

School of Mathematics & Statistics

Important Degree Information:

B.Sc./M.A. Honours

The general requirements are 480 credits over a period of normally 4 years (and not more than 5 years) or part-time equivalent; the final two years being an approved honours programme of 240 credits, of which 90 credits are at 4000 level and at least a further 120 credits at 3000 and/or 4000 (H) levels. Refer to the appropriate Faculty regulations for lists of subjects recognised as qualifying towards either a B.Sc. or M.A. degree.

B.Sc./M.A. Honours with Integrated Year Abroad

The general requirements are 540 credits over a period of normally 5 years (and not more than 6 years) or part-time equivalent; the final three years being an approved honours programme of 300 credits, of which 60 credits are gained during the integrated year abroad, 90 credits are at 4000 level and at least a further 120 credits at 3000 and/or 4000 (H) levels. Refer to the appropriate Faculty regulations for lists of subjects recognised as qualifying towards either a B.Sc. or M.A. degree.

M.Sci. Honours (being phased out)

General requirements of 540 credits over a period of normally 4 years; of which 300 credits are in an approved Honours programme. See earlier regulations.

M.Math. Honours

General requirements are 600 credits over a period of normally 5 years or 4 years with Advanced Standing (and in no circumstances more than 6 years) or part-time equivalent; an approved honours programme of at least 330 credits of which 120 credits are at 5000 level and at least a further 210 are at 3000 level and above.

Other Information: In the case of students who spend part of the BSc/MA Honours Programme abroad on a recognised Exchange Scheme, the Programme Requirements will be amended to take into account courses taken while abroad.

Degree Programmes	Programme Requirements at:
(M.Math Honours): Applied Mathematics (M.Math Honours)	<p>Single Honours M.Math Applied Mathematics Degree:</p> <p>Level 1: At least 20 credits comprising MT1002</p> <p>Level 2: At least 60 credits comprising at least grade 15 in MT2001 and MT2003 (or MT2101 and PH2011)</p> <p>Level 3: At least 60 credits comprising MT3501, MT3503, MT3504, MT3601</p> <p>Level 4(H): At least 45 credits comprising MT4005, MT4509 and MT4510. In addition at least one of MT4111, MT4112, MT5611 and MT5612</p> <p>Level 5: At least 120 credits overall which must include MT5999 and at least 60 credits from MT5802, MT5806, MT5809, MT5810</p>

Mathematics & Statistics

Degree Programmes	Programme Requirements at:
<p>(M.Math Honours): Mathematics (M.Math Honours)</p>	<p>Single Honours M.Math Mathematics Degree: Level 1: At least 20 credits including MT1002</p> <p>In addition credit in one of MT1007, MT1008, MT2004 must be gained at some stage.</p> <p>Level 2: At least 90 credits including at least grade 15 in MT2001 (or MT2101), and at least grade 15 in two of MT2002, MT2003, MT2004 and MT2005</p> <p>Level 3: At least 60 credits including MT3501, MT3503, MT3504 and at least one of MT3600, MT3601 and MT3606</p> <p>Level 4(H): At least 30 credits including at least 2 of MT4003, MT4004, MT4510, MT4509, MT4606. In addition at least one of MT4111, MT4112, MT5111 and MT5112</p> <p>Level 5: At least 120 credits overall which must include MT5999 and at least 60 credits from MT5802, MT5810, MT5806, MT5809, MT5823-MT5828, MT5752, MT5753, MT5835, MT5990.</p>
<p>(M.Math Honours): Pure Mathematics (M.Math Honours)</p>	<p>Single Honours M.Math Pure Mathematics Degree: Level 1: At least 20 credits including MT1002</p> <p>Level 2: At least 60 credits including a pass at 15 or better in MT2001 and MT2002</p> <p>Level 3: At least 60 credits including MT3501, MT3503, MT3504 and MT3600</p> <p>Level 4(H): At least 30 credits including MT4003 and MT4004. In addition at least one of MT4111, MT4112, MT5611 and MT5612.</p> <p>Level 5: At least 120 credits overall which must include MT5999 and at least 60 credits from MT5823-MT5828, MT5990</p>
<p>(M.Math. Honours): Statistics (M.Math Honours)</p>	<p>Single Honours Statistics M.Math. Degree: Level 1: At least 20 credits including MT1002</p> <p>Level 2: At least 60 credits including a pass at 15 or better in MT2001 (or MT2101) and MT2004</p> <p>Level 3: At least 30 credits including MT3501, MT3606</p> <p>Level 4(H) & Level 5: The programme must include:</p> <ul style="list-style-type: none"> - at least one of MT4606, MT4531, MT5701; - at least one of MT4607, MT5753; - at least three of MT5752, MT5753, MT5806, MT5835, MT5990; - MT5999 - At least 120 credits at level 5.

Degree Programmes	Programme Requirements at:
<p>(B.Sc. Honours or M.A. Honours): Mathematics</p> <p>Entrants in 2002 and onwards</p>	<p>Single Honours Mathematics Degrees: Level 1: At least 20 credits comprising MT1002</p> <p>In addition credit in one of MT1007, MT1008 or MT2004 must be gained at some stage.</p> <p>Level 2: At least 60 credits comprising a pass at 11 or better in MT2001 (or MT2101) and a pass at 11 or better in at least one of MT2002, MT2003, MT2004 and MT2005. (An alternative route is MT2101 and PH2011)</p> <p>Level 3: At least 60 credits including MT3501, MT3503, MT3504, and at least one of MT3600, MT3601 and MT3606</p> <p>Level 4(H): At least 90 credits which must include</p> <ul style="list-style-type: none"> - MT4599; - at least one of MT4111, MT4112.
<p>(B.Sc. Honours or M.A. Honours): Mathematics</p> <p>Entrants in 2001 or before</p>	<p>Single Honours Mathematics Degrees: Level 1: 20 credits comprising MT1002</p> <p>Level 2: At least 60 credits comprising a pass at 11 or better in MT2001 (or MT2101) and in one of MT2002 or MT2003</p> <p>Level 3 and 4(H):</p> <ul style="list-style-type: none"> - 60 credits comprising MT3501, MT3502 (or MT3600), MT3503, MT3504; - at least two of MT4601 (MT3601), MT4603 (MT4003), MT4604 (MT4004) and MT4605 (MT4005); - at least one of MT4111, MT4112; - MT4599 - no less than 90 credits overall at level 4. -
<p>(B.Sc. Honours): Mathematics and Physics</p>	<p>Mathematics element of Joint Degree: Level 1: 20 credits comprising MT1002</p> <p>Level 2: 30-60 credits comprising passes at 11 or better in either (MT2001 and MT2003) or MT2101</p> <p>Level 3 and level 4(H): Normally a total of 120 credits which must include</p> <ul style="list-style-type: none"> - at least two of MT3501, MT3502 (or MT3600), MT3503, MT3504; - at least one of MT4601 (MT3601), MT4603 (MT4003), MT4604 (MT4004), MT4605 (MT4005); - at least one of MT4111, MT4112; - MT4599; <p>but excluding MT4505.</p>

Mathematics & Statistics

Degree Programmes	Programme Requirements at:
<p>(B.Sc. Honours): Mathematics and Chemistry, Computer Science, Economics, Geography, Internet Computing, Logic & Philosophy of Science, Management Science, Psychology.</p> <p>(M.A. Honours): Mathematics and Ancient History, Art History, Biblical Studies, Classical Studies, Economics, Hebrew, International Relations, Latin, Mediaeval History, Modern History, Philosophy, Psychology, Scottish History, Spanish[^], Theological Studies.</p> <p>[^] available also as 'with Integrated Year Abroad Degrees'</p>	<p>Mathematics element of Joint Honours Degrees: Level 1: 20 credits comprising MT1002</p> <p>Level 2: 60 credits comprising Passes at 11 or better in MT2001 (or MT2101) and one of MT2002 or MT2003</p> <p>Level 3 and level 4(H): Normally a total of 120 credits which must include: either <ul style="list-style-type: none"> - at least two of MT3501, MT3502 (or MT3600), MT3503, MT3504; - at least one of MT4601 (MT3601), MT4603 (MT4003), MT4604 (MT4004), MT4605 (MT4005); or <ul style="list-style-type: none"> - at least two of MT3501, MT3503, MT3504, MT3600, MT3601; - at least one of MT4003, MT4004, MT4005; together with <ul style="list-style-type: none"> - at least one of MT4111, MT4112; - MT4599. <p>Note The total number of MT credits at level 3 and 4 may be reduced to no less than 90 with the permission of the Director of Teaching.</p> </p>
<p>(B.Sc. Honours): Mathematics with French[^] or Geography or German[^] or Russian or Spanish[^]</p> <p>[^] available also as 'with Integrated Year Abroad Degrees'</p> <p>(M.A. Honours) Mathematics with Russian[^] or Spanish[^]</p>	<p>Mathematics element of Major Degree with a Modern Language: Level 1: 20 credits comprising MT1002</p> <p>Level 2: 60 credits comprising a pass at 11 or better in MT2001 (or MT2101) and in one of MT2002 or MT2003</p> <p>Level 3 and level 4(H): Normally a total of 180 credits which must include <ul style="list-style-type: none"> - at least three of MT3501, MT3502 (or MT3600), MT3503, MT3504; - at least one of MT4601 (MT3601), MT4603 (MT4003), MT4604 (MT4004), MT4605 (MT4005); - at least one of MT4111, MT4112; - MT4599. </p>
<p>(M.Phys. Honours): Mathematics and Theoretical Physics</p>	<p>Mathematics element of Joint M.Phys. Degree: Level 1: 20 credits comprising MT1002</p> <p>Level 2: 30 - 60 credits comprising MT2101 or (MT2001 and MT2003)</p> <p>Level 3: 30 credits comprising MT3501 and MT3504</p> <p>Level 4(H): At least 45 credits comprising at least three modules from MT4000 level, other than MT4505</p> <p>Level 5: At least 80 credits comprising either MT5999 or PH5102 plus at least two at MT5000 level, other than MT5805.</p> <p>Note Normally a total of 180 MT credits at level 3 and above.</p>

Degree Programmes	Programme Requirements at:
<p>(B.Sc. Honours): Statistics and one of Computer Science, Economics, Geography, Internet Computing, Logic & Philosophy of Science, Management Science.</p> <p>(M.A. Honours): Statistics and one of Economics, Philosophy</p>	<p>Statistics element of Joint Honours Degrees:</p> <p>Level 1: At least 20 credits including MT1002</p> <p>Level 2: At least 60 credits comprising passes at 11 or better in MT2001 (or MT2101) and MT2004</p> <p>Level 3 and level 4(H): Normally 120 credits which must include</p> <ul style="list-style-type: none"> - at least 30 credits comprising MT3501, MT3606; - at least two of MT3703, MT4531, MT4606, MT4607, MT4608, MT4609; - MT4599.
<p>(B.Sc. Honours): Statistics with French[^] or German[^] or Spanish[^]</p> <p>[^] available also as 'with Integrated Year Abroad Degrees'</p>	<p>Statistics element of a Major Degree with a Modern Language:</p> <p>Level 1: At least 20 credits comprising MT1002</p> <p>Level 2: At least 60 credits comprising passes at 11 or better in MT2001 (or MT2101) and MT2004</p> <p>Level 3 and level 4(H): Normally a total of 180 credits which must include</p> <ul style="list-style-type: none"> - 30 credits comprising MT3501, MT3606; - at least one of MT4531, MT4606; - at least two of MT3703, MT4607, MT4608, MT4609; - MT4599.

Students completing any other degree programmes (as defined in previous Course Catalogues) should discuss their module selections with one of the School's Honours Advisers.

Interdisciplinary (ID) Modules

This School co-ordinates and contributes to an inter-disciplinary module – **ID2003 Science Methods**. This appears in the Interdisciplinary Section of the Catalogue (Section 21)

Mathematics & Statistics (MT) Modules

MT1001 Introductory Mathematics

Credits:	20.0	Semester:	1
Prerequisites:	Higher or A level Mathematics (A/S level Mathematics with approval of Head of School)		
Anti-requisite:	MT1003, CS1010		
Description:	This module is designed to give students a secure base in elementary calculus to allow them to tackle the mathematics needed in other sciences. Students wishing to do more mathematics will be given a good foundation from which they can proceed to MT1002. Some of the work covered is a revision and reinforcement of material in the Scottish Highers and many A-level syllabuses.		
Class Hour:	9.00 am		
Teaching:	Five lectures, one tutorial and one laboratory.		
Assessment:	Continuous Assessment = 30%, 2 Hour Examination = 70%		
Re-Assessment:	2 Hour Examination = 100%		

Mathematics & Statistics

MT1002 Mathematics

Credits: 20.0 Semester: Either
Prerequisites: MT1001 or B at Advanced Higher Mathematics or B at A level Mathematics

Description: This module is designed to introduce students to the ideas, methods and techniques which they will need for applying mathematics in the physical sciences or for taking the study of mathematics further. It aims to extend and enhance their skills in algebraic manipulation and in differential and integral calculus, to develop their geometric insight and their understanding of limiting processes, and to introduce them to complex numbers and matrices.

Class Hour: 9.00 am
Teaching: Five lectures, one tutorial and one laboratory.
Assessment: Continuous Assessment = 30%, 2 Hour Examination = 70%
Re-Assessment: 2 Hour Examination = 100%

MT1003 Pure and Applied Mathematics

Credits: 20.0 Semester: 2
Prerequisite: MT1002

Description: The aim of this module is to provide students with a taste of both pure and applied mathematics, to give them insight into areas available for study in later years and to provide them with the opportunity to broaden their mathematical experience.

Class Hour: 9.00 am
Teaching: Five lectures, one tutorial and one laboratory.
Assessment: Continuous Assessment = 30%, 2 Hour Examination = 70%
Re-Assessment: 2 Hour Examination = 100%

MT1007 Statistics in Practice

Credits: 20.0 Semester: 2
Prerequisites: An A grade at GCSE/Grade 1 at Standard Grade Mathematics or a C grade at AS level/Higher Mathematics

Description: This module provides an introduction to statistical reasoning, elementary but powerful statistical methodologies, and real world applications of statistics. Case studies, such as building an optimal stock portfolio, and data vignettes are used throughout the course to motivate and demonstrate the principles. Students get hands-on experience exploring data for patterns and interesting anomalies as well as experience using modern statistical software to fit statistical models to data.

Class Hour: 11.00 am
Teaching: Four lectures, one tutorial and one laboratory.
Assessment: Continuous Assessment = 50%, 2 Hour Examination = 50%
Re-Assessment: Continuous Assessment = 25%, 2 Hour Examination = 75%

MT1008 Mathematical Information Technology

Credits: 20.0 Semester: 1
Prerequisites: Higher or A-level Mathematics

Antirequisites: IS1003, CS1003, MT1006

Description: This module provides an introduction to the use of Information Technology in Mathematical Science. The topics covered include basic IT skills, data handling and analysis, and the use of a computational algebra package such as MAPLE. Students will undertake small projects and present short written reports. No previous knowledge of computing is required.

Class Hour: 11.00 am
Teaching: Four lectures, one tutorial and one laboratory.
Assessment: Continuous Assessment = 100%
Re-Assessment: Resubmission of appropriate project work and/or resit of class test(s)

MT2001 Mathematics

Credits: 30.0 Semester: Either

Prerequisite: MT1002

Anti-requisite: MT2101

Description: The aims of this module are to extend the knowledge and skills gained by students in the module Mathematics MT1002, and in particular to enhance their skills in the theory and application of: differential and integral calculus of several real variables; limiting processes; linear mathematics.

Class Hour: 12.00 noon.

Teaching: Five lectures, one tutorial and one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

MT2002 Algebra and Analysis

Credits: 30.0 Semester: 1

Prerequisite: MT1002

Description: The aims of this module are to encourage students' understanding of the logical structure of mathematics and the nature of proof, and to introduce students to some fundamental concepts of abstract algebra and of analysis.

Class Hour: 11.00 am

Teaching: Five lectures, one tutorial and one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

MT2003 Applied Mathematics

Credits: 30.0 Semester: 2

Prerequisite: MT1002, MT2001

Anti-requisite: MT2101

Description: This module introduces students to applied mathematics through the construction, analysis and interpretation of mathematical models, and to the techniques of analysis used in mathematical modelling.

Class Hour: 12.00 noon.

Teaching: Five lectures, one tutorial and one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

MT2004 Statistics

Credits: 30.0 Semester: 2

Prerequisite: MT1002

Description: This module introduces students to the mathematical models of randomness used as part of statistical modelling and analysis. The module is a mix of fundamental mathematical statistics and applied statistical analysis and provides the background necessary for the 3000 level modules in statistics.

Class Hour: 10.00 am

Teaching: Five lectures, one tutorial and one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

Mathematics & Statistics

MT2005 Discrete Mathematics: Algorithms and Applications

Credits: 30.0 Semester: 2

Prerequisites: MT1002 or IS1003 or MT1008

Description: In recent years mathematics of discrete (finite) structures has greatly gained importance, especially with the development and expansion of computer technology. This course covers a selection of topics from discrete mathematics. The emphasis is on methods (algorithms) for manipulating finite mathematical objects (such as graphs, codes, abstract machines, etc.), solving problems using these algorithms, as well as on 'real life' applications of these methods to problems in operational research. The course also gives a mathematical treatment of computational machines (automata and Turing machines) and safe transfer of information (coding and encryption).

Class Hour: 11.00 am

Teaching: Five lectures, one tutorial and one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

MT2101 Mathematical Methods

Credits: 30.0 Semester: 2

Prerequisite: MT1002

Anti-requisites: MT2001, MT2003

Description: This module is designed for intending Physics students and combines elements of MT2001 and MT2003. The aims of this module are to extend the knowledge and skills gained by students in the module MT1002, and in particular enhance their skills in the theory and application of: limiting processes and differential and integral calculus in several real variables, methods of Fourier series and Laplace transforms, and vector calculus. The module MT2101 may, with the permission of the Head of School, be acceptable as a alternative to MT2001 in the entry requirements for Honours courses involving mathematics or statistics. However, students wishing to retain the option of entry to Honours Mathematics or Statistics should normally take MT2001.

Class Hour: 12.00 noon

Teaching: Five lectures, one tutorial, one practical.

Assessment: Continuous Assessment = 30%, 3 Hour Examination = 70%

Re-Assessment: 3 Hour Examination = 100%

The details of the Honours modules – that is 3000, 4000(H) and 5000 level modules – which relate to the programmes listed in this section, are available in the Honours Course Catalogue.