

# Study Programmes 2011–12

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## Disclaimer

This document attempts to provide advice but please see the Queen Mary Academic Regulations for definitive information. Nothing in this document overrides the Academic Regulations, which always take precedence, and are available online at [www.arcs.qmul.ac.uk/policy\\_zone](http://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 document. 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 we should automatically register you for Essential Mathematical Skills **in addition** to the other eight modules shown on your study programme. Essential Mathematical Skills is a zero-credit module and so 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 one of them, 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](http://www.maths.qmul.ac.uk/undergraduate/modules?module=MTH3100) to the module organiser's website.

Note that Essential Mathematical Skills is only for students whose home department is the School of Mathematical Sciences. 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?

If you are now in your second year then you should follow the appropriate study programme later in this document. Otherwise, you should follow the study programme that we published in 2010, unless you entered GN13 or G1L1 in 2007 or earlier, in which case you should follow the appropriate study programme that we published in 2009.

If you are following an old study programme then you should do so as closely as current module availability allows. Old versions of study programmes are available from the archive section at the bottom of the handbook web page at [www.maths.qmul.ac.uk/undergraduate/forms-guidelines/handbook#archive](http://www.maths.qmul.ac.uk/undergraduate/forms-guidelines/handbook#archive).

### Can I change my study programme?

If you want to change your study programme, please follow the procedure set out in our student handbook. Please note that some changes are feasible and some are not. It is usually easier to change earlier than later. Changes normally take effect at the start of the next academic year (semester A) but can take effect at the start of semester B. A change to a related programme will normally be easier than a change to an unrelated programme. For example, G100, G110 and GG31 all have identical first years, so changes among them at the end of the first year are straightforward. Generally, it may be necessary to catch up with one or more modules a year later than normal, which may lead to timetable clashes that we cannot resolve. If we allow you to change programme then you implicitly agree to work around any such timetable clashes that affect only you or a very small number of students.

### 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. If necessary, the programme director for your new programme will either:

- waive one or more 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 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);
- it does not overlap with any module you have already taken, are taking or must take later;
- you satisfy the prerequisites.

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](http://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 (but before the normal deadline for module changes each semester).

## What are “recommended modules”?

Optional modules in the study programmes below with a superscript R appended are “recommended modules”. This means two things:

1. The compulsory and recommended modules fit well together and form a complete programme. If you do not have other strong preferences then you should choose the recommended optional modules throughout your programme. This will ensure that you satisfy the prerequisites for later modules. We will try to ensure that the compulsory and recommended modules within each study programme do not have timetable clashes.
2. The recommended modules provide defaults so that if you do not choose your optional modules by the deadline we will register you for the recommended modules.

## Can I take modules offered by other Schools?

You can take Business Management (BUS) modules only if your study programme includes them explicitly. You can take Economics (ECN) modules only if your study programme is GL11.

We may allow you to take modules offered by Schools other than Business and Management or Economics and Finance **provided their content does not overlap significantly with that of any module offered by the School of Mathematical Sciences**, because if it does you should take the module offered by the School of Mathematical Sciences. Therefore, if you want to take a module offered by a School within the Faculty of Science and Engineering other than Mathematical Sciences, you must obtain permission by email from the Director of Studies in the School of Mathematical Sciences. You must do this by the end of the first week of the semester in which the module is offered, giving a clearly reasoned academic case explaining why you want to

take the module. You do not need permission from the School of Mathematical Sciences, other than the agreement of your adviser, to take modules offered in other faculties.

In all cases, you must also obtain permission (preferably in writing and normally by email) from the School offering the module and usually from the module organiser. If you register for any modules that you are not allowed to take then you may be deregistered later and have difficulty finding replacements.

## **How do academic credit points relate to modules?**

The smallest unit of teaching is a “module”. All modules offered by the School of Mathematical Sciences are worth 15 academic credit points (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 particularly 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 offered 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 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 credits at specific levels.

Our study programmes therefore aim to ensure that, if you follow them, you will satisfy the Academic Regulations and be able to graduate. To do this, we restrict 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](http://www.maths.qmul.ac.uk/undergraduate/modules).

## **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 this, but we do not recommend it because you may get lower marks and hence a lower degree class than if you had followed the minimum requirements of your study programme.

Students entering their second year in 2011–12 are no longer required to take at least one level-6 module in their second year and so will be required to take at least 90 credits at level 6 in their final BSc year, as indicated in the study programmes later in this document. This is the most significant change to the study programmes.

Students entering their third or final year in 2011–12 should continue to follow the study programmes published in the School of Mathematical Sciences Undergraduate Handbook 2010–11.

### **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 modules in the final year of a BSc degree, or level-4 or level-5 modules in the final year of an MSci degree. If you want to take level-4 modules after your first year then you should take them in your second year if your study programme allows this.

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>Choose two of:</b> MTH5102 [5] Calculus III <sup>R</sup> MTH5104 [5] Convergence & Continuity <sup>R</sup> MTH5106 [5] Dynamics of Physical Systems <sup>R</sup> MTH5117 [5] Mathematical Writing MTH5121 [5] Probability Models MTH5122 [5] Statistical Methods <b>Choose another 15 credits at any level,</b> e.g. another of the modules above.	<b>Choose three of:</b> MTH5100 [5] Algebraic Structures I <sup>R</sup> MTH5103 [5] Complex Variables <sup>R</sup> MTH5105 [5] Differential & Integral Analysis <sup>R</sup> MTH5109 [5] Geometry II: Knots and Surfaces <sup>R</sup> MTH5110 [5] Intro. to Numerical Computing MTH5120 [5] Statistical Modelling I <b>Choose another 15 credits at any level,</b> e.g. another of the modules above.

#### Year 3

Semester 5	Semester 6
<b>Choose four modules from the lists below:</b>	
MTH6107 [6] Chaos & Fractals <sup>R</sup> MTH6109 [6] Combinatorics <sup>R</sup> MTH6121 [6] Introduction to Math. Finance MTH6126 [6] Metric Spaces <sup>R</sup> MTH6132 [6] Relativity <sup>R</sup> MTH6138 [6] Third Year Project MTH6140 [6] Linear Algebra II	MTH6100 [6] Actuarial Mathematics MTH6105 [6] Algorithmic Graph Theory <sup>R</sup> MTH6108 [6] Coding Theory <sup>R</sup> MTH6115 [6] Cryptography MTH6120 [6] Further Topics in Math. Finance MTH6124 [6] Mathematical Problem Solving MTH6128 [6] Number Theory <sup>R</sup> MTH6129 [6] Oscillations, Waves & Patterns <sup>R</sup> MTH6141 [6] Random Processes
<b>Then choose another 30 credits at level 6 and another 30 credits at level 5, 6 or 7,</b> e.g. another four modules from the lists above.	

## Mathematical Sciences Undergraduate Study Programmes 2011–12

This programme offers a combination of pure and applied mathematics. If you wish to focus on pure mathematics or statistics then you should consider transferring to G110 or GG31.

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5104 [5] Convergence &amp; Continuity</b>	<b>MTH5100 [5] Algebraic Structures I</b>
<b>MTH5112 [5] Linear Algebra I</b>	<b>MTH5103 [5] Complex Variables</b>
<b>MTH5117 [5] Mathematical Writing</b>	<b>MTH5105 [5] Differential &amp; Integral Analysis</b>
<b>Choose another 15 credits at any level, e.g.</b> MTH5121 [5] Probability Models <sup>R</sup>	<b>Choose another 15 credits at any level, e.g.</b> MTH5109 [5] Geometry II: Knots and Surfaces <sup>R</sup>

#### Year 3

Semester 5	Semester 6
<b>Choose <u>six</u> modules from the lists below:</b>	
MTH6104 [6] Algebraic Structures II <sup>R</sup>	MTH6105 [6] Algorithmic Graph Theory
MTH6107 [6] Chaos & Fractals	MTH6108 [6] Coding Theory <sup>R</sup>
MTH6109 [6] Combinatorics <sup>R</sup>	MTH6111 [6] Complex Analysis <sup>R</sup>
MTH6126 [6] Metric Spaces <sup>R</sup>	MTH6115 [6] Cryptography
MTH6138 [6] Third Year Project	MTH6124 [6] Mathematical Problem Solving <sup>R</sup>
MTH6140 [6] Linear Algebra II <sup>R</sup>	MTH6128 [6] Number Theory <sup>R</sup>
<b>Then choose another 30 credits at level 5, 6 or 7, e.g. another two modules from the lists above.</b>	

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b>	<b>MTH5120 [5] Statistical Modelling I</b>
<b>MTH5122 [5] Statistical Methods</b>	<b>Choose <u>three</u> of:</b>
<b>Choose <u>two</u> of:</b>	MTH5100 [5] Algebraic Structures I <sup>R</sup>
MTH5102 [5] Calculus III	MTH5103 [5] Complex Variables <sup>R</sup>
MTH5104 [5] Convergence & Continuity <sup>R</sup>	MTH5105 [5] Differential & Integral Analysis <sup>R</sup>
MTH5106 [5] Dynamics of Physical Systems	MTH5109 [5] Geometry II: Knots and Surfaces
MTH5117 [5] Mathematical Writing	MTH5110 [5] Intro. to Numerical Computing
MTH5121 [5] Probability Models <sup>R</sup>	

#### Year 3

Semester 5	Semester 6
<b>MTH6134 [6] Statistical Modelling II</b>	<b>MTH6136 [6] Statistical Theory</b>
<b>Choose <u>one</u> of:</b>	<b>Choose <u>three</u> of:</b>
MTH6121 [6] Introduction to Math. Finance	MTH6100 [6] Actuarial Mathematics
MTH6138 [6] Third Year Project <sup>R</sup>	MTH6105 [6] Algorithmic Graph Theory
MTH6139 [6] Time Series <sup>R</sup>	MTH6116 [6] Design of Experiments <sup>R</sup>
MTH6140 [6] Linear Algebra II <sup>R</sup>	MTH6120 [6] Further Topics in Math. Finance
MTH731U [7] Computational Statistics	MTH6129 [6] Oscillations, Waves & Patterns
<b>Choose another 30 credits at level 5, 6 or 7,</b>	MTH6141 [6] Random Processes <sup>R</sup>
<b>e.g. additional modules from the list above</b>	MTH709U [7] Bayesian Statistics <sup>R</sup>
<b>or additional modules from the Semester 3 list.</b>	MTH734U [7] Topics in Prob. and Stoch. Proc.

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>BUS021 [4] Financial Accounting</b> Either (a) if you plan to choose MTH6136 [6] Statistical Theory next year <b>choose</b> MTH5122 [5] Statistical Methods <sup>R</sup> and another 15 credits at level 5, 6 or 7, e.g. MTH5121 [5] Probability Models <sup>R</sup> or (b) if you plan to choose MTH6129 [6] Oscillations, Waves & Patterns next year <b>choose</b> MTH5102 [5] Calculus III MTH5106 [5] Dynamics of Physical Systems	<b>MTH4104 [4] Introduction to Algebra</b> <b>BUS011 [5] Marketing</b> Choose another 30 credits at level 5, 6 or 7, e.g. MTH5103 [5] Complex Variables <sup>R</sup> MTH5120 [5] Statistical Modelling I <sup>R</sup>

#### Year 3

Semester 5	Semester 6
<b>BUS204 [5] Strategy</b>	<b>BUS324 [6] Management of Human Resources</b> Either (a) <b>choose</b> MTH6136 [6] Statistical Theory <sup>R</sup> or (b) <b>choose</b> MTH6129 [6] Oscillations, Waves & Patterns
<b>Choose 60 credits from MTH modules at level 6 or 7 and another 15 credits at level 5, 6 or 7, e.g.</b>	
Additional modules from the Semester 3 list MTH6117 [6] Entrepreneurship and Innovation <sup>R</sup> MTH6121 [6] Introduction to Math. Finance <sup>R</sup> MTH6138 [6] Third Year Project <sup>R</sup>	MTH6100 [6] Actuarial Mathematics <sup>K</sup> MTH6120 [6] Further Topics in Math. Finance <sup>R</sup>

## GN13 BSc in Mathematics, Business Management and Finance

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, 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>MTH5122 [5] Statistical Methods</b> <b>BUS021 [4] Financial Accounting</b> Choose another 15 credits <sup>1</sup> at any level, e.g. <b>MTH5121 [5] Probability Models<sup>2,R</sup></b>	<b>MTH5120 [5] Statistical Modelling I</b> <b>BUS011 [5] Marketing</b> <b>BUS022 [5] Managerial Accounting</b> Choose another 15 credits <sup>1</sup> at any level, e.g. <b>MTH4104 [4] Introduction to Algebra<sup>R</sup></b>

#### Year 3

Semester 5	Semester 6
<b>BUS204 [5] Strategy</b> <b>BUS306 [6] Financial Management</b> <b>MTH6121 [6] Introduction to Math. Finance</b>	<b>BUS324 [6] Management of Human Resources</b> <b>MTH6100 [6] Actuarial Mathematics</b>
Choose <b>two</b> modules from the lists below:	
MTH6117 [6] Entrepreneurship and Innovation MTH6134 [6] Statistical Modelling II MTH6139 [6] Time Series <sup>R</sup>	MTH6120 [6] Further Topics in Math. Finance <sup>R</sup> MTH6136 [6] Statistical Theory MTH6141 [6] Random Processes <sup>R</sup>
Then choose another 15 credits at level 5, 6 or 7, e.g. another of the modules above or MTH6138 [6] Third Year Project.	

<sup>1</sup> At most one optional module in semesters 3 and 4 can be at level 4.

<sup>2</sup> Not choosing this module will limit your final-year options.

## 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 by a superscript P.

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

### Outline programme

See also pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>MTH5121 [5] Probability Models</b> <b>MTH5122 [5] Statistical Methods</b> <b>ECN214 [5] Games and Strategies<sup>P</sup></b>	<b>MTH5120 [5] Statistical Modelling I</b> <b>ECN211 [5] Microeconomics II<sup>P</sup></b> <b>ECN226 [5] Capital Markets 1<sup>P</sup></b> Choose <u>one</u> of: MTH4102 [4] Differential Equations <sup>R</sup> MTH4104 [4] Introduction to Algebra

#### Year 3

Semester 5	Semester 6
<b>ECN222 [5] Financial Markets and Institutions<sup>(from 2012–13)</sup></b> <b>ECN371 [6] Corporate Finance 1</b>	<b>MTH6136 [6] Statistical Theory</b> Choose <u>one</u> of: ECN358 [6] Futures and Options <sup>R</sup> ECN372 [6] Corporate Finance 2 <sup>R</sup>
Choose <u>two</u> modules from the lists below:	
MTH6134 [6] Statistical Modelling II <sup>R</sup> MTH6139 [6] Time Series <sup>R</sup>	MTH6116 [6] Design of Experiments MTH6141 [6] Random Processes <sup>R</sup>
Then choose another 15 credits from ECN modules at level 6 and another 15 credits at level 5, 6 or 7, e.g. MTH6138 [6] Third Year Project.	

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

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 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>MTH5122 [5] Statistical Methods</b> <b>BUS201 [5] Financial Institutions</b> <b>Choose another 15 credits at any level,<sup>3</sup> e.g.</b> <b>MTH5121 [5] Probability Models<sup>R</sup></b>	<b>MTH5120 [5] Statistical Modelling I</b> <b>BUS022 [5] Managerial Accounting</b> <b>Choose another 30 credits at any level,<sup>3</sup> e.g.</b> <b>MTH4104 [4] Introduction to Algebra<sup>R</sup></b> <b>MTH5103 [5] Complex Variables<sup>R</sup></b>

#### Year 3

Semester 5	Semester 6
<b>MTH6121 [6] Introduction to Math. Finance</b> <b>BUS306 [6] Financial Management</b>	<b>MTH6100 [6] Actuarial Mathematics</b> <b>MTH6136 [6] Statistical Theory</b>
<b>Choose <u>two</u> modules from the lists below:</b>	
MTH6134 [6] Statistical Modelling II <sup>K</sup> MTH6139 [6] Time Series <sup>R</sup>	MTH6116 [6] Design of Experiments MTH6120 [6] Further Topics in Math. Finance <sup>R</sup> MTH6141 [6] Random Processes <sup>R</sup>
<b>Then choose another 30 credits at level 5, 6 or 7,</b> e.g. another of the modules above and MTH6138 [6] Third Year Project.	

<sup>3</sup> Do not choose more than 30 credits in total at level 4 in year 2.

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH4105 [4] Intro. to Math. Computing</b> <b>MTH5112 [5] Linear Algebra I</b> <b>DCS210 [5] Algorithms and Data</b> <b>Choose one of:</b> MTH5102 [5] Calculus III MTH5104 [5] Convergence & Continuity MTH5106 [5] Dynamics of Physical Systems MTH5117 [5] Mathematical Writing <sup>R</sup> MTH5121 [5] Probability Models MTH5122 [5] Statistical Methods	<b>MTH5110 [5] Intro. to Numerical Computing</b> <b>DCS103 [4] Language and Communication</b> <b>Choose two of:</b> MTH5100 [5] Algebraic Structures I <sup>R</sup> MTH5103 [5] Complex Variables MTH5105 [5] Differential & Integral Analysis MTH5109 [5] Geometry II: Knots and Surfaces <sup>R</sup> MTH5120 [5] Statistical Modelling I

#### Year 3

Semester 5	Semester 6
<p><b>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.                      You must include at least 90 credits overall at level 6 or 7.</b></p> <p>Note that MTH6138 [6] Third Year Project can be a mathematical computing project.                      (Approval from the Department of Computer Science may be required for some DCS modules.)</p>	

Second-year GG14 students interested in applied mathematics may attend MTH4102 Differential Equations in semester 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  
(This programme is no longer open to new students.)

### 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5102 [5] Calculus III</b>	<b>MTH5103 [5] Complex Variables</b>
<b>MTH5106 [5] Dynamics of Physical Systems</b>	<b>PHY210 [4] Electric and Magnetic Fields</b>
<b>MTH5112 [5] Linear Algebra I</b>	<b>PHY304 [5] Physical Dynamics</b>
<b>PHY214 [5] Thermal and Kinetic Physics</b>	<b>PHY319 [5] Quantum Mechanics A</b>

#### Year 3

Semester 5	Semester 6
<b>MTH6129 [6] Oscillations, Waves &amp; Patterns</b>	
<b>PHY403 [6] Statistical Physics</b>	
Choose 45 credits from non-project MTH or PHY modules at level 6 or 7.	
Choose either <u>one</u> of:	
MTH6138 [6] Third Year Project	
PHY709 [6] Independent Project	
and another 30 credits at level 5, 6 or 7,	
or	
PHY776 [6] Extended Independent Project (30 credits, double module over both semesters)	
and another 15 credits at level 5, 6 or 7.	

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5112 [5] Linear Algebra I</b> <b>MTH5122 [5] Statistical Methods</b> <b>SBC201 [5] Cognitive Psychology</b> Choose another 15 credits at any level, <sup>4</sup> e.g. <b>MTH5121 [5] Probability Models<sup>R</sup></b>	<b>MTH5120 [5] Statistical Modelling I</b> <b>SBC202 [5] Social &amp; Developmental Psychology</b> Choose another 30 credits at any level, <sup>4</sup> e.g. <b>MTH4104 [4] Introduction to Algebra<sup>R</sup></b> <b>MTH5103 [5] Complex Variables<sup>R</sup></b>

#### Year 3

Semester 5	Semester 6
<b>MTH6134 [6] Statistical Modelling II</b> <b>SBC302 [6] Personality &amp; Individual Differences</b>	<b>MTH6136 [6] Statistical Theory</b> <b>SBC344 [6] Animal Cognition</b>
Choose <u>two</u> modules from the lists below:	
<b>MTH6139 [6] Time Series<sup>R</sup></b> <b>MTH6140 [6] Linear Algebra II<sup>R</sup></b>	<b>MTH6116 [6] Design of Experiments<sup>R</sup></b> <b>MTH6141 [6] Random Processes<sup>R</sup></b>
<b>Then choose another 30 credits at level 5, 6 or 7, of which at least 15 credits must be from MTH modules, e.g. additional modules from the lists above or MTH6138 [6] Third Year Project.</b>	

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.

<sup>4</sup> Do not choose more than 30 credits in total at level 4 in year 2.

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5104 [5] Convergence &amp; Continuity</b> <b>MTH5112 [5] Linear Algebra I</b> <b>MTH5117 [5] Mathematical Writing</b> Choose <u>one</u> of: MTH5102 [5] Calculus III MTH5106 [5] Dynamics of Physical Systems <sup>R</sup> MTH5121 [5] Probability Models MTH5122 [5] Statistical Methods	<b>MTH5100 [5] Algebraic Structures I</b> <b>MTH5105 [5] Differential &amp; Integral Analysis</b> Choose <u>two</u> of: MTH5103 [5] Complex Variables <sup>R</sup> MTH5109 [5] Geometry II: Knots and Surfaces <sup>R</sup> MTH5110 [5] Intro. to Numerical Computing MTH5120 [5] Statistical Modelling I

#### Year 3

Semester 5	Semester 6
<b>Choose <u>six</u> modules from the lists below:</b>	
MTH6104 [6] Algebraic Structures II <sup>R</sup> MTH6107 [6] Chaos & Fractals <sup>R</sup> MTH6109 [6] Combinatorics <sup>R</sup> MTH6126 [6] Metric Spaces MTH6132 [6] Relativity <sup>R</sup> MTH6140 [6] Linear Algebra II	MTH6105 [6] Algorithmic Graph Theory <sup>R</sup> MTH6108 [6] Coding Theory MTH6111 [6] Complex Analysis <sup>R</sup> MTH6115 [6] Cryptography MTH6124 [6] Mathematical Problem Solving <sup>R</sup> MTH6128 [6] Number Theory MTH6129 [6] Oscillations, Waves & Patterns <sup>R</sup> MTH6136 [6] Statistical Theory MTH6141 [6] Random Processes
<b>Then choose another 30 credits at level 5, 6 or 7, e.g. another two modules from the lists above.</b>	

**Year 4**

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

## 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 pages 1–5. 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. A superscript R indicates a recommended module.

#### Year 1

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

#### Year 2

Semester 3	Semester 4
<b>MTH5104 [5] Convergence &amp; Continuity</b> <b>MTH5112 [5] Linear Algebra I</b> <b>MTH5121 [5] Probability Models</b> <b>MTH5122 [5] Statistical Methods</b>	<b>MTH5100 [5] Algebraic Structures I</b> <b>MTH5105 [5] Differential &amp; Integral Analysis</b> <b>MTH5120 [5] Statistical Modelling I</b> Choose <b>one</b> of: MTH5103 [5] Complex Variables <sup>R</sup> MTH5109 [5] Geometry II: Knots and Surfaces

#### Year 3

Semester 5	Semester 6
<b>MTH5117 [5] Mathematical Writing</b> <small>(from 2012–13)</small> <b>MTH6134 [6] Statistical Modelling II</b> <b>MTH6140 [6] Linear Algebra II</b>	<b>MTH6116 [6] Design of Experiments</b> <b>MTH6136 [6] Statistical Theory</b>
<b>Choose <u>one</u> module from the lists below:</b>	
MTH6104 [6] Algebraic Structures II <sup>R(2011-12)</sup> MTH6107 [6] Chaos & Fractals MTH6126 [6] Metric Spaces	MTH6105 [6] Algorithmic Graph Theory MTH6108 [6] Coding Theory MTH6115 [6] Cryptography MTH6124 [6] Mathematical Problem Solving <sup>R</sup>
<b>Choose <u>one</u> module from the lists below:</b>	
MTH6139 [6] Time Series <sup>R</sup>	MTH6141 [6] Random Processes <sup>R</sup>
<b>Then choose another 15 credits at level 5, 6 or 7, e.g. another of the modules above.</b>	

**Year 4**

Semester 7	Semester 8
<b>MTH717U [7] MSci Project (30 credits, double module over both semesters)</b>	
<b>Choose <u>two</u> modules from the lists below:</b>	
MTH731U [7] Computational Statistics	MTH709U [7] Bayesian Statistics
MTH716U [7] Measure Theory and Probability	MTH734U [7] Topics in Prob. and Stoch. Proc.
<b>Choose another 30 credits from MTH modules at level 7 and another 30 credits at level 6 or 7.</b>	