Pathway Choice Guidance for Year 3 G102 Students

Pathways

In your final year (or year 3 for MSci students), you’ll pick one of three pathways depending on your mathematical interests and strengths. When choosing your pathway, think about what style of mathematics you prefer and which particular modules you enjoyed most in your first two years. You should also think about what you hope to do after graduation, although for many careers and further study any of the pathways would provide good background.

There is plenty of choice of modules within each pathway, and once you’ve made your pathway choice you’ll need to pick modules within it.

The General Pathway

This pathway contains a broad spread of modules from a variety of areas of mathematics. You can choose a mixture of pure and applied modules but you’ll not be able to go as deeply into one particular area.

You should consider this pathway if you;
- enjoy lots of different parts of mathematics;
- have no clear favourites among your first and second year modules

You should avoid this pathway if you;
- want to go more deeply into a particular area;

The Pure Pathway

Most of the modules in this pathway involve more formal abstract mathematics. You can expect theorems, proofs and formal definitions to be prominent in many of them. However, you’ll still pick up many widely relevant skills, and many modules contain applicable parts of pure mathematics.

You should consider this pathway if you;
- enjoy maths ‘for its own sake’;
- are reasonably comfortable with proofs and abstract definitions;
- enjoyed Numbers, Sets and Functions, Introduction to Algebra, and Convergence & Continuity modules;
- are considering further study in maths

The Statistics and Financial Pathway

Many of the modules in this pathway are concerned with financial mathematics and statistics. The idea of understanding and modelling the world through data is a powerful tool which these days is used almost everywhere. The skills you learn in these modules will be relevant whether or not your career is directly related to statistics or financial mathematics.

You should consider this pathway if you;
- enjoy using data to understand the world;
- are reasonably comfortable with statistical and probabilistic ideas and reasoning;
- would like to focus on financial mathematics
- enjoyed Probability & Statistics I and II modules;
- are considering further study or a career in statistics;

Off-diet modules

You are allowed to choose up to 30 credits (typically two modules) from outside a pathway. These modules may be other level 6 mathematics modules or modules from other schools. However, we cannot guarantee these modules will not clash, and if the modules do clash you will be required to modify your selection in September – for example choosing modules from within your pathway.
Guidance for students going into year 2 and 3

Choosing modules from outside the School is a good option to consider if you have a strong interest in a subject outside mathematics. Often taking a non-Pathway module will involve getting used to the different ways of thinking of another discipline, as well as potentially a different style of teaching and assessment. This can be rewarding and can provide a nice contrast to your mathematical modules. However, it can also be demanding and non-Pathway modules are not guaranteed to be clash free on your timetable. So, this is only an option to take if you have a particular interest in a different module.

- You should consider taking a non-Pathway module if;
- you have a strong interest in a modules from another school;
- you are prepared to adapt to the different ways of another discipline;
- you have the time and willingness to explore your options and contact module organisers;
- you accept that there’s a chance the module(s) might clash with some of your Pathway modules – Pathway modules will take priority over non-Pathway modules when we timetable them;

You should avoid taking an off-diet module if;
- you think it will be an easy option;
- you can’t think of what else to do;

If you decide to take a non-Pathway MTH module you’ll need to get approval from your Advisor and send this to maths@qmul.ac.uk. If you decide to take a non-MTH, non-Pathway module you’ll need to contact the module Home School (Module Organiser), to;
- check if they have space on their module;
- check that you meet an prerequisite or corequisite requirements for the module;
- obtain permission to take the module(s) from the Home School and forward this to the Educations Services Team via maths@qmul.ac.uk;
- **NOTE:** if the non-Pathway module you’re considering is from another School within the Faculty of Science and Engineering, in addition to module Home School permission, you’ll also need permission from the School of Mathematical Sciences Deputy Director of Education;
- **NOTE:** students are not permitted to choose modules from either the School Of Economics and Finance, or the School of Business and Management [ECN or BUS coded modules]

Don’t leave these checks until the last minute to ensure you get the chance to study the modules you want.
The standard pathways are listed below. Modules outside these pathways may only be taken with School approval. At most 30 credits in any year may be from outside the pathway.

### YEAR 1

**Semester 1 (4 modules)**
- MTH4114 [4] Computing and Data Analysis with Excel
- MTH4207 [4] Introduction to Probability
- MTH4213 [4] Numbers, Sets and Functions

**Semester 2 (4 modules)**
- MTH4104 [4] Introduction to Algebra
- MTH4201 [4] Calculus II
- MTH4215 [4] Vectors and Matrices

### YEAR 2

At most 30 credits may be from outside the pathway.

**Semester 3 (4 modules)**
- MTH5112 [5] Linear Algebra I
  - Choose **one** from:
    - MTH5130 [5] Number Theory

**Semester 4 (4 modules)**
- MTH5001 [5] Introduction to Computer Programming
- Choose **three** from:
  - MTH5103 [5] Complex Variables
  - MTH5113 [5] Introduction to Differential Geometry
  - MTH5105 [5] Differential and Integral Analysis
  - MTH5120 [5] Statistical Modelling I

### YEAR 3

Students must choose one of three pathways: General, Pure, and Stats and Financial, and then choose 60 credits from each semester from modules listed for that pathway. Modules outside these pathways may only be taken with School approval via a waiver as these can’t be guaranteed to be ‘non clashing non timetables At most 30 credits may be from outside the pathway’. Please remember that you must pass at least six level 6 modules in year 3. 

#### General Pathway

**Semester 5 (4 modules)**
- MTH5130 [5] Number Theory
- MTH6115 [6] Cryptography
- MTH6140 [6] Linear Algebra II
- MTH6138 [6] Third Year Project (may be taken in either semester)

**Semester 6 (4 modules)**
- MTH6105 [6] Algorithmic Graph Theory
- MTH6142 [6] Complex Networks
- MTH6108 [6] Coding Theory
- MTH6138 [6] Third Year Project (may be taken in either semester)
- MTH6110 [6] Communicating and Teaching Mathematics (by approval in semester A)

#### Pure Pathway

**Semester 5 (4 modules)**
- MTH5130 [5] Number Theory
- MTH6115 [6] Cryptography
- MTH6140 [6] Linear Algebra II
- MTH6107 [6] Chaos and Fractals
- MTH6138 [6] Third Year Project (may be taken in either semester)

**Semester 6 (4 modules)**
- MTH6105 [6] Algorithmic Graph Theory
- MTH6142 [6] Complex Networks
- MTH6108 [6] Coding Theory
- MTH6132 [6] Relativity
- MTH6138 [6] Third Year Project (may be taken in either semester)
- MTH6110 [6] Communicating and Teaching Mathematics (by approval in semester A)
**Statistics and Financial Pathway**

To choose this Pathway, students **must** have studied MTH5129.

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<tr>
<th>Semester 5 (4 modules)</th>
<th>Semester 6 (4 modules)</th>
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<tr>
<td>MTH6138 [6] Third Year Project (may be taken in either semester)</td>
<td>MTH6138 [6] Third Year Project (may be taken in either semester)</td>
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<tr>
<td>MTH5124</td>
<td>MTH6110 [6] Communicating and Teaching Mathematics (by approval in semester A)</td>
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**YEAR 4**

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<th>Semester 7</th>
<th>Semester 8</th>
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Choose 75 credits from undergraduate MTH or SPA modules at level 7 (modules with the codes MTH7*U or SPA7*U). [1] This does not apply to students who enrolled in September 2014 or before.