IMPERIAL

Programme Information		
Programme Title	**Programme Code**	**HECoS Code**
Pure Mathematics	G1U3 / G1U324	For Registry Use Only
Pure Mathematics (Formalisation of Mathematics)	G1101 / G1102	

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MSc – G1U3 / G1101	1 Calendar Year (12 months)	Full-Time	Annually in October	90	180
MSc – G1U324 / G1102	2 Calendar Years (24 months)	Part-Time	Annually in October	90	180
PG Diploma – G1U3D	N/A	N/A	*	60	120
PG Certificate – G1U3C	N/A	N/A	*	30	60
*The PG Certificate and PG Diploma are exit awards and are not available for entry. You must apply to and join MSc.					

Ownership			
Awarding Institution	Imperial College London	Faculty	Faculty of Natural Sciences
Teaching Institution	Imperial College London	Department	Mathematics
Associateship	Diploma of Imperial College (DIC).	Main Location(s) of Study	South Kensington Campus
External Reference			
Relevant QAA Benchmark Statement(s) and/or other external reference points		Mathematics, Statistics and Operational Research	
FHEQ Level		Level 7	
EHEA Level		2nd Cycle	
External Accreditor(s) (if applicable)			
External Accreditor 1:	N/A		
Accreditation received:	N/A	Accreditation renewal:	N/A
Collaborative Provision			
Collaborative partner	Collaboration type	Agreement effective date	Agreement expiry date

N/A	N/A	N/A	N/A

Specification Details

Programme Lead	Professor Travis Schedler, MSc Pure Mathematics Programme Director
Student cohorts covered by specification	2025-26 entry
Date of introduction of programme	October 21
Date of programme specification/revision	January 25

Programme Overview

This course will provide you with outstanding training in advanced Pure Mathematics.

We offer a variety of modules in core subjects of Pure Mathematics together with a range of more specialised options, and a substantial research project, reflecting broad research interests of the Pure Mathematics section. The Pure Mathematics section is consistently rated one of the top in the country for research, with particular strengths in geometry, number theory, algebra and analysis.

In addition, we offer a programme stream on Formalisation of Mathematics employing the sophisticated computer programming language Lean and its growing, extensive Mathlib library of mathematical content, and a substantial research project reflecting broad research interests of the Pure Mathematics section and its world-leading expertise in the Formalisation of Mathematics.

The full time MSc consists of a twelve-month programme in which you will take eight taught courses and work on an independent written project under the direction of a supervisor. This will allow you to design your own learning plan in line with your unique background, interests and the field in which you wish to do your research project. You will choose their MSc project supervisor and topic in late November and start work on it early in the second term, and then full-time over the summer. More information on the structure and regulations of the program and details of assessment can be found in the Course Handbook, which is available on the current MSc students page. It is not possible for projects to be carried out partly or wholly at an external organisation, however requests for internal placements in another academic department may be approved on a case by case basis. Students in the stream on Formalisation of Mathematics are required to enrol in the module on Formalising Mathematics, and must do a project involving formalisation as a central component. Students may switch in to this stream at any time up until the end of January (in their final year in the case of the two-year programme) subject to availability of supervisors for the project in the area of formalisation. They may switch out of the stream at any time before the end of the examination period.

The set of skills obtained during the Pure Mathematics MSc programme is well suited for continuing to PhD level research in pure mathematics. The mathematical skills in problem-solving, project work and presentation are highly transferable and will enable you to take a role in a variety of situations in employment and research. Our graduates find employment in the fields of Education, Research, Actuarial Analysis, Risk Analysis, Investment Banking, Management Consultancy.

Learning Outcomes

Students who have fulfilled all the requirements of the programme will be awarded an MSc. On successful completion of the programme, our aim is that you will have achieved the following Learning Outcomes (divided into three groups):

1.   Outcomes from modules element
   - Explore the role of rigorous mathematical argument and deductive reasoning, and apply them through formal processes of mathematical proof and development of mathematical theories.
   - Manipulate precise and intricate ideas and construct logical arguments using appropriate terminology.
   - Communicate effectively using a variety of modes and media including written, oral and digital forms.
   - Restructure and further develop mathematical statements and arguments optimally for formalisation via computer programming, and code them effectively (for the Formalisation stream).

2. Advanced outcomes from modules element
   - Exercise deep conceptual understanding of one or more branches of pure mathematics.
   - Use mathematics as a language in a wide range of situations relevant to research.
   - Demonstrate independent learning of mathematical constructions and methods.
   - Assimilate a large body of complex concepts and their inter-relationships.
   - Solve open-ended problems and problems with well-defined solutions by formulating problems in precise terms, identifying key issues and trying different approaches in order to make progress.
   - Develop original approaches to key challenges in formalising rigorous mathematics into a computer and apply these successfully (for the Formalisation stream).

3. Outcomes from research-project element
   - Demonstrate critical thinking and creativity and innovatively apply mathematical skills to tackle complex research problems
   - Design a research project with set hypotheses and objectives within the context of a wide body of scientific literature that you have reviewed.
   - Communicate your expertise in relation to a particular research topic, both orally and in writing.
   - Expand the library of mathematics verified by computer programming and make it available for use by working mathematicians (for the Formalisation stream).

Students not eligible for an MSc degree, may be awarded exit awards (see "Progression and Classification"). Our aim is that a student awarded a (i) PG Certificate based on four modules would achieve the outcomes in group 1; (ii) PG Certificate based on the project element would achieve the outcomes in groups 3; (iii) PG Diploma based on eight modules would achieve the outcomes in groups 1 and 2; (iv) PG Diploma based on four modules and the project element would achieve the outcomes in groups 1 and 3.

The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial degree programme. The Graduate Attributes are available at:
https://www.imperial.ac.uk/about/education/our-graduates/

Entry Requirements

Academic Requirement	Normally a 2.1 UK Bachelor's Degree with Honours in mathematics (or a comparable qualification recognised by the university). For further information on entry requirements, please go to: www.imperial.ac.uk/study/apply/postgraduate-taught/entry-requirements/accepted-qualifications/
Non-academic Requirements	N/A
English Language Requirement	Standard requirement Please check for other Accepted English Qualifications
Admissions Test/Interview	N/A

The programme's competency standards documents are available from the department.

Learning & Teaching Approach

Learning and Teaching Delivery Methods

- Lectures
- Problem sheets
- Assessed coursework
- Individual student/lecturer consultations, including meetings with personal tutors and project supervisors
- Problem classes
- Office hours
- Research seminars
- Labs for coding mathematics into specialised programming languages (for the Formalisation stream)

Overall Workload

Your overall workload consists of face-to-face sessions and independent learning. While your actual contact hours may vary according to the optional modules you choose to study, the following gives an indication of how much time you will need to allocate to different activities at each level of the programme. At Imperial, each ECTS credit taken equates to an expected total study time of 25 hours. Therefore, the indicative total study time is 2250 hours over the entire MSc programme (including the summer), this being composed of roughly 1500 hours associated with modules and 750 hours with the research project. As these are indicative study times, you may need to make reasonable adjustments to these suggested times to account for your individual learning style.

You will spend around 300 hours in lectures, problem classes and tutorials over the entire MSc programme. The remaining time is for self-study (including project work) and meetings with your project supervisor.

Assessment Strategy

Assessment Methods

- Examination (usually 90% of module mark)
- Coursework (usually 10% of module mark)
- Dissertation (90% of research project mark)
- Oral assessment (10% of research project mark)

Academic Feedback Policy

Any assessed coursework done as part of a module will be marked and returned to the student within two weeks. Students are encouraged to discuss difficulties with the module lecturer.

There is access to lecturers informally and through a formal 'office hours' system. Two meetings with personal tutors are also held in each term. Another feedback channel is through the student representatives, which also take part in staff-student committee meetings.

Indicative feedback from the Programme Director or module leader about the outcome of the May-June examinations.

On the project, students will meet their supervisor, typically weekly, to discuss their progress. They should choose modules to complement their project, and discuss their work on these with their supervisor.

Students will submit an early report to their project supervisor (shortly following the May-June examinations), formulated as an extended project proposal, which may include a literature review, description of the problem to be addressed and its background, and preliminary results if available. The project supervisors will meet with the students shortly afterwards to provide the student with feedback on their progress.

The students will also receive comments on their project report and oral presentations.

Imperial's Policy on Academic Feedback and guidance on issuing provisional marks to students is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Re-sit Policy

Imperial's Policy on Re-sits is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Mitigating Circumstances Policy

Imperial's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/

Additional Programme Costs

No additional costs are anticipated.

Important notice: The Programme Specifications are the result of a large curriculum and pedagogy reform implemented by the Department and supported by the Learning and Teaching Strategy of Imperial College London. The modules, structure and assessments presented in this Programme Specification are correct at time of publication but might change as a result of student and staff feedback and the introduction of new or innovative approaches to teaching and learning. You will be consulted and notified in a timely manner of any changes to this document.

Programme Structure[1]

Year 1 – FHEQ Level 7
Full-time students choose 4 modules in term 1 and 4 modules in term 2. Work on the individual research project should begin during term 2, with the majority of the work carried out during term 3 and the summer. Part-time students choose 4 modules in Year 1 and 4 modules in Year 2 (usually 2 modules per term). They normally spread the work on the project over both years.

Students on the Formalisation of Mathematics stream must take MATH70040 Formalising Mathematics and their project must involve formalisation as a central component.

Code	Module Title	Core/ Compulsory Elective/	Group	Term	Credits
MATH70028	Probability Theory 1	Elective	-	Autumn	7.5
MATH70029	Functional Analysis	Elective	-	Spring	7.5
MATH70030	Fourier Analysis and the Theory of Distributions	Elective	-	Spring	7.5
MATH70055	Stochastic Calculus and Applications to Non-Linear Filtering	Elective	-	Spring	7.5
MATH70031	Probability Theory 2	Elective	-	Autumn	7.5
MATH70032	Geometry of Curves and Surfaces	Elective	-	Spring	7.5
MATH70033	Algebraic Curves	Elective	-	Autumn	7.5
MATH70034	Algebraic Topology	Elective	-	Spring	7.5
MATH70056	Algebraic Geometry	Elective	-	Spring	7.5
MATH70057	Riemannian Geometry	Elective	-	Spring	7.5
MATH70058	Manifolds	Elective	-	Autumn	7.5
MATH70059	Differential Topology	Elective	-	Spring	7.5
MATH70060	Complex Manifolds	Elective	-	Spring	7.5
MATH70035	Algebra 3	Elective	-	Autumn	7.5
MATH70036	Group Theory	Elective	-	Autumn	7.5
MATH70037	Galois Theory	Elective	-	Autumn	7.5
MATH70038	Graph Theory	Elective	-	Autumn	7.5
MATH70039	Group Representation Theory	Elective	-	Spring	7.5
MATH70040	Formalising Mathematics	Elective	-	Spring	7.5
MATH70061	Commutative Algebra	Elective	-	Autumn	7.5
MATH70062	Lie Algebras	Elective	-	Autumn	7.5

[1] **Core** modules are those which serve a fundamental role within the curriculum, and for which achievement of the credits for that module is essential for the achievement of the target award. Core modules must therefore be taken and passed in order to achieve that named award. **Compulsory** modules are those which are designated as necessary to be taken as part of the programme syllabus. Compulsory modules can be compensated. **Elective** modules are those which are in the same subject area as the field of study and are offered to students in order to offer an element of choice in the curriculum and from which students are able to select. Elective modules can be compensated.

MATH70063	Algebra 4	Elective	-	Spring	7.5
MATH70041	Number Theory	Elective	-	Autumn	7.5
MATH70042	Algebraic Number Theory	Elective	-	Spring	7.5
MATH70064	Elliptic Curves	Elective	-	Autumn	7.5
MATH70132	Mathematical Logic	Elective	-	Spring	7.5
MATH70140	Geometric Complex Analysis	Elective	-	Spring	7.5
MATH70135	Advanced Partial Differential Equations 1	Elective	-	Autumn	7.5
MATH70021	Advanced Partial Differential Equations 2	Elective	-	Spring	7.5
MATH70066	Advanced Topics in Mathematics (not running in 2025-26)	Elective	-	Autumn	7.5
MATH70019	Theory of Partial Differential Equations	Elective	-	Autumn	7.5
MATH70086	Pure Mathematics Research Project	Core	-	Summer	30
				Credit Total	90

Please note: Students may also take modules from the Department's MSc Applied Mathematics (www.imperial.ac.uk/mathematics/postgraduate/msc/msc-in-applied-mathematics/modules/) and with approval from the Programme Director as well as from the involved programme, from other Master's courses in the department and university.

Normally, no more than 15 ECTS points (divided between at most two modules) can be taken from outside the list herein. In exceptional situations where an additional module would be relevant to the project being undertaken by the student, and this has been approved by the project supervisor and the Programme Director, a maximum of 22.5 ECTS points can be taken from outside the list.

Progression and Classification

Award and Classification for Postgraduate Students

Award of a MSc Degree
To qualify for the award of the Pure Mathematics MSc degree you must have:
1. accumulated credit to the value of no fewer than 90 credits at level 7;
2. and no more than 15 credits as a Compensated Pass.
3. met any specific requirements for an award as outlined in the approved programme specification for that award.

Exit Degrees:

Award of a Postgraduate Certificate (PG Cert)
To qualify for the award of a postgraduate certificate you must have a minimum of 30 credits at Level 7. This may be composed of the project element (worth 30 ECTS), or 30 ECTS worth of modules.

Award of a Postgraduate Diploma (PG Dip)
To qualify for the award of a postgraduate diploma you must have passed modules to the value of no fewer than 60 credits at Level 7 and no more than 10 credits as a Compensated Pass. The 60 credits may include the project element (worth 30 ECTS) and 30 ECTS worth of modules, or 60 ECTS worth of modules.

The PG Cert and PG Dip exit award titles for students on the Formalisation of Mathematics stream will be 'Pure Mathematics'. it will not include a reference to the Formalisation of Mathematics stream in the award title.

Classification of Postgraduate Taught Awards

The university sets the class of Degree that may be awarded as follows:
Distinction: 70.00% or above
Merit: 60.00% or above but less than 70.00%.
Pass: 50.00% or above but less than 60.00%.

For a Masters, your classification will be determined through Programme Overall Weighted Average and the designated dissertation or final major project module meeting the threshold for the relevant classification band.

Your degree algorithm provides an appropriate and reliable summary of your performance against the programme learning outcomes. It reflects the design, delivery, and structure of your programme without unduly over-emphasising particular aspects.

Programme Specific Regulations

N/A

Supporting Information
The Programme Handbook is available at: www.imperial.ac.uk/mathematics/postgraduate/msc/msc-in-pure-mathematics/current-students/
The Module Handbook is available at: https://www.imperial.ac.uk/media/imperial-college/faculty-of-natural-sciences/department-of-mathematics/ammp/2025-26-MSc-Applied-Module-Guide-and-Syllabus.pdf
Imperial's entry requirements for postgraduate programmes can be found at: www.imperial.ac.uk/study/pg/apply/requirements
Imperial's Quality & Enhancement Framework is available at: www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance
Imperial's Academic and Examination Regulations can be found at: www.imperial.ac.uk/about/governance/academic-governance/regulations
Imperial College London is an independent corporation whose legal status derives from a Royal Charter granted under Letters Patent in 1907. In 2007 a Supplemental Charter and Statutes was granted by HM Queen Elizabeth II. This Supplemental Charter, which came into force on the date of Imperial's Centenary, 8th July 2007, established Imperial as a University with the name and style of "The Imperial College of Science, Technology and Medicine". www.imperial.ac.uk/admin-services/secretariat/university-governance-structure/charters/
Imperial College London is regulated by the Office for Students (OfS) www.officeforstudents.org.uk/advice-and-guidance/the-register/
This document provides a definitive record of the main features of the programme and the learning outcomes that you may reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities provided. This programme specification is primarily intended as a reference point for prospective and current students, academic and support staff involved in delivering the programme and enabling student development and achievement, for its assessment by internal and external examiners, and in subsequent monitoring and review.