G100/G10Y/G101 - BSc Mathematics/BSc Mathematics with Year Abroad/BSc Mathematics with Professional Placement

YEAR 1	
Semester 1 (30 credits) MTH4000 [4] Programming in Python I MTH4213 [4] Numbers, Sets and Functions	Semester 2 (30 credits) MTH4104 [4] Introduction to Algebra MTH4215 [4] Vectors and Matrices
Year-long modules (60 credits)	
MTH4300 [4] Introduction to Analysis with Calculus MTH4500 [4] Probability & Statistics	
YEAR 2 Modules outside this pathway (normally a maximum of 15 credits) may be taken with School approval.	
Semester 3 (60 credits) MTH5112 [5] Linear Algebra I MTH5123 [5] Differential Equations Choose **two** from: MTH5104 [5] Convergence and Continuity MTH5124 [5] Actuarial Mathematics I MTH5129 [5] Probability and Statistics II MTH5130 [5] Number Theory	Semester 4 (60 credits) MTH5001 [5] Introduction to Computer Programming Choose **three** from: MTH5103 [5] Complex Variables MTH5105 [5] Differential and Integral Analysis MTH5113 [5] Introduction to Differential Geometry MTH5114 [5] Linear Programming and Games MTH5120 [5] Statistical Modelling I
YEAR 3 Students must choose a pathway and 60 credits must be chosen in each semester from modules listed for that pathway. Modules outside the pathway (normally a maximum of 15 credits) may be taken with School approval. Please remember that you must pass at least six level 6 modules in year 3.	
<u>General Pathway</u>	
Semester 5 (60 credits) Choose **four** from: MTH5130 [5] Number Theory MTH6115 [6] Cryptography MTH6138 [6] Third Year Project* MTH6140 [6] Linear Algebra II MTH6141 [6] Random Processes MTH6151 [6] Partial Differential Equations MTH6154 [6] Financial Mathematics I	Semester 6 (60 credits) Choose **four** from: MTH6101 [6] Introduction to Machine Learning MTH6105 [6] Algorithmic Graph Theory MTH6110 [6] Communicating and Teaching Mathematics (by approval in semester A)** MTH6138 [6] Third Year Project* MTH6142 [6] Complex Networks MTH6150 [6] Numerical Computing with C and C++ MTH6155 [6] Financial Mathematics II

Pure Pathway	
Semester 5 (60 credits) Choose **four** from: MTH5130 [5] Number Theory MTH6106 [6] Group Theory MTH6115 [6] Cryptography MTH6138 [6] Third Year Project* MTH6140 [6] Linear Algebra II MTH6107 [6] Chaos and Fractals MTH6151 [6] Partial Differential Equations	Semester 6 (60 credits) Choose **four** from: MTH6105 [6] Algorithmic Graph Theory MTH6110 [6] Communicating & Teaching Mathematics** MTH6127 [6] Metric Spaces and Topology MTH6138 [6] Third Year Project* MTH6132 [6] Relativity MTH6142 [6] Complex Networks MTH6158 [6] Ring Theory
Statistics and Financial Pathway To choose this Pathway, students **must** have studied MTH5129.	
Semester 5 (60 credits) Choose **four** from: MTH5124 [5] Actuarial Mathematics I MTH6102 [6] Bayesian Statistical Methods MTH6134 [6] Statistical Modelling II MTH6138 [6] Third Year Project* MTH6141 [6] Random Processes MTH6151 [6] Partial Differential Equations MTH6154 [6] Financial Mathematics I	Semester 6 (60 credits) Choose **four** from: MTH6150 [6] Numerical Computing with C and C++ MTH6142 [6] Complex Networks MTH6155 [6] Financial Mathematics II MTH6101 [6] Introduction to Machine Learning MTH6139 [6] Time Series MTH6113 [6] Mathematical Tools for Asset Management MTH6138 Third Year Project* MTH6110 [6] Communicating & Teaching Mathematics** MTH6101 [6] Introduction to Machine Learning

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 respectively.

*Please note that MTH6138 Third Year Project can be taken in either semester but requires approval of Project supervisor prior to the start of the semester in which module is taken.

**Please note that MTH6110 has limited spaces and is by interview and approval in Semester A.

G102/G12Y - MSci Mathematics/MSci Mathematics with Year Abroad

YEAR 1	
Semester 1 (30 credits) MTH4000 [4] Programming in Python I MTH4213 [4] Numbers, Sets and Functions	Semester 2 (30 credits) MTH4104 [4] Introduction to Algebra MTH4215 [4] Vectors and Matrices
Year-long modules (60 credits)	
MTH4300 [4] Introduction to Analysis with Calculus MTH4500 [4] Probability & Statistics	
YEAR 2 Modules outside this pathway (normally a maximum of 15 credits) may be taken with School approval.	
Semester 3 (60 credits) MTH5104 [5] Convergence and Continuity MTH5112 [5] Linear Algebra I MTH5123 [5] Differential Equations Choose **one** from: MTH5124 [5] Actuarial Mathematics I MTH5129 [5] Probability and Statistics II MTH5130 [5] Number Theory	Semester 4 (60 credits) MTH5001 [5] Introduction to Computer Programming Choose **three** from: MTH5103 [5] Complex Variables MTH5105 [5] Differential and Integral Analysis MTH5113 [5] Introduction to Differential Geometry MTH5114 [5] Linear Programming and Games MTH5120 [5] Statistical Modelling I
YEAR 3 Students must choose a pathway and 60 credits must be chosen in each semester from modules listed for that pathway. Modules outside the pathway (normally a maximum of 15 credits) may be taken with School approval. Please remember that you must pass at least six level 6 modules in year 3.	
General Pathway	
Semester 5 (60 credits) Choose **four** from: MTH5130 [5] Number Theory MTH6115 [6] Cryptography MTH6138 [6] Third Year Project* MTH6140 [6] Linear Algebra II MTH6141 [6] Random Processes MTH6151 [6] Partial Differential Equations MTH6154 [6] Financial Mathematics I	Semester 6 (60 credits) Choose **four** from: MTH6101 [6] Introduction to Machine Learning MTH6105 [6] Algorithmic Graph Theory MTH6110 [6] Communicating and Teaching Mathematics (by approval in semester A)** MTH6138 [6] Third Year Project* MTH6142 [6] Complex Networks MTH6150 [6] Numerical Computing with C and C++ MTH6155 [6] Financial Mathematics II

Pure Pathway	
Semester 5 (60 credits) Choose **four** from: MTH5130 [5] Number Theory MTH6106 [6] Group Theory MTH6115 [6] Cryptography MTH6138 [6] Third Year Project* MTH6140 [6] Linear Algebra II MTH6107 [6] Chaos and Fractals MTH6151 [6] Partial Differential Equations	Semester 6 (60 credits) Choose **four** from: MTH6105 [6] Algorithmic Graph Theory MTH6110 [6] Communicating & Teaching Mathematics** MTH6127 [6] Metric Spaces and Topology MTH6138 [6] Third Year Project* MTH6132 [6] Relativity MTH6142 [6] Complex Networks MTH6158 [6] Ring Theory
Statistics and Financial Pathway To choose this Pathway, students **must** have studied MTH5129.	
Semester 5 (60 credits) Choose **four** from: MTH5124 [5] Actuarial Mathematics I MTH6102 [6] Bayesian Statistical Methods MTH6134 [6] Statistical Modelling II MTH6138 [6] Third Year Project* MTH6141 [6] Random Processes MTH6151 [6] Partial Differential Equations MTH6154 [6] Financial Mathematics I	Semester 6 (60 credits) Choose **four** from: MTH6150 [6] Numerical Computing with C and C++ MTH6142 [6] Complex Networks MTH6155 [6] Financial Mathematics II MTH6101 [6] Introduction to Machine Learning MTH6139 [6] Time Series MTH6113 [6] Mathematical Tools for Asset Management MTH6138 Third Year Project* MTH6110 [6] Communicating & Teaching Mathematics** MTH6101 [6] Introduction to Machine Learning

YEAR 4	
Semester 7	Semester 8
MTH717U [7] MSci Project (30 credits)	
MTH700U [7] Research Methods in Mathematical Sciences	
Choose 75 credits from undergraduate MTH or SPA modules at level 7 (modules with the codes MTH7*U or SPA7*U). **Excluding the following:**	
MTH761U [7] Financial Instruments and Markets MTH771U [7] Foundations of Mathematical Modelling MTH790U [7] Programming in C++ for Finance	MTH762U [7] Continuous-time Models in Finance MTH787U [7] Advanced Derivatives Pricing and Risk Management MTH773U [7] Advanced Computing in Finance

*Please note that MTH6138 Third Year Project can be taken in either semester but requires approval of Project supervisor prior to the start of the semester in which module is taken.

**Please note that MTH6110 has limited spaces and is by interview and approval in Semester A.

Pathway Choice Guidance for G100/G102 Students

Pathways

The three pathways in Year 3 build a coherent collection of modules from which you can go on to a variety of quantitative careers and/or further study, depending on your interests and strengths. When thinking about anychanges you want to make for semester 2, don't forget that you need to continue following that Pathway, takingaccount of what you hope to do after graduation.

Across the year, you can request for consideration by the School, off-diet choices of up to 15 credits in second yearand up to 30 credits in third year. Please note that we **cannot** guarantee off-diet modules will not clash with yourPathway choices and, if the modules do clash, you will be required to modify your selection to remove the clash onceyour timetable has been updated.

Off-diet modules

Off-diet choices fall into two categories and require different approvals: non-Pathway MTH modules and non-Pathway, non-MTH modules. Such an option should only be pursued if you have a strong interest in the module,have discussed the plan with your Advisor and obtain approvals prior to the start of the semester.

- Non-Pathway MTH modules – You should consider taking a non-Pathway MTH module if:
    - you have a strong interest in the subject
    - you have the time and willingness to explore your options, contact Module Organisers, learn additionalmaterial if necessary
    - 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

If you decide to take a non-Pathway MTH module prior to the start of the semester, you'll need to get approval fromyour Advisor and send this to maths@qmul.ac.uk.

- Non-Pathway, non-MTH modules – You should consider taking a non-Pathway/non-MTH module if:
    - you have a strong interest in a subject outside mathematics
    - you are prepared to adapt to different ways of another discipline such as teaching and assessment
    - you have the time and willingness to explore your options, contact Module Organisers, learn additionalmaterial if necessary
    - 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

If you decide to take a non-Pathway, non-MTH module prior to the start of the semester, you will need to get approval from your Advisor as well as contacting the module Home School to:

- *check if they have space on their module*
- *check that you meet the prerequisite or co-requisite requirements for the module*
- *obtain permission to take the module(s) from the Home School's Education Services Team and forward this to the School of Maths Education Services Team via maths@qmul.ac.uk*

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.

Notes

- Level 4 modules cannot be selected in Year 3 (and only in exceptional cases in Year 2)
- Only in very exceptional cases will the School consider the selection of 30 credits outside of the pathway forstudents in Year 2
- Students **<u>are not</u>** permitted to choose modules from either the School Of Economics and Finance, or theSchool of Business and Management [ECN- or BUS-coded modules]

Please don't leave these checks until the last minute to ensure you get the chance to study the modules you want.