Programme Specification (Undergraduate) FOR ENTRY YEAR: 2025/26

Date created: 21/08/2023 **Last amended:** 28/03/2025 **Version no.** 1 **Date approved by EQED:** 30/11/2023

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

BSc Mathematics and Actuarial Science (GN1H) Dip HE*/Cert HE* Exit awards.
BSc Mathematics and Actuarial Science with a Year in Industry
MMath Mathematics and Actuarial Science
MMath Mathematics and Actuarial Science with a Year in Industry

Notes

* An award marked with an asterisk is only available as an exit award and is not available for students to register onto.

a) HECOS Code

HECOS Code	%
100106	100%

b) UCAS Code (where required)

GN1H

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time

b) Type of study

Campus-based

4. Registration periods:

BSc Mathematics and Actuarial Science
The normal period of registration is 3 years
The maximum period of registration 5 years

BSc Mathematics and Actuarial Science with industry
The normal period of registration is 4 years
The maximum period of registration 6 years

MMath Mathematics and Actuarial Science
The normal period of registration is 4 years
The maximum period of registration is 6 years

MMAth Mathematics and Actuarial Science with industry

The normal period of registration is 5 years
The maximum period of registration is 7 years

5. Typical entry requirements

136 points normally including ABB at A level with minimum B in Mathematics. Entry interviews may be introduced at a later date. Appropriate English language skills.

6. Accreditation of Prior Learning

APL will not be accepted for exemptions from individual modules. However, students may be considered for direct entry to year 2, case by case and subject to the general provisions of the University APL policy.

7. Programme aims

The programme aims to:

- foster confidence, convey knowledge and develop expertise in mathematics, including an appreciation of the usefulness of mathematics, particularly in a business/financial context;
- provide an education and training in mathematics which includes fundamental concepts and gives an indication of the breadth of mathematics, and in particular to gain a solid grounding in the key applications of mathematics within finance/actuarial science;
- provide an education and training in actuarial science consistent with the Faculty and Institute of Actuaries' Core Principles competencies;
- 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 project-management skills;
- develop competence in IT, in particular the use of mathematical software;
- enhance practical computing skills by learning software relevant to the business community;
- develop skills which will have direct applicability to employment in the financial sector, notably the actuarial profession;
- raise students' expertise and understanding to a point where they could embark upon postgraduate mathematical study;
- develop the ability to complete independent project work and foster the skill of application of mathematical tools in a financial context.

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.

In addition to the aims above, the MMath variant of this programme aims to:

- Develop students abilities to use the skills learned in BSc applied to real-world situations
- Develop use of judgement in solving actuarial problems where there is often not a single

solution, and delivering solutions in a professional manner

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 [log in required]
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- United Nations Education for Sustainable Development Goals
- Student Destinations Data
- Professional organisations (Institute and Faculty of Actuaries)

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9. Programme Outcomes

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

a) Knowledge and Critical Understanding

i) Competence in an appropriate body of knowledge

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Apply their understanding of basic techniques of analysis, algebra, applied mathematics, and statistics.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems. Assessed practical classes. Assessed case studies and short projects. Final year project. Specific projects undertaken on placement (*with industry*)
Students should be able to: Apply their understanding of key techniques and algorithms in actuarial science and finance.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems. Assessed practical classes. Assessed case studies and short projects. Final year project. Specific projects undertaken on placement (*with industry*)
Students should be able to: Apply their understanding of basic techniques in modelling problems.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems. Assessed practical classes. Assessed case studies and short projects. Final year project. Specific projects undertaken on placement (*with industry*)

Students should be able to: Apply their understanding of a range of computing languages and software.	Computer practical classes. Worked examples in lectures Use of software packages on placement (*with industry)*	Assignments, small group working, skills tests, access to proprietary e learning tools (e.g. DataCamp).	Assessed practical classes. Components of module coursework. Placement reports (*with industry*)
(Integrated Masters) Students should be able to: Analyse situations and apply actuarial skills to assess issues and formulate, justify, and present plausible solutions to actuarial business problems.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to: Apply their actuarial technical skills to a professional level, and in the context of real-world issues and standards such as the UN sustainable development goals.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.

ii) Breadth of knowledge

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Apply basic knowledge; produce an exposition of logical structure; and accurately assess when it is appropriate to generalise or specialise.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examination, assessed problems, project report. Formal report on placement. Written examinations, assessed problems.

Students should be able to: Apply an algorithm for the solution of a standard problem.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examination, assessed problems, project report. Formal report on placement. Written examinations, assessed problems.
Students should be able to: Apply standard theorems to solve particular problems; design Mathematical models; and apply computer algorithms for solving finance problems.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Assessed practical classes.
(*With industry*) Students should be able to: Apply mathematical theory in an industrial setting		Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	Industrial placement record tasks on Blackboard, including formal report on placement.
Students should be able to: Analyse problems and select an appropriate proof or solution strategy; critically appraise solutions; analyse and solve `messily defined' finance management problems; and analyse IT problems.	Lectures, problem classes, feedback on assessed problems, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems, Project report.
(*With industry*) Students should be able to: Analyse how projects are set up and managed within an industrial setting.		Working through exercises in industrial placement record on Blackboard. Specific projects undertaken on placement where applicable	Industrial placement record tasks on Blackboard, including formal report on placement.

(Integrated Masters) Students should be able to: Examine strategic concepts in the management of financial institutions and products and the risks faced by providers and users of such products.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to: Use technical and business skills learned in prior years and combine these with newly developed understanding of how to apply these skills to solve real world problems.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to: Analyse situations and apply actuarial skills to assess issues and formulate, justify, and present plausible solutions to actuarial business problems.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to: Interpret the needs of a specific audience clearly through communications both orally and in writing in a way which: a. uses an effective structure	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.

b. adopts language that the intended recipients will understand c. includes adequate explanation of technical concepts d. incorporates (where appropriate) effective communication tools.			

iii) Understanding of source materials

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Distil information from a variety of sources into coherent arguments and discussion	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable
Students should be able to: Present results (both informal and to a variety of audiences); participate in scientific discussion.	Tutorials, Group workshops, Presentation workshops, project supervision. Feedback on assessed written pieces.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable.
Students should be able to: Write coherent reports; using software if necessary within their presentation.	Guidance from project supervisor.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Assessed essays. Project presentation.
(*With industry*) Students should be able to: Present mathematical ideas to a mixed audience (i.e., not all	Working through exercises in industrial placement record tasks on Blackboard. Specific projects undertaken on placement where applicable	Discussion and feedback on ideas, practice within placement.	Industrial placement record tasks on Blackboard, including formal report on placement.

mathematically-trained) within an industrial setting			
Students should be able to: Demonstrate knowledge of mathematical software such as R, MATLAB and MAPLE.	Lab classes, and purpose designed handbooks.	Participation in classes, practical use of software, problem classes, e learning.	Log books of practical sessions. Reflective blogs.
Students should be able to: Apply mathematical modelling skills and use accurately the language of finance.	Group projects. Project and lectures, eLearning.	Participation in classes, practical use of software, problem classes, e learning.	Project reports. Written examinations and presentations. Industrial placement record tasks on Blackboard, including formal report on placement.
(With industry) Students should be able to: Apply mathematical modelling skills and use accurately the language of finance.	Use of software packages on placement	Discussion and feedback on ideas, practice within placement.	Project reports. Written examinations and presentations. Industrial placement record tasks on Blackboard, including formal report on placement.

b) Cognitive and Practical Skills

i) Selection and analysis of sources

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Identify and use reliable and authentic sources	Tutorials, Group workshops, Presentation workshops, project supervision.	Discussion and feedback on ideas, marked and self-assessment assignments, problem classes and elements of e learning.	Project reports. Written examinations and presentations.
Students should be able to: Critically assess sources for authenticity and quality	Tutorials, Group workshops, Presentation workshops, project supervision.	Discussion and feedback on ideas, marked and self-assessment assignments, problem classes and elements of e learning.	Project reports. Written examinations and presentations.

ii) Critical engagement

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Identify and work with differing points of view in discussions	Tutorials, Group workshops, Presentation workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.
Students should be able to: Distil the critical points from material and use to form arguments	Tutorials, Group workshops, Presentation workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.
Students should be able to: Reflect on and articulate motivations, strengths and skills	Tutorials, Group workshops, Presentation workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.

iii) Presentation of an argument

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Manage and present different perspectives and reach a conclusion	Tutorials, Group workshops, Presentation workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.
Students should be able to: Present a coherent point of view to explain a position that they hold	Tutorials, Group workshops, Presentation workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.
(Integrated Masters)	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.

Students should be able to: Interpret the needs of a specific audience clearly through communications both orally and in writing in a way which: a. uses an effective structure b. adopts language that the intended recipients will understand c. includes adequate explanation of technical concepts d. incorporates (where appropriate) effective communication tools.			

iv) Independent research

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Use library sources and online materials to supplement recommended texts and sources to explore syllabus components	Tutorials, Group workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.
(Integrated Masters) Students should be able to: Demonstrate advanced actuarial analytical skills to interpret data and other collected information into a clear and substantial report	Tutorials, Group workshops, project supervision.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Project reports. Written examinations and presentations.

v) Relevant technical skills

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Use their knowledge of mathematical software such as R, MATLAB and MAPLE in relevant contexts.	Lab classes, and purpose designed handbooks.	Participation in classes, practical use of software, problem classes, e learning.	Log books of practical sessions. Reflective blogs.
Students should be able to: Apply mathematical modelling skills and use accurately the language of finance.	Group projects. Project and lectures, eLearning.	Participation in classes, practical use of software, problem classes, e learning.	Project reports. Written examinations and presentations. Industrial placement record tasks on Blackboard, including formal report on placement.
(With industry) Students should be able to: Apply mathematical modelling skills and use accurately the language of finance.	Group projects. Project and lectures, eLearning. Use of software packages on placement	Discussion and feedback on ideas, practice within placement.	Project reports. Written examinations and presentations. Industrial placement record tasks on Blackboard, including formal report on placement.

vi) Autonomous working

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Work independently and make effective use of resources in guided independent study	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable
Students should be able to:	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects

Distil information from a variety of sources into coherent arguments and discussion			undertaken on placement where applicable
Students should be able to: Apply their understanding of basic techniques of analysis, algebra, applied mathematics, and statistics.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems. Assessed practical classes. Assessed case studies and short projects. Final year project. Specific projects undertaken on placement (*with industry*)
Students should be able to: Apply their understanding of key techniques and algorithms in actuarial science and finance.	Lectures, specified reading, problem classes	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Written examinations, assessed problems. Assessed practical classes. Assessed case studies and short projects. Final year project. Specific projects undertaken on placement (*with industry*)

vii) Presentation of research findings

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Use appropriate techniques to solve a problem, then test and evaluate the solution against the problem statement and document the process clearly using appropriate communication methods.	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable
(Integrated Masters) Students should be able to:	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable

Develop a clear initial proposal to outline the scope and structure of the proposed reports Initial proposal.			
(Integrated Masters) Students should be able to: Demonstrate advanced actuarial analytical skills to interpret data and other collected information into a clear and substantial report Interim and final report.	Tutorials, Group workshops, Presentation workshops, project supervision.	Worked examples, marked and self-assessment assignments, problem classes and elements of e learning.	Group presentations. Project presentations. Specific projects undertaken on placement where applicable

c) Transferable skills

i) Verbal, written and digital communication

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Respond to questioning	Tutorials, workshops.	Tutorials, workshops.	Presentation assessment.
Students should be able to: Scientifically communicate in a way that is appropriate to the intended audience.	Tutorials, workshops.	Tutorials, workshops.	Presentation assessment, assessed reports.
Students should be able to: Present projects appropriate to the audience.	Project supervision, presentation workshops. Presentation opportunities on placement where applicable	Tutorials, workshops.	Presentation assessment. Industrial placement record tasks
Students should be able to: Write effective reports.	Project supervisions.	Tutorials, workshops.	Assessed reports.

Students should be able to: Communicate mathematical concepts coherently.	Tutorials.	Tutorials, workshops.	Assessed questions.
(*With industry*) Students should be able to: Present 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		Opportunities for written reports while on placement. Formal placement report.	Industrial placement record tasks on Blackboard, including formal report on placement.
(Integrated Masters) Students should be able to: Interpret the needs of a specific audience clearly through communications both orally and in writing in a way which: a. uses an effective structure b. adopts language that the intended recipients will understand c. includes adequate explanation of technical concepts d. incorporates (where appropriate) effective communication tools.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to:	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.

Examine strategic concepts in the management of financial institutions and products and the risks faced by providers and users of such products.			
(Integrated Masters) Students should be able to: Use technical and business skills learned in prior years and combine these with newly developed understanding of how to apply these skills to solve real world problems.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.
(Integrated Masters) Students should be able to: Prepare and summarise data, and undertake exploratory data analysis and visualisation.	Workshops, discussions, practical classes.	Workshop discussions, small group working, practice.	Written examinations and projects.

ii) Numeracy

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Use appropriate software, including mathematical software.	Induction. Laboratories.	Participation in classes, practical use of software, problem classes, e learning.	Marked project work. Project reports.
(With industry) Students should be able to: Use appropriate software, including mathematical software.		Use of specialist packages on placement	Industrial placement record tasks on Blackboard, including formal report on placement

Students should be able to: Use analytical and graphical methods.	Throughout programme Use of specialist packages on placement	Tutorials, workshops.	Written examinations, project reports. Use of analytical and graphical methods on placement
Students should be able to: Conduct background research and literature surveys; summarise content from information sources.	Project supervision.	Tutorials, workshops.	Individual project reports.
Students should be able to: Learn in DL mode, including e-learning.	Experience of working within a commercial organization at a distance eLearning-mode module.	Participation in classes, discussion and feedback on ideas, problem classes and tutorials.	Industrial placement record tasks on Blackboard, including formal report on placement Module assessment.

iii) Self-reflection

Intended Learning Outcome	Module Code	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Review classroom discussions, and reflect on the level of understanding that they have	MA1402, 1407. MA2514	Workshops, discussions	Group discussion, formative assessments and tasks.	Written examinations, assessed problems. Assessed practical classes.
(Integrated Masters) Students should be able to: Reflect on classroom discussions, and evaluate the level of understanding that they have	MA4xxx1	Workshops, discussions	Group discussion, formative assessments and tasks.	Written examinations, assessed problems. Assessed practical classes.

Students should be able to: Identify and understand mathematical and coding errors and be able to resolve systematically	MA1202, MA2403, MA2206, MA3515	Tutorials, workshops, e learning, discussions	Group discussion, formative assessment, worked examples in problem classes	Written examinations, assessed problems. Assessed practical classes.

iv) Problem solving

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Analyse, breakdown problems, synthesise, and critically examine of mathematical modelling skills.	Lectures, problem workshops, group work, projects.	Group discussion, formative assessment, worked examples in problem classes	Marked problems, group work assessment, project assessment.
(*With industry*) Students should be able to: Analyse problems and identify solutions for 'messily defined' problems in an industrial setting		Experience of working within a commercial organization. Working through exercises in industrial placement record on Blackboard. Specific projects undertaken on placement where applicable	Industrial placement record tasks on Blackboard, including formal report on placement
(Integrated Masters) Students should be able to: Analyse problems and identify solutions for 'messily defined' problems, and clearly document results.	Problem workshops, group work, projects.	Group discussion, formative assessment, worked examples in problem classes	Marked problems, group work assessment, project assessment.

v) Organisation and management

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Develop and enhance their study skills.	Resource based learning. Study skills booklet.	Group discussion, personal tutor support, problem classes, practice.	Examinations, assessed problems, project assessments.
Students should be able to: Work independently and manage time appropriately.	Structured support decreasing through years. Experience of working within a commercial organization (*with industry*)	Structured support and guidance	Meeting deadlines. Industrial placement record tasks on Blackboard, including formal report on placement.
Students should be able to: Develop career and business awareness.	Careers workshops. Business based project. Guest speakers. Placements	Career support, placement preparation	Project reports. Destinations data.
Students should be able to: Retrieve information effectively.	Induction library session. Study skills handbook. Project supervision.	Meetings with project supervisor, work in problem classes and practice	Examinations, assessed problems, project assessments.

vi) Teamwork

Intended learning Outcome	Teaching methods	Learning Activities	Assessment Type
Students should be able to: Develop skills in scientific discussion, organize effectively, and manage their time	Support from and discussions with supervisors and module convenors.	Group problem solving. Group projects.	Group assessment.

(*With industry*) Students should be able to: work in a team in an industrial setting • 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 • Choose a format and communication appropriate to the work environment • Critically review their own written or oral communication skills • Select self-development activities		Experience of working within a commercial organization. Working through exercises in industrial placement record book. Specific projects undertaken on placement where applicable	Industrial placement record tasks on Blackboard, including formal report on placement.
(Integrated Masters) Students should be able to: Work as a team to investigate, discuss and distil ideas and use judgement to present important points.	Workshops, discussion forums	Group presentations, discussion.	Group assessment.

Year in Industry

In addition, for the Year in Industry' variants the additional programme outcomes apply

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.

MMath progression criteria:

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

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 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.

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 this degree include: Year in Industry between second and third years.

Despite both being accredited by the Institute and Faculty of Actuaries, the BSc differs significantly from the MSc Actuarial Science with Data Analytics. In the BSc, the understanding of the mathematics is at a lower level (commensurate with what one would expect in an undergraduate mathematics degree in a good university such as Leicester). There is also an appreciation of how the mathematics is applied in a variety of real-life situations, but these are significantly more limited in scope and complexity than those studied in the MSc. Throughout the BSc, emphasis will be placed on developing broad practical and algorithmic skills relevant to the financial/actuarial sector, while teaching the general mathematical principles common to UK mathematics undergraduate programmes.

In the 4th year of the Integrated Masters programme, the emphasis is on building the skills to apply mathematical skills in to real-life situations, and using judgement to determine an appropriate course of action. Thus bringing IM students up to a level similar to the MSc programme.

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. Additionally, 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).

The University recognises that undertaking a work placement as part the programme of study can enhance career prospects and provide added value, and as such this programme includes a 'year in industry' variant.

By experiencing real-world scenarios and applying skills and knowledge to a professional environment, students can gain a unique insight into how their studies can be utilised in industry. This will not only showcase their abilities to future employers but will also enhance their studies upon returning to university to complete your programme.

To understand the special features for year in industry undergraduate programme variants, this programme specification should be read in conjunction with the programme specification content which can be found here. This outlines details including programme aims, support, progression and duration.

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, give an indication of the breadth of mathematics, and, in particular, to gain a solid grounding in the key applications of mathematics within finance/actuarial science. Overall, the programme aims to develop skills which will have direct applicability to employment in the financial sector, notably the actuarial profession.
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 the basis to the key applications in finance and actuarial science. For each of these concepts and theories the students will develop an appreciation of the usefulness of mathematics, particularly in a business/financial context.
Research-based Framed enquiry for exploring existing knowledge.	*Research-based:* During problem classes, students will have an opportunity to apply their understanding of: basic techniques of analysis, algebra, applied mathematics, and statistics, key techniques and algorithms in actuarial science and finance, and basic techniques in modelling 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. Additionally, for MMath, students will learn to apply their actuarial technical skills to a professional level, and in the context of real-world issues and standards such as the UN sustainable development goals.

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:

The School and Student Society organise a number of events during the academic year where guest speakers attend and provide industry insight, and areas for future development. These are supplemented by visits from returning alumni to help students bridge the gap towards future employment. The School works with external bodies, including the Institute and Faculty of Actuaries and the Worshipful Company of Actuaries to provide a range of individual and group opportunities for students to engage with the profession and key employers. Students are informed and invited to participate in these events via emails.

Throughout term, subject specific career drop-in sessions are scheduled (and added to the students' timetable), for students to find out more about the subject and research specific paths in Actuarial Science.

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.

13. Indications of programme quality

QAA subject review [www/qaa.org/], external examiners reports ("the performance of the students is comparable with similar high-quality UK institutions"), subject benchmarks [www.qaa.ac.uk/crntwork/benchmark/phase2/mathematics.pdf], dispensation from professional qualifications.

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: 2025/26

Date created: 21/08/2023 **Last amended:** 28/03/2025 **Version no.** 1 **Date approved by EQED:** 30/11/2023

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	Module	Change
2026/27	MA2404 Markov Processes	Core module deleted
2026/27	MA2414 Survival Models	Core module deleted
2026/27	MA2419 Fundamentals of Data Science	New core module
2026/27	MA2XXX AI for Data Science	New core module
2027/28	MA3404 Markov Processes	New core module
2027/28	MA3414 Survival Models	New core module

Mathematics and Actuarial Science

Level 4/Year 1 2025/26

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	60 credits	30 credits	30 credits
Optional	n/a	n/a	n/a

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
Sem 2	MA1116	Linear Algebra 2	15 credits
Sem 1	EC1030	Business Microeconomics	15 credits
Sem 2	EC1031	Business Macroeconomics	15 credits
Sem 1	MA1300	Fundamentals of University Mathematics	15 credits
Sem 2	MA1261	Probability and Statistics	15 credits

Notes
n/a

Level 5/Year 2 2026/27

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	n/a	60 credits	60 credits
Optional	n/a	n/a	n/a

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Sem 1	MA2401	Actuarial Modelling 1	15 credits
Sem 1	MA2403	Statistical Distributions and Inference	15 credits

Delivery period	Code	Title	Credits
Sem 1	MA2514	Actuarial Professional Skills and Employability	15 credits
Sem 2	MA2405	Actuarial Modelling 2	15 credits
Sem 2	MA2206	Statistical Data Analysis	15 credits
Sem 2	MA2402	Business Finance	15 credits
Sem 1	MA2419	Fundamentals of Data Science	15 credits
Sem 2	MA2XXX	AI for Data Science	15 credits

Notes
n/a

Level 6/Year 3 2027/28

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	30 credits	30 credits	30 credits
Optional	n/a	15 credits	15 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Year long	MA3515	Actuarial Project	30 credits
Sem 1	MA3471	Financial Engineering	15 credits
Sem 2	MA3266	Liability Modelling	15 credits
Sem 1	MA3404	Markov Processes	15 credits
Sem 2	MA3414	Survival Models	15 credits

Notes
n/a

Option modules

Delivery period	Code	Title	Credits
Semester 1	MA3077	Operational Research	15 credits
Semester 1	MK3133	The Management and Shaping of Innovation	15 credits
Semester 1	EC3030	Business Microeconomics*	15 credits
Semester 1	MA3703	Readings in Actuarial Science	15 credits
Semester 2	MA3201	Generalised Linear Models	15 credits
Semester 2	MA3022	Data Mining and Neural Networks	15 credits
Semester 2	EC3031	Business Macroeconomics*	15 credits
Semester 2	AF3138	Advanced Investment Management	15 credits
Semester 2	AF3139	Technology in Financial Markets	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. * The economics modules in year 3 are an option for year 2 joiners onto the programme to allow them to gain all of the exemptions from the IFoA offered within the course.

Level 7/Year 4 2028/29

Credit breakdown

Status	Year long	Semester 1	Semester 2
Core	60 credits	15 credits	15 credits
Optional	n/a	15 credits	15 credits

120 credits in total

Core modules

Delivery period	Code	Title	Credits
Year long	MA4404	Actuarial Research Project	30 credits
Year long	MA4401	Actuarial Practice	30 credits
Sem 1	MA4402	Actuarial Modelling Practice	15 credits
Sem 2	MA4403	Actuarial Communications	15 credits

Notes
n/a

Option modules

Delivery period	Code	Title	Credits
Semester 1	MA4077	Operational Research	15 credits
Semester 1	MA4910	Readings Around Green Economics (variation of MA7910)	15 credits
Semester 1	EC4097	Financial Risk Management (variation of EC7097)	15 credits
Semester 2	EC4061	Corporate Finance (variation of EC7061)	15 credits
Semester 2	EC4075	International Money and Finance (variation of EC7075)	15 credits
Semester 2	MA4201	Generalised Linear Models (variation of MA3201)	15 credits
Semester 2	MA4022	Data Mining and Neural Networks	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.

Appendix 2: Module specifications

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