UNIVERSITY OF LEICESTER

Programme Specification (Undergraduate) FOR ENTRY YEAR: 2027/28

Date created: 01/11/2022 **Last amended:** 18/03/2026 **Version no.** 1

Please note: This programme is currently under review as part of the University's ongoing curriculum enhancement process. The information in Appendix 1 reflects the current structure and content of the programme. Any future changes will be communicated to applicants and offer holders once confirmed.

1. Programme title(s) and code(s):

BSc /DipHE*/CertHE* Mathematics (G100)
BSc Mathematics with a Year Abroad (G101)
BSc Mathematics with a Year in Industry

MMath Mathematics (G105)
MMath with a Year Abroad (G107)
MMath Mathematics with a Year in Industry (G105)
BSc Mathematics with Foundation Year (G199)

*Exit award

a) HECOS Code

HECOS Code	%
100403 (mathematics)	**35**
100400 (applied mathematics)	**35**
101032 (probability)	**10**
100406 (statistics)	**10**
100956 (programming)	**10**

b) UCAS Code (where required)

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time

b) Type of study

Campus-based

4. Registration periods:

The normal period of registration for the BSc programme is three years. The maximum period of registration for the BSc programme is five years.

The normal period of registration for the MMath programme is four years. The maximum period of registration for the MMath programme is six years.

The normal period of registration for the BSc Mathematics with a Year Abroad programme is four years. The maximum period of registration for the BSc Mathematics with a Year Abroad programme is six years.

The normal period of registration for the BSc with industry programme is four years. The maximum period of registration for the BSc with industry programme is six years. The normal period of registration for the MMath with industry programme is five years. The maximum period of registration for the MMath with industry programme is seven years.

For Foundation Year Variant:
The normal period of registration for the BSc is four years (one year for the Foundation Year, with three years for the BSc). The maximum period of registration for the BSc is six years (one year for the Foundation Year, and five years for the BSc).

5. Typical entry requirements

136 points normally including AAB at A level with A in Mathematics. Appropriate English language skills.
For Foundation Year Variant:
A level: ABB or points equivalent from best three A levels. Typically in subjects outside of the 'usual' A levels expected by the department. BTEC Diploma: DDM in appropriate subje ct area. Access to HE courses in Science and Engineering: 45 L3 credits, including 30 at Distinction and remaining L3 credits at least at Merit.
136 points normally including AAB at A level with A in Mathematics. Appropriate English language skills.
For Foundation Year Variant:
A level: ABB or points equivalent from best three A levels. Typically in subjects outside of the 'usual' A levels expected by the department. BTEC Diploma: DDM in appropriate subje ct area. Access to HE courses in Science and Engineering: 45 L3 credits, including 30 at Distinction and remaining L3 credits at least at Merit.

6. Accreditation of Prior Learning

APL will not be accepted for exemptions from individual modules, however may be considered for direct entry to year 2, on a case by case and subject to the general provisions of the University APL policy.
Foundation year variant
None

7. Programme aims

The programme aims to

- foster confidence, convey knowledge and develop expertise in mathematics, including an ap preciation of the usefulness of mathematics;
- provide an education and training in mathematics which includes fundamental concepts and gives an indication of the breadth of mathematics;
- develop an appreciation of the necessity for rigorous justification of assertions and the need for logical arguments;
- develop the ability to model the world using mathematics, and to be able to produce relevant and robust solutions to real world problems;
- enable students to develop self-confidence gained through the provision of careful guidance in the first level, with increasing independence later;

- improve students' team working skills;
- stimulate intellectual development and develop powers of critical analysis, problem solving, written communication skills and improve presentational skills;
- develop the ability to communicate solutions to problems and mathematical concepts in general using language appropriate to the target audience;
- develop competence in IT, in particular the use of mathematical software and programming;
- enhance practical computing skills by learning software in common use;
- raise students' expertise and understanding to a point where they could embark upon postgraduate mathematical study;
- develop the ability to complete independent project;
- enable students to develop and broaden their learning experience in mathematics by studying at a non-UK University (for the year abroad options);
- enable students to develop their linguistic abilities, by attending lectures and classes and co mpleting assessments in the native language of a non-UK, European University (for the in Europe degree)
- In addition to the aims above, the "with Industry" variant of the programme aims to:
- place students on challenging and relevant industrial placements;
- enable students to use and develop the knowledge and skills gained during the taught part of the programme; and
- develop students' career management and development skills.

For Foundation Year variant, see Foundation Year Programme Specification

8. Reference points used to inform the programme specification

- QAA Benchmarking Statement
- Framework for Higher Education Qualifications (FHEQ)
- UK Quality Code for Higher Education
- University Education Strategy
- University Assessment Strategy [login required]
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- United Nations Education for Sustainable Development Goals
- Student Destinations Data

9. Programme Outcomes

Unless otherwise stated, programme outcomes apply to all awards specified in 1. Programme title(s).

a) Discipline specific knowledge and competencies

i) Mastery of an appropriate body of knowledge

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Knowledge of basic theory, basic techniques of analysis, algebra, applied mathematics, and statistics.	Lectures, specified reading, problem classes, surgeries, poster presentations. In addition, elements of e-Learning are incorporated.	Written examinations, assessed written and computational problems. Assessed oral and poster presentations.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Ability to recognise sound arguments and valid proofs.	Lectures, specified reading, problem classes, surgeries, poster presentations. In addition, elements of e-Learning are incorporated.	Assessed written projects and problem sheets, and seminar discussions.
Knowledge of basic techniques, and model problems.	Computer practical classes. With industry variant: Use of software packages on placement	Assessed practical classes. Final year project. With industry variant: Assessed case studies and short projects. Specific projects undertaken on placement where applicable Placement reports
Knowledge of a computing language and software.	Computer practical classes. With industry variant: Use of software packages on placement	Assessed practical classes. Final year project. With industry variant: Assessed case studies and short projects. Specific projects undertaken on placement where applicable Placement reports

ii) Understanding and application of key concepts and techniques

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Novel applications of basic knowledge. Exposition of logical structure. Ability to generalise and specialise.	Lectures, tutorials, problem classes, marked assignments.	Written examination, assessed problems, project report.
Proof techniques. Ability to apply an algorithm for the solution of a standard problem.	Lectures, tutorials, problem classes, marked assignments.	Written examinations, assessed problems.
Ability to apply theorems to solve particular problems. Mathematical modelling. Application of computer algorithms for solving finance problems.	Computer practical classes.	Assessed practical classes.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
With industry variant: Applications of mathematical theory in an industrial setting	With industry variant: Specific projects undertaken on placement where applicable Working through exercises in industrial placement record book. Specific projects undertaken on placement	With industry variant: Placement reports Industrial placement record book including formal report on placement.

iii) Critical analysis of key issues

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Analysis of problem and selection of appropriate proof or solution strategy. Critical appraisal of solutions. Analyse and solve more 'messily defined' finance management problems. Analysis of IT problems.	Lectures, problem classes, feedback on assessed problems, project supervision. Lectures, problem classes, feedback on assessed problems, project supervision.	Written examinations, assessed problems, Project report.
With industry variant: Analysis of how projects are set up and managed within an industrial setting	With industry variant: Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	With industry variant: Industrial placement record book including formal report on placement.

iv) Clear and concise presentation of material

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Presentation of results (both informal and to a variety of audiences), participation in scientific discussion.	Tutorials, Group workshops, Presentation workshops, project supervision. Feedback on assessed written pieces.	Group presentations. Project presentations.
Ability to write coherent reports. Software presentation.	Guidance from project supervisor.	Assessed essays. Project presentation.
With industry variant: Presentation of mathematical ideas to a mixed audience (i.e. not all mathematically-trained) within an industrial setting	With industry variant: Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	With industry variant: Specific projects undertaken on placement where applicable Assessed essays. Project presentation. Industrial placement record book including formal report on placement

v) Critical appraisal of evidence with appropriate insight

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Project design.	Project supervision	Project reports.

vi) Other discipline specific competencies

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Knowledge of mathematical software such as R, MATLAB and MAPLE.	Lab classes, and purpose designed handbooks.	Assessed problems, projects.
Mathematical modelling skills. Language of finance	Group projects. Project and lectures, eLearning. With industry variant: Use of software packages on placement	Project reports. Written examinations and presentations. With industry variant: Industrial placement record book including formal report on placement

b) Transferable skills

i) Oral communication

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Present technical information to peers and tutors in an appropriate form, and deliver presentations to non-mathematical audiences, Respond to questions on Presentations, Project and poster presentation	Tutorials, workshops. Project supervision, Presentation workshops. With industry variant: Presentation opportunities on placement where applicable	Presentation assessment. With industry variant: Industrial placement record book including formal report on placement

ii) Written communication

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Report writing.	Project supervisions.	Assessed reports.
Mathematical communication	Tutorials.	Assessed questions.
With industry variant: Presenting technical information to peers and tutors in an appropriate form and communicating technical information and mathematical arguments in an appropriate form for a given audience	With industry variant: Opportunities for written reports while on placement. Formal placement report.	With industry variant: Industrial placement record book including formal report on placement

iii) Information technology

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Use of Windows. Use of specialist packages. Office software.	Induction. Laboratories.	Marked project work. Project reports
With industry variant: Office software including mathematical software	With industry variant: Use of specialist packages on placement	With industry variant: Industrial placement record book including formal report on placement

iv) Numeracy

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Use of analytical and graphical methods.	Induction. Laboratories. With industry variant: Use of specialist packages on placement	Written examinations, project reports. With industry: Use of analytical and graphical methods on placement

v) Team working

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Scientific discussion. Communicate effectively with other team members. Organisation, time management	Group problem solving. Group projects.	Group assessment (including peer assessment).
With industry variant: Team working in an industrial setting (*with industry*) • Work with other team members to identify, distribute and undertake tasks necessary to complete a project • Communicate effectively with other team members to ensure effective operation of the team • Demonstrate ability to choose a format and communication appropriate to your work environment	With industry variant: Experience of working within a commercial organization. Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	With industry variant: Industrial placement record book including formal report on placement.

vi) Problem solving

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Analysis, breakdown, synthesis, critical examination. Mathematical modelling skills.	Lectures, problem workshops, group work, projects.	Marked problems, assessed group work, project assessment.
With industry variant: Problem analysis and solution for `messily defined' problems in an industrial setting	With industry variant: Experience of working within a commercial organization. Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	With industry variant: Industrial placement record book including formal report on placement

vii) Information handling

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Conduct background research and literature surveys. Summarise content from information sources.	Project supervision. With industry variant: Experience of working within a commercial organization at a distance	Individual and group project reports. With industry variant: Industrial placement record book including formal report on placement
Ability to learn from e-learning resources.	eLearning-mode module. With industry variant: Experience of working within a commercial organization at a distance	Some assessed material only provided through e-learning resources. With industry variant: Industrial placement record book including formal report on placement

viii) Skills for lifelong learning

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Study skills.	Resource based learning. Study skills booklet. With industry variant: Experience of working within a commercial organisation	Examinations, assessed problems, project assessments. Meeting deadlines. Project reports. Destinations data. With industry variant: Industrial placement record book including formal report on placement Successful feedback from placements.

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Independence and time management.	Structured support decreasing through years. With industry variant: Experience of working within a commercial organisation	Examinations, assessed problems, project assessments. Meeting deadlines. Project reports. Destinations data. With industry variant: Industrial placement record book including formal report on placement Successful feedback from placements.
Careers and business awareness.	Guest speakers. With industry variant: Experience of working within a commercial organisation	Examinations, assessed problems, project assessments. Meeting deadlines. Project reports. Destinations data. With industry variant: Industrial placement record book including formal report on placement Successful feedback from placements.
Information retrieval.	Induction library session. Study skills handbook. Project supervision. With industry variant: Experience of working within a commercial organisation	Examinations, assessed problems, project assessments. Meeting deadlines. Project reports. Destinations data. With industry variant: Industrial placement record book including formal report on placement Successful feedback from placements.

10. Progression points

This programme follows the standard Scheme of Progression set out in Senate Regulations – see the version of Senate Regulation 5 governing undergraduate programmes relevant to the year of entry.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course.

For Foundation Year Variant:

Progression from Year 0 to year 1: In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course. For the progression requirements from the Foundation Year, see the Foundation Year programme specification from year of entry.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course

a) Course transfers

. In order to progress on to the Integrated Masters year 4, students will need to achieve a credit-weighted average of 55% or more in years 2 and 3 of the programme. If they fail to achieve this mark then they will revert to the BSc.

b) Year Abroad

The Year Abroad variant of this programme is offered in accordance with the University's standard specification for year abroad programme variants.

c) Year in Industry

The Year in Industry variant of this programme is offered in accordance with the University's standard specification for year in industry programme variants.

Students will have the opportunity to take a Year in Industry either between levels 5 and 6 OR levels 6 and 7. Student can only take a Year in Industry on one occasion and cannot take both a Year in Industry AND a Year Abroad.

To take a Year in Industry after level 5, students would need to meet standard University eligibility requirements to progress to the next level of study. Students who obtain a level 5 CWA of less than 55.00% will be permitted to take a Year in Industry but will not be eligible for progression to level 7, and therefore would revert to a BSc (with a Year in Industry). See 'Progression from levels 4 to 5 and 5 to 6' for more information.

To take a Year in Industry after level 6, students would need to have met the criteria to remain on the MMath programme.

11. Criteria for award and classification

This programme follows the standard scheme of undergraduate award and classification set out in Senate Regulations – see the version of *Senate Regulation 5 governing undergraduate programmes* relevant to the year of entry.

12. Special features

Options for these degrees include: Third year abroad. As none of these options are materially affected by the changes to the programme detailed here, these options will not be treated individually.

Year in Industry between second and third years.

Throughout the BSc/MMath, emphasis will be placed on developing broad practical and algorithmic skills, while teaching the general mathematical principles common to UK mathematics undergraduate programmes.

The BSc and MMath programmes will be taught using computer classes, problem classes and skills sessions in addition to appropriately-paced traditional lectures. Some elements of supported eLearning will be used to develop independent-learning skills necessary for later professional studies. Assessment will be via course work, computational exercises, projects and written exams. In contrast to the MMath's mini-projects present in each year 4 module, the BSc follows the model used by other undergraduate programmes by having a single supervisor-led final-year project (although some limited use of mini projects will be made in particular BSc modules).

12a. Research-inspired Education

Students on this programme will advance through the four quadrants of the University of Leicester Research-inspired Education Framework as follows:

RiE Quadrant	Narrative
	The programme aims to teach fundamental concepts and develop the ability to model the world using mathematics and to produce relevant and robust solutions to real world problems. The programme will be taught using practical classes, problem classes and skills sessions in addition to lectures.
Research-briefed Bringing staff research content into the curriculum.	*Research-briefed:* Students will be exposed to a number of fundamental concepts and methods all of which are actively being used as foundations of current research, as well as of industry. For each of these concepts and theories the students will be shown how to apply and reproduce main theorems, and introduced to a range of subjects such as linear algebra, calculus, probability, and statistics.
Research-based Framed enquiry for exploring existing knowledge.	*Research-based:* During problem classes, students will have an opportunity to put in practice their ability to: generalise and specialise applications of basic knowledge, apply an algorithms and theorems for the solution of specific problems.
Research-oriented Students critique published research content and process.	*Research-oriented:* Students will be able to conduct background research and literature surveys, and summarise content from information sources. They will be able to learn from e-learning resources. Students will then be able to apply the acquired knowledge to analyse models and provide a critical appraisal for solutions.
Research-apprenticed Experiencing the research process and methods; building new knowledge.	*Research-apprenticed:* Students will work individually or in groups to conduct research or to identify a business problem that can be solved with the implementation of advanced mathematical, data science, and analytical skills. Students will then have the opportunity to present their work and process, and be challenged on choices that were made throughout the development of the project.

As part of studying at a research-intensive university, students on this programme have the following extra or co-curricular opportunities available to them to gain exposure to research culture:

Some of the extra or co-curricular opportunities that are available to students to help them gain exposure to the research culture in the School include:

- **Student Maths Society (SUMS)**: The School has an active society, which is fully run and governed by students. SUMS organizes a range of mathematics-related events, including invited talks from external speakers.
- **Mathematics Competitions**: The School supports and trains student teams for both internal and international mathematics competitions, such as Mathematical Contest in Modelling (MCM) and Interdisciplinary Contest in Modelling (ICM).

- **Career Development Sessions**: Throughout the term, the School schedules subject-specific career drop-in sessions, which are added to the students' timetables.
- **Research Seminars**: The School organizes weekly research seminars, inviting experts from other universities to present their work. These seminars are open to all students, both on-campus and online via Teams.

Teaching on this programme will be research-informed (it draws consciously on systematic inquiry into the teaching and learning process itself) in the following way:

The School supports all staff involved in teaching to gain an accredited Higher Education teaching qualification, in which they demonstrate their use of teaching theory to support their own practice and reflect on their current teaching and continuing professional development.

All module convenors are part of teaching pods, which group similar fields together. These pods are designed to provide a forum for discussion between teaching-focussed and teaching/research staff, and as a way for more experienced staff to support others by, for example, peer observation and feedback. This provides a platform for staff to share considerations and observations of their teaching experience and obtain research-based input.

Teaching staff meet once a year for a 'Teaching Away Day', which gives the opportunity to discuss some key issues in depth with the other members within the teaching pods, and shared with everyone. This gives a chance to share ideas and experience, and to identify questions that need answers.
Additionally, staff will be paired within their teaching pods to observe each other's teaching sessions then meet to agree actions in order to participate in UoL's Peer Observation of Teaching scheme.

12b. Work-related learning

The workload of all students on this programme includes the opportunity to engage with at least 100 hours of employer informed, work-related learning activity. Further information regarding work-related learning is available online.

13. Indications of programme quality

Good results in National Student Survey and positive comments from external examiner.

14. External Examiner(s) reports

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports for this programme can be found at exampapers@Leicester [log-in required]

UNIVERSITY OF LEICESTER

Programme Specification (Undergraduate) FOR ENTRY YEAR: 2027/28

Date created: 01/11/2022 **Last amended:** 18/03/2026 **Version no.** 1

Appendix 1: Programme structure (programme regulations)

The University regularly reviews its programmes and modules to ensure that they reflect the current status of the discipline and offer the best learning experience to students. On occasion, it may be necessary to alter particular aspects of a course or module.

Updates to the programme

Academic year affected	Module	Change
2026/27	CO1109 Business and Financial Computing	Optional module not offered

BSc Mathematics / MMath Mathematics

Level 4/Year 1 2027/28

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	n/a	45 credits	45 credits
Optional	n/a	15 credits	15 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Sem 1	MA1015	Calculus and Analysis 1	15 credits
Sem 2	MA1016	Calculus and Analysis 2	15 credits
Sem 1	MA1115	Linear Algebra 1	15 credits

Delivery period	Code	Title	Credits
Sem 2	MA1116	Linear Algebra 2	15 credits
Sem 1	MA1300	Fundamentals of University Mathematics	15 credits
Sem 2	MA1261	Probability and Statistics	15 credits

Notes
N/A

Option modules

Delivery period	Code	Title	Credits
Semester 1	MA1104	Elements of Number Theory	15 credits
Semester 1	EC1030	Business Microeconomics	15 credits
Semester 1	CO1102	Programming Fundamentals	15 credits
Semester 2	MA1105	Sets, Relations and Groups	15 credits
Semester 2	EC1031	Business Macroeconomics	15 credits
Semester 2	CO1107	Algorithms, Data Structures and Advanced Programming	15 credits

Notes
This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

Level 5/Year 2 2028/29

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	n/a	45 credits	45 credits
Optional	n/a	15 credits	15 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Sem 1	MA2032	Vector Calculus	15 credits
Sem 1	MA2132	Advanced Linear Algebra	15 credits
Sem 1	MA2252	Introduction to Computing	15 credits
Sem 2	MA2021	Differential Equations	15 credits
Sem 2	MA2133	Algebra	15 credits
Sem 2	MA2510	Investigations in Mathematics	15 credits

Notes
N/A

Option modules

Delivery period	Code	Title	Credits
Semester 2	MA2041	Mathematical Foundations of Machine Learning	15 credits
Semester 1	MA2401	Actuarial Modelling 1	15 credits
Semester 1	MA2403	Statistical Distributions and Inference	15 credits
Semester 1	MA2042	Advanced Discrete Mathematics	15 credits
Semester 2	MA2206	Statistical Data Analysis	15 credits
Semester 2	MA2511	Industrial Applications of Mathematics	15 credits
Semester 2	MA2405	Actuarial Modelling 2	15 credits

Notes
This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules. MA2206 has MA2403 as prerequisite; MA2405 has MA2401 as a prerequisite. Full details on module specifications.

Level 6/Year 3 2029/30

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	30 credits	n/a	n/a
Optional	n/a	45 credits	45 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Year long	MA3516	Mathematics Research Project	30 credits
Year long	MA3513	Industrial Mathematics Project	30 credits

Notes
Only one of MA3516 or MA3513 can be taken.

Option modules

Delivery period	Code	Title	Credits
Semester 1	MA3012	Scientific Computing	15 credits
Semester 1	MA3471	Financial Engineering	15 credits
Semester 1	MA3077	Operational Research	15 credits
Semester 1	MA3152^	Differential Geometry	15 credits
Semester 1	MA3131	Groups and Symmetry	15 credits
Semester 1	MA3080	Mathematical Modelling	15 credits
Semester 1	MA3002^	Equations of Mathematical Physics	15 credits
Semester 1	MA3144^	Topology	15 credits

Delivery period	Code	Title	Credits
Semester 1	EC3030	Business Microeconomics*	15 credits
Semester 1	MA3063^	Topics in Mathematical Biology	15 credits
Semester 1	MA3081	Machine Learning for Data Analysis and AI	15 credits
Semester 1	MA3404	Markov Processes	
Semester 2	MA3201	Generalised Linear Models	15 credits
Semester 2	MA3121	Complex Analysis	15 credits
Semester 2	MA3153	Number Theory	15 credits
Semester 2	MA3511	Communicating Mathematics	15 credits
Semester 2	MA3082	Nonlinear optimization (Operational Research 2)	15 credits
Semester 2	MA3022	Data Mining and Neural Networks	15 credits
Semester 2	MA3101	Fields and Classical Geometry	15 credits
Semester 2	MA3202	Introduction to Functional Data Analysis	15 credits
Semester 2	EC3031	Business Macroeconomics**	15 credits

Notes

*EC3030 cannot be taken if EC1030 has already been taken

**EC3031 cannot be taken if EC1031 has already been taken

This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

^Some optional modules run in alternate academic years, MA3144/MA4144 and MA3063/MA4061 run in 2026/7 and 2028/9 whilst MA3002/4002 and MA3152/4152 run in 2027/8 and 2029/0, and so on.

Level 7/Year 4 2030/31

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	45 credits	n/a	n/a
Optional	n/a	45 credits	30 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Year long	MA4504	MMath Project	45 Credits

Notes
If MA3516 was taken in Year 3, the topic of the MA4504 project must be different.

Option modules

Delivery period	Code	Title	Credits
Semester 1	MA4013	Scientific Computing	15 credits
Semester 1	MA4077	Operational Research	15 credits
Semester 1	MA4132	Groups and Symmetry	15 credits
Semester 1	MA4152^	Differential Geometry	15 credits
Semester 1	MA4471	Financial Engineering	15 credits
Semester 1	MA4080	Mathematical Modelling	15 credits
Semester 1	MA4002^	Equations of Mathematical Physics	15 credits
Semester 1	MA4144^	Topology	15 credits
Semester 1	MA4061^	Topics in Mathematical Biology	15 credits

Delivery period	Code	Title	Credits
Semester 1	MA4081	Machine Learning for Data Analysis and AI	15 credits
Semester 1	MA4404	Markov Processes	15 credits
Semester 2	MA4201	Generalised Linear Models	15 credits
Semester 2	MA4153	Number Theory	15 credits
Semester 2	MA4513	Communicating Mathematics	15 credits
Semester 2	MA4082	Nonlinear optimization (Operational Research 2)	15 credits
Semester 2	MA4022	Data Mining and Neural Networks	15 credits
Semester 2	MA4103	Fields and Classical Geometry	15 credits
Semester 2	MA4202	Introduction to Functional Data Analysis	15 credits
Semester 2	MA4121	Complex Analysis	15 credits

Notes

This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules. Students are not allowed to take level 3 and level 4 versions of same module, e.g. if you studied MA3202 in year 3 you cannot choose MA4202 in year 4.

If MA3121 was not taken in Year 3 then MA4121 must be taken in Year 4

^Some optional modules run in alternate academic years, MA3144/MA4144 and MA3063/MA4061 run in 2026/7 and 2028/9 whilst MA3002/4002 and MA3152/4152 run in 2027/8 and 2029/0, and so on.

BSc/MMath Mathematics with a year abroad

Year 1 as per BSc Mathematics.
Year 2 as per BSc Mathematics.
Year 3 spent in an overseas institution.
Year 4 as per Year 3 BSc Mathematics.

MMath only: Year 5 as per Year 4 MMath

BSc Mathematics with a year in industry

The 'year in industry' variant of this programme is offered in accordance with the University's standard specifications for year in industry programmes.
Year 1 as per BSc Mathematics.
Year 2 as per BSc Mathematics with a year in industry.
Year 3 spent in industry:

1. Students will work within a sponsoring company for a minimum required number of days during the period between 1 July of Year 2 of their course and the start of the following academic year.
2. During their placement students will undertake a programme of training and practical experience which will be agreed by the sponsoring company and the University.
3. Students will be assessed on their performance during the year through a variety of activities including maintaining a weekly log.
4. Students who do not satisfactorily complete their industrial placement year will be transferred to the BSc Mathematics degree.

Year 4 as per Year 3 BSc Mathematics.

MMath Mathematics with a year in industry

The 'year in industry' variant of this programme is offered in accordance with the University's standard specification for year in industry programmes
Year 1 as per MMath Mathematics.
Year 2 as per MMath Mathematics with a year in industry.
Year 3 spent in industry:

1. Students will work within a sponsoring company for a minimum required number of days during the period between 1 July of Year 2 of their course and the start of the following academic year.
2. During their placement students will undertake a programme of training and practical experience which will be agreed by the sponsoring company and the University.
3. Students will be assessed on their performance during the year through a variety of activities including maintaining a weekly log.
4. Students who do not satisfactorily complete their industrial placement year will be transferred to the BSc Mathematics degree.

Year 4 as per Year 3 MMath Mathematics.
Year 5 as per Year 4 MMath Mathematics.

Student support for 'with a year industry' BSc/MMath courses

Finding a placement

Students are regarded as self-managing career professionals responsible for securing their own placements. HOWEVER the University supports students to find placements via:

1. The employability programme, which enables students to position themselves for applications for work placements, internships and employment; and
2. A range of programmes designed to improve links with potential employers of mathematics undergraduates, including:
   - Festival of Careers, including opportunities to meet employers from management and finance, and from science, technology and engineering sectors
   - Talent Academy, with sponsored group exercises embedded within the Mathematics for Business module
   - Interview and assessment centre sessions for students to practice interview skills
   - Business projects embedded across programmes
   - Support in articulating skills in applications and CVs within the Business Applications of Mathematics module
   - Opportunities to meet actuarial employers via actuarial society meetings across the year

Risk assessment of placements

1. The Employability Resource Officer will inform the students about the procedure for confirming a placement with the Mathematics Department. This form will also be available from the departmental administrator.
2. **Stage 1**. This is completed by the student once a placement has been offered to them.
3. **Stage 2**. The departmental administrator inputs the basic data from the form on to the 'Placement information spreadsheet' and emails the placement provider the 'Placement Provider form' via email.
4. Stage 3. When the 'Placement provider form' is received back from the client – the course tutor is responsible for using the information the forms contain to fill out the risk assessment form.
5. **Stage 4.** When the placement is deemed suitable, the course tutor informs the departmental administrator that the placement can be authorised. The authorised form is sent back to the student and placement provider.
6. If the risk assessments form (stage 2) brings any concerns of higher risks into the equation, then this should be discussed with the Relationship Manager (STEM). Either the Relationship Manager or the Course Tutor should contact the client to discuss resolving these risks.
7. In the case of an ethical risk – the departmental ethical officer should be involved.
8. The University runs compulsory Work Placement Briefing sessions for students before they go out on placement.
9. All placement providers are required to sign up to a Placement Provider Charter before any students may be placed with them.

Support for students while on placement

1. The scope of the placement project is agreed between the placement provider, College and the student in advance.
2. Intended learning outcomes are made clear to the student, as well as how they are to be achieved.
3. The placement provider undertakes to provide additional training to students if necessary to meet the learning outcomes.
4. In most cases, we would expect the placement provider to provide a mentor for the student.

5. The provider undertakes to provide a suitable induction programme for the student, including health and safety requirements, confidentiality requirements and any other key requirements of the placement.
6. Each student will be allocated a placement tutor from the College. The placement tutor will be in close contact with both the mentor (or other placement provider representative) and the student throughout the placement and will undertake to visit the student at least twice at the placement site during the placement.
7. The provider undertakes to ensure that suitable financial arrangements are in place with students, to ensure the student will be paid correctly and in a timely manner.
8. Students will work within a sponsoring company for a minimum required number of days during the period between 1 September of the second year of their course and the start of the 4th academic year.
9. During their placement students will undertake a programme of training and practical experience which will be agreed by the sponsoring company and the University
10. Students will be assessed on their performance during the year through a variety of activities including maintaining a weekly log and a formal placement report, as set out in the student's industrial placement record book.
11. Students who do not satisfactorily complete their industrial placement year (see progression details above) will be transferred to the three year BSc degree or the four year MMath degree as appropriate.

Appendix 2: Module specifications

See undergraduate Module specification database [login required] (Note - modules are organized by year of delivery).