UNIVERSITY OF LIVERPOOL

Mathematics with Finance BSc (Hons)

COURSE DETAILS

- A level requirements: AAB
- UCAS code: G1N3
- Study mode: Full-time
- Length: 3 years

KEY DATES

- Apply by: 31 January 2024
- Starts: 23 September 2024

Course overview

This is one of our most popular degree programmes with great employment potential. Studying a range of topics covering the core areas of mathematics, this course will prepare you for a career in the financial sector.

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 from which you may take your career in any number of directions.

This is one of our most popular degree programmes with great employment potential. This programme is designed to prepare you for a career in the banking sector, pension or investment funds, hedge funds, consultancy and auditing firms or government regulators. The course prepares students to be professionals who use mathematical models to analyse and solve financial problems under uncertainty. The programme will provide a useful perspective on how capital markets function in a modern economy.

You will study a range of topics covering important areas of mathematics. The main focus will be on basic financial mathematics, statistics and probability, no assumptions are made about whether or not you have previously studied these, or have previous experience in the use of computers. In the final year, you will cover some specialised work in financial mathematics and more advanced ideas in probability theory and statistics as well as stochastic modelling, econometrics and finance.

This programme also has the option to choose a year abroad in year three, making it a four year programme. You will spend an academic year at one of our partner universities.

WHAT YOU'LL LEARN

- How to use mathematical models
- How to analyse and solve financial problems
- Problem solving
- Teamwork
- Communication and presentation skills

ACCREDITATION

Institute and Faculty of Actuaries

We have accreditation from the Institute and Faculty of Actuaries. Currently our students can receive exemptions for CS1, CM2 and CB1 of the professional actuarial exams conducted by the Institute and Faculty of Actuaries, the professional body for actuaries in the UK.

Royal Statistical Society

Moreover, the programme is accredited by the Royal Statistical Society.

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

Course content

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

YEAR ONE

All modules taken in year one are compulsory.

COMPULSORY MODULES

CALCULUS I (MATH101)

Credits: 15 / Semester: semester 1

At its heart, calculus is the study of limits. Many quantities can be expressed as the limiting value of a sequence of approximations, for example the slope of a tangent to a curve, the rate of change of a function, the area under a curve, and so on. Calculus provides us with tools for studying all of these, and more. Many of the ideas can be traced back to the ancient Greeks, but calculus as we now understand it was first developed in the 17th Century, independently by Newton and Leibniz. The modern form presented in this module was fully worked out in the late 19th Century. MATH101 lays the foundation for the use of calculus in more advanced modules on differential equations, differential geometry, theoretical physics, stochastic analysis, and many other topics. It begins from the very basics – the notions of real number, sequence, limit, real function, and continuity – and uses these to give a rigorous treatment of derivatives and integrals for real functions of one real variable.

CALCULUS II (MATH102)

Credits: 15 / Semester: semester 2

This module, the last one of the core modules in Year 1, is built upon the knowledge you gain from MATH101 (Calculus I) in the first semester. The syllabus is conceptually divided into three parts: Part I, relying on your knowledge of infinite series, presents a thorough study of power series (Taylor expansions, binomial theorem); part II begins with a discussion of functions of several variables and then establishes the idea of partial differentiation together with its various applications, including chain rule, total differential, directional derivative, tangent planes, extrema of functions and Taylor expansions; finally, part III is on double integrals and their applications, such as finding centres of mass of thin bodies. Undoubtedly, this module, together with the other two core modules from Semester 1 (MATH101 Calculus I and MATH103 Introduction to linear algebra), forms an integral part of your ability to better understand modules you will be taking in further years of your studies.

INTRODUCTION TO LINEAR ALGEBRA (MATH103)

Credits: 15 / Semester: semester 1

Linear algebra is the branch of mathematics concerning vector spaces and linear mappings between such spaces. It is the study of lines, planes, and subspaces and their intersections using algebra.

Linear algebra first emerged from the study of determinants, which were used to solve systems of linear equations. Determinants were used by Leibniz in 1693, and subsequently, Cramer's Rule for solving linear systems was devised in 1750. Later, Gauss further developed the theory of solving linear systems by using Gaussian elimination. All these classical themes, in their modern interpretation, are included in the module, which culminates in a detailed study of eigenproblems. A part of the module is devoted to complex numbers which are basically just planar vectors. Linear algebra is central to both pure and applied mathematics. This module is an essential pre-requisite for nearly all modules taught in the Department of Mathematical Sciences.

MATHEMATICAL IT SKILLS (MATH111)

Credits: 15 / Semester: semester 1

This module introduces students to powerful mathematical software packages such as Maple and Matlab which can be used to carry out numerical computations or to produce a more complicated sequence of computations using their programming features. We can also do symbolic or algebraic computations in Maple. These software packages have built-in functions for solving many kinds of equations, for working with matrices and vectors, for differentiation and integration. They also contain functions which allow us to create visual representations of curves and surfaces from their mathematical descriptions, to work interactively, generate graphics and create mathematical documents. This module will teach students many of the above-mentioned features of mathematical software packages. This knowledge will be helpful in Years 2, 3 and 4 when working on different projects, for example in the modules MATH266 and MATH371.

INTRODUCTION TO STATISTICS USING R (MATH163)

Credits: 15 / Semester: semester 2

Students will learn fundamental concepts from statistics and probability using the R programming language and will learn how to use R to some degree of proficiency in certain contexts. Students will become aware of possible career paths using statistics.

INTRODUCTION TO FINANCE (ACFI103)

Credits: 15 / Semester: semester 2

This module introduces students to fundamental concepts in finance. The course aims to provide a firm foundation for the students to build on later on in the second and third years of their programmes, by covering basic logical and rational analytical tools that underpin financial decisions. The course covers topics such as the structure of firms and time value of money. Building on these notions, we then discuss the valuation of simple securities such as bonds and equities. The course also introduces students to project appraisal techniques.

INTRODUCTION TO STUDY AND RESEARCH IN MATHEMATICS (MATH107)

Credits: 15 / Semester: semester 1

This module looks at what it means to be a mathematician as an undergraduate and beyond. The module covers the discussion of mathematics at university, research mathematics and careers for mathematicians as well as core elements of mathematical language and writing such as logic, proofs, numbers, sets and functions. The activities include sessions delivered by staff on their research areas, sessions by alumni and other mathematicians working outside academia on careers for mathematicians and sessions by careers services. The module also provides key tools needed for studying mathematics at university level. You will explore the core mathematical concepts in more detail in groups and individually and practice communicating mathematics in speech and writing.

THEORY OF INTEREST (MATH167)

Credits: 15 / Semester: semester 2

This module mainly focuses on the theory of interest rates in financial mathematics. The module provides an understanding of some fundamental concepts of financial mathematics, and how these concepts are applied in calculating present and accumulated values for various streams of cash flows. Students will also be given an introduction to financial instruments, such as derivatives and the concept of no-arbitrage.

Programme details and modules listed are illustrative only and subject to change.

YEAR TWO

In addition to the compulsory modules below, you will choose two optional modules, one in semester 1 and one in semester 2. For students who did not study at XJTLU, module MATH221 is compulsory, module MATH242 is optional. For students who did study at XJTLU, module MATH242 is compulsory, module MATH221 is not available.

COMPULSORY MODULES

CORPORATE FINANCIAL MANAGEMENT FOR NON-SPECIALIST STUDENTS (ACFI213)

Credits: 15 / Semester: semester 1

The module aims to introduce students to the modern theory of finance and financial management. Theoretical concepts like the net present value, decision making under uncertainty, dividend valuation, bond pricing, portfolio theory, asset pricing, futures and options are introduced. In all cases numerical examples, using real market data, will be used to make theory come to life.

FINANCIAL REPORTING AND FINANCE (NON-SPECIALIST) (ACFI290)

Credits: 15 / Semester: semester 1

This module is a non-specialist introduction into the field of accounting and finance. The module aims to give students basic knowledge and skills in a range of financial accounting areas covering 4 main topics – financial reporting and analysis looking at the creation and understanding of financial statements and how to interpret the numbers included in such statements; taxation looking at basic tax calculations covering personal income tax, corporation tax and capital gains tax, along with understanding the tax system in place in the UK; managerial accounting looking at decision making based on financial data; and financial instruments and looking at financial institutions and how businesses can raise finance. Successful students will obtain a good knowledge of basic accounting techniques, the ability to perform accounting calculations and the ability to interpret and understand key financial statements and how to use them in a business scenario. Such skills are essential in the business world and offer students a good foundation on which to build if they are interested in further accounting or business modules. The module is delivered through interactive lectures and seminars involving a high level of question practice with discussion on key topics. It is assessed through a 100% exam. There will be a practice test in Week7 of the Semester.

STATISTICS AND PROBABILITY I (MATH253)

Credits: 15 / Semester: semester 1

Analysis of data has become an essential part of current research in many fields including medicine, pharmacology, and biology. It is also an important part of many jobs in e.g. finance, consultancy and the public sector. This module provides an introduction to statistical methods with a strong emphasis on applying and interpreting standard statistical techniques. Since modern statistical analysis of real data sets is performed using computer power, a statistical software package is introduced and employed throughout.

DIFFERENTIAL EQUATIONS (MATH221)

Credits: 15 / Semester: semester 2

Differential equations play a central role in mathematical sciences because they allow us to describe a wide variety of real-world systems and the mathematical techniques encountered in this module are useful to a number of later modules; this is why MATH201 is compulsory for a number of degree programmes. The module will aim to stress the importance of both theory and applications of ordinary differential equations (ODEs) and partial differential equations (PDEs), putting a strong emphasis on problem solving and examples. It has broadly 5 parts and each part contains two types of equations: those that can be solved by specific methods and others that cannot be solved but can only be studied to understand some properties of the underlying equations and their solutions. The main topics are first order ODEs, second order ODEs, systems of ODEs, first-order PDEs and some of the most well-known second-order PDEs, namely the wave, heat and Laplace equations.

FINANCIAL MATHEMATICS (MATH262)

Credits: 15 / Semester: semester 2

Mathematical Finance uses mathematical methods to solve problems arising in finance. A common problem in Mathematical Finance is that of derivative pricing. In this module, after introducing the basic concepts in Financial Mathematics, we use some particular models for the dynamic of stock price to solve problems of pricing and hedging derivatives. This module is fundamental for students intending to work in financial institutions and/or doing an MSc in Financial Mathematics or related areas.

STATISTICS AND PROBABILITY II (MATH254)

Credits: 15 / Semester: semester 2

This module provides an introduction to probabilistic methods that are used not only in actuarial science, financial mathematics and statistics but also in all physical sciences. It focuses on discrete and continuous random variables with values in one and several dimensions, properties of the most useful distributions (e.g. geometric, exponential, and normal), their transformations, moment and probability generating functions and limit theorems. This module will help students doing MATH260 and MATH262 (Financial mathematics). This module complements MATH365 (Measure theory and probability) in the sense that MATH365 provides the contradiction-free measure theoretic foundation on which this module rests.

OPTIONAL MODULES

INTRODUCTION TO DATA SCIENCE (COMP229)

Credits: 15 / Semester: semester 1

This module provides a thorough introduction to the new subject of Data Science starting from the fundamental mathematical methods and developing real-life applications in several areas including Pattern Recognition, Materials Science, Computer Vision, Climate Analysis. The basic concepts from Linear Algebra and Metric Geometry will be gradually introduced without assuming any prior knowledge. The methods and algorithms from Graph Theory and Computational Geometry will be illustrated by worked examples and short programs/scripts.

OPERATIONAL RESEARCH: PROBABILISTIC MODELS (MATH268)

Credits: 15 / Semester: semester 1

This module introduces several probabilistic models in operations research, such as queueing systems, simulations, and decision theory under risk. Those topics heavily interact with other subjects such as applied probability, actuarial sciences etc. This module is complementary to MATH261 (Introduction to operational research), which focuses on the mathematical programming aspect of operational research, mainly in a deterministic setup.

METRIC SPACES AND CALCULUS (MATH242)

Credits: 15 / Semester: semester 2

This is a foundational module aimed at providing the students with the basic concepts and techniques of modern real Analysis. The guiding idea will be to start using the powerful tools of analysis, familiar to the students from the first year module MATH101 (Calculus I) in the context of the real numbers, to vectors (multivariable analysis) and to functions (functional analysis). The notions of convergence and continuity will be reinterpreted in the more general setting of metric spaces. This will provide the language to prove several fundamental results that are in the basic toolkit of a mathematician, like the Picard Theorem on the existence and uniqueness of solutions to first order differential equations with an initial datum, and the implicit function theorem. The module is central for a curriculum in pure and applied mathematics, as familiarity with these notions will help students who want to take several other subsequent modules as well as many projects. This module is also a useful preparation (although not a formal prerequisite) for MATH365 Measure theory and probability, a very useful module for a deep understanding of financial mathematics.

NUMERICAL METHODS (MATH256)

Credits: 15 / Semester: semester 2

Most problems in modern applied mathematics require the use of suitably designed numerical methods. Working exactly, we can often reduce a complicated problem to something more elementary, but this will often lead to integrals that cannot be evaluated using analytical methods or equations that are too complex to be solved by hand. Other problems involve the use of 'real world' data, which don't fit neatly into simple mathematical models. In both cases, we can make further progress using approximate methods. These usually require lengthy iterative processes that are tedious and error prone for humans (even with a calculator), but ideally suited to computers. The first few lectures of this module demonstrate how computer programs can be written to handle calculations of this type automatically. These ideas will be used throughout the module. We then investigate how errors propagate through numerical computations. The focus then shifts to numerical methods for finding roots, approximating integrals and interpolating data. In each case, we will examine the advantages and disadvantages of different approaches, in terms of accuracy and efficiency.

OPERATIONAL RESEARCH (MATH269)

Credits: 15 / Semester: semester 2

The term "Operational Research" came in the 20th century from military operations. It describes mathematical methods to achieve the goal (or to find the best possible decision) having limited resources. This branch of applied mathematics makes use of and has stimulated the development of optimisation methods, typically for problems with constraints. This module can be interesting for any student doing mathematics because it concentrates on real-life problems.

BECOMING ENTREPRENEURIAL (ULMS254)

Credits: 15 / Semester: semester 2

This is a cross-disciplinary module focusing on the challenges of identifying, exploring, and implementing entrepreneurial opportunities that create and capture value. The module's broad spectrum provides students with a foundation in entrepreneurial thinking, allowing them to develop the skills and attributes needed whether to build their own start up from the ground up or add value within existing companies through entrepreneurial and innovation applications. Students will develop an entrepreneurial mindset through experiential learning and embeddedness in the entrepreneurship ecosystem through start-ups and industries engagement as well as the Brett Centre for Entrepreneurship Venture Creation Programme, in which every part of the business journey is covered from ideation to pitching to a panel of industry experts.

Programme details and modules listed are illustrative only and subject to change.

YEAR THREE

Choose four optional modules, two from semester 1 and two from semester 2, of which at least two must be MATH modules.

COMPULSORY MODULES

APPLIED PROBABILITY (MATH362)

Credits: 15 / Semester: semester 1

To give examples of empirical phenomena for which stochastic processes provide suitable mathematical models. To provide an introduction to the methods of probabilistic model building for dynamic events occurring over time. To familiarise students with the usual techniques in the area of probability modelling.

STOCHASTIC MODELLING IN INSURANCE AND FINANCE (MATH375)

Credits: 15 / Semester: semester 1

This module covers stochastic modelling and its applications in different actuarial/financial problems. This module can contribute to getting a CM2 exemption by The Institute and Faculty of Actuaries.

STATISTICAL METHODS IN INSURANCE AND FINANCE (MATH374)

Credits: 15 / Semester: semester 2

This module covers the application of statistical methodologies and technique into actuarial sets of data. This module can contribute to getting CS1 and CS2 exemptions by The Institute and Faculty of Actuaries.

FINANCIAL AND ACTUARIAL MODELLING IN R (MATH377)

Credits: 15 / Semester: semester 2

This module focuses on the applications of actuarial and financial mathematics using the programming language R. It provides the students with an introduction to the basic principles of programming in R. Students will practice various computational aspects of actuarial science and finance. The module focuses on the implementation of the theoretical models, learned in other modules, using R code. Students will develop a background in the practical applications of Statistics, Reserving, Portfolio management, Option pricing, and others. This module will enhance the employability skills for students in Financial and Actuarial Mathematics.

OPTIONAL MODULES

MATHS SUMMER INDUSTRIAL RESEARCH PROJECT (MATH391)

Credits: 15 / Semester: semester 1,summer

The research internship module is designed to give students the experience of working in a research environment or setting that is quite different from any project work that they undertake in the Department of Mathematics. It should provide an insight into how students may apply skills and experiences later in their career; whether working abroad, in industry or in a scientific setting.

ECONOMETRICS 1 (ECON212)

Credits: 15 / Semester: semester 1

Econometrics is a branch of economics aimed at providing rigorous statistical techniques to test, empirically, the validity of economic hypotheses and economic models using data from the real world. Therefore, this module provides students with opportunities to develop and further strengthen important, but crucially transferable, advanced academic skills in economics, mathematics, statistics and computing, which can be used in a variety of different contexts such as applied economics and finance research. These skills are very useful and in high demand by graduate employers. A key feature of this module is the combination of rigorous theoretical foundation of OLS with hands-on applications using a relevant analytical software package (for example, EViews or STATA) and economic data.

FURTHER METHODS OF APPLIED MATHEMATICS (MATH323)

Credits: 15 / Semester: semester 1

Ordinary and partial differential equations (ODEs and PDEs) are crucial to many areas of science, engineering and finance. This module addresses methods for, or related to, their solution. It starts with a section on inhomogeneous linear second-order ODEs which are often required for the solution of higher-level problems. We then generalize basic calculus by considering the optimization of functionals, e.g., integrals involving an unknown function and its derivatives, which leads to a wide variety of ODEs and PDEs. After those systems of two linear first-order PDEs and second-order PDES are classified and reduced to ODEs where possible. In certain cases, e.g., `elliptic' PDEs like the Laplace equation, such a reduction is impossible. The last third of the module is devoted to two approaches, conformal mappings and Fourier transforms, which can be used to obtain solutions of the Laplace equation and other irreducible PDEs.

LINEAR STATISTICAL MODELS (MATH363)

Credits: 15 / Semester: semester 1

This module extends earlier work on linear regression and analysis of variance, and then goes beyond these to generalised linear models. The module emphasises applications of statistical methods. Statistical software is used throughout as familiarity with its use is a valuable skill for those interested in a career in a statistical field.

NETWORKS IN THEORY AND PRACTICE (MATH367)

Credits: 15 / Semester: semester 2

MATH367 aims to develop an appreciation of optimisation methods for real-world problems using fundamental tools from network theory; to study a range of 'standard problems' and techniques for solving them. Thus, network flow, shortest path problem, transport problem, assignment problem, and routing problem are some of the problems that are considered in the syllabus. MATH367 is a decision making module, which fits well to those who are interested in receiving knowledge in graph theory, in operational research, in economics, in logistics and in finance.

MEASURE THEORY AND PROBABILITY (MATH365)

Credits: 15 / Semester: semester 2

This module is important for students who are interested in the abstract theory of integrating and in the deep theoretical background of the probability theory. It will be extremely useful for those who plan to do MSc and perhaps PhD in Probability, including financial applications. If you plan to take level 4 module(s) on Financial Mathematics next year, MATH365 can be very helpful.

DERIVATIVE SECURITIES (ACFI310)

Credits: 15 / Semester: semester 1

In the last three decades, derivatives have become increasingly important in the world of 👽 finance. Futures and options are now traded actively on many exchanges and OTC around the world. Yet most of our undergraduate finance courses, which mostly study underlying assets and institutions, simply do not have enough time for an in-depth discussion of derivatives. This class presents both a practical and theoretical approach to derivatives markets. The course starts with basic definitions and properties of put and call options, and forward and futures contracts. Payoff diagrams are used to illustrate these basic notions. Determinants of derivatives values are discussed. The basic no-arbitrage pricing relationships between different types of derivatives are established.

GAME THEORY (MATH331)

Credits: 15 / Semester: semester 2

In this module you will explore, from a game-theoretic point of view, models which have been used to understand phenomena in which conflict and cooperation occur and see the relevance of the theory not only to parlour games but also to situations involving human relationships, economic bargaining (between trade union and employer, etc), threats, formation of coalitions, war, etc.

APPLIED STOCHASTIC MODELS (MATH360)

Credits: 15 / Semester: semester 1

Stochastic processes are ways of quantifying the dynamic relationships of sequences of random events. Stochastic models play an important role in elucidating many areas of the natural and engineering sciences. They can be used to analyse the variability inherent in biological and medical processes, to deal with uncertainties affecting managerial decisions and with the complexities of psychological and social interactions, and to provide new perspectives, methodology, models and intuition to aid in other mathematical and statistical studies. This module is intended as a beginning course in introducing continuous-time stochastic processes for students familiar with elementary probability. The objectives are: (1) to introduce students to the standard concepts and methods of stochastic modelling; (2) to illustrate the rich diversity of applications of stochastic processes in the science; and (3) to provide exercises in the applications of simple stochastic analysis to appropriate problems.

THEORY OF STATISTICAL INFERENCE (MATH361)

Credits: 15 / Semester: semester 2

This module introduces fundamental topics in mathematical statistics, including the theory of point estimation and hypothesis testing. Several key concepts of statistics are discussed, such as sufficiency, completeness, etc., introduced from the 1920s by major contributors to modern statistics such as Fisher, Neyman, Lehmann and so on. This module is absolutely necessary preparation for postgraduate studies in statistics and closely related subjects.

STOCHASTIC THEORY AND METHODS IN DATA SCIENCE (MATH368)

Credits: 15 / Semester: semester 2

This module raises the awareness of students on how mathematical methods from stochastics can help to deal with problems arising in a variety of areas, ranging from quantifying uncertainty, to problems in physics, to optimisation and decision making, among others. The module summarises probability theory, explain the basics of simulation and sampling and then focuses on learning theory and methods. Specific topics and examples will be presented along with the theory and computer experiments.

MATHEMATICAL RISK THEORY (MATH366)

Credits: 15 / Semester: semester 2

To provide an understanding of the mathematical risk theory used in practise in non-life actuarial depts of insurance firms, to provide an introduction to mathematical methods for managing the risk in insurance and finance (calculation of risk measures/quantities), to develop skills of calculating the ruin probability and the total claim amount distribution in some non - life actuarial risk models with applications to insurance industry, to prepare the students adequately and to develop their skills in order to be exempted for the exams of CT6 subject of the Institute of Actuaries (MATH366 covers 50% of CT6 in much more depth).

Programme details and modules listed are illustrative only and subject to change.

HOW YOU'LL LEARN

Your learning activities will consist of lectures, tutorials, practical classes, problem classes, private study and supervised project work.

In year one, lectures are supplemented by a thorough system of group tutorials and computing work is carried out in supervised practical classes. Key study skills, presentation skills and group work start in first-year tutorials and are developed later in the programme.

The emphasis in most modules is on the development of problem solving skills, which are regarded very highly by employers. Project supervision is on a one-to-one basis, apart from group projects in year two.

HOW YOU'RE ASSESSED

Most modules are assessed by a two and a half hour examination in January or May, but many have an element of coursework assessment. This might be through homework, class tests, mini-project work or key skills exercises.

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.

Careers and employability

A mathematically-based degree opens up a wide range of career opportunities, including some of the most lucrative professions.

Recent employers of our graduates are:

- Barclays Bank plc
- Deloitte
- Forrest Recruitment
- Marks and Spencer
- Mercer Human Resource Consulting Ltd.
- Venture Marketing Group.
- BAE Systems
- BT
- Guardian Media Group
- Royal Bank of Scotland
- Siemens
- Unilever.

87.5% **OF MATHEMATICAL SCIENCES GRADUATES GO ON TO WORK OR FURTHER STUDY WITHIN 15 MONTHS OF GRADUATION.**

Discover Uni, 2018-19.

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	£9,250

International fees	
Full-time place, per year	£24,800

Fees are correct for the academic year 2024/25
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 tuition fees, funding and student finance.

ADDITIONAL COSTS

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This could include buying a laptop, books, or stationery.

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

SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries to provide tuition fee discounts and help with living expenses while at university.

Check out our Undergraduate Global Advancement Scholarship. This offers a tuition fee discount of up to £5,000 for eligible students starting an undergraduate degree from September 2024. There's also the Liverpool Bursary which is worth £2,000 per year for eligible students.

Discover our full range of undergraduate scholarships and bursaries

Entry requirements

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

Your qualification	**Requirements** About our typical entry requirements
A levels	AAB Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **ABB** with **A** in the EPQ. You may automatically qualify for reduced entry requirements through our contextual offers scheme. If you don't meet the entry requirements, you may be able to complete a foundation year which would allow you to progress to this course. Available foundation years: • Mathematical Sciences BSc (Hons) (Foundation, 4 year route with Carmel College) BSc (Hons)
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	35 including 6 in Higher Mathematics
Irish Leaving	H1, H1, H2, H2, H2, H3 including Mathematics at H1

Your qualification	Requirements About our typical entry requirements
Certificate	
Scottish Higher/Advanced Higher	Advanced Highers accepted at grades AAB including grade A in Mathematics.
Welsh Baccalaureate Advanced	Acceptable at grade B or above alongside AA at A level including grade A in Mathematics.
Access	Considered
International qualifications	Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

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.

THE ORIGINAL REDBRICK