School of Mathematics & Statistics

B.Sc. / M.A. Honours

The general requirements are 480 credits over a period of normally four years (and not more than five years) or parttime equivalent, of which the final two years form 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 levels.

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

The general requirements are 540 credits over a period of normally five years (and not more than six years) or part-time equivalent, of which the final three years are 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 levels.

M.Math. Honours

The general requirements are 600 credits over a period of normally five years (or four years with advanced standing credits) and in no circumstances more than six years or part-time equivalent, of which the final years form an approved Honours programme of at least 330 credits of which 120 credits are at 5000 level and at least a further 210 credits are at 3000 level and above.

Exchange scheme: In the case of students who spend part of the B.Sc./M.A. Honours programme abroad on a recognised Exchange scheme, the Programme Requirements will be amended to take into account courses taken while abroad.

(see http://www.st-andrews.ac.uk/studyabroad/outgoingstudents/AcademicInformation/).

Applied Mathematics - Single Honours (5-year) M.Math.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 60 credits: MT2001 and MT2003 – with a pass at grade 15 or better in both.

Third, Fourth and Fifth Years:

45 credits: MT3501 and MT3503 and MT3504;

60 credits: MT3601 and MT4005 and MT4509 and MT4510;

Between 15 and 20 credits: MT4112 (recommended) or MT4111 or MT5611;

60 credits: MT5802, MT5806, MT5809, MT5810, MT5990;

40 credits: MT5999 (Fifth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 360 credits across Third, Fourth and Fifth Years, except that 30 of these credits in Third or Fourth Year may be substituted by credits from another Level or School, with permission of the Adviser

of Studies and any other School involved.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at 5000 level.

Applied Mathematics - Single Honours M.Math. (Fast Track)

Approved candidates will be awarded 60 advanced standing credits

First Year: 20 credits: MT1002;

30 credits: MT2001 - with a pass at grade 15 or better.

Second Year: 30 credits: MT2003 - with a pass at grade 15 or better;

30 credits: MT3501, MT3503, MT3504; 30 further credits: MT2000 - MT4999.

Third and Fourth Years:

15 further credits: MT3501 or MT3503 or MT3504;

60 credits: MT3601 and MT4005 and MT4509 and MT4510;

Between 15 and 20 credits: MT4112 (recommended) or MT4111 or MT5611;

60 credits: MT5802, MT5806, MT5809, MT5810, MT5990;

40 credits: MT5999 (Fourth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 300 credits

across Third and Fourth Years.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at

5000 level.

Mathematics - Single Honours B.Sc. or M.A.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 11 or better;

At least 30 credits: MT2002 - MT2005 – with a pass at grade 11 or better in one of these.

Third and Fourth Years:

45 credits: MT3501 and MT3503 and MT3504; 15 credits: MT3600 or MT3601 or MT3606; 15 credits: MT3607 or MT4111 or MT4112; 15 credits: MT4599 (in Fourth Year only);

150 further credits: MT3000 - MT4999, except that 30 of these credits in Third Year may be substituted by credits from another Level or School, with permission of the Adviser of

Studies and any other School involved.

In total, at least 210 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 in the second seco

level.

Mathematics - Joint Honours B.Sc. or M.A.

(B.Sc. Honours)

Mathematics and one of: Biology, Chemistry, Computer Science, Economics, Geography, Internet Computer Science, Logic & Philosophy of Science, Management Science, Physics, Psychology

Not available to entrants from 2011-12

(M.A. Honours)

Mathematics and one of: Ancient History, Arabic W, Art History, Biblical Studies, Classical Studies, Economics, German W, Hebrew, International Relations, Italian W, Latin, Mediaeval History, Modern History, Philosophy, Psychology, Russian W, Scottish History, Spanish W, Theological Studies

W Available also as 'With Integrated Year Abroad' degree

Mathematics element of Joint B.Sc. or M.A. Honours (except Mathematics and Computer Science or Physics or Psychology with BPS recognition):

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 11 or better;

30 credits: MT2002 (for Pure Maths options) or MT2003 (for Applied Maths options) - with

a pass at grade 11 or better.

Third and Fourth Years:

30 credits: MT3501, MT3503, MT3504;

15 credits: MT3600 **or** MT3601; 15 credits: MT4111 **or** MT4112;

15 credits: MT4599 (in Fourth Year only);

45 further credits: MT3000 - MT4999.

In total, 240 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Mathematics element of Mathematics and Computer Science – Joint B.Sc. Honours:

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 11 or better;

30 credits: MT2002 (for Pure Maths options) or MT2003 (for Applied Maths options) - with

a pass at grade 11 or better.

Third and Fourth Years:

30 credits: MT3501, MT3503, MT3504;

15 credits: MT3600 or MT3601;

15 credits: MT4599 (in Fourth Year only); 60 further credits: MT3000 - MT4999.

In total, 240 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Mathematics element of Mathematics and Psychology (with BPS recognition) - Joint B.Sc. or M.A. Honours:

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 11 or better;

30 credits: MT2002 (for Pure Maths options) or MT2003 (for Applied Maths options) – with

a pass at grade 11 or better.

Third and Fourth Years:

30 credits: MT3501, MT3503, MT3504;

15 credits: MT3600 **or** MT3601; 15 credits: MT4111 **or** MT4112;

15 credits: MT4599 (in Fourth Year only); 15 further credits: MT3000 - MT4999.

In total, 240 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Mathematics and Physics - Joint Honours B.Sc.

First Year: 60 credits: PH1011 and PH1012 and MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 90 credits: PH2011 and PH2012 and MT2001 - with passes at grade 11 or better in all;

30 credits: MT2002 or MT2003 - with a pass at grade 11 or better.

Third and Fourth Years (Maths):

30 credits in two of: MT3501, MT3503, MT3504;

15 credits: MT3600 or MT3601;

15 credits: MT4111 or MT 4112 (unless PH3080 taken);

15 credits: MT4599 (in Fourth Year only); 45 further credits: MT3000 - MT4999.

Third Year (Physics): EITHER (if MT2003 taken in Second Year):

50 credits: PH3007 **and** PH3012 **and** PH3061 **and** PH3062; 10 credits: PH3080 (unless MT4111 **or** MT4112 taken).

OR (if MT2003 not taken in Second Year):

50 credits: PH3012 and PH3061 and PH3062 and PH3081; 10 credits: PH3080 (unless MT4111 or MT4112 taken).

Fourth Year (Physics): EITHER (if MT2003 taken in Second Year):

25 credits: PH4022 and PH4039;

At least 30 further credits: AS3000-AS5999, PH3000 - PH4110, PH5000 - PH5099.

OR (if MT2003 not taken in Second Year): 40 credits: PH3007 and PH4022 and PH4039;

At least 15 further credits: AS3000 - AS5999, PH3000 - PH4110, PH5000 - PH5099.

In total, 240 credits must be achieved at 3000 and 4000 level with at least 90 of these at 4000 level.

Mathematics – Single Honours (5-year) M.Math.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 15 or better;

60 credits: MT2002 - MT2005 - with a pass at grade 15 or better in one of these and a

pass at grade 11 better in another.

Third, Fourth and Fifth Years:

45 credits: MT3501 and MT3503 and MT3504; 15 credits: MT3600 or MT3601 or MT3606;

30 credits: MT4003, MT4004, MT4509, MT4510, MT4606;

Between 15 and 20 credits: MT3607 or MT4111 or MT4112 or MT5611;

60 credits: MT5751 - MT5753, MT5757, MT5758, MT5802, MT5806, MT5809, MT5810,

MT5821, MT5823 - MT5830, MT5990, ID5059;

40 credits: MT5999 (Fifth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 360 credits across Third, Fourth and Fifth Years, except that 30 of these credits in Third or Fourth Year may be substituted by credits from another Level or School, with permission of the

Adviser of Studies and any other School involved.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at 5000 level.

Mathematics - Single Honours M.Math. (Fast Track)

Approved candidates will be awarded 60 advanced standing credits

First Year: 20 credits: MT1002;

30 credits: MT2001 – with a pass at grade 15 or better.

Second Year: 60 credits: MT2002 - MT2005 - with a pass at grade 15 or better in one of these and a

pass at grade 11 better in another. 30 credits: MT3501, MT3503, MT3504;

30 further credits: MT2000 - MT4999.

Third and Fourth Years:

15 further credits: MT3501 or MT3503 or MT3504;

15 credits: MT3600 or MT3601 or MT3606;

30 credits: MT4003, MT4004, MT4509, MT4510, MT4606;

Between 15 and 20 credits: MT3607 or MT4111 or MT4112 or MT5611;

60 credits: MT5751 - MT5753, MT5757, MT5758, MT5802, MT5806, MT5809, MT5810,

MT5823 - MT5830, MT5990, ID5059; 40 credits: MT5999 (Fourth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999. ID5059, to a total of 300 credits

from these ranges across Third and Fourth Years.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at

5000 level.

Pure Mathematics - Single Honours (5-year) M.Math.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 60 credits: MT2001 and MT2002 – with a pass at grade 15 or better in both.

Third, Fourth and Fifth Years: 45 credits: MT3501 and MT3503 and MT3504;

45 credits: MT3600 and MT4003 and MT4004;

Between 15 and 20 credits: MT4111 or MT4112 or MT5611;

60 credits: MT5821, MT5823 - MT5830, MT5990;

40 credits: MT5999 (Fifth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 360 credits across Third, Fourth and Fifth Years, except that 30 of these credits in Third or Fourth Year may be substituted by credits from another Level or School, with permission of the

Adviser of Studies and any other School involved.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at 5000 level.

Pure Mathematics - Single Honours M.Math. (Fast Track)

Approved candidates will be awarded 60 advanced standing credits

First Year: 20 credits: MT1002;

30 credits: MT2001 – with a pass at grade 15 or better.

Second Year: 30 credits: MT2002 – with a pass at grade 15 or better

30 credits: MT3501, MT3503, MT3504; 30 further credits: MT2000 – MT4999.

Third and Fourth Years:

15 further credits: MT3501 or MT3503 or MT3504; 45 credits: MT3600 and MT4003 and MT4004;

Between 15 and 20 credits: MT4111 or MT4112 or MT5611;

60 credits: MT5821, MT5823 - MT5830, MT5990;

40 credits: MT5999 (Fourth Year only);

20 further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 300 credits

across Third and Fourth Years.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at 5000 level.

Mathematics 'with' ... - Honours B.Sc.

(B.Sc. Honours)

Mathematics with one of: French WN,

German W N , Geography

Not available to entrants from 2008-09

W Available also as 'With Integrated Year

Abroad' degree

(M.A. Honours)

Mathematics with either Russian W or Spanish W

^w Available also as 'With Integrated Year Abroad' degree

Mathematics Major element of B.Sc. or M.A. Honours 'with' degree:

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 30 credits: MT2001 – with a pass at grade 11 or better;

30 credits: MT2002 (for Pure Maths options) or MT2003 (for Applied Maths options) -

with a pass at grade 11 or better.

Third and Fourth Years:

30 credits: MT3501, MT3503, MT3504;

15 credits: MT3600 **or** MT3601; 15 credits: MT4111 **or** MT 4112;

15 credits: MT4599 (in Fourth Year only); 105 further credits: MT3000 - MT4999.

In total, 240 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Mathematics and Theoretical Physics- Joint Honours M.Phys.

First Year: 60 credits: PH1011 and PH1012 and MT1002.

Second Year: 90 credits: PH2011 and PH2012 and MT2001 - with passes at grade 15 or better in all.

30 credits: MT2002 or MT2003 - with a pass at grade 15 or better.

Third Year: EITHER (if MT2003 taken in Second Year):

50 credits: PH3007 and PH3012 and PH3061 - PH3062;

45 credits: MT3501 and MT3504;

At least 10 credits: MT4111 or MT4112 or PH3080;

15 credits: MT4507 or PH4038.

OR (if MT2003 not taken in Second Year):

50 credits: PH3012 and PH3061 - PH3062 and PH3081;

30 credits: MT3501 and MT3504;

At least 10 credits: MT4111 or MT4112 or PH3080;

15 credits: MT4507 or PH4038.

15 further credits: MT3000 - MT4598 or MT4600 - MT4699.

Fourth Year: EITHER (if MT2003 taken in Second Year):

40 credits: PH4022 and PH4032 and PH4039;

At least 20 further credits: AS3000 - AS4999, PH3000 - PH4109, ID4001;

At least 60 further credits: MT3000 - MT4598, MT4600 - MT4699, MT5000 - MT5899.

OR (if MT2003 not taken in Second Year):

70 credits: PH3007 and PH4022 and PH4032 and PH4039;

At least 45 further credits: MT3000 - MT4598, MT4600 - MT4699, MT5000 - MT5899.

Fifth Year: At least 40 credits: MT5999 or PH5103;

At least 15 credits from: PH5002, PH5003, PH5011, PH5012 (unless already taken);

At least 40 credits: MT5000 - MT5899 (unless already taken in Fourth Year);

Further credits if necessary to a total of 145 across Third, Fourth and Fifth Years from 3000 - , 4000 - and 5000 - level MT modules (except that 30 further credits from MT2000

- MT2999 may be substituted).

Further credits if necessary to a total of 145 across Third, Fourth and Fifth Years from 3000 - , 4000 - and 5000 - level MT PH and AS modules (except that 15 further credits

from a physics-based ID4001 may be substituted).

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level with at least 120 of these at 5000 level.

Mathematics and Theoretical Physics - Joint Honours M.Phys.

Direct entry to second year for approved candidates with 120 advanced standing credits

Second Year: 20 credits: MT1002:

90 credits: PH2011 and PH2012 and MT2001 - with passes at grade 15 or better in all.

30 credits: MT2002 or MT2003 - with a pass at grade 15 or better.

Third Year: EITHER (if MT2003 taken in Second Year):

50 credits: PH3007 and PH3012 and PH3061 - PH3062;

45 credits: MT3501 and MT3504;

At least 10 credits: MT4111 or MT4112 or PH3080;

15 credits: MT4507 or PH4038.

OR (if MT2003 not taken in Second Year):

50 credits: PH3012 and PH3061 - PH3062 and PH3081;

30 credits: MT3501 and MT3504;

At least 10 credits: MT4111 or MT4112 or PH3080;

15 credits: MT4507 or PH4038.

15 further credits: MT3000 - MT4598 or MT4600 - MT4699.

Fourth Year: EITHER (if MT2003 taken in Second Year):

40 credits: PH4022 and PH4032 and PH4039;

At least 20 further credits: AS3000 - AS4999, PH3000 - PH4109, ID4001;

At least 60 further credits: MT3000 - MT4598, MT4600 - MT4699, MT5000 - MT5899.

OR (if MT2003 not taken in Second Year):

70 credits: PH3007 and PH4022 and PH4032 and PH4039;

At least 45 further credits: MT3000 - MT4598, MT4600 - MT4699, MT5000 - MT5899.

Fifth Year: At least 40 credits: MT5999 or PH5103;

At least 15 credits from: PH5002, PH5003, PH5011, PH5012 (unless already taken); At least 40 credits: MT5000 - MT5899 (unless already taken in Fourth Year);

Further credits if necessary to a total of 145 across Third, Fourth and Fifth Years from 3000 $\,$

-, 4000 - and 5000 - level MT modules (except that 30 further credits from MT2000 -

MT2999 may be substituted).

Further credits if necessary to a total of 145 across Third, Fourth and Fifth Years from 3000 - , 4000 - and 5000 - level MT PH and AS modules (except that 15 further credits from a

physics-based ID4001 may be substituted).

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level with at least 120 of these at 5000 level.

Chemistry with Mathematics - Honours M.Chem

First Year: 80 credits: CH1401 and CH1402 and CH1601 and MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 90 credits: CH2501 and CH2701 and MT2001 - with passes at grade 15 or better in all three;

30 credits: MT2002 (for Pure Maths options) or MT2003 (for Applied Maths options).

Third Year (Chemistry):

20 credits: CH3441;

60 credits: CH3431, CH3514, CH3512, CH3521, CH3615, CH3621, CH3712, CH3715, CH3717,

CH3721;

Fourth Year (Chemistry):

40 credits: CH4442;

30 credits: CH4514, CH4515, CH4614, CH4612, CH4613, CH4714, CH4712, CH4713;

Third and Fourth Years (Maths):

30 credits: MT3501, MT3503, MT3504;

15 credits: MT3600 or MT3601;

45 further credits: MT3000 - MT4598, MT4600 - MT4999.

Fifth Year: 90 credits: CH5441 and CH5461 and CH5711 and CH5712 and CH5713 and CH5714;

30 credits: CH5511, CH5516 - CH5518, CH5611 - CH5616, CH5717 - CH5718.

Statistics - Single Honours B.Sc. or M.A.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 60 credits: MT2001 and MT2004 - with passes at grade 11 or better in both.

Third and Fourth Years:

Between 60 and 70 credits: MT3501 and MT3606 and (MT4606 or MT5701) and (MT4607

or MT5753);

15 credits: MT3607 (recommended) or MT4111 or MT4112 30 or 35 credits: (MT4531 **or** MT5831), MT4608, MT4609;

15 credits: MT4599 (in Fourth Year only)

Further credits: MT3000 - MT4999 to a total of 240 credits across Third and Fourth Years, except that 30 of these credits in Third Year may be substituted by credits from another Level or School, with permission of the Adviser of Studies and any other School involved.

In total, at least 210 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Statistics - Joint Honours B.Sc. or M.A.

(B.Sc. Honours) (M.A. Honours)

Statistics and one of: Biology, Computer Science, Economics, Geography, Internet Computer Science ^N, Logic & Philosophy of Science, Management Science

Statistics and either Economics or Philosophy

Not available to entrants from 2011-12

Statistics element of Joint Honours B.Sc. or M.A.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 60 credits: MT2001 and MT2004 - with passes at grade 11 or better in both.

Third and Fourth Years:

30 credits: MT3501 and MT3606;

Between 30 and 40 credits: MT3706, (MT4531 or MT5831), (MT4606 or MT5701),

(MT4607 **or** MT5753), MT4608, MT4609; 15 credits: MT4599 (in Fourth Year only);

Further credits: MT3000 - MT4999 to a total of 120 credits.

In total, 240 credits must be achieved at 3000 and 4000 level, including at least 90 credits at 4000 level.

Statistics - Single Honours (5-year) M.Math.

First Year: 20 credits: MT1002.

(Students without prerequisite for MT1002 will take MT1001 in Semester 1.)

Second Year: 60 credits: MT2001 and MT2004 – with a pass at grade 15 or better in both.

Third, Fourth and Fifth Years:

65 credits: MT3501 and MT3606 and MT3607 and MT5753;

15 credits: MT4527 **or** MT4608; 20 credits: MT5701 **or** MT5831;

Between 25 and 40 credits: MT5751, MT5752, MT5757, MT5758, ID5059 (i.e. at least two

of these modules);

40 credits: MT5999 (on a statistical topic - Fourth Year only);

Further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059, if necessary, to a total of

at least 120 credits from these ranges;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 360 credits across Third, Fourth and Fifth Years, except that 30 of these credits in Third or Fourth Year may be substituted by credits from another Level or School, with permission of the

Adviser of Studies and any other School involved.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at 5000 level.

Statistics - Single Honours M.Math. (Fast Track)

Approved candidates will be awarded 60 advanced standing credits

First Year: 20 credits: MT1002;

30 credits: MT2001 – with a pass at grade 15 or better.

Second Year: 30 credits: MT2004 – with a pass at grade 15 or better

15 credits: MT3501;

15 further credits: MT3000 -MT4999.

Third and Fourth Years:

50 credits: MT3606 and MT3607 and MT5753;

15 credits: MT4527 **or** MT4608; 20 credits: MT5701 **or** MT5831;

Between 25 and 40 credits: MT5751, MT5752, MT5757, MT5758, ID5059 (i.e. at least two

of these modules);

40 credits: MT5999 (on a statistical topic - Fourth Year only;

Further credits: MT5000 - MT5753, MT5757 - MT5999, ID5059, if necessary, to a total of

at least 120 credits from these ranges;

Further credits: MT3000 - MT5753, MT5757 - MT5999, ID5059, to a total of 300 credits

across Third and Fourth Years.

In total, at least 330 credits must be achieved at 3000, 4000 and 5000 level, including at least 120 credits at

5000 level.

Students still completing degree programmes as defined in previous Course Catalogues should discuss their module selections with their Honours Adviser(s).