MANCHESTER
1824

The University of Manchester

Mathematics

Mathematics at Manchester

> **"** When I first visited the Alan Turing building I was impressed with the modern, airy building and all the staff I spoke to were friendly and helpful. My other favourite thing is the pastoral care and support on offer. Even though the Department is very large everyone is treated like an individual. **"**

Erin Hales
BSc Mathematics

State-of-the-art facilities in a £60m purpose-built, sustainable building

One of the largest mathematics departments in the UK

Most targeted UK university by top graduate employers

Industry input into development of our cutting-edge course content ensures real-world relevance

Ranked 6th in the UK for mathematics (QS World University Rankings 2019)

Facilities & resources

Our facilities are second to none and provide students with the very best opportunities:

- **The Department is located in the state-of-the-art, purpose-built and centrally-located Alan Turing building**

- **Collaborative working labs, complete with specialist computing and audio visual equipment, to support group working**

- **Close supervision and pastoral care by an academic member during the whole degree course**

- **A wide variety of software is available for use by students, including office software, specialist mathematical and scientific software, and open source applications**

- **4 million books in one of the UK's best university libraries.**

" My first impression of Manchester was amazement at how beautiful the city actually is and how many different things you could do here. The University made me feel at home. "

Simona Stoycheva
BSc Maths with Philosophy

Learning support

Peer support scheme

Our peer support scheme is one of the largest in Europe. Peer mentors are higher-year students on the same degree programme as you, who will help you find your feet when you arrive here and adjust to student life. As they'll have already been a student at Manchester for at least a year, they should be able to help you with anything you might be worried or unsure about.

PASS *(Peer Assisted Study Sessions)*

Led by volunteer students, PASS sessions will often be based around a specific area of study. You'll have the opportunity to consolidate and build on your existing knowledge through discussion with other students in an informal and supportive environment, where you can compare notes, analyse, ask questions and talk through ideas.

Academic advisers

Study with us and you'll be assigned an academic adviser who is there to give advice about any academic issues throughout the duration of your course. Your adviser will be able to help you with the transition from school or college to university – and can help you get to grips with studying and learning more independently. They'll also be able to help you develop your skills in academic writing or research, or any other skills that are specific to your degree programme.

Disability support

If you have additional needs arising from a medical condition, physical or sensory disability, a specific learning disability such as dyslexia, or a mental health difficulty that affects your study, we can provide support. Contact or visit our Disability Advisory and Support Office before you apply, to discuss your needs and the support available.

www.manchester.ac.uk/dass

Find out more about the personal and academic support available to you throughout your studies:
www.manchester.ac.uk/study/experience/student-life/university/student-support

„ The main advantage of studying here is the large amount of contact time you get compared with other courses - so far I've had an average of around 18 hours per week, which lets you really immerse yourself in the subject, and your lecturers, supervisors, PASS leaders and academic advisor will always be there to help ... The list of optional course units is long and diverse so you can either choose a variety or focus entirely on a few disciplines in more depth. „

Charlie Berthou
BSc Mathematics

Which course?

Choosing your course

Single Honours

Year 1: Study a wide range of topics, including pure maths, applied maths, statistics and probability. Learn how to use maths software such as MATLAB.

Year 2: Half of your course units are choices, so you can start to specialise in some of the areas listed above, or in financial maths or logic.

Year 3: All course units are options and cover a wide variety of topics, so you can specialise further if you wish.

Joint Honours

'Mathematics and X' courses are 50% maths; 'Mathematics with X' courses are two-thirds maths.

Year 1: Study a similar core of pure and applied maths, statistics and probability.

Further years: Enjoy some flexibility to specialise with optional course units.

Skills and job opportunities

You'll develop transferable skills in problem solving, organisation, logical thinking, attention to detail and analysis and interpretation of data.
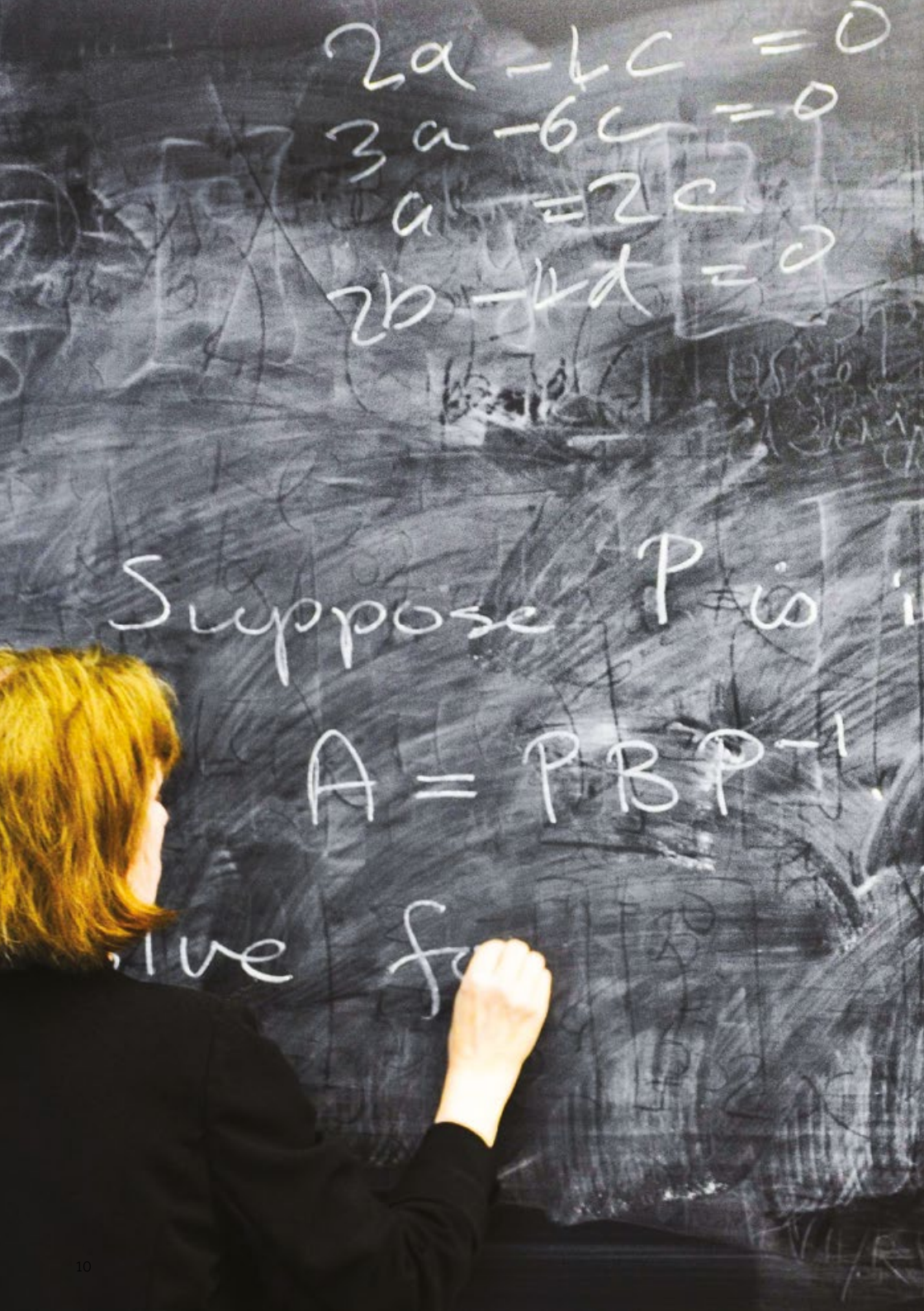
Our maths graduates are in high demand, with some of our most recent graduates securing positions including accountants, actuaries, engineers, software developers and meteorologists. A significant number of our students go on to postgraduate study.

Every year we run a maths-specific careers fair open to all maths students. It is attended by a large number of employers from a wide variety of industries, and previous attendees include: Amazon, Amec, Barclays, BP, Deloitte, HMRC, IBM, the Institute and Faculty of Actuaries, Jaguar Land Rover and PwC.

Work-based placement

Students also have the opportunity to spend a year on a work-based placement (except for students on the Mathematics with a Modern Language course). This will give you the opportunity to gain invaluable work-based experience and learn more about yourself and the workplace so that you're better able to make good choices about a career post-graduation.

Many students who have a year placement are taken on by the same employer once they have finished their studies. The timing of the placement will depend on whether you're studying a three- or four-year degree programme. Whilst students wanting to take the work-based placement are responsible for finding their own placement, they'll be supported in this through a special programme set up to help them. This will be done by working closely with dedicated advisers from the Careers Service and support and mentoring within the Department.

Apply

How to apply

www.manchester.ac.uk/study/undergraduate/applications

Please note that the course units listed in this brochure only represent a sample of the full breadth of available units for each course. Units are reviewed on an annual basis and as such may vary slightly to those advertised.

For up-to-date course information, including unit detail and entry requirements in full, visit our course finder:
www.manchester.ac.uk/undergraduate

Typical offer

BSc and MMath

A-level: A*AA-AAA
A-level Further Maths is preferred but not essential. Those offering Further Maths are more likely to receive the AAA offer.

IB: 36 points overall with 6,6,6 in Higher Level subjects to include 6 in Higher Level Mathematics.

For full details of our entry requirements:
www.manchester.ac.uk/ugcourses

Mathematics

This flexible single-honours undergraduate degree programme offers you the widest choice of options. You'll gain good all-round mathematical knowledge and skills, together with the ability to experience more specialised results, methods and ideas. You'll develop your capacity to learn and apply mathematical ideas, to understand the significance and power of mathematics, and to acquire a thorough knowledge and understanding of those mathematical topics.

After your first three semesters, you can choose course units from a wide range of options and pursue the areas of mathematics that interest you most. You'll also have the option to choose course units from other subject areas from your second year onwards.

Year	Sample course units
1	> Sequences and Series > Linear Algebra > Calculus and Vectors
2	> Probability > Statistical Method > Discrete Mathematics
3	> Fractal Geometry > Coding Theory > Elasticity
4	> Double Project > Set Theory > Stochastic Calculus

UCAS code	BSc	3y	G100	ROYAL STATISTICAL SOCIETY DATA | EVIDENCE | DECISIONS
	MMath	4y	G104	

Mathematics and Statistics

Develop your capacity to formulate and analyse problems and to interpret scientific evidence using appropriate statistical methodology. This degree will enhance your knowledge and understanding of basic mathematics, probability and statistics and will provide you with fundamental knowledge and skills, and the basis for more advanced work.

You'll develop your capacity to learn and apply mathematical and statistical ideas, to understand the significance and power of mathematics, and to acquire a thorough knowledge and understanding of mathematics and statistics.

Year	Sample course units
1	> Introduction to Statistics > Probability > Foundations of Pure Mathematics
2	> Real and Complex Analysis > Algebraic Structures > Statistical Methods
3	> Foundations of Finance > Mathematical Modelling in Finance > Extreme Values and Financial Risk
4	> Scientific Computing > Statistical Inference > Multivariate Statistics

UCAS code			
	BSc	3y	GGC3
	MMath	4y	GG13

ROYAL STATISTICAL SOCIETY
DATA | EVIDENCE | DECISIONS

Actuarial Science and Mathematics

This course will provide you with a solid foundation in mathematics, together with specialist course units in Actuarial Science. You'll learn to use specialist mathematical skills to measure the probability and risk of future events in financial industries.

Covering aspects of pure and applied mathematics and statistics as well as some more general mathematics, as the course progresses, the statistical topics are explored in more detail.

The BSc Actuarial Science and Mathematics programme is accredited (the programme is currently in the process of being re-accredited) by the Institute and Faculty of Actuaries. Students graduating from the programme may be recommended for exemption from the CS1, CS2, CM1, CB1 and CB2 subjects.

Year	Sample course units
1	> Microeconomics > Introduction to Statistics > Financial Mathematics for Actuarial Science
2	> Real and Complex Analysis > Probability > Actuarial Insurance
3	> Statistical Inference > Actuarial Models > Risk Theory

UCAS code	BSc	3y	NG31	ROYAL STATISTICAL SOCIETY DATA | EVIDENCE | DECISIONS

Mathematics with Finance

This degree is aimed at mathematics students with a particular interest in financial systems and includes a greater component of Accounting and Finance than some of our other courses. This course provides a solid foundation in finance and covers the study of international financial markets and multinational corporate finance. Other topics include financial reporting and investment analysis. You'll study mathematics and finance in a ratio of 2:1. The BSc Mathematics with Finance is run jointly with the world-renowned Alliance Manchester Business School.

Year	Sample course units
1	> Financial Decision Making > Fundamentals of Financial Reporting > Calculus and Applications
2	> Investment Analysis > Foundations of Finance > Introduction to Financial Mathematics
3	> Financial Derivatives > Advanced Corporate Finance > Mathematical Modelling in Finance

UCAS code	BSc	3y	G1N3	ROYAL STATISTICAL SOCIETY DATA | EVIDENCE | DECISIONS

Mathematics with Financial Mathematics

This flexible degree programme is for those interested in learning about some of the recent applications of mathematics to the financial sector and pursuing a career in this area. This course will enable you to acquire a working knowledge of models and procedures and modern financial mathematics as it's applied in financial institutions as well as in the financial departments of national and international companies.

After your first three semesters, you can choose course units from a wide range of options and pursue the areas of mathematics that interest you most. You'll also have the option to choose course units from other subject areas from your second year onwards.

Year	Sample course units
1	> Foundations of Pure Mathematics > Probability > Introduction to Statistics
2	> Fundamentals of Management > Accounting Metric Spaces > Practical Statistics
3	> Statistical Modelling in Finance > Regression Analysis > Statistical Computing
4	> Computational Finance > Stochastic Modelling in Finance > Corporate Governance in Context

UCAS code			
	BSc	3y	G1NH
	MMath	4y	G1NJ

ROYAL STATISTICAL SOCIETY
DATA | EVIDENCE | DECISIONS

" The career advice at the University is brilliant and always helpful. They can show you which jobs are best suited for you and your degree to help start you thinking about your future after you graduate. "

Karina Malone
BSc Mathematics

" There is a great sense of belonging and support at the Department of Mathematics, from students, to lecturers, and staff in general. "

Godiraone George
BSc Mathematics with Finance

Mathematics and Philosophy

This joint-honours degree course, representing a close and fruitful connection which has existed since the time of the ancient Greeks, explores both mathematics and philosophy side by side. While this course aims to provide you with an advanced level of understanding about each subject, it also aims to let you explore the fascinating interplay between the two disciplines.

Both disciplines are given equal weight and each offers a wide range of options. In your final year you'll carry out a substantial philosophy dissertation and can also choose to complete a project on a mathematical topic.

Year	Sample course units
1	> Introduction to Philosophy of Mind > Foundations of Pure Mathematics > Introduction to Ethics
2	> Introduction to Logic > Real Analysis > Philosophy of Religion
3	> Fractal Geometry > Commutative Algebra > Personhood and Freedom of the Will

UCAS code	BSc	3y	GV15	ROYAL STATISTICAL SOCIETY DATA | EVIDENCE | DECISIONS

Mathematics with a Modern Language

Increasingly, mathematics graduates with strong language skills are in high demand. Combining mathematics with a modern language will allow you to live and work abroad, widening your career options.

This four-year joint-honours degree course combines a mathematics core with a choice of modern language; French, German or Spanish. The third year of your studies is spent overseas, either at a university studying mathematics, improving your language on an approved course, or undertaking approved paid work (in a school for instance). During your three years in Manchester, you study mathematics and your chosen language in the ratio 2:1.

Year	Sample course units
1	> Calculus and Applications > Foundations of Pure Mathematics > Modern Language
2	> Probability > Partial Differential Equations and Vector Calculus > Modern Language
3	The third year is spent abroad; studying, working or improving language skills
4	> Applied Complex Analysis > Statistical Computing > Modern Language

UCAS code	BSc	3y	G1R9	ROYAL STATISTICAL SOCIETY DATA | EVIDENCE | DECISIONS

Career opportunities

Mathematics graduates from The University of Manchester :

64%
Employed

21%
Further study

Salaries

UK average	£23,000
UK Maths	£25,840
UoM Maths	£26,003

Further study options

MSc – 37%
PGCE – 21%

Most popular qualifications

PGCE Secondary Education

Most popular course title

MANCHESTER 1824
The University of Manchester

Most popular institution

What our graduates do:

Data Scientist

Hardware Engineer

Investment Analyst

Actuarial Analyst

Statistician

Where our graduates work:

Aardvark

Swift

BP

Credit Suisse

Royal London Prospects TPP

Source: HESA, Destinations of Leavers from Higher Education (DLHE)

Women in science

The Department of Mathematics actively works towards generating an inclusive environment for all of our students and has recently been awarded an Athena SWAN Bronze award for its commitment to the advancement and promotion of the careers of women in STEMM in higher education and research.

Overall our student population's gender balance is significantly above the national averages, with 42% of our undergraduates and 47% of our postgraduate population being female.*

Students benefit from a supportive study environment and an exceptional technical education, coupled with opportunities to develop strong communication and teamworking skills.

Read about our Women of Wonder:
www.se.manchester.ac.uk/people/women-of-wonder

Watch the stories of some of the women in our Faculty:
www.mub.eps.manchester.ac.uk/science-engineering/2017/03/06/women-of-wonder

* Figures correct at 25 January 2019

Maria Thorpe

Team leader, Student Finance Modelling, Department for Education, Sheffield. Maria studied a PhD in Applied Mathematics, in the Department of Mathematics and also completed a three-month internship at the House of Commons Library.

"The House of Commons Library provides impartial research to MPs and their aides on topics that are relevant to their constituency. Thanks to the research skills picked up over the course of my PhD, I felt comfortable with the research process; distilling the question posed to its most important parts, skimming through background material to get a feel for the topic, succinctly answering the problem, and highlighting areas of further interest.

Working in the Palace of Westminster was a fantastic experience and getting to know first-hand how our parliament actually works was fascinating. I was able to attend debates and select committee meetings and tour the palace archives and towers. One of the best parts of my time there though was meeting the many people, from lobbyists and select committee clerks to library and party researchers.

This experience provided new insights into the varied uses of both the technical and softer skills developed throughout my PhD, and the importance of good communication. As an analyst in the civil service, communicating results and caveats is just as important as undertaking the analysis."

Ulla Karhumäki

PhD student in Mathematical Logic.

"My research interests are in the branch of mathematical logic called model theory. The aim of my PhD is to prove some results which will help us to understand one of the main open problems in the area I am working on. A large part of PhD studies in pure mathematics is understanding the background and new results properly.

I was part of the organising team of the British Postgraduate Model Theory Conference 2019, which is an annual meeting providing an opportunity for postgraduate students and postdoctoral researchers in model theory to present and discuss their work. Moreover, I was part of the organising team of the Manchester Research Students Conference 2017, which is a one-day meeting where PhD students in the University of Manchester, in all areas of mathematics, present their work to each other. Organising these meetings taught me a great deal and will definitely be useful in the future.

To pursue a career as a mathematician in academia one needs many kinds of skills. Most importantly one must, of course, enjoy doing mathematics and be curious about (all kinds of) mathematics. Also, it is important to be able to work both by yourself and with other people, to explain your work both orally and in written form and to teach students at different levels."

Make your mark with Stellify

> *I wanted to try something completely new. Transforming unused and overgrown land into areas where fruit and vegetables can be grown gave my volunteering an environmental focus.*
>
> *Volunteering is a different experience from study. For me, as a chemical engineering student, it's enabled me to think outside my discipline, which by its nature is very technical.*
>
> *Here at Manchester, volunteering is embedded in the very heart of the University's culture – there are so many opportunities to try something new, which in turn can have such a positive impact on our communities.*

Alessia Xu
MEng Chemical Engineering
with Industrial Experience

Read Alessia's story at:
www.manchester.ac.uk/make-your-mark

At Manchester you'll find a whole host of transformational academic and extracurricular activities to help you stand out and make your mark on the world. You could even prove your abilities to potential employers by gaining a prestigious award.

We call this process **Stellify**: to change, or be changed, into a star.

Stellify offers you opportunities to develop and grow at a university leading the way in social responsibility. Here's how.

Learn without boundaries
Enjoy interdisciplinary, international and entrepreneurial study options outside your course.

Understand the issues that matter
Become ethically, socially and politically informed on some of humanity's most pressing global issues.

Make a difference
Contribute to and learn from local and global communities through volunteering.

Step up and lead
Gain confidence and experience by assisting and inspiring your peers.

Create your future
Explore countless opportunities for professional career development.

STELLIFY

www.manchester.ac.uk/stellify

MathSoc

MathSoc is a student run-society aimed primarily at students of The Department of Mathematics. The Society presents an opportunity for members to expand their network within the Department and hosts events and activities relevant to members' interests. The MathSoc office can be found in the atrium of the Alan Turing Building and details of past and upcoming events can be found on their Facebook page.

Throughout the year we will be hosting socials and events aimed at connecting individuals from like-minded disciplines with one another and with leading graduate employers eager to recruit Manchester students onto various schemes; for the more mathematically intrigued we will be devising topical events, such as lectures from prominent, guest speakers—stay tuned!

You can find us on

 UoMMathSoc

 UoMMathSoc

 UoMMathSoc

" MathSoc is a great place to meet people with similar interests and to make new friends! We work with our sponsors to provide helpful (and fun) activities such as pub quizzes and networking events. You can also join us for social events like pub crawls or going to a giant inflatable park! "

Ryan Hinch
UoM MathSoc President

" The staff are friendly and approachable... their passion for the subject makes the lectures engaging and interesting. "

Una Gardiner
MMath Mathematics

The University of Manchester

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This brochure was printed in 2019 for the purposes of the 2020 intake. It has therefore been printed in advance of course starting dates and for this reason, course information may be amended prior to you applying for a place. There are a number of reasons why changes to course information and/or published term dates may need to be made prior to you applying for a place – more details can be found on our website. Prospective students are therefore reminded that they are responsible for ensuring, prior to applying to study, that they review up-to-date course information by searching for the relevant course at:

www.manchester.ac.uk/undergraduate/courses

Further information describing the teaching, examination, assessment and other educational services offered by The University of Manchester is available at:

www.manchester.ac.uk/undergraduate

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