates for the exam papers would be good. |              |

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 second marking is very well done here. In other institutions the second marker just adds up the marks assigned by the marker to check for errors. Here the second marker marks, and can influence the changing of grades. |         |

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?                                                                                                                                                                                                                                                                                                                                  | <b>Yes/Always</b> |
| <b>For projects there were some large discrepancies in some of the marks <math>\geq 10</math> marks. Then at moderation these just seem to be averaged. Perhaps another thing could be the 2 examiners come together (once they have individually marked the projects) and discuss their marks and why they have given the grades they have. Then it might turn out that ones feels they have been too harsh or generous and a more deserving mark obtained.</b> |                   |

|                                                                                                                                                                                       |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)? | <b>Yes/Always</b> |
|                                                                                                                                                                                       |                   |

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?                                                                          | <b>N/A</b>                                                               | <b>No/None</b>                                                              |
| Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?                                                                       | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
| 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? | <b>N/A</b>                                                               | <b>Yes/All</b>                                                              |
|                                                                                                                                                                                               |                                                                          |                                                                             |

|                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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:**

**Exams**

**There is an established process for the writing of examination papers, with clear deadlines. Internally, a draft exam paper is checked by another member of staff, and by the exam editor for the appropriate section, before being passed to the external examiner. Setters and checkers are told of the deadline well in advance. In 2021-22, the Statistics section will pilot a new interface for sharing examination papers with their external examiner. This will make it possible to share papers with the external as they become available, rather than sending all papers as a single package. This should produce a more streamlined process, which will be implemented department-wide if the pilot goes well.**

**Projects**

**For projects, a moderation panel discusses all projects where there is a discrepancy of 10 or more marks, and in some cases, both markers are contacted to clarify their views. The External's suggestion about direct discussion between first and second markers is an interesting one, and will be considered as part of a broader review into project marking and moderation. In future years, there will be more detailed documentation of how moderation decisions were made.**

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 |
| <b>The meeting was conducted in a fair way, and we were allowed to vote on the borderline candidates when appropriate. This seemed to work very well. The Chair and the Director of UG Studies had everything under control.</b> |            |

|                                                                                                                        |            |
|------------------------------------------------------------------------------------------------------------------------|------------|
| 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):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>As noted earlier your second marking is very well done. I also particularly like the feedback you give the students on the exam questions, and any extra comments for the externals. These are very useful to see as they usually help justify the PTEM parameters chosen. The scatter plots are very useful too.</b></p> <p><b>I really enjoyed the meeting which had been organised with the students for the externals. This was enlightening and allowed for an insight into how they found the exams, and the whole teaching, throughout the year.</b></p> <p><b>Your projects are excellent, and I'm particularly impressed by how low the Turnitin scores are.</b></p> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Please outline any recommendations or suggestions for enhancement you would like to make with regards to these programme(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Firstly I think exam papers should arrive with the external in a timely fashion. Having been told that this year was an 'exceptional year' I'm hoping for a more timely process this year. I would also like to have the module descriptors for the exams I'm checking too so that I know the content, and hence what is being examined. Perhaps I should have asked for this material this year, but also I think it should have been provided regardless.</b></p> <p><b>If the exams remain online for next year, then there should be a concerted effort across the department to put enough 'easier' material on the exam paper to get the students started. They</b></p> |

did complain about this a lot in our meeting. They also said some of the exams were very time pressured, and used the whole time allocated to them.

Finally, just to reiterate my comment about project marks. Where the discrepancy is large, maybe a discussion could be had with both examiners to try and work out how they came to their marks in order to see if either of them can be persuaded that they were too harsh/generous, hence concluding on a more deserving mark.

**Departmental Response: We thank the external for these helpful comments and suggestions. Section editors will ordinarily agree a schedule for review of exam papers with the external, as part of our existing process. As the external notes, this process was disrupted in this exceptional year, and we expect that externals will receive 21-22 papers on the usual schedule. We thank the external for providing comments on papers that were delivered later than would ordinarily be the case.**

**For future years, the rationale for moderation of individual project marks will be documented and made available to external examiners.**

#### 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.                                     | <b>Yes</b> |
| 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. | <b>Yes</b> |
| In my experience the academic standards and the achievements of students are comparable with those in other degree awarding bodies.                                                                                   | <b>Yes</b> |
|                                                                                                                                                                                                                       |            |

|                                               |                                                            |
|-----------------------------------------------|------------------------------------------------------------|
| Name and Position of Departmental Respondent: | <b>Chris Hallsworth, Director of Undergraduate Studies</b> |
| Date:                                         | <b>1 February 2022</b>                                     |





## External Examiner Report (2020-21 Academic Year)

|                           |                |
|---------------------------|----------------|
| Name of External Examiner | David Woods    |
| Name of Programme         | MSc Statistics |

### Appointment Process:

|                                                       |         |
|-------------------------------------------------------|---------|
| Did you find the appointment process fit for purpose? | Yes/All |
| Was the appointment made in a timely manner?          | 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 |
| <b>Module learning outcomes were not initially provided but the programme team were quick to respond.</b> |         |

### Departmental Response:

We thank the examiner for their positive comments. Although the student handbook and other information for the degree were sent to the examiner at the start of his role, the learning outcomes of the modules were not initially provided but we responded promptly to the request. We have now updated our examination system on BB to include the module specifications. This is to ensure that everything is provided in a single space for the external examiner.

### 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 |
| <b>An impressive range of optional modules are provided in S2, covering almost all of modern statistics.</b> |            |

|                                                                                                                                                                                                                            |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Do you consider that the programme design is suitable in relation to the following, where applicable?<br>*relevant subject benchmarks,<br>*Professional Statutory Regulatory Body (PSRB)<br>*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 |
| <b>Applaud the innovative use of oral assessments for resits.</b>                                                                                                                                                           |            |

|                                                                                                                                             |            |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Is the assessment load comparable and balanced across modules of the same level?                                                            | Yes/Always |
| <b>With so many S2 options, it is important to keep closely monitoring assessments to ensure equivalence of standards (as appropriate).</b> |            |

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

#### **Departmental Response:**

We thank the reviewer for their positive comments. The examiner has raised a challenge of the MSc degree which is to ensure that our Spring term modules are all assessed at the same standards and quality. This is a challenge that we face every year and every year we do our best to ensure high quality and standards for all MSc modules.

#### 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? | <b>Yes/All</b> |
|                                            |                |

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?                | <b>Yes/All</b> |
| Was the general standard and consistency of marking appropriate?                                                     | <b>Yes/All</b> |
| Was there evidence that assessed work had been moderated internally, either through check marking or second marking? | <b>Yes/All</b> |
| Was the justification of marks clear on the scripts that you reviewed?                                               | <b>Yes/All</b> |
|                                                                                                                      |                |

Practical Examinations:

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

Oral Examinations:

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

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

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

|                                                                                                                                                                                                              |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 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)?                        | <b>Yes/Always</b> |
| <b>Appropriate discussion was had in the exam board regarding both policy for, and specific examples of, boundary cases. The change to modified Faculty rules for 2021-22 should help to clarify policy.</b> |                   |

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?                                                                          | <b>N/A</b>                                                               |                                                                             |
| Were the procedures for incorporating marks obtained by students at another institution clear and consistently applied?                                                                       | <b>N/A</b>                                                               |                                                                             |
| 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? | <b>N/A</b>                                                               |                                                                             |
|                                                                                                                                                                                               |                                                                          |                                                                             |

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:

|  |
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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:

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**Departmental Response:**

The MSc in Statistics degree from this academic year (2021-2022) is moving to the Common Set of Regulations of the College. This will help with the decisions made at the Board of Examiners.

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        |
| <b>See earlier comment re: move to new Faculty policy on borderline candidates.</b>                                    |            |

|                                                                                                                                                                                |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 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 agree with the comments of the external examiner as stated above.

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:**

NA

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):

**Wide range of S2 optional modules**  
**Appropriate choice of assessment type for each module**  
**Wide range of summer project choices**

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

**The programme is running well. It will be interesting to see how the remote access arrangements are continued/expanded to ensure equality of experience for different student types (as much as possible).**

**Departmental Response:**

We are doing our best to ensure high standards of teaching and assessments for our degree, especially now that we are running the degree as multi-mode with the assessments delivered as time-limited remote assessments.

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:**

NA

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

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|                                               |                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------|
| Name and Position of Departmental Respondent: | Marina Evangelou, Senior Lecturer in Statistics<br>MSc in Statistics Course Director |
| Date:                                         | 18 January 2021                                                                      |