



### 1. Programme Title(s) and Code(s):

<i>Programme Title</i>	<i>UCAS Code</i>	<i>GU Code</i>
BSc Honours in Mathematics	G100	G100-2208
BSc Honours in Applied Mathematics	G120 G122-2208	
MA Honours in Mathematics	G100 G102-2000	
BSc Honours in Pure Mathematics	G111 G111-2208	

### 2. Academic Session:

2023-24

### 3. SCQF Level (see [Scottish Credit and Qualifications Framework Levels](#)):

10

### 4. Credits:

480

### 5. Entrance Requirements:

Please refer to the current undergraduate prospectus at: <http://www.gla.ac.uk/prospectuses/undergraduate/>

Please refer to the current graduate prospectus at: <http://www.gla.ac.uk/prospectuses/postgraduate/>

### 6. ATAS Certificate Requirement (see [Academic Technology Approval Scheme](#)):

ATAS Certificate not required

### 7. Attendance Type:

Full Time

### 8. Programme Aims:

- To develop in all students rigorous, logical, deductive reasoning;
- To give students a solid foundation in the fundamental ideas of pure mathematics, calculus, mathematical methods and modern applied mathematics;
- To enable students to use appropriate methods to solve problems and to prove results;
- To prepare students for a wide range of future careers through the acquisition of specific skills and

<sup>1</sup> This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if full advantage is taken of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each course can be found in course handbooks and other programme documentation and online at [www.gla.ac.uk/](http://www.gla.ac.uk/)

The accuracy of the information in this document is reviewed periodically by the University and may be checked by the Quality Assurance Agency for Higher Education.

general mathematical ability;

- To provide an opportunity for students to study in depth one or more chosen topics.

## 9. Intended Learning Outcomes of Programme:

The programme provides opportunities for students to develop and to demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas.

Knowledge and Understanding:

By the end of this programme students will be able to:

- display a sound understanding of the framework of mathematics;
- apply the principles and techniques of mathematics to solve a wide range of mathematical problems both similar to previously worked examples or unseen;
- display a broad and critical understanding of the nature of proof and what constitutes a proof;
- present and write articles involving the fundamental concepts, principles, theories and methods of mathematics;
- take problems expressed orally and verbally, reformulate them within the framework of mathematics, solve them using the tools of mathematics and communicate their solutions in oral and verbal form.

Skills and Other Attributes:

Subject-specific/practical skills

By the end of this programme students will be able to:

- reproduce key mathematical definitions, theorems and their proofs and adapt such material to specific or modified situations;
- appreciate how to proceed to impose pattern and structure on complex information by association with how this is achieved in the development of mathematics;
- make appropriate use of the tools of mathematics to solve real problems, obtaining arithmetically correct results by means of scientific calculators in simple cases and mathematical software packages or a programming language for more complex problems;
- make appropriate use of ICT facilities, including specialist text/word processing and mathematical software packages;
- apply the concepts and techniques of mathematics to other disciplines;
- work independently on a project but with the support of an experienced supervisor.

Intellectual skills

By the end of this programme students will be able to:

- analyse and construct rigorous logical arguments;
- apply the principles of mathematics to evaluate complex logical arguments, in particular those involving abstract concepts;
- take a problem for investigation, identify the important features of the problem and construct a framework to capture these features within a mathematical model;
- select and apply appropriate mathematical methods and tools to solve the equations arising in the mathematical model, and be aware of the assumptions made and the limitations that these assumptions impose on the usefulness of the solution obtained;
- interpret the results of the mathematical analysis with the intention of accepting these results or further refining the mathematical model to incorporate further realism within the model, as appropriate.

Transferable/key skills

By the end of this programme students will be able to:

- think logically and analytically in concrete and abstract situations;
- adapt theory according to particular circumstances;
- adopt a structured approach to problem solving;
- apply the techniques and structured procedures of mathematics to solve problems in other disciplines;
- assess critically numerical and graphical information;
- make efficient use of computers for analysing and presenting information;

- communicate clearly and appropriately, both in writing and orally;
- work independently , with the support of experienced supervisors available;
- work effectively with others in a group or team setting;
- manage time and meet deadlines;
- be self-aware and self-critical and understand education as a life-long process.

### 10. Typical Learning and Teaching Approaches:

At Levels 3 and 4, every lecture course has a credit value of either 10 or 20 credits. Each 10 credit course involves 17 lectures and 5 tutorials during the semester except for Writing and Presenting Mathematics, which has a unique structure. 20 credit courses have 34 lectures and 10 tutorials during the semester.

### 11. Typical Assessment Methods:

Is examined in unseen degree examinations, compulsory project work (worth 20 credits) of an individual nature and compulsory individual and group work involving the writing and presenting of mathematics.

### 12. Programme Structure and Features:

The route extends over four years of full-time study. It may be undertaken in the Colleges of Science or Arts and the result will either be a BSc (Hons) in the Colleges of Science or a MA (Hons) in the College of Arts.

A candidate for the Honours degree must obtain a minimum of 480 credits, 240 of which must be awarded for Honours courses. The regular route involves four years of study that are divided into two pre-Honours years, in which introductory courses are studied, followed by two Honours years. In all cases, students following the regular route must take a minimum of 240 credits in the first two years. Pure Mathematics students would be required to take 80 credits marked P (Single Honours) across their two Honours years. Applied Mathematics students would be required to take 80 credits marked A (Single Honours) across their two Honours years. Mathematics students would have a free choice across all of the honours courses that we offer. In reality we would expect almost all students to opt to take a Mathematics Degree rather than a Pure or Applied Mathematics Degree since this will allow them maximum choice.

Year	Courses	Total Credits	Mathematics requirements for continuation
1	Mathematics 1 (40 credits) Maths1017	40 credits (Mathematics) & 80 credits (other courses) Total = 120 credits	Grade D3 or better
2	<u>Mathematics compulsory courses</u> 2A (10 credits) Maths2001 2B (10 credits) Maths2004 2C (10 credits) Maths2032 2D (10 credits) Maths2033 2E (10 credits) Maths2034 2F (10 credits) Maths2035	60 credit (Mathematics) & 60 credits (other courses) Total = 120 credits	Grade D3 or better in each course with GPA on these six courses of at least 12, normally at the first attempt.
3	(M) Analysis of Differentiation & Integration (10 credits) Maths4073 (P) Metric Spaces & Basic Topology (20 credits) Maths4077 (M) Mathematical Methods (20 credits) Maths4075 (M) Writing & Presenting Mathematics	Total = 120 credits	Grade D3 or better overall courses

	<p>(10 credits) Maths4040  (M) Methods of Complex Analysis  (10 credits) Maths4076  (P) Algebra (20 credits) Maths4072  (A) Modelling of Rigid &amp; Deformable Bodies (20 credits) Maths4078  (A) Dynamical Systems  (10 credits) Maths4074</p> <p>Alternative exit points:- After Year 3, students are normally qualified for a designated degree in Mathematics.</p>			
4	<p>Semester 1: 40 credits + 20 credit project  Semester 2: 60 credits  or  Semester 1: 50 credits + 20 credit project  Semester 2: 50 credits</p> <p>(P) Differential Geometry (20 credits)  Maths4101  (P) Topics in Algebra (10 credits)  Maths4111  (M) Number Theory (10 credits)  Maths4108  (M) Numerical Methods (20 credits)  Maths4109  (M) 4H: Measure Theory and Probability  (10 credits) Maths4116  (M) Project (20 credits) Maths4061P  (A) Fluid Mechanics (10 credits)  Maths4102  (A) Partial Differential Equations (20 credits) Maths4110  (P) Functional Analysis (20 credits)  Maths4103  (P) Galois Theory (10 credits)  Maths4105  (P) Algebraic and Geometric Topology  (20 credits) Maths4112  (M) Financial Statistics (10 credits)  Stats4010  (M) Further Complex Analysis (10 credits) Maths4104  (A) Continuum Mechanics &amp; Elasticity  (20 credits) Maths4100  (A) Mathematical Physics (10 credits)  Maths4107  (A) Mathematical Biology (20 credits)  Maths4106</p>	Total = 120 credits		

### Exit Route: Designated Degree

Two versions of the early exit award of a Designated degree are available for students who do not achieve the Honours entry requirement at the end of Year 2 or who choose to leave early. The first gives a route back to the Honours programme in Year 4 while the second does not.

#### Version A:

Entry Requirements: Achieve D3 in the courses 2A, 2B, 2C, 2D, 2E and 2F and a GPA of 12.0 in these courses plus the General Science Faculties progress requirements.

Structure of Year 3: Students take the standard Year 3 courses of the B.Sc. Honours programme as outlined in the above table.

If a student achieves the same standard (see table above) as that required for Honours students to enter Year 4, then the student may, if he/she wishes, be readmitted onto the Honours programme, entering Year 4 of the programme.

#### Version B:

Entry Requirements: Achieve D3 in the courses 2A, 2B, 2D and a GPA of 9.0 in the courses 2C, 2E and 2F.

Structure of Year 3: Students take 80 credits of special Mathematics courses with 40 credits of material from elsewhere (in accordance with the general University regulations).

#### Semester 1:

3R: Finite Mathematics (MATHS3021) [10 credits]

3S: Mathematical Methods (MATHS3019) [20 credits]

3T: Analysis (MATHS3022) [10 credits]

3W: Writing and Presenting Mathematics (MATHS3018) [10 credits]

#### Semester 2:

3U: Complex Methods (MATHS3016) [10 credits]

3V: Dynamical Systems (MATHS3017) [10 credits]

3Q: Mechanics (MATHS3020) [10 credits]

A student taking this version will not be allowed back into the Honours programme.

### Regulations

This programme will be governed by the relevant regulations published in the University Calendar. These regulations include the requirements in relation to:

- (a) Award of the degree
- (b) Progress
- (c) Early exit awards
- (d) (For undergraduate programmes, where appropriate) Entry to Honours

<http://www.gla.ac.uk/services/senateoffice/calendar/>

### **13. Programme Accredited By:**

### **14. Location(s):**

Glasgow

### **15. College:**

College of Science and Engineering

**16. Lead School:**

Mathematics and Statistics [REG30500000]

**17. Is this programme collaborative with another institution:**

No

**18. Awarding Institution(s):**

University of Glasgow

**19. Teaching Institution(s):**

University of Glasgow

**20. Language of Instruction:**

English

**21. Language of Assessment:**

English

**22. Relevant QAA Subject Benchmark Statements (see [Quality Assurance Agency for Higher Education](#)) and Other External or Internal Reference Points:**

See QAA subject benchmark statement at:

<http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Maths07.pdf>

**23. Additional Relevant Information (if applicable):**

Support for students is provided by the Postgraduate/Undergraduate Adviser(s) of Studies supported by University resources such Student Learning Development ([www.gla.ac.uk/myglasgow/sld/](http://www.gla.ac.uk/myglasgow/sld/)), Counselling & Psychological Services ([www.gla.ac.uk/myglasgow/counselling/](http://www.gla.ac.uk/myglasgow/counselling/)), the Disability Service ([www.gla.ac.uk/myglasgow/disability/](http://www.gla.ac.uk/myglasgow/disability/)) and the Careers Service ([www.gla.ac.uk/myglasgow/careers/](http://www.gla.ac.uk/myglasgow/careers/)).

**IT facilities**

Students are expected to carry out a variety of tasks using computers (eg the word processing of reports or essays) and Mathematics prefer to keep in contact with students via email. Students in Mathematics have a dedicated computer lab, equipped with 80 PCs.

**Feedback from students**

Each Mathematics class elects at least one of its members to represent it on School Staff-Student Committee. This is a forum in which student representatives may obtain further information about administrative matters, raise complaints and suggest improvements to their Mathematics courses. Two undergraduate students representatives are invited to attend meetings of Mathematics Learning and Teaching Committee where they may comment on any matter under discussion or, indeed, raise matters that they would like to have discussed. Student representation on other University committees and bodies (such as Senate) is the responsibility of the Students' Representative Council (SRC).

**24. Online Distance Learning:**

No

**25. Date of approval:**

02/10/2023