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:

		Credit value
Calculus I (Maths Hons) #	MATH1081	20
Linear Algebra I (Maths Hons) #	MATH1091	20
Analysis I #	MATH1051	20
Programming I	MATH1587	10
Dynamics I	MATH1607	10
Probability I	MATH1597	10
Statistics I	MATH1617	10

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

		Credit value
Discrete Mathematics	MATH1031	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:

		Credit value
Complex Analysis II	MATH2011	20
Analysis in Many Variables II	MATH2031	20

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

List A:		**Credit value**
Algebra II	MATH2581	20
Mathematical Physics II	MATH2071	20
Probability II	MATH2647	10
Statistical Inference II	MATH2711	20

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

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

a. 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;

b. 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;

c. secure an exchange opportunity with an approved international partner institution of the University;

d. successfully complete Level 2 of their existing programme (G103 or equivalent) so as to be eligible to progress to Level 3;

e. 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:

a. 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;

b. 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;

c. secure a placement opportunity with an approved employer or institution;

d. 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	MATH3011	20
Cryptography and Codes III	MATH3401	20
Decision Theory III	MATH3071	20
Mathematical Biology III	MATH3171	20
Mathematics into Schools	MATH3481	20
Number Theory III	MATH3031	20
Partial Differential Equations III	MATH3291	20
Differential Geometry III	MATH3021	20
Solitons III	MATH3231	20
Operations Research III	MATH3141	20
Geometric Topology III	MATH3491	20
Galois Theory III	MATH3041	20
Geometry III	MATH3201	20
Dynamical Systems III	MATH3091	20
List 3B:		
Analysis III	MATH3011	20

Cryptography and Codes III	MATH3401	20
Decision Theory III	MATH3071	20
Mathematical Biology III	MATH3171	20
Mathematics into Schools	MATH3481	20
Number Theory III	MATH3031	20
Partial Differential Equations III	MATH3291	20
Differential Geometry III	MATH3021	20
Solitons III	MATH3231	20
Geometry of Mathematical Physics III	MATH3471	20
Fluid Mechanics III	MATH3101	20
Quantum Computing III	MATH3391	20
Quantum Mechanics III	MATH3111	20
Dynamical Systems III	MATH3091	20

List 3C:

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

Level 4 (Degree)

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

		Credit value
Mathematical Project IV	MATH4072	40

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:		**Credit value**
Advanced Probability IV	MATH4431	20
Functional Analysis and Applications IV	MATH4371	20
Representation Theory IV	MATH4241	20
Advanced Mathematical Biology IV	MATH4411	20
Stochastic Analysis IV	MATH4261	20
Riemannian Geometry IV	MATH4171	20
Topics in Combinatorics IV	MATH4281	20
Topics in Algebra and Geometry IV	MATH4151	20
Algebraic Topology IV	MATH4161	20
General Relativity IV	MATH4051	20
Advanced Quantum Theory IV	MATH4061	20
Ergodic Theory IV	MATH4361	20

List 4B:

Functional Analysis and Applications IV	MATH4371	20
Statistical Mechanics IV	MATH4231	20
Representation Theory IV	MATH4241	20
Advanced Mathematical Biology IV	MATH4411	20
Superstrings IV	MATH4271	20
Riemannian Geometry IV	MATH4171	20
Topics in Combinatorics IV	MATH4281	20
Topics in Algebra and Geometry IV	MATH4151	20

Geophysical and Astrophysical Fluids IV	MATH4421	20
General Relativity IV	MATH4051	20
Advanced Quantum Theory IV	MATH4061	20
Ergodic Theory IV	MATH4361	20

List 4C:

Advanced Probability IV	MATH4431	20
Functional Analysis and Applications IV	MATH4371	20
Spatio-Temporal Statistics	MATH4341	20
Advanced Mathematical Biology IV	MATH4411	20
Stochastic Analysis IV	MATH4261	20
Uncertainty Quantification IV	MATH4337	10
Clinical Trials	MATH4407	10
Topics in Combinatorics IV	MATH4281	20
Topics in Algebra and Geometry IV	MATH4151	20
Deep Learning and Artificial Intelligence	MATH4267	10
High-Dimensional Data Analysis IV	MATH4287	10
General Relativity IV	MATH4051	20
Non-Parametric Statistics IV	MATH4391	20
Ergodic Theory IV	MATH4361	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.