

Mathematics (4 years) [MMath]

Year 3 Programme Structure

The third year of this degree programme consists of 120 credits of optional MATH course units in mathematics; the level 3 MATH courses, which are each of 10 credits, are listed below.

It is important when choosing third-year course units to think about the fourth year also, not just to bear in mind where the level 3 courses you choose are going to lead, but also because, in the 240 credits of course units in years 3 and 4 combined, 120 credits must be MATH courses at level 4.

In your third year you can, with permission, substitute up to 20 credits of level 3 MATH course units either with level 2 MATH course units not already taken or level 2 or 3 outside course units. A list of recommended outside course units is available from the section on 'course unit selection', but you can choose courses which are not on this list including University College course units. (The only constraints are that the course or courses must fit into your timetable without clashing with other courses you have chosen, and you must have the necessary pre-requisites. Recall that, for nearly all course units within this university, the first number digit of a course unit is the level, so that UCIL2**** and BMAN2**** are level 2 course units for example.)

If you have taken an outside course unit in year 2 and are interested in continuing this subject for the next two years, you may want to take some of these level 4 MATH course units in your third year. This will allow you the possibility in the fourth year of replacing up to 20 credits of level 3 MATH course units with level 3 outside course units. (As usual, taking an outside course requires the permission of the Year Tutor, and the appropriate 'course unit permission form' must be completed.)

The level 4 MATH course units available are 15-credit options so (for instance) you could choose to replace three level 3 course units (30 credits) this year by two at level 4 (30 credits); however, students should be aware that level 4 courses may be more intellectually demanding than those at level 3, and may require more pre-requisites. For this reason it is often advisable to discuss taking a course with the lecturer.

You will have to do a 30-credit Project as part of your fourth year, but you can also take a level 3 project this year (which is either MATH30011 in semester 1 or MATH30022 in semester 2). This gives you the opportunity to pursue independent investigation into a mathematical topic you are interested in, with the guidance of a member of staff who is an expert in that area. This is a great way for students to develop their transferable skills in research, communication and presentation, by organising and producing a written report and giving a short verbal presentation. The list of project topics in Mathematics varies from year to year and the current suggested topics are located here: <http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateprojects/>

Finally, for those who are considering teaching as a career, there is the course unit MATH30002 Mathematics Education. This course has limited places available and you must apply for a place by completing the online form.

If two courses you have chosen clash (such as between a lecture of one course and an example class of another) it may still be possible to take both courses with permission; you will need to complete the course unit permission form. It is not recommended to take two courses which clash for more than a 1 hour clash in each semester.

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 3 course units

Description	Semester	Requirement	Credit Rating	Level
MATH30011 - Project (Semester One)	1	Optional	10	3
MATH31001 - Linear Analysis	1	Optional	10	3
MATH32001 - Group Theory	1	Optional	10	3
MATH32011 - Commutative Algebra	1	Optional	10	3
MATH32071 - Number Theory	1	Optional	10	3
MATH32091 - Combinatorics and Graph Theory	1	Optional	10	3
MATH33011 - Mathematical Logic	1	Optional	10	3
MATH34001 - Applied Complex Analysis	1	Optional	10	3
MATH34011 - Asymptotic Expansions & Perturbation Methods	1	Optional	10	3
MATH35001 - Viscous Fluid Flow	1	Optional	10	3

Description	Semester	Requirement	Credit Rating	Level
MATH35021 - Elasticity	1	Optional	10	3
MATH36001 - Matrix Analysis	1	Optional	10	3
MATH36041 - Essential Partial Differential Equations	1	Optional	10	3
MATH36061 - Convex Optimization	1	Optional	10	3
MATH37001 - Martingales with Applications to Finance	1	Optional	10	3
MATH38001 - Statistical Inference	1	Optional	10	3
MATH38141 - Regression Analysis	1	Optional	10	3
MATH38161 - Multivariate Statistics and Machine Learning	1	Optional	10	3
MATH38181 - Extreme Values and Financial Risk	1	Optional	10	3
MATH30002 - Mathematics Education	2	Optional	10	3
MATH30022 - Project (Semester 2)	2	Optional	10	3
MATH31042 - Fractal Geometry	2	Optional	10	3
MATH31052 - Topology	2	Optional	10	3
MATH31082 - Riemannian Geometry	2	Optional	10	3
MATH32032 - Coding Theory	2	Optional	10	3
MATH32052 - Hyperbolic Geometry	2	Optional	10	3
MATH32062 - Algebraic Geometry	2	Optional	10	3
MATH34032 - Green's Functions, Integral	2	Optional	10	3

Description	Semester	Requirement	Credit Rating	Level
Equations and Applications				
MATH35012 - Wave Motion	2	Optional	10	3
MATH35032 - Mathematical Biology	2	Optional	10	3
MATH35082 - Symmetry in Geometry and Nature	2	Optional	10	3
MATH36022 - Numerical Analysis II	2	Optional	10	3
MATH36032 - Problem Solving by Computer	2	Optional	10	3
MATH37012 - Markov Processes	2	Optional	10	3
MATH38032 - Time Series Analysis	2	Optional	10	3
MATH38052 - Generalised Linear Models	2	Optional	10	3
MATH38072 - Medical Statistics	2	Optional	10	3
MATH39032 - Mathematical Modelling in Finance	2	Optional	10	3
MATH30000 - Double Project	1 and 2	Optional	20	3