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 (and not more than 6 years) or part-time equivalent; the final three years being an approved honours programme of 360 credits, of which 120 credits are at 5000 level and at least a further 210 credits at 3000 and 4000 levels. General and Faculty of Science regulations apply. A special four year accelerated programme is available for students with Advanced Standing credits.

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

The Honours syllabus is undergoing a major change commencing in 2002-03 and Programme requirements listed below are those for students entering the first year of the Honours Programme in 2002-03 or subsequently. Students entering the Second Year of the Honours programme in 2002-03 should refer to School Handbooks and consult Honours Advisers for the requirements of their honours programme.

Degree Programmes	Programme Requirements at:
(B.Sc. Honours or M.A. Honours): **Applied Mathematics (not available to entrants after 2002-03)**	**Single Honours Applied Mathematics Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising a pass at 11 or better in both MT2001 and MT2003 **Level 3:** 60 credits comprising MT3501, MT3502, MT3503, MT3504 **Level 4(H):** At least 90 credits which must include: MT4601, MT4605; at least one of MT4111, MT4112; MT4599

Degree Programmes	Programme Requirements at:
(M..Math Honours): **Applied Mathematics (M.Math Honours)**	**Single Honours M.Math Applied Mathematics Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising at least grade 15 in MT2001 and MT2003 **Level 3:** 60 credits comprising MT3501, MT3502, MT3503, MT3504 **Level 4(H):** 45-60 credits comprising MT4601, MT4605 at least one of MT4111, MT4112 **Level 5:** 120 credits comprising MT5999 and at least 60 credits from the level 5000 modules in Applied Mathematics
(B.Sc. Honours or M.A. Honours): **Mathematics** **Entrants in 2001 or before**	**Single Honours Mathematics Degrees:** **Level 1:** 20 credits comprising MT1002 **Level 2:** At least 60 credits comprising a pass at 11 or better in MT2001 or MT2101 and in one of MT2002 or MT2003 **Level 3:** 60 credits comprising MT3501, MT3502, MT3503, MT3504 **Level 4(H):** At least 90 credits which must include at least two of MT4601, MT4603, MT4604 and MT4605; MT4599; at least one of MT4111, MT4112.
(B.Sc. Honours or M.A. Honours): **Mathematics** **Entrants in 2002 and onwards**	**Single Honours Mathematics Degrees:** **Level 1:** 20 credits comprising MT1002 MT1007, MT1008, MT2004* *Gain credit in at least one of these three modules. **Level 2:** 60 credits comprising a pass at 11 or better in MT2001 or MT2101 and in one of MT2002, MT2003. **Level 3:** 60 credits comprising four of MT3501, MT3502, MT3503, MT3504, MT3606 **Level 4(H):** At least 90 credits which must include - at least two of MT4601, MT4603, MT4604 and MT4605; - MT4599; - at least one of MT4111, MT4112.
(B.Sc. Honours): **Mathematics and Physics**	**Mathematics element of Joint Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 30-60 credits comprising passes at 11 or better in either (MT2001 and MT2003) or MT2101 **Level 3:** At least 30 credits comprising at least two of MT3501, MT3502, MT3503, MT3504; **Level 4(H):** At least 90 credits which must include from Mathematics - at least one of MT4601, MT4603, MT4604, MT4605; - at least one of MT4111, MT4112; - MT4599 but excluding MT4505

Degree Programmes	Programme Requirements at:
(B.Sc. Honours): **Mathematics and Computer Science, Chemistry, Economics, Geography, Internet Computing, Logic & Philosophy of Science, Management Science, Psychology.** (M.A. Honours): **Mathematics and Ancient History, Art History, Economics, Hebrew, Latin, Mediaeval History, Modern History, Philosophy, Psychology, Scottish History, Spanish^, Theological Studies.** ^ available also as 'with Integrated Year Abroad Degrees'	**Mathematics element of Joint Honours Degrees:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising Passes at 11 or better in MT2001 (or MT2101) and one of MT2002 or MT2003 **Level 3:** At least 30 credits comprising at least two of MT3501, MT3502, MT3503, MT3504; **Level 4(H):** At least 90 credits which must include from Mathematics - at least one of MT4601, MT4603, MT4604, MT4605; - at least one of MT4111, MT4112; - MT4599
(B.Sc. Honours): **Mathematics with French or German or Geography** (M.A. Honours) **Mathematics with Spanish**	**Mathematics element of Major Degree with a Modern Language:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising a pass at 11 or better in MT2001 or MT2101, and in one of MT2002 or MT2003 **Level 3:** 45 credits comprising at least three of MT3501 - MT3504; **Level 4(H):** At least 90 credits which must include from Mathematics - at least one of MT4601 – MT4605; - at least one of MT4111, MT4112; - MT4599
(B.Sc. Honours or M.A. Honours): **Mathematics and Statistics** **(no longer available to entrants after 2001-02)**	**Mathematics and Statistics Joint Honours Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 90 credits comprising a pass at 11 or better in - MT2001 or MT2101 - MT2004 - and in one of MT2002, MT2003, MT2005 **Level 3:** At least 45 credits comprising MT3501; - at least one of MT3502, MT3503, MT3504; - MT3606 **Level 4(H):** At least 90 credits which must include - at least one of MT4601, MT4603, MT4604, and MT4605; - at least two of MT4607, MT4608,MT4609, MT4610; - at least one of MT4531, MT4606; - MT4599; - at least one of MT4111 and MT4112.

Degree Programmes	Programme Requirements at:
(M.Phys. Honours): **Mathematics and Theoretical Physics (applies to all students entering Third level 2002 onwards)**	**Mathematics and Theoretical Physics Joint M.Phys. Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 30 - 60 credits comprising MT2101 or (MT2001 and MT2003) **Level 3:** 30 credits comprising MT3501 and MT3504 **Level 4(H):** At least 45 credits comprising at least three modules from MT4000 level, other than MT4505 **Level 5:** At least 70 credits comprising either MT5998 or PH5102 plus at least two at MT5000 level, other than MT5805
(M.Math Honours): **Pure Mathematics (M.Math Honours)**	**Single Honours M.Math Pure Mathematics Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising at least grade 15 in one of MT2001, MT2101 together with grade 15 in MT2002 **Level 3:** 60 credits comprising MT3501, MT3502, MT3503, MT3504 **Level 4(H):** 45 credits comprising MT4603, MT4604; - at least one of MT4111, MT4112 **Level 5:** 120 credits comprising MT5999 and at least 60 credits from the level 5000 modules in Pure Mathematics
(M.Math Honours): **Mathematics (M.Math Honours)**	**Single Honours M.Math Mathematics Degree:** **Level 1:** 20 credits comprising MT1002 MT1007*, MT1008*, MT2004* * gain credit from one of these 3 modules **Level 2:** 90 credits comprising at least grade 15 in one of MT2001, MT2101, together with grade 15 in two of MT2002, MT2003, and MT2005 **Level 3:** 60 credits comprising four of MT3501, MT3502, MT3503, MT3504, MT3606 **Level 4(H):** 45 credits comprising at least 2 of MT4601, MT4603, MT4604, MT4605, MT4606 - at least one of MT4111, MT4112 **Level 5:** 120 credits comprising MT5999 and at least 80 credits from level 5000 modules
(B.Sc. Honours or M.A. Honours): **Pure Mathematics (no longer available to entrants after 2002-03)**	**Single Honours Pure Mathematics Degrees:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 11 or better in both (MT2001 or MT2101) and MT2002 **Level 3:** 60 credits comprising MT3501 - MT3504 **Level 4(H):** At least 90 credits which must include: MT4603, MT4604; at least one of MT4111, MT4112, MT4599

Degree Programmes	Programme Requirements at:
(B.Sc. Honours): **Quantitative Ecology (not available to entrants after 2001-02)**	**Single Honours Quantitative Ecology Degree:** **Level 1:** 20 credits comprising pass at 11 or better in MT1006 or MT1007 **Level 2:** 120 credits comprising passes at 11 or better in MT2001, MT2004, BL2001 and either BL2004 or BL2005. It is recommended that students take BL2005. **Level 3:** 45 credits comprising MT3501, MT3504, MT3606; at least 60 credits from BL3000 level modules **Level 4(H):** At least 90 credits including MT4599
(M.Math. Honours): **Statistics (M.Math Honours)**	**Single Honours Statistics M.Math. Degree:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 30 credits comprising passes at 15 or better in MT2001 (or MT2101) and MT2004 **Level 3:** 30 credits comprising MT3501, MT3606 **Level 4(H):** At least 15 credits comprising at least one of MT4531, MT4606 **Level 5:** 120 credits comprising MT5999 and at least 60 credits from level 5000 modules in Statistics
(B.Sc. Honours): **Statistics and one of Computer Science, Economics, Geography, Logic & Philosophy of Science, Management Science.** (M.A. Honours): **Statistics and one of Economics, Philosophy**	**Statistics element of Joint Honours Degrees:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 11 or better in MT2001 (or MT2101) and MT2004 **Level 3:** 30 credits comprising MT3501; MT3606 **Level 4(H):** At least 90 credits which must include at least two of MT4531, MT4606, MT4607, MT4608, MT4609, MT4610; MT4599
(B.Sc. Honours): **Statistics with French or German**	**Statistics element of a Major Degree with a Modern Language:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 11 or better in MT2001 (or MT2101) and MT2004 **Level 3:** 30 credits comprising MT3501; MT3606. **Level 4(H):** At least 90 credits which must include - at least one of MT4531, MT4606; - at least two of MT4607 – MT4610; - MT4599
(B.Sc. Honours): **Statistics (not available to entrants after 2002-03)** (M.A. Honours): **Statistics (not available to entrants after 2002-03)**	**Single Honours Statistics Degrees:** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 11 or better in MT2001 (or MT2101) and MT2004 **Level 3:** 30 credits comprising MT3501, MT3606 **Level 4(H):** At least 90 credits which must include: at least one of MT4531, MT4606, at least 3 of MT4607, MT4608, MT4609, MT4610; MT4599

Degree Programmes	Programme Requirements at:
(M.Sci. Honours): **Applied Mathematics** **before 2001/02**	**Applied Mathematics (entrants in 2001 or earlier)** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising a pass at 17 or better in both MT2001 and MT2003 **Level 3:** 60 credits comprising MT3501 - MT3504 **Level 4(H):** 30 credits comprising MT4601, MT4605 **Level 5:** at least one of MT5611 and MT5612; - MT5999; - at least 120 credits from MT5803 – MT5850
(M.Sci. Honours): **Mathematics(M.Sci.) (entrants in 2001 or earlier)** **before 2001/02**	**Mathematics (entrants in 2001 or earlier)** **Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 17 or better in (MT2001 or MT2101) and one of MT2002 or MT2003 **Level 3:** 60 credits comprising MT3501 - MT3504; **Level 4(H):** 30 credits comprising at least two of MT4601 - MT4605 **Level 5:** 180 credits comprising at least one of MT5611 and MT5612; - MT5999; - at least 120 credits from MT5803 – MT5850
(M.Sci. Honours): **Mathematics and Statistics (M.Sci. Honours):** **(entrants in 2001 or earlier)** **before 2001/02**	**Level 1:** 20 credits comprising MT1002 **Level 2:** 90 credits comprising passes at 17 or better in both (MT2001 or MT2101) and MT2004 and also in one of MT2002, MT2003 or MT2005 **Level 3:** 30 credits comprising MT3501; at least one of MT3502 - MT3504; **Level 4(H):** At least 60 credits comprising one of MT4601 – MT4605, - - MT4606 or MT5701 - at least two of (MT4607 or MT5702), MT4610, (MT4608 or MT5704), (MT4609 or MT5705); **Level 5:** 180 credits comprisingMT4606 or MT5701 - at least two of (MT4607 or MT5702), (MT4608 or MT5704), (MT4609 or MT5705); - at least one of MT5611 or MT4612; - MT5999; - at least 120 credits from MT5701 – MT5850

Degree Programmes	Programme Requirements at:
(M.Sci. Honours): **Mathematics and Theoretical Physics (entrants 2000 or earlier)** **2000/01**	**(available only to those admitted to the University in September 2000 or earlier)** **Level 1:** 20 credits comprising MT1002 **Level 2:** 30 - 60 credits comprising passes in either MT2101 or (MT2001 and MT2003) plus the Physics requirements, the Mathematics passes being at 17 or better and the Physics passes being at 15 or better **Level 3:** (Mathematics element only) 60 credits comprising MT3501 and MT3504; either MT3502 or a level 4 module as specified below; either MT3503 or a level 4 module as specified below. **Level 4(H):** (Mathematics element only) subject to fulfilling prerequisite, any level 4 module other than MT4505 **Level 5:** (Mathematics element only) 80 credits comprising at least four modules from MT5611 – MT5850 other than MT5805; 30 credits from either MT5998 or physics equivalent.
(M.Sci. Honours): **Pure Mathematics (M.Sci. Honours) (entrants in 2001 or earlier)** **before 2001/02**	**Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 17 or better in both (MT2001 or MT2101) and MT2002 **Level 3:** 60 credits comprising MT3501 - MT3504; **Level 4(H):** 30 credits comprising MT4603, MT4604. **Level 5:** 180 credits comprising at least one of MT5611 and MT5612; - MT5999; - at least 120 credits from MT5803 – MT5850.
(M.Sci. Honours): **Statistics (M.Sci. Honours) (entrants in 2001 or earlier)** **before 2001/02**	**Level 1:** 20 credits comprising MT1002 **Level 2:** 60 credits comprising passes at 17 or better in MT2001 (or MT2101) and MT2004 **Level 3:** 15 credits comprising MT3501 **Level 4(H):** (MT4606 or MT5701), - (MT4607 or MT5702), - MT4610, - (MT4608 or MT5704), - (MT4609 or MT5705); **Level 5:** 180 credits comprising MT5999; - at least 140 credits from MT5701 – MT5850

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

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%

MT1002 Mathematics

Credits: 20.0 Semester: Either

Prerequisites: MT1001 or B at Advanced Higher Mathematics (including units 1 and 2) 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: MT1001 or B at Advanced Higher Mathematics (including units 1 and 2) or B at A level Mathematics

Description: Case studies are used to show the relevance of statistical modelling to a range of problems, such as climate change, fisheries management, and managing a financial portfolio. A sufficient grounding in statistics is given to enable students to appreciate the complexities of statistical investigations.

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

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%

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: 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 needs of Honours students in Physics and Astronomy are addressed. 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.