

# Mathematics (4 years) [MMath]

## Year 4 Programme Structure

The fourth year of this degree programme consists of a compulsory (= mandatory) 30-credit fourth-year project plus 90 credits of optional level 4 MATH course units in Mathematics; the level 4 MATH courses, which are each of 15 credits, are listed below. You can access all course descriptions via your 'My Manchester' student portal, and you are advised to check the timetables for all course units before selection.

You should note that, in the 240 credits of course units in years 3 and 4 combined, 120 credits must be MATH courses at level 4 (which includes the 30-credit fourth year project). If you took level 4 MATH course units in year 3, you will therefore be able to substitute up to 20 credits of level 3 MATH course units with level 3 outside course units; this allows you to continue an interest in an outside subject. As usual, taking an outside course requires the permission of the Year Tutor, and the course unit permission form must be completed. (Note that, for nearly all course units within this university, the first number digit of a course unit is the level, so that MCEL3\*\*\*\* and BMAN3\*\*\*\* are level 3 course units.)

Please check the timetables before selecting course units.

For all issues to do with course selection you are strongly advised to consult with your Academic Advisor.

Course descriptions on each course unit includes information on assessment criteria's, lecturer, syllabus, learning outcomes, etc., and they are available from the 'My Course' tab in 'My Manchester' by searching the subject code or you can browse them from the Schools 'Study' website.

## Level 4 course units

Description	Semester	Requirement	Credit Rating	Level
MATH40000 - Double Project	1 and 2	Mandatory	30	4
MATH41061 - Differentiable Manifolds	1	Optional	15	4
MATH42041 - Noncommutative Algebra	1	Optional	15	4
MATH42061 - Representation and Characters of Groups	1	Optional	15	4

Description	Semester	Requirement	Credit Rating	Level
MATH42121 - Galois Theory	1	Optional	15	4
MATH43021 - Set Theory	1	Optional	15	4
MATH43051 - Model Theory	1	Optional	15	4
MATH44041 - Applied Dynamical Systems	1	Optional	15	4
MATH45061 - Continuum Mechanics	1	Optional	15	4
MATH46101 - Numerical Linear Algebra	1	Optional	15	4
MATH47101 - Stochastic Calculus	1	Optional	15	4
MATH47201 - Martingales Theory for Finance	1	Optional	15	4
MATH48001 - Statistical Inference	1	Optional	15	4
MATH48011 - Linear Models with Nonparametric Regression	1	Optional	15	4
MATH48061 - Multivariate Statistics	1	Optional	15	4
MATH48091 - Statistical Computing	1	Optional	15	4
MATH48181 - Extreme Values and Financial Risk	1	Optional	15	4
MATH48191 - Statistical Modelling in Finance	1	Optional	15	4
MATH49111 - Scientific Computing	1	Optional	15	4
MATH62061 - Representation and Characters of Groups	1	Optional	15	4
MATH40082 - Computational Finance	2	Optional	15	4

Description	Semester	Requirement	Credit Rating	Level
MATH41012 - Fourier Analysis & Lebesgue Integration	2	Optional	15	4
MATH41022 - Analytic Number Theory	2	Optional	15	4
MATH42112 - Lie Algebras	2	Optional	15	4
MATH42132 - Algebraic Number Theory	2	Optional	15	4
MATH42142 - Analysis, Random Walks and Groups	2	Optional	15	4
MATH43042 - Godel's Theorems	2	Optional	15	4
MATH45122 - Transport Phenomena and Conservation Laws	2	Optional	15	4
MATH45132 - Stability Theory	2	Optional	15	4
MATH46052 - Approximation Theory and Finite Element Analysis	2	Optional	15	4
MATH46132 - Numerical Optimisation & Inverse Problems	2	Optional	15	4
MATH47112 - Brownian Motion	2	Optional	15	4
MATH48032 - Time Series Analysis and Financial Forecasting	2	Optional	15	4
MATH48052 - Generalised Linear Models and Survival Analysis	2	Optional	15	4
MATH48082 - Design and Analysis of Experiments	2	Optional	15	4
MATH48122 - Markov Chain Monte Carlo	2	Optional	15	4

Description	Semester	Requirement	Credit Rating	Level
MATH48132 - Longitudinal Data Analysis	2	Optional	15	4
MATH49102 - Stochastic Modelling in Finance	2	Optional	15	4