

Study Programmes

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Disclaimer

This handbook attempts to provide advice but please see the Queen Mary Academic Regulations for definitive information. Nothing in this handbook overrides the Academic Regulations, which always take precedence, and are available online at www.arcs.qmul.ac.uk/policy_zone.

Guidance for students in the first year

What is Essential Mathematical Skills?

Essential Mathematical Skills is a progression hurdle, which you must pass in order to progress from the first to the second year of any Mathematical Sciences degree programme, i.e. those listed later in this part of the handbook. It does not contribute to your progression or degree classification in any other way although it will appear on your results transcript, which potential employers will want to see. If you are in your first year then you must register for Essential Mathematical Skills **in addition** to the other eight modules shown on your study programme. (In fact, we should automatically register you for all nine modules.) Essential Mathematical Skills does not count towards the limit of 150 credits at level 3 or 4.

We will allow you seven attempts at the Essential Mathematical Skills exam during your first year and two resit attempts out of attendance the year after if necessary. As soon as you pass, you can stop attending the module and you will not need to take the exam again. You will have three attempts during the first semester and one attempt in January. These all count as first attempts and if you pass then your transcript will show a mark of 100% and an A grade. If you pass later,

your transcript will show a mark of 40% (a bare pass) and an E grade. **Your transcript will look better if you pass Essential Mathematical Skills by the end of January.**

If you do not pass Essential Mathematical Skills by the end of January then you should continue attending the tuition. You will have resit opportunities towards the end of the second semester, in the main examination period and in the late summer examination period. If you have not passed Essential Mathematical Skills by the end of August, you will not progress to the second year and you will have to take a year out of College. The following year you may attempt the resit examination towards the end of the second semester and in the main examination period. If you pass, you will progress to the second year and may continue your course; otherwise, you will not be able to continue on a Mathematical Sciences degree programme at Queen Mary.

For further details, including the dates of the exams run during the semesters, follow the link at www.maths.qmul.ac.uk/undergraduate/modules?module=MTH3100 to the module organiser's website.

Note that you should take Essential Mathematical Skills only if your home department is the School of Mathematical Sciences, i.e. your study programme is one of G100, G110, GG31, G1N1, GN13, GL11, G1N4, G1L1, GG14, FG31, G1C8, G102 or G1G3. In particular, you should not take Essential Mathematical Skills if your study programme is one of LG11 or GG41. Students who have progressed from the SEFP and already passed Essential Foundation Mathematics must still pass Essential Mathematical Skills, which covers different, although similar, material.

Guidance for students in the second and later years

Should I follow the current study programme?

Generally, you should follow the current version of your study programme, and if you began your undergraduate course in 2008 or later then you must follow the study programme for your degree that appears later in this part of the handbook.

However, there were significant changes to GN13 and G1L1 in summer 2008 that required us to maintain two different versions of those study programmes: one for students who entered in 2007 or earlier, most of whom have now graduated, and one for students who entered in 2008 or later. If you entered GN13 or G1L1 in 2007 or earlier then you should follow the latest version of the programme for 2007 entry. This appeared in the undergraduate handbook for 2009–10, which is available from the archive section at the bottom of the handbook web page at www.maths.qmul.ac.uk/undergraduate/forms-guidelines/handbook#archive.

When might the general regulations not apply?

We can request suspension of the regulations outlined in our study programmes if necessary in special cases.

If we allow you to change study programme then you may need to take more than 150 credits (10 modules) in total at level 4 in order to meet the requirements of the new programme. This will normally happen only if you transfer from GL11, which is the only Mathematical Sciences programme with more than two non-MTH modules in the first year. If necessary, the programme director for your new programme will either:

- waive one compulsory level-4 module; or
- liaise with the Director of Studies and the Senior Tutor to request suspension of regulations and allow you to take more than 150 credits (10 modules) at level 4.

If you take a year abroad, we will not require you to pass the full number of Queen Mary credits, although we may require you to meet an equivalent requirement from your year abroad.

What happens if I do not follow my study programme?

Normally, your degree title will be the title of your study programme. If you fail to meet any of the specific requirements of your study programme then we may give you the degree title "Mathematical Studies". Failure to pass specific modules will affect only the title and not the class of your degree. Provided you pass enough credits in total, your marks for all the modules you

have taken determine the class of your degree as specified by Queen Mary Academic Regulations.

What does “choose another n credits” mean?

A requirement of this general form in a study programme means that you must choose optional or elective modules to the value of n credits – normally each module is worth 15 credits – subject to any constraints stated in the requirement. The constraints may be that you can choose only MTH modules or only modules at certain levels. However, **you can choose additional modules from any lists of modules from which you have already chosen some modules** (provided they satisfy the constraints).

When choosing each optional or elective module, **it is your responsibility** to ensure that:

- the department teaching the module will allow you to take it (see below);
- you satisfy the prerequisites;
- it does not overlap with any module you have already taken, are taking or must take later.

To take INE6001 Mathematical Education for Physical and Mathematical Sciences you require approval from the Director of Studies; see the module details at www.maths.qmul.ac.uk/undergraduate/modules?module=INE6001. If you want to take any other intercollegiate module then you require the approval of the Senior Tutor and Registry. Some intercollegiate modules may not be available to select online but there will be a mechanism to allow you to register for approved intercollegiate modules. It may be best to register online for a full diet of Queen Mary modules initially and then change some to intercollegiate modules later.

Can I take Business Management (BUS) modules?

You can take Business Management (BUS) modules only if they appear in the current version of your study programme. The Business Management modules in our study programmes are all compulsory and there are no Business Management options. If you register for any modules that Business Management will not allow you to take then you will be deregistered later and you may have difficulty finding replacements.

Can I take Economics (ECN) modules?

You can take Economics (ECN) modules only if they appear in the current version of your study programme or your study programme is GL11. If you register for any modules that Economics will not allow you to take then you will be deregistered later and you may have difficulty finding replacements.

How are credits, course units and modules related?

The Queen Mary Academic Credit Framework came into effect for students entering Queen Mary in 2008 and defines academic credit in such a way that 15 academic credit points (credits) are equivalent to 1 course unit. Queen Mary is phasing out the term “course unit”. We now call the smallest unit of teaching a “module”. All modules offered by the School of Mathematical Sciences are worth 15 credits except for the Advanced Statistics Project and the MSci Project, which are “double modules” and carry 30 credits each.

What are academic levels?

The academic level of a module reflects its target study year, although you can take modules in other years, which is common in joint honours programmes. The Queen Mary Academic Credit Framework follows the National Qualifications Framework in which levels 4–7 correspond to developmental years 1–4. This is consistent with university entry qualifications (such as GCE A-levels) being at level 3. Modules in our foundation programmes and Essential Mathematical Skills are also at level 3. The first digit in all current Mathematical Sciences undergraduate module codes is the level, but this is not yet the case for most modules taught by other departments. Therefore, the following study programmes show the level of each module explicitly in square brackets between the module code and title. There are requirements on the numbers of credits you must take at various levels, which we have incorporated into our current study programmes.

How do the Student Information System and Academic Regulations affect my study programme?

Queen Mary completed the transfer of all student information to its new Student Information System (SIS) over summer 2010 and module registration now takes place online. The SIS will check that you have satisfied the Academic Regulations before allowing you to graduate but it cannot check in all cases that your module registrations each year are consistent with the Academic Regulations. This is because module registration uses lists of allowed modules for each semester and not a count of modules at specific levels.

We have therefore revised our study programmes to ensure that, if you follow them, you will satisfy the Academic Regulations and be able to graduate. We now specify more precisely the developmental years in which you can take modules at particular levels, as explained in the next two sections, although this should not affect most students.

Note that it is your responsibility to ensure that you have taken prerequisite modules and that you do not take overlapping modules; the SIS does not enforce these requirements.

We include prerequisites and overlaps in the module details that we publish on the web; see www.maths.qmul.ac.uk/undergraduate/modules or www.maths.qmul.ac.uk/undergraduate/forms-guidelines/handbook.

Should I take modules at level 6 or 7 before my final year?

For a BSc programme, you will be required to take the number of level-6 modules specified in your final year even if you took extra level-6 modules as options in your second year. For an MSci programme, you will be required to take the number of level-7 modules specified in your final year even if you took extra level-7 modules as options in your third year. Therefore, you should not normally take modules at level 6 or 7 earlier than required by your study programme. If you do, you will be taking a more difficult programme than necessary. We allow, but do not recommend, this because you may get lower marks and hence a lower degree class than if you had followed the minimum requirements of your study programme.

Can I take modules at level 4 or 5 in my final year?

We target level-4 modules at your first year of study, level-5 modules at your second year of study, etc. and it is generally not academically appropriate to take modules at more than two levels below their target year. This means that we will not allow you to take level-4 or level-5 modules in the final year of an MSci degree and, from academic year 2011–12 onwards, we will not allow you to take level-4 modules in the final year of a BSc degree, as reflected in our current study programmes. A similar or more restrictive rule already applies in many departments, such as the School of Economics and Finance. If you want to take level-4 modules after your first year, you should take them in your second year. If necessary, your adviser may allow you to defer one or more second-year modules at level 5 or 6 to make way for lower-level modules.

However, as a transitional arrangement in academic year 2010–11 for BSc programmes other than G1N1, GL11 and GG14, we will allow you to take level-4 Mathematical Sciences (MTH) modules in your final year. **If you do so, it is your responsibility to ensure that you satisfy the appropriate Queen Mary Academic Regulations; otherwise, you may not be able to graduate.** We will not generally allow you to take level-4 modules offered by other departments in your third or final year. If you wish to do so then you must apply by email to the Director of Studies by the end of the first week of the semester, giving a clearly reasoned academic case explaining why we should allow your choice of modules. If you take level-4 modules in your final year, you are less likely to benefit from the exam board's discretion to move you up if you fall just below a degree class boundary than if you take only modules at level 5 or higher.

G100 BSc in Mathematics

Programme director: Professor Bill Jackson

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also **Part 5 pages 1–4**. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4105 [4] Intro. to Math. Computing MTH4107 [4] Introduction to Probability	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4104 [4] Introduction to Algebra MTH4106 [4] Introduction to Statistics

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I Choose two of: MTH5102 [5] Calculus III MTH5104 [5] Convergence & Continuity MTH5106 [5] Dynamics of Physical Systems MTH5117 [5] Mathematical Writing MTH5121 [5] Probability Models MTH5122 [5] Statistical Methods Choose another 15 credits at any level.	Choose two of: MTH5100 [5] Algebraic Structures I MTH5103 [5] Complex Variables MTH5105 [5] Differential & Integral Analysis MTH5109 [5] Geometry II: Knots and Surfaces MTH5110 [5] Intro. to Numerical Computing MTH5120 [5] Statistical Modelling I Choose one of: MTH6105 [6] Algorithmic Graph Theory MTH6128 [6] Number Theory MTH6129 [6] Oscillations, Waves & Patterns MTH6136 [6] Statistical Theory Choose another 15 credits at any level.

Year 3

Semester 5	Semester 6
Choose 75 credits from MTH modules at level 6 or 7 and 45 credits[†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

G110 BSc in Pure Mathematics

Programme director: Professor Bill Jackson

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Pure Mathematics:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I	MTH4101 [4] Calculus II
MTH4103 [4] Geometry I	MTH4102 [4] Differential Equations
MTH4105 [4] Intro. to Math. Computing	MTH4104 [4] Introduction to Algebra
MTH4107 [4] Introduction to Probability	MTH4106 [4] Introduction to Statistics

Year 2

Semester 3	Semester 4
MTH5104 [5] Convergence & Continuity	MTH5100 [5] Algebraic Structures I
MTH5112 [5] Linear Algebra I	MTH5103 [5] Complex Variables
MTH5117 [5] Mathematical Writing	MTH5105 [5] Differential & Integral Analysis
Choose another 15 credits at any level.	Choose one of:
	MTH6105 [6] Algorithmic Graph Theory
	MTH6128 [6] Number Theory

Year 3

Semester 5	Semester 6
Choose <u>three</u> modules from the lists below:	
MTH6104 [6] Algebraic Structures II	MTH6108 [6] Coding Theory
MTH6107 [6] Chaos & Fractals	MTH6111 [6] Complex Analysis
MTH6109 [6] Combinatorics	MTH6115 [6] Cryptography
MTH6126 [6] Metric Spaces	MTH716U [7] Measure Theory and Probability
MTH6140 [6] Linear Algebra II	MTH732U [7] Topology
	MTH733U [7] Fields and Galois Theory^(not offered 2010-11)
Choose another 30 credits from MTH modules at level 6 or 7 and 45 credits[†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

GG31 BSc in Mathematics and Statistics

Programme director: Dr Heiko Grossmann

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics and Statistics:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4105 [4] Intro. to Math. Computing MTH4107 [4] Introduction to Probability	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4104 [4] Introduction to Algebra MTH4106 [4] Introduction to Statistics

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I MTH5122 [5] Statistical Methods	MTH5120 [5] Statistical Modelling I MTH6136 [6] Statistical Theory
Choose two modules from the lists below:	
MTH5102 [5] Calculus III MTH5104 [5] Convergence & Continuity MTH5106 [5] Dynamics of Physical Systems MTH5117 [5] Mathematical Writing MTH5121 [5] Probability Models	MTH5100 [5] Algebraic Structures I MTH5103 [5] Complex Variables MTH5105 [5] Differential & Integral Analysis MTH5109 [5] Geometry II: Knots and Surfaces
Then choose another 30 credits at any level.	

Year 3

Semester 5	Semester 6
Choose five modules from the lists below:	
MTH6134 [6] Statistical Modelling II MTH6139 [6] Time Series	MTH6100 [6] Actuarial Mathematics MTH6105 [6] Algorithmic Graph Theory MTH6116 [6] Design of Experiments MTH6129 [6] Oscillations, Waves & Patterns MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small> MTH709U [7] Bayesian Statistics MTH731U [7] Computational Statistics MTH734U [7] Topics in Prob. and Stoch. Proc.
Then choose another 45 credits [†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

G1N1 BSc in Mathematics with Business Management

Programme director: Dr Barbara Bogacka

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics with Business Management:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability BUS001 [4] Fundamentals of Management	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4106 [4] Introduction to Statistics BUS017 [4] Economics for Business

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I BUS021 [4] Financial Accounting	MTH4104 [4] Introduction to Algebra BUS011 [5] Marketing
Choose either	
MTH5102 [5] Calculus III MTH5106 [5] Dynamics of Physical Systems	MTH6129 [6] Oscillations, Waves & Patterns and another 15 credits at level 5, 6 or 7
or	
MTH5122 [5] Statistical Methods and another 15 credits at level 5, 6 or 7	MTH6136 [6] Statistical Theory and another 15 credits at level 5, 6 or 7

Year 3

Semester 5	Semester 6
BUS204 [5] Strategy	BUS324 [6] Management of Human Resources
Choose 60 credits from MTH modules at level 6 or 7 and another 30 credits [†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

GN13 BSc in Mathematics, Business Management and Finance

Programme director: Dr Barbara Bogacka

(Students who entered before 2008 should follow the previous version of this programme.)

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics, Business Management and Finance:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability BUS001 [4] Fundamentals of Management	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4106 [4] Introduction to Statistics BUS017 [4] Economics for Business

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I MTH5122 [5] Statistical Methods BUS021 [4] Financial Accounting Choose another 15 credits at any level.	MTH5120 [5] Statistical Modelling I MTH6100 [6] Actuarial Mathematics BUS011 [5] Marketing BUS022 [5] Managerial Accounting

Year 3

Semester 5	Semester 6
BUS204 [5] Strategy BUS306 [6] Financial Management MTH6121 [6] Introduction to Math. Finance	BUS324 [6] Management of Human Resources Choose <u>one</u> of: MTH6120 [6] Further Topics in Math. Finance MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small>
Choose <u>one</u> module from the lists below:	
MTH6134 [6] Statistical Modelling II MTH6139 [6] Time Series	MTH6136 [6] Statistical Theory
Then choose another 30 credits[†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

GL11 BSc in Mathematics, Statistics and Financial Economics

Programme director: Dr Barbara Bogacka

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics, Statistics and Financial Economics:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.
- You must **pass** all ECN modules indicated with a * as *ECN.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability *ECN199 [4] Economic Principles	MTH4101 [4] Calculus II MTH4106 [4] Introduction to Statistics *ECN106 [4] Macroeconomics I *ECN111 [4] Microeconomics I

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I MTH5122 [5] Statistical Methods *ECN214 [5] Games and Strategies ECN222 [5] Financial Markets and Institutions	MTH5120 [5] Statistical Modelling I MTH6136 [6] Statistical Theory *ECN211 [5] Microeconomics II *ECN226 [5] Capital Markets 1

Year 3

Semester 5	Semester 6
ECN371 [6] Corporate Finance 1	Choose one of: ECN358 [6] Futures and Options ECN372 [6] Corporate Finance 2
Choose two modules from the lists below:	
MTH6134 [6] Statistical Modelling II MTH6139 [6] Time Series	MTH6116 [6] Design of Experiments MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small> MTH731U [7] Computational Statistics
Then choose another 15 credits from ECN modules at level 6 and another 45 credits at level 5, 6 or 7.	

G1N4 BSc in Mathematics with Finance and Accounting G1L1 BSc in Mathematics and Statistics with Finance

Programme director: Dr Barbara Bogacka

(G1L1 students who entered in 2008–09 may transfer to G1N4; G1L1 students who entered before 2008 should follow the previous version of this programme.)

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics with Finance and Accounting / Mathematics and Statistics with Finance:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability BUS021 [4] Financial Accounting	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4106 [4] Introduction to Statistics BUS017 [4] Economics for Business

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I MTH5122 [5] Statistical Methods BUS201 [5] Financial Institutions Choose another 15 credits at any level.	MTH5120 [5] Statistical Modelling I MTH6100 [6] Actuarial Mathematics BUS022 [5] Managerial Accounting Choose another 15 credits at any level.

Year 3

Semester 5	Semester 6
MTH6121 [6] Introduction to Math. Finance BUS306 [6] Financial Management	MTH6136 [6] Statistical Theory
Choose <u>two</u> modules from the lists below:	
MTH6134 [6] Statistical Modelling II MTH6139 [6] Time Series	MTH6116 [6] Design of Experiments MTH6120 [6] Further Topics in Math. Finance MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small>
Then choose another 45 credits[†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

GG14 BSc in Mathematics and Computing

Programme director: Professor Mark Jerrum

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics and Computing:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability DCS100 [4] Procedural Programming	MTH4101 [4] Calculus II MTH4104 [4] Introduction to Algebra MTH4106 [4] Introduction to Statistics DCS104 [4] Object Oriented Programming

Year 2

Semester 3	Semester 4
MTH4105 [4] Intro. to Math. Computing MTH5112 [5] Linear Algebra I DCS210 [5] Algorithms and Data	MTH5110 [5] Intro. to Numerical Computing DCS103 [4] Language and Communication
Choose one module from the lists below:	
MTH5102 [5] Calculus III MTH5117 [5] Mathematical Writing MTH5121 [5] Probability Models MTH5122 [5] Statistical Methods	MTH5100 [5] Algebraic Structures I MTH5103 [5] Complex Variables
Choose one of:	
Remark: Choose Statistical Methods in Semester 3 if you choose Statistical Theory in Semester 4.	MTH6105 [6] Algorithmic Graph Theory MTH6128 [6] Number Theory MTH6136 [6] Statistical Theory
Choose another 15 credits at level 5, 6 or 7.	

Year 3

Semester 5	Semester 6
Choose 75 credits from MTH modules at level 6 or 7 and 30 credits from DCS modules at level 5, 6 or 7. Then choose another 15 credits at level 5, 6 or 7. (Approval from the Department of Computer Science may be required for some DCS modules.)	

Students interested in applied mathematics may attend MTH4102 Differential Equations in semester 2 or 4 but not register for it or take the final exam. We will accept attendance, together with at least a C grade for Calculus I and II, as a prerequisite for subsequent modules.

FG31 BSc in Mathematics and Physics

Programme director: Dr Will Sutherland

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics and Physics:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability PHY116 [4] From Newton to Einstein	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4106 [4] Introduction to Statistics PHY215 [4] Quantum Physics

Year 2

Semester 3	Semester 4
MTH5102 [5] Calculus III MTH5106 [5] Dynamics of Physical Systems MTH5112 [5] Linear Algebra I PHY214 [5] Thermal and Kinetic Physics	MTH6129 [6] Oscillations, Waves & Patterns PHY210 [4] Electric and Magnetic Fields PHY304 [5] Physical Dynamics PHY319 [5] Quantum Mechanics A

Year 3

Semester 5	Semester 6
PHY403 [6] Statistical Physics	
Choose 45 credits from non-project MTH or PHY modules at level 6 or 7.	
Choose either (a) <u>one</u> of: MTH6138 [6] Third Year Project PHY709 [6] Independent Project and another 45 credits[†] at level 5, 6 or 7, or (b) PHY776 [6] Extended Independent Project (30 credits, double module over both semesters) and another 30 credits[†] at level 5, 6 or 7.	

[†] See also “Can I take modules at level 4 or 5 in my final year?” on page 4.

G1C8 BSc in Mathematics with Psychology

Programme director: Dr Heiko Grossmann

To obtain a BSc degree:

- You must take 360 credits (normally 24 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally 6 modules) at level 6 or higher.
- You must pass at least 270 credits (normally 18 modules) at level 4 or higher. Special regulations apply if you take a year abroad.

To obtain a BSc in Mathematics with Psychology:

- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must take all compulsory modules and the required number of compulsory options as shown in the outline programme or as agreed with the programme director.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core) Essential Psychology Skills for G1C8	
MTH4100 [4] Calculus I MTH4103 [4] Geometry I MTH4107 [4] Introduction to Probability SBC104 [4] Exploring Psychology	MTH4101 [4] Calculus II MTH4102 [4] Differential Equations MTH4106 [4] Introduction to Statistics SBC105 [4] Cognition, Evolution & Behaviour

Year 2

Semester 3	Semester 4
MTH5112 [5] Linear Algebra I MTH5122 [5] Statistical Methods SBC201 [5] Cognitive Psychology Choose another 15 credits at any level.	MTH5120 [5] Statistical Modelling I MTH6136 [6] Statistical Theory SBC202 [5] Social & Developmental Psychology Choose another 15 credits at any level.

Year 3

Semester 5	Semester 6
MTH6134 [6] Statistical Modelling II SBC302 [6] Personality & Individual Differences	SBC344 [6] Animal Cognition
Choose <u>two</u> modules from the lists below:	
MTH6139 [6] Time Series MTH6140 [6] Linear Algebra II	MTH6116 [6] Design of Experiments MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small>
Choose another 45 credits at level 5, 6 or 7, of which at least 30 credits must be from MTH modules.	

Essential Psychology Skills for G1C8 is additional support teaching that we provide instead of some of the teaching that the School of Biological and Chemical Sciences provides for its own students. It is not a formal module, it carries no academic credit and you cannot register for it.

G102 MSci in Mathematics

Programme director: Professor Bill Jackson

Degree requirements

- You must take 480 credits (normally the MSci Project and 32 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally the MSci Project and 4 other modules) at level 7.
- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must pass at least 420 MTH credits at level 4 or higher or other approved modules, and comply with the outline programme.
- You must take the MSci Project and in addition at least 60 MTH credits (normally 4 modules) at level 7 or approved modules at other colleges of the University of London.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I	MTH4101 [4] Calculus II
MTH4103 [4] Geometry I	MTH4102 [4] Differential Equations
MTH4105 [4] Intro. to Math. Computing	MTH4104 [4] Introduction to Algebra
MTH4107 [4] Introduction to Probability	MTH4106 [4] Introduction to Statistics

Year 2

Semester 3	Semester 4
MTH5104 [5] Convergence & Continuity	MTH5100 [5] Algebraic Structures I
MTH5112 [5] Linear Algebra I	MTH5105 [5] Differential & Integral Analysis
MTH5117 [5] Mathematical Writing	
Choose <u>two</u> modules from the lists below:	
MTH5102 [5] Calculus III	MTH5103 [5] Complex Variables
MTH5106 [5] Dynamics of Physical Systems	MTH5109 [5] Geometry II: Knots and Surfaces
MTH5121 [5] Probability Models	MTH5110 [5] Intro. to Numerical Computing
MTH5122 [5] Statistical Methods	MTH5120 [5] Statistical Modelling I
	MTH6105 [6] Algorithmic Graph Theory
	MTH6128 [6] Number Theory
	MTH6129 [6] Oscillations, Waves & Patterns
	MTH6136 [6] Statistical Theory
Then choose another 15 credits at level 3, 4, 5 or 6.	

Year 3

Semester 5	Semester 6
Choose <u>six</u> modules from the lists below:	
MTH6104 [6] Algebraic Structures II	MTH6108 [6] Coding Theory
MTH6107 [6] Chaos & Fractals	MTH6111 [6] Complex Analysis
MTH6109 [6] Combinatorics	MTH6115 [6] Cryptography
MTH6122 [6] Linear Ops. & Diff. Equations ^(not offered 2010-11)	MTH6123 [6] Math. Aspects of Cosmology ^(not offered 2010-11)
MTH6126 [6] Metric Spaces	MTH6130 [6] Probability III ^(to be replaced from 2011–12)
MTH6132 [6] Relativity	MTH733U [7] Fields and Galois Theory ^(not offered 2010-11)
MTH6140 [6] Linear Algebra II	MTH737U [7] Fluid Dynamics
----- Then choose another 30 credits at level 5, 6 or 7.	

Year 4

Semester 7	Semester 8
MTH717U [7] MSci Project (30 credits, double module over both semesters)	
Choose 60 credits from MTH modules at level 7 and another 30 credits at level 6 or 7.	

G1G3 MSci in Mathematics with Statistics

Programme director: Dr Heiko Grossmann

Degree requirements

- You must take 480 credits (normally the MSci Project and 32 modules of 15 credits each) including at most 30 credits (2 modules) at level 3, at most 150 credits (10 modules) at level 3 or 4, and at least 90 credits (normally the MSci Project and 4 other modules) at level 7.
- You must pass Essential Mathematical Skills, which is a 0-credit level-3 core module, to progress from the first to the second year of this programme.
- You must pass at least 420 MTH credits at level 4 or higher or other approved modules, and comply with the outline programme.
- You must take the MSci Project and in addition at least 60 MTH credits (normally 4 modules) at level 7 or approved modules at other colleges of the University of London.

If you graduate but fail to meet these requirements then your degree title may be “Mathematical Studies”.

Outline programme

See also Part 5 pages 1–4. Modules in **bold** are compulsory and must normally be taken in the year shown. You must take modules to the value of 120 credits (normally 8 modules) in each developmental year. The value of each module is 15 credits unless otherwise indicated. The square brackets show levels.

Year 1

Semester 1	Semester 2
MTH3100 [3] Essential Mathematical Skills (core)	
MTH4100 [4] Calculus I	MTH4101 [4] Calculus II
MTH4103 [4] Geometry I	MTH4102 [4] Differential Equations
MTH4105 [4] Intro. to Math. Computing	MTH4104 [4] Introduction to Algebra
MTH4107 [4] Introduction to Probability	MTH4106 [4] Introduction to Statistics

Year 2

Semester 3	Semester 4
MTH5104 [5] Convergence & Continuity	MTH5100 [5] Algebraic Structures I
MTH5112 [5] Linear Algebra I	MTH5105 [5] Differential & Integral Analysis
MTH5117 [5] Mathematical Writing	MTH5120 [5] Statistical Modelling I
MTH5122 [5] Statistical Methods	MTH6136 [6] Statistical Theory

Year 3

Semester 5	Semester 6
Choose <u>two</u> modules from the lists below:	
MTH6104 [6] Algebraic Structures II	MTH6108 [6] Coding Theory
MTH6107 [6] Chaos & Fractals	MTH6115 [6] Cryptography
MTH6126 [6] Metric Spaces	
MTH6140 [6] Linear Algebra II	
Choose <u>three</u> modules from the lists below:	
MTH5121 [5] Probability Models	MTH6116 [6] Design of Experiments
MTH6134 [6] Statistical Modelling II	MTH6130 [6] Probability III <small>(to be replaced from 2011–12)</small>
MTH6139 [6] Time Series	MTH709U [7] Bayesian Statistics
	MTH731U [7] Computational Statistics
Then choose another 45 credits at level 5, 6 or 7.	

Year 4

Semester 7	Semester 8
MTH717U [7] MSci Project (30 credits, double module over both semesters)	
Choose 60 credits from MTH modules at level 7 and another 30 credits at level 6 or 7.	