UNIVERSITY OF LIVERPOOL

BSc (Hons)

Actuarial Mathematics

UCAS code NG31

Entry requirements	Study mode	Duration	
A level: ABB	Full-time	3 years	Apply by: **13 January 2027** Starts on: **27 September 2027**

About this course

Studying Actuarial Mathematics at Liverpool will allow you to take your career in any number of directions. Choose this programme and you will become an expert in using mathematical models to solve financial problems.

Introduction

Mathematics is a fascinating, beautiful and diverse subject to study. It underpins a wide range of disciplines; from physical sciences to social science, from biology to business and finance.

At Liverpool, our programmes are designed with the needs of employers in mind, to give you a solid foundation enabling you to take your career in any number of directions.

Actuarial mathematics prepares students to be professionals who use mathematical models to analyse and solve financial problems under uncertainty. Actuaries are experts in the design, financing and operation of insurance plans, annuities, and pension or other employee benefit plans.

This programme is aimed at students who want to work in the world of insurance, financial or governmental services, where actuarial mathematics plays a key role. You will graduate prepared for a career as an actuary, combining financial and actuarial mathematics with statistical techniques and business topics.

You will cover specialised work in advanced actuarial and financial mathematics. You will then study more advanced ideas in both life and non-life insurance mathematics as well as stochastic modelling, econometrics and finance.

We have accreditation from the Institute and Faculty of Actuaries, the professional body for actuaries in the UK.

What you'll learn

- Core aspects of Mathematics such as finance, algebra, calculus and statistics.
- Teamwork
- Problem solving
- How to present and communicate clearly
- How to analyse and solve financial problems.

Accreditation

Institute and Faculty of Actuaries and Institute of Mathematics and its Applications (IMA)

We have accreditation from the Institute and Faculty of Actuaries and the Institute of Mathematics and its Applications (IMA).

Currently our students can receive exemptions for CS1, CS2, CM1, CM2, CB1 and CB2 of the professional actuarial exams conducted by the Institute and Faculty of Actuaries, the professional body for actuaries in the UK.

Both accreditations can be achieved on a conditional basis. Accreditations depend on your choice and your performance on optional modules.

Accreditation in detail

Institute and Faculty of Actuaries

With close industry links, excellent teaching and quality content, this course is accredited by the professional Actuarial body The Institute and Faculty

of Actuaries.

Institute of Mathematics and its Applications (IMA)

The IMA is the professional learned institute for mathematicians, supporting the advancement of mathematical knowledge and its applications to promote and enhance mathematical practice for the benefit of society.

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Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

Year one

In year one you will study compulsory modules covering economic principles, algebra, calculus, statistics, mathematical IT skills, and finance.

Modules

Compulsory modules	Credits
ECONOMIC PRINCIPLES FOR BUSINESS AND MARKETS (ECON127)	15
CALCULUS I (MATH101)	15
INTRODUCTION TO LINEAR ALGEBRA (MATH103)	15
MATHEMATICAL IT SKILLS (MATH111)	15
CALCULUS II (MATH102)	15
INTRODUCTION TO STATISTICS USING R (MATH163)	15
THEORY OF INTEREST (MATH167)	15
PRINCIPLES OF FINANCE (ACFI113)	15

Programme details and modules listed are illustrative only and subject to change. As part of our commitment to continuous improvement, we are currently reviewing all of our programmes. This may include refining study pathways, strengthening links with employers, integrating generative AI, developing students' research skills, and enhancing

alignment with our research strengths. The course content currently shown on this page reflects the programme as it is running in September 2026. This page will be updated for students beginning in September 2027 by 1 September 2026 at the latest.

Year two

In addition to the compulsory modules below, you will choose two optional modules.

We regularly review our teaching so the choice of modules may change.

In addition to the compulsory modules below, you will choose two optional modules.

Modules

Compulsory modules	Credits
FINANCIAL REPORTING AND FINANCE (NON-SPECIALIST) (ACFI290)	15
PRINCIPLES OF ECONOMICS 2 (ECON210)	15
STATISTICS AND PROBABILITY I (MATH253)	15
LIFE INSURANCE MATHEMATICS I (MATH273)	15
FINANCIAL MATHEMATICS (MATH262)	15
STATISTICS AND PROBABILITY II (MATH254)	15

Optional modules	Credits
DIFFERENTIAL EQUATIONS (MATH221)	15
METRIC SPACES AND CALCULUS (MATH242)	15
OPERATIONAL RESEARCH: LINEAR AND CONVEX METHODS (MATH269)	15

Optional modules	Credits
BECOMING ENTREPRENEURIAL (ULMS254)	15
NUMERICAL METHODS (MATH226)	15

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Year three

In addition to the compulsory modules, you can choose one module from the optional module list below. We regularly review our teaching, so the choice of modules may change.

Modules

Compulsory modules	Credits
APPLIED PROBABILITY (MATH362)	15
LIFE INSURANCE MATHEMATICS II (MATH373)	15
STOCHASTIC MODELLING IN INSURANCE AND FINANCE (MATH375)	15
MATHEMATICAL RISK THEORY (MATH366)	15
STATISTICAL METHODS IN INSURANCE AND FINANCE (MATH374)	15

Compulsory modules	Credits
ACTUARIAL MODELS (MATH376)	15
FINANCIAL COMPUTING IN R (MATH377)	15

Optional modules	Credits
APPLIED STOCHASTIC MODELS (MATH360)	15
FURTHER METHODS OF APPLIED MATHEMATICS (MATH323)	15
MATHS SUMMER INDUSTRIAL RESEARCH PROJECT (MATH391)	15

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Teaching and assessment

How you'll learn

You will be taught through a diverse blend of engaging teaching methods, including lectures, tutorials, practical classes, video content, interactive learning sessions, independent study, and supervised project work.

The department of mathematical sciences offers a vibrant, stimulating, and supportive learning environment with highly motivated and exceptionally qualified staff, renowned for their world-leading research and teaching.

In year 1, lectures are supplemented by a thorough system of small-group tutorials; computing work is carried out in supervised practical classes. Key study skills, presentation

skills and group work start in the first year and are developed later in the programme. The emphasis in most modules is on the development of problem-solving and critical thinking skills, which are regarded very highly by employers.

How you're assessed

Each module has an assessment scheme tailored to fit its syllabus. This might include traditional written exams, class tests, assignments, projects, group work, or online exercises with automatic marking and immediate feedback.

Liverpool Hallmarks

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

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Careers and employability

A degree in mathematics provides access to an almost limitless range of rewarding career paths. As a graduate with a mathematics degree from the University of Liverpool, you'll have an extremely valuable set of analytical and critical thinking skills that employers value, enabling you to pursue careers in almost any field.

Graduates with a mathematics-based degree are in high demand across a broad spectrum of industries, thanks to their expertise in quantitative analysis, problem-solving, and mathematical modelling. Some of the key career paths include:

- Data Science and Analytics: Mathematics graduates are well-equipped to work as data scientists, data analysts, or business analysts. Their skills in statistical modelling, machine learning, and data interpretation are highly sought after in sectors like finance, healthcare, and tech.
- Engineering and Technology: Mathematics graduates can work in engineering roles, including systems engineering, computational modelling, and simulation. They may also contribute to software development, particularly in fields that require complex algorithms, like AI and cybersecurity.
- Operations Research and Logistics: Companies in manufacturing, transportation, and supply chain management often hire mathematics graduates to optimise processes, improve efficiency, and reduce costs. Roles include operations research analyst, supply chain planner, and logistics coordinator.
- Healthcare and Biostatistics: Mathematics is increasingly used in medical research, epidemiology, and healthcare analytics. Careers may include a biostatistician, a health data analyst, or a mathematical modeller in disease forecasting.

The versatility of a mathematics-based degree allows graduates to enter nearly any sector that requires mathematical modelling, statistical analysis, and algorithmic problem-solving. The growing demand for data-driven decision making in today's world ensures that career prospects remain strong, with opportunities for advancement and specialisation across fields.

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Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

Tuition fees

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Full-time place, per year - £10,050
Year in industry fee - £2,010
Year abroad fee - £1,508 (applies to year in China)

International fees

Full-time place, per year - £29,500
Year in industry fee - £1,955
Year abroad fee - £14,750 (applies to year in China)

The UK fees shown are for the academic year 2027/28. The international fees shown are for the academic year 2026/27 and will be subject for change for the academic year 2027/28. Please be advised that tuition fees may increase each year for both UK and international students. For UK students, this will be subject to the government's regulated fee limits.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support. Learn more about paying for your studies.

Additional costs

Your tuition fee covers almost everything but you may have additional study costs to consider, such as books.

Find out more about the additional study costs that may apply to this course.

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Entry requirements

The qualifications and exam results you'll need to apply for this course.

A levels

ABB
Mathematics A level grade A.

Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **ABC** from A levels, with **A** in the EPQ including an A in Mathematics.

You may automatically qualify for reduced entry requirements through our contextual offers scheme. Based on your personal circumstances, you may automatically qualify for up to a two-grade reduction in the entry requirements needed for this course. When you apply, we consider a range of factors – such as where you live – to assess if you're eligible for a grade reduction. You don't have to make an application for a grade reduction – we'll do all the work.

Find out more about how we make reduced grade offers.

T levels

T levels are not currently accepted.

GCSE

4/C in English and 4/C in Mathematics

Subject requirements

Applicants must have studied Mathematics at Level 3 within 2 years of the start date of their course.

For applicants from England: For science A levels that include the separately graded practical endorsement, a "Pass" is required.

BTEC Level 3 National Extended Diploma

Applications considered when combined with A level Maths grade A

International Baccalaureate

32 points overall with no score less than 4 and including 6 in HL Mathematics, or pass the IB Diploma plus 6,5,5 in 3 HL subjects including 6 in HL Mathematics.

Irish Leaving Certificate

H1, H1, H2, H2, H2, H3 including Mathematics at H1

Scottish Higher/Advanced Higher

Advanced Highers accepted at grades ABB including grade A in Mathematics.

Welsh Baccalaureate Advanced

B in the Welsh Baccalaureate, plus grades AB at A level to include Mathematics at grade A.

Access

Pass Access to HE Diploma in a relevant subject with 45 Level 3 credits, with 33 at Distinction (including 15 in Mathematics) and 12 at Merit.

International qualifications

Select your country or region to view specific entry requirements.

If you hold a bachelor's degree or equivalent, but don't meet our entry requirements, you could be eligible for a Pre-Master's course. This is offered on campus at the University of Liverpool International College, in partnership with Kaplan International Pathways. It's a specialist preparation course for postgraduate study, and when you pass the Pre-Master's at the required level with good attendance, you're guaranteed entry to a University of Liverpool master's degree.

Alternative entry requirements

- If your qualification isn't listed here, or you're taking a combination of qualifications, contact us for advice

- Applications from mature students are welcome.

English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

IELTS

6.0 overall, with no component below 5.5

TOEFL iBT

If you took a TOEFL test on or before 20 January 2026, you'll need 78 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking 19. If you took a TOEFL test from 21 January 2026 onwards, when a new scoring system was introduced, you'll need 4 overall, with 4 or above in all components. TOEFL Home Edition not accepted.

Duolingo English Test

115 overall, with speaking, reading and writing not less than 105, and listening not below 100

Pearson PTE Academic

59 overall, with no component below 59

LanguageCert Academic

65 overall, with no skill below 60

Cambridge IGCSE First Language English 0500

Grade C overall, with a minimum of grade 2 in speaking and listening. Speaking and listening must be separately endorsed on the certificate.

Cambridge IGCSE First Language English 0990

Grade 4 overall, with Merit in speaking and listening

Cambridge IGCSE Second Language English 0510/0511

0510: Grade C overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0511: Grade C overall.

Cambridge IGCSE Second Language English 0993/0991

0993: Grade 5 overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0991: Grade 5 overall.

Cambridge ESOL Level 2/3 Advanced

169 overall, with no paper below 162

International Baccalaureate English A: Literature or Language & Literature

Grade 4 at Standard Level or grade 4 at Higher Level

International Baccalaureate English B

Grade 6 at Standard Level or grade 5 at Higher Level

Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

Pre-sessional English in detail

If you don’t meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

Your most recent IELTS score	Pre-sessional English course length	On campus or online
5.5 overall, with no component below 5.5	6 weeks	On campus or online
5.5 overall, with no component below 5.0	10 weeks	On campus or online
5.0 overall, with no component below 5.0	12 weeks	Online
5.0 overall, with no component below 4.5	20 weeks	On campus
4.5 overall, with no component below 4.5	30 weeks	On campus
4.0 overall, with no component below 4.0	40 weeks	On campus

If you’ve completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.0 overall, with no component below 5.5, for further details.

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