

These programme regulations should be read in conjunction with the University's [core regulations for undergraduate programmes](#), and the [marking and classification conventions for undergraduate programmes](#).

**Master of Mathematics (G103)**

**Master of Mathematics with Year Abroad (G117)**

**Master of Mathematics with Placement (G118)**

1. This programme is available at Durham City, in a full-time mode of study.

**Level 1 (Certificate)**

2. Candidates shall study and be assessed in the following modules:

		<b>Credit value</b>
Calculus I (Maths Hons) #	<a href="#">MATH1081</a>	20
Linear Algebra I (Maths Hons) #	<a href="#">MATH1091</a>	20
Analysis I #	<a href="#">MATH1051</a>	20
Programming I	<a href="#">MATH1587</a>	10
Dynamics I	<a href="#">MATH1607</a>	10
Probability I	<a href="#">MATH1597</a>	10
Statistics I	<a href="#">MATH1617</a>	10

3. Candidates shall also study and be assessed in EITHER the module

		<b>Credit value</b>
Discrete Mathematics	<a href="#">MATH1031</a>	20

OR module(s) to the value of 20 credits offered by any other Boards of Studies (including up to 20 credits of appropriate language modules offered by the University's Centre for Foreign Language Study).

**Level 2 (Diploma)**

4. Candidates shall study and be assessed in the following modules:

		<b>Credit value</b>
Complex Analysis II	<a href="#">MATH2011</a>	20
Analysis in Many Variables II	<a href="#">MATH2031</a>	20

5. Candidates shall also study and be assessed in one of the modules from List A:

<b>List A:</b>		<b>Credit value</b>
Algebra II	<a href="#">MATH2581</a>	20
Mathematical Physics II	<a href="#">MATH2071</a>	20
Probability II	<a href="#">MATH2647</a>	10
Statistical Inference II	<a href="#">MATH2711</a>	20

6. Candidates shall also study and be assessed in modules from List B to make a total of 120 credits:

<b>List B:</b>		<b>Credit value</b>
Algebra II	<a href="#">MATH2581</a>	20
Data Science and Statistical Computing II	<a href="#">MATH2687</a>	10
Elementary Number Theory II	<a href="#">MATH2617</a>	10
Markov Chains II	<a href="#">MATH2707</a>	10
Mathematical Physics II	<a href="#">MATH2071</a>	20
Mathematical Modelling II	<a href="#">MATH2637</a>	10
Numerical Analysis II	<a href="#">MATH2051</a>	20
Probability II	<a href="#">MATH2647</a>	10
Special Relativity and Electromagnetism II	<a href="#">MATH2657</a>	10
Statistical Inference II	<a href="#">MATH2711</a>	20
Statistical Modelling II	<a href="#">MATH2697</a>	10
Topology II	<a href="#">MATH2727</a>	10

### Year Abroad (Year 3)

- 7 This programme is only available to students admitted initially to the MMath Mathematics (G103) programme (or equivalent). Candidates wishing to transfer to MMath Mathematics with year abroad (G117) must:
- successfully complete Level 1 of the MMath Mathematics (G103) programme (or equivalent) with an average mark of 55%, and be eligible to progress to Level 2 of the programme;
  - during Level 2 study, have applied to the Board of Studies in Mathematical Sciences to be admitted to the MMath Mathematics with year abroad (G117) and have had their application approved by that Board;
  - secure an exchange opportunity with an approved international partner institution of the University;
  - successfully complete Level 2 of their existing programme (G103 or equivalent) so as to be eligible to progress to Level 3;
  - where tuition at the Overseas Partner Institution is in a foreign language, candidates must have taken at least 20 credits in an appropriate language module at level 1.

### Placement (Year 3)

- 8 This programme is only available to students admitted initially to the MMath Mathematics (G103) programme (or equivalent). Candidates wishing to transfer to MMath Mathematics with Placement (G118) must:
- successfully complete Level 1 of the MMath Mathematics (G103) programme (or equivalent) with an average mark of 55%, and be eligible to progress to Level 2 of the programme;
  - during Level 2 study, have applied to the Board of Studies in Mathematical Sciences to be admitted to the MMath Mathematics with placement (G118) and have had their application approved by that Board;
  - secure a placement opportunity with an approved employer or institution;
  - successfully complete Level 2 of their existing programme (G103 or equivalent) so as to be eligible to progress to Level 3.

### Level 3 (Degree)

9. Candidates shall study and be assessed in EITHER modules to the value of 120 credits from one or more of lists 3A, 3B, 3C, subject to timetable compatibility (note that modules within each list are guaranteed to be timetable compatible) OR (again, subject to timetable compatibility) modules to the value of 100 credits from one or more of lists 3A, 3B, 3C, and one open 20 credit module chosen from those offered by any other Board of Studies (including appropriate credit-bearing language modules offered by the University's Centre for Foreign Language Study).

#### List 3A:

		Credit value
Analysis III	<a href="#">MATH3011</a>	20
Cryptography and Codes III	<a href="#">MATH3401</a>	20
Decision Theory III	<a href="#">MATH3071</a>	20
Mathematical Biology III	<a href="#">MATH3171</a>	20
Mathematics into Schools	<a href="#">MATH3481</a>	20
Number Theory III	<a href="#">MATH3031</a>	20
Partial Differential Equations III	<a href="#">MATH3291</a>	20
Differential Geometry III	<a href="#">MATH3021</a>	20
Solitons III	<a href="#">MATH3231</a>	20
Operations Research III	<a href="#">MATH3141</a>	20
Geometric Topology III	<a href="#">MATH3491</a>	20
Galois Theory III	<a href="#">MATH3041</a>	20
Geometry III	<a href="#">MATH3201</a>	20
Dynamical Systems III	<a href="#">MATH3091</a>	20

#### List 3B:

Analysis III	<a href="#">MATH3011</a>	20
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Cryptography and Codes III	<a href="#">MATH3401</a>	20
Decision Theory III	<a href="#">MATH3071</a>	20
Mathematical Biology III	<a href="#">MATH3171</a>	20
Mathematics into Schools	<a href="#">MATH3481</a>	20
Number Theory III	<a href="#">MATH3031</a>	20
Partial Differential Equations III	<a href="#">MATH3291</a>	20
Differential Geometry III	<a href="#">MATH3021</a>	20
Solitons III	<a href="#">MATH3231</a>	20
Geometry of Mathematical Physics III	<a href="#">MATH3471</a>	20
Fluid Mechanics III	<a href="#">MATH3101</a>	20
Quantum Computing III	<a href="#">MATH3391</a>	20
Quantum Mechanics III	<a href="#">MATH3111</a>	20
Dynamical Systems III	<a href="#">MATH3091</a>	20

**List 3C:**

Analysis III	<a href="#">MATH3011</a>	20
Cryptography and Codes III	<a href="#">MATH3401</a>	20
Decision Theory III	<a href="#">MATH3071</a>	20
Mathematical Biology III	<a href="#">MATH3171</a>	20
Mathematics into Schools	<a href="#">MATH3481</a>	20
Number Theory III	<a href="#">MATH3031</a>	20
Partial Differential Equations III	<a href="#">MATH3291</a>	20
Advanced Statistical Modelling III	<a href="#">MATH3411</a>	20
Bayesian Computation and Modelling III	<a href="#">MATH3421</a>	20
Operations Research III	<a href="#">MATH3141</a>	20
Fluid Mechanics III	<a href="#">MATH3101</a>	20
Machine Learning and Neural Networks III	<a href="#">MATH3431</a>	20
Stochastic Processes III	<a href="#">MATH3251</a>	20
Mathematical Finance III	<a href="#">MATH3301</a>	20

**Level 4 (Degree)**

10. Candidates shall study and be assessed in the following modules:

Mathematical Project IV	<a href="#">MATH4072</a>	<b>Credit value</b> 40
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11. Candidates shall also study and be assessed in modules to the value of 80 credits from one or more of Lists 4A, 4B, 4C, subject to timetable compatibility (note that modules within each list are guaranteed to be timetable compatible):

**List 4A:**

Advanced Probability IV	<a href="#">MATH4431</a>	<b>Credit value</b> 20
Functional Analysis and Applications IV	<a href="#">MATH4371</a>	20
Representation Theory IV	<a href="#">MATH4241</a>	20
Advanced Mathematical Biology IV	<a href="#">MATH4411</a>	20
Stochastic Analysis IV	<a href="#">MATH4261</a>	20
Riemannian Geometry IV	<a href="#">MATH4171</a>	20
Topics in Combinatorics IV	<a href="#">MATH4281</a>	20
Topics in Algebra and Geometry IV	<a href="#">MATH4151</a>	20
Algebraic Topology IV	<a href="#">MATH4161</a>	20
General Relativity IV	<a href="#">MATH4051</a>	20
Advanced Quantum Theory IV	<a href="#">MATH4061</a>	20
Ergodic Theory IV	<a href="#">MATH4361</a>	20

**List 4B:**

Functional Analysis and Applications IV	<a href="#">MATH4371</a>	20
Statistical Mechanics IV	<a href="#">MATH4231</a>	20
Representation Theory IV	<a href="#">MATH4241</a>	20
Advanced Mathematical Biology IV	<a href="#">MATH4411</a>	20
Superstrings IV	<a href="#">MATH4271</a>	20
Riemannian Geometry IV	<a href="#">MATH4171</a>	20
Topics in Combinatorics IV	<a href="#">MATH4281</a>	20
Topics in Algebra and Geometry IV	<a href="#">MATH4151</a>	20

Geophysical and Astrophysical Fluids IV	<a href="#">MATH4421</a>	20
General Relativity IV	<a href="#">MATH4051</a>	20
Advanced Quantum Theory IV	<a href="#">MATH4061</a>	20
Ergodic Theory IV	<a href="#">MATH4361</a>	20

**List 4C:**

Advanced Probability IV	<a href="#">MATH4431</a>	20
Functional Analysis and Applications IV	<a href="#">MATH4371</a>	20
Spatio-Temporal Statistics	<a href="#">MATH4341</a>	20
Advanced Mathematical Biology IV	<a href="#">MATH4411</a>	20
Stochastic Analysis IV	<a href="#">MATH4261</a>	20
Uncertainty Quantification IV	<a href="#">MATH4337</a>	10
Clinical Trials	<a href="#">MATH4407</a>	10
Topics in Combinatorics IV	<a href="#">MATH4281</a>	20
Topics in Algebra and Geometry IV	<a href="#">MATH4151</a>	20
Deep Learning and Artificial Intelligence	<a href="#">MATH4267</a>	10
High-Dimensional Data Analysis IV	<a href="#">MATH4287</a>	10
General Relativity IV	<a href="#">MATH4051</a>	20
Non-Parametric Statistics IV	<a href="#">MATH4391</a>	20
Ergodic Theory IV	<a href="#">MATH4361</a>	20
Level 4 modules up to the value of 20 credits from another Board of Studies, subject to the agreement of the Mathematics Board of Studies		

**Assessment, progression and award**

12. Modules marked with the # symbol must be passed at 40% or above in order to progress to the next level of study.
13. Students who fail to achieve the standard required under the Core Regulations for progression to Level 3 of the MMath but who achieve the standard required for progression to Level 3 of a Bachelors programme may progress to Level 3 of the BSc in Mathematics in accordance with the Core Regulations.
14. A student who is qualified to progress from Level 2 to Level 3 of the MMath but wishes to transfer to Level 3 of the BSc Mathematics shall be permitted to do so.
15. Students whose achievement at the end of Level 3 does not qualify them to proceed to Level 4 may be awarded the degree of BSc in Mathematical Sciences at either Honours or Ordinary level in accordance with the Core Regulations for the award of a Bachelors degree.
16. Students whose achievement at the end of Level 4 does not qualify them to be awarded the degree of MMath may be awarded the degree of BSc in Mathematical Sciences with Honours in accordance with the Core Regulations for the award of a Bachelors degree.

**Year Abroad**

17. Students admitted to the MMath Mathematics (G103) are able to apply to transfer to the MMath Mathematics with Year Abroad programme (G117). Students undertaking the MMath Mathematics with Year Abroad programme (G117) will undertake an approved exchange in an overseas university taking a course of study chosen in consultation with the programme director and the host institution.
18. Students who the Board of Examiners for Mathematics deem to have made satisfactory progress on the year abroad will continue to Level 3 of the MMath Mathematics with Year Abroad programme (G117). Students who have not made satisfactory progress on the year abroad will not be permitted to continue on the MMath Mathematics with Year Abroad (G117) programme, but must instead proceed to Level 3 of the MMath Mathematics (G103) programme.

**Placement**

19. Students admitted to the MMath Mathematics (G103) are able to apply to transfer to the MMath Mathematics with Placement programme (G118). Students undertaking the MMath Mathematics with Placement programme (G118) will undertake an approved placement chosen in consultation with the programme director and the placement provider.

20. Students who the Board of Examiners for Mathematics deem to have made satisfactory progress on the placement will continue to Level 3 of the MMath Mathematics with Placement programme (G118). Students who have not made satisfactory progress on the placement will not be permitted to continue on the MMath Mathematics with Placement (G118) programme, but must instead proceed to Level 3 of the MMath Mathematics (G103) programme.