Welcome to the School of Mathematical Sciences

From the moment you start your course, you will be part of a community that supports you to secure your future as a Lancaster graduate. We will welcome you to the School of Mathematical Sciences and support your transition to university life.

You will be offered regular meetings with tutors and lecturers, and our strong academic support systems are there to ensure you realise your potential. You will study and grow as a person in a vibrant and safe environment, enjoying a wide range of activities.

We will expect you to work hard, but we will help you to gain the full benefit from your efforts. We cover a broad range of topics in the earlier years, while allowing specialisation later on. The pace will stretch you and assist you to develop, and the results will be well worth it.

Come and start your journey with us.

Professor Gordon Blower
Head of School

Scan here to discover Mathematical Sciences at Lancaster:

For more information please visit lancaster.ac.uk/maths

Contents

04 Introducing MARS
06 For the professional
07 A supportive learning environment
08 Loving Lancaster
10 Hello future
12 Our programmes
13 How you’ll learn
14 Study Abroad opportunities
15 Placement Year opportunities
18 Your first year
20 Choose your minor
22 Second year and beyond
24 A home away from home
26 Computer Science and Mathematics
27 Data Science
28 Combined courses
30 Entry requirements
31 Additional test: AEA

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Connect with us
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“Mathematical Sciences is an ever-changing subject. For this reason, we have recently expanded to become the School of Mathematical Sciences which, alongside the existing pure mathematics and statistics sections, includes a MARS section working on Mathematics for Artificial Intelligence and Real-world Systems. We are introducing new courses in statistics, pure and applied mathematics that develop modern theories to address contemporary problems. As a Lancaster University School of Mathematical Sciences graduate, you will be well equipped for many possible careers.”

Professor Gordon Blower  
Head of School

Be a part of the first generation of AI informed maths graduates!

What does this mean for Lancaster?
With a £15 million investment, we are developing new applied mathematical approaches in AI and differential equations to represent complex natural systems; from pandemics to 3D printing, and atmospheric models to safe and secure networks of computers. Our research is defining a new curriculum - we’re updating our modules and creating new, exciting topics that put you at the forefront of the field as we develop modern theories to address contemporary problems.

What does this mean for you?
The modules you take; the projects you participate in; and the research you do will provide many opportunities for you to learn about these methods in real-world applications. This is an exciting new era for maths students, which leaves you equipped for many possible careers.

Professor Christopher Jewell  
Professor in Statistics  
MARS Project Leader

For more information please visit lancaster.ac.uk/maths
For the professional

Choosing where to study can be an overwhelming experience. You know you want to focus on maths, but how do you know which course is right for you? As a sign of course quality, accreditations from professional bodies are a great place to start.

The Royal Statistical Society (RSS) and/or the Institute of Mathematics & its Applications (IMA) accredit all of our single-honours degree pathways in Mathematics and Statistics.

For you, this means that our degrees demonstrate both a high level of competency and professionalism in the area of mathematics. Professional bodies open doors to several networks should you choose to engage, and are well recognised by employers.

Royal Statistical Society
Through the RSS, you may be eligible for GradStat status (subject to criteria fulfilment) – our dedicated Teaching Office will help you select the right modules. RSS also sponsor a Royal Statistical Society prize for an exceptional student or students graduating from its accredited courses – another chance for recognition.

Institute of Mathematics & its Applications
The IMA is a chartered professional body for mathematicians in the UK. All of our single honours MSci schemes meet the requirement for gaining the CMath designation which is a professional status in advanced mathematics which employers will value.

Open door policy
Academic staff who teach on our undergraduate programmes have dedicated office hours for student queries and for additional support. You will receive feedback on all work submitted and teaching staff are happy to discuss this with you if you have any concerns.

Teaching Office
This is your one-stop shop for enquiries ranging from timetabling and exams to module choices and coursework. The Office can also offer more general support, and if they don’t have the solution then they will know who to contact.

Academic advisor
When you start at Lancaster you will be assigned an academic advisor, who will (where possible) remain your tutor for the duration of your studies at Lancaster. This is an academic member of staff who you will meet with once a term in order to check your progress and personal development. Your academic advisor can provide both academic and pastoral advice and you can arrange to meet them at any point if you feel that you would benefit from the additional support. They can provide extra feedback on coursework, give advice on module choices and discuss potential career options.

Student wellbeing partnership service
Settling into university can take time. Here at Lancaster we have a dedicated team who will support you during this transition, and help you make the most of your time at university. For more information, please visit www.lancaster.ac.uk/student-wellbeing-service/.

World-leading research
We are ranked #7 in the UK for research in the 2021 Research Excellence Framework. This means that you will be taught by some of the world’s leading researchers in mathematics and statistics.

A supportive learning environment

Learning developer
In the Faculty of Science & Technology, we have a dedicated learning developer who can offer tips on finding suitable reading resources and managing your time to achieve your full potential through effective study practices and good scientific writing.

We also offer a Maths and Stats Hub (MASH). This is a tailored and inclusive service, which aims to advance undergraduate students’ knowledge and skills, improving their academic performance, confidence and preparedness for the workplace. For more information, please visit www.lancaster.ac.uk/maths-learning-development/

Rosie Jones
BA Mathematics & Philosophy graduate 2019-2022
I’ve really enjoyed my time at Lancaster and my love of maths has only increased since studying here! There’s such a wide variety of support available in the School of Mathematical Sciences, I’ve always felt there was help available when I needed it.
Loving Lancaster

What is your favourite part about studying at Lancaster University?

The community spirit at Lancaster has spurred me on to get involved with so many things and take on opportunities that have made my university experience as amazing as it has been. I have loved studying maths and being able to explore the subject beyond what is taught in school, as well as being surrounded by some incredible minds in the School; however, this has realistically only been one part of the multi-faceted experience of studying at Lancaster. Meeting new people, networking, discovering new hobbies and skills, volunteering, and working part-time have made up the rest of the experience and made me the person who absolutely loves Lancaster - so I think I'd say my favourite part has been everything!

What do you like to do when you’re not studying?

A couple of months after starting university I nominated myself for my college's JCR (the group of elected students who organise/run college events). After being elected, I was responsible for running the college's social media accounts, as well as helping to organise and host events for the college, including Welcome Week where I hosted a pub quiz to a completely packed out bar of freshers! This experience was a huge confidence booster for me and has left me with amazing memories and lots of stories to impress employers with in applications and interviews. I have also been a member of Lancaster's music society, where I was a member of the brass band and got to travel to Bangor in Wales for the UniBrass competition.

Do you feel the School has supported you with employability and careers?

The School of Mathematical Sciences has its own dedicated employability staff who are really knowledgeable about the different paths that a degree in maths can lead to, including opportunities in employment and further study. Equally, the careers staff at Lancaster are really phenomenal. I didn’t have a clue what kind of career I wanted to go into when I started at university and the support I have received since then has been so useful in helping me to discover what I am passionate about and find the right career to aim for. In my first year, I was given the opportunity to visit a range of graduate employers in Manchester and London with the Careers Service, as well as attending networking evenings with Lancaster alumni who were working in graduate roles in both cities. This led me to secure a place on a summer insight programme with PwC between first and second year.

How has this all prepared you for a future career?

Many of the modules that I’ve taken have incorporated practical elements including statistical programming and group projects. These experiences have exposed me to the style of work that I am likely to be doing once I join KPMG and have given me a great opportunity to prepare. Outside of my studies I have held part-time jobs as both an ambassador for the School of Mathematical Sciences and for the University as a whole. Both of these roles have been really enjoyable and given me so much more confidence - I’ve given campus tours to hundreds of prospective students and parents over the years as well as delivered presentations to a full lecture theatre of applicants about studying at Lancaster! I couldn’t have imagined doing those things before coming to university, but the opportunities have been incredible, and the University/School community is so supportive.

Any advice for new students?

Grab the university experience with both hands. I have learned so much about myself and other people during my time at university and I definitely feel like I am coming out of it a more well-rounded individual. Make sure you try something new and don’t be afraid to get involved with things that might seem daunting at first. Choosing a mathematics degree at Lancaster has been the best decision I have made in terms of helping me to feel prepared for my future (and having an amazing time).
Hello Future

Have you ever wondered where a degree in maths can take you? The answer is anywhere! The beauty of maths is that it opens doors to many career opportunities. As a maths graduate, you will have a unique and transferable skill set sought after by employers across a wide range of sectors.

You may choose to pursue your love of numbers in a career such as accountancy, finance or banking. Or you may wish to utilise your logic and analytical skills in management roles, consultancy, civil service, education, software or statistics.

Or you could find yourself in developing sectors and emerging industries such as health statistics, data science and software development.

We are committed to developing your employability skills whilst you are here at Lancaster and preparing you for your next step.

Find out more about what our maths alumni have gone on to do after their degree at Lancaster:

For more information please visit lancaster.ac.uk/maths

Careers support
Our careers tutor in the School works in partnership with the University’s Careers Service to offer a range of workshops and talks on topics such as:

+ Job application processes – CVs and cover letters, interviews and assessment centres
+ Careers within specific relevant fields such as finance, research, statistics and teaching
+ Completing a PhD in mathematics or statistics
+ Career planning
+ Postgraduate study options

You can also access 1:1 appointments throughout the year through the University’s Careers Service. The School promotes a range of opportunities to meet and network with employers through events both on and off campus. This includes our annual Science and Technology Careers Fair where a range of regional and national employers are invited onto campus to talk about the internship, placement and graduate opportunities available to students.

Project Skills modules
In second year, you can choose from a range of project skills modules which will allow you to apply mathematics from an area of your interest to solve substantial problems.

You will develop skills that will enhance your employability such as working in a team, scientific writing, and presenting the conclusions of your investigations. You will also learn to both work independently under supervision and as part of a small group.

Past projects have included:

+ Dynamics and Analysis
+ Geometry and Algebra
+ Modelling and Probability
+ Discrete Mathematics and Computing

Internship scheme
Undertaking relevant work experience whilst you are at university is extremely beneficial when applying for graduate level jobs. Through our Science and Technology Internship Scheme you can apply for paid work placements which give you the opportunity to practise the skills and knowledge learned during your degree. These opportunities can be both full- and part-time, and range from 3 months to a year.
Our programmes

We offer degrees in Mathematics, Mathematics with Statistics and several combined courses detailed on the following pages.

**Mathematics**
- BSc Mathematics - G100
- MSci Mathematics - G101
- BSc Mathematics (Placement Year) - G102
- MSci Mathematics (Study Abroad) - G103

**Mathematics with Statistics**
- BSc Mathematics with Statistics - G1G3
- MSci Mathematics with Statistics - G1GJ
- BSc Mathematics with Statistics (Placement Year) - GCG3
- MSci Mathematics with Statistics (Study Abroad) - G1GH

**Flexibility**
It is possible to transfer between Mathematics and Mathematics with Statistics up until the end of the second year, subject to fulfilling progression criteria.

How you’ll learn

**Lectures**
Lectures will introduce you to course content. During your first year, you will typically have four of these per week in each mathematics and statistics module. They are taught in large groups with fellow students from across the year group. Whilst this form of teaching is mostly led by the lecturer, we do encourage you to actively participate.

**Workshops**
Our regular workshops will guide you throughout your studies by providing expert support and guidance. You will work in small groups with specialist tutors to develop knowledge and understanding of module content and practise applying the skills you have gained.

**Problem-solving**
In your first year, we run problem-solving classes designed to develop your skills to tackle university-style mathematics. Working in small groups, you will apply your mathematical knowledge to a set of problems.

**Computer labs**
Some practical work involves working with statistical and mathematical software. This involves working with statistical and mathematical software to develop programming skills and enhance your employability.

**Assessment**
Completing assessments is a key part of your learning. Alongside main exams, you will also complete weekly or fortnightly homework sheets for your modules. These allow you to monitor your progress and identify areas to work on with your workshop tutor.

For more information please visit lancaster.ac.uk/maths
At A levels I studied Maths, Further Maths and Chemistry but I was always really focused on doing a maths degree. Coming to Lancaster I thought I wanted to study pure mathematics but after the first year I decided that I wanted to change to mathematics and statistics. This change was quite easy to make as Lancaster allows us some flexibility with our degree schemes. The course is designed so that you can get what you want out of your degree, and I am happy I could change when I wanted.

In my third year I went on a placement to do Supply Chain Procurement at GSK. My role involved looking after suppliers and taking the lead on site projects to improve sustainability and allow new products to be brought to our site. This was integrated into my degree so I was supported by the University careers department and I had to do a few assignments that counted towards my final grade. Before my placement, I was unsure what I wanted to pursue as a career so this was an amazing opportunity to start working out what I was and wasn’t interested in.

My placement experience allowed me to discover what the working world was like but with support from the University. I came back with a clearer understanding of what my future could look like. I have more confidence in presenting, talking to people and my writing abilities which has been really beneficial to my degree but also to my future career prospects. Looking to the future, I hope to be doing an MSc in Data Science here at Lancaster and following this as a career path.

Ellen Sayles
BSc Mathematics with Statistics (Placement Year)

At A levels I studied Maths, Further Maths and Chemistry but I was always really focused on doing a maths degree. Coming to Lancaster I thought I wanted to study pure mathematics but after the first year I decided that I wanted to change to mathematics and statistics. This change was quite easy to make as Lancaster allows us some flexibility with our degree schemes. The course is designed so that you can get what you want out of your degree, and I am happy I could change when I wanted.

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Ellen Sayles
BSc Mathematics with Statistics (Placement Year)
Rhys Peploe
BSc Mathematics with Statistics (Placement Year)
MSc Data Science

I’ve been at Lancaster for 5 years doing my Bachelors degree in Mathematics with Statistics (Placement Year) and a Master’s in Data Science, which has equipped me with the tools to feel confident going into graduate roles after university. The undergraduate course is broad to allow you to gain vital skills in a number of areas while being detailed enough in order to understand and be able to reproduce those abilities to a high standard; it gave me the framework to allow me to pursue the Master’s and specialise in a topic that I’m really passionate about.

I spent 13 months with IBM as a financial analyst. During this time, I was responsible for managing projects and budgets as well as a number of ad-hoc tasks which allowed me to experience various roles, not just what was on the job description. Before placement, I had no clue what job I wanted to pursue; the year gave me plenty of chances to try out various roles and find out what I do (and definitely do not) want to do, so the flexibility has allowed me to mold a career path and lead me to choose to study the MSc Data Science. Training is provided from our Faculty in the first two years and then ongoing support throughout the industry year means you are never far from help if you need it; the team was vital in my search for a placement!

Both of my degrees have constantly challenged me to be more inquisitive about maths, and our world-leading researchers teach modules on their fields, so you get the very best to learn from. Utilising the software R has been fascinating and the applications are endless; knowledge of this program makes picking up new ones so much easier too.

Cerys Evans
BSc Mathematics (Placement Year)

Why Lancaster?

Lancaster has been the perfect place for me. The campus feels like its own little world and the sense of community has been a really key part of my experience at Lancaster. You can find your place in colleges, liberation forums, and societies – there really is somewhere for everyone.

Tell us about your course

The way that the Mathematics course is structured at Lancaster means that by the end of first year every student is caught up to the same level so you don’t have to worry about being behind if you studied different qualifications at school. Then second year builds on that foundation to give a breadth of teaching across pure maths, statistics, and mathematical methods so that you can study what interests you in third year knowing that you have a strong basis to work from.

Tell us about your placement year

I spent 14 months working for NHS England as a data analyst in the performance analysis team. I had the opportunity to work on official statistics that were discussed on the news and used by Number 10, the CEO of the NHS, and the general public. I was able to use the coding skills I learned in my degree to improve processes within my team which significantly increased efficiency and reduced errors.

I absolutely loved working in a sector that I feel passionately about and now know that data is the career I want to work in after I graduate. My placement experience helped me choose third-year modules that will be relevant to the graduate jobs I plan to apply for and the assessments I did during my placement year have helped me reflect on what sort of jobs I want to apply for.

What do you do when you’re not studying?

My favourite part about my time in Lancaster has been the extracurricular activities I’ve been involved with outside of my course. Throughout my second year I got more involved with my department and the Students’ Union. I was the lead student ambassador for the School of Mathematical Sciences in 2020/2021 and 2022/2023 and this was a fantastic opportunity to develop my management and engagement skills while helping others on my course to study better. There are so many fantastic opportunities for growth at Lancaster and since starting at university I’ve significantly developed both professionally and personally thanks to getting involved with things on campus.

For more information please visit lancaster.ac.uk/maths
Your **first year**

For the majority of our degree schemes, you will follow a common core first year programme. This involves two sets of modules and a minor subject.

### Mathematical Methods

#### Calculus

Calculus is concerned with derivatives (which measure rates of change) and integrals (which measure area) and is usually introduced as rules for differentiating or integrating simple functions. You will see how to use the notion of a limit to define derivatives and integrals for many more functions. You will also study complex numbers, which are important in themselves and also have practical uses in, for example, electrical engineering.

#### Further calculus

The graphs of functions of two real variables look like surfaces, with hills, valleys and other features. This module extends calculus to deal with these, introducing partial derivatives, and explains how repeated integration may be used to calculate volume. You will also be introduced to techniques for solving elementary differential equations.

#### Probability

Explore the ideas of probability models which characterise the outcomes of different types of experiment that involve a chance or random component.

### Mathematical Concepts

#### Numbers and relations

Is it possible to write 84503 as a sum of the squares of two whole numbers? What is the largest whole number that exactly divides both 99457 and 75067? Learn how to answer these and similar questions. You will also encounter formal logic and learn about mathematical proofs.

#### Linear algebra

Matrices are a concise way of writing and solving sets of simultaneous linear equations, whose connection with lines and planes is established. You will explore how matrices can be used to represent certain transformations of the plane or space and show how these transformations can be characterised by the way they behave in special directions.

#### Discrete mathematics

We talk about set theory and discuss the different types of infinite sets that exist. We also formally introduce functions and their properties, before going on to look at counting problems and methods to solve them, and ending with graph theory. Graphs have important applications in the design and understanding of the properties of systems such as the infrastructure powering the internet, social networks such as Facebook, the London Underground network and the global ecosystem.

#### Geometry and calculus

How would you find the closest point to the origin on a particular curve? What is the tangent plane to a smooth surface and how do we find it? Study geometric objects through the use of calculus.

#### Convergence and continuity

No one can walk infinitely many steps, perform infinitely many additions, or write down infinitely small numbers, but once we understand the definition of a limit in mathematics, the idea of infinity makes sense. The concept of a limit allows us to study whether a given sequence is convergent, or a given function defined on the real numbers is continuous, in a precise way. It also forms the foundations of many of your future mathematics modules.

#### Series, differentiation and integration

We take a closer look at differentiation and integration, and the relationship between the two. You will develop a much deeper understanding of calculus and see how to extend the theory to more general settings, as well gain an appreciation of the limitations of the theory through some rather surprising examples.
Choose your **minor**

**Our flexible Part I system allows you to take one third of your first year modules in another subject area, which you will choose during your first week at Lancaster. Entry onto minor courses is subject to meeting entry requirements and timetabling restrictions.**

Minors are a great way to try a second subject at university level, and you may even choose to continue your minor and/or transfer to one of our combined degrees. Here are some of the subjects that students have taken as a minor alongside a mathematics major:

- Physics
- Accounting & Finance
- Economics
- Philosophy
- Computer Science
- Management Science
- French/German/Spanish/Chinese/Italian

Other minor choices may be available upon arrival, but are not guaranteed. Minor choices are only available on single honours courses. For example, if you choose to study BA Mathematics and Philosophy, Philosophy is the equivalent of your minor choice.

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**I started my Mathematics and Statistics degree back in 2019 and being at Lancaster meant I had all the support I needed during my studies.**

Said studies have generally been the perfect balance of fun and challenging. Lecturers are always willing to help, and the weekly workshops help me catch up on anything I’ve missed. There’s a good balance of assignments – quizzes, coursework and the occasional group project to mix things up (not to forget the end-of-year exams)! Between all of these, I feel like my skills are being fairly assessed; there’s both academic and more ‘real life’ work.

Something that really caught my eye when I was applying to Lancaster was the minor offered in first year. As far as I know, there’s no real comparable scheme anywhere in the country. You can do something related to your degree, a complementary skill, or something completely different! I personally took a minor in Creative Writing, because I thought that the opportunity was so good, I couldn’t pass it up. Meanwhile, one of my friends took a minor in German – he liked it so much he changed his degree to be a joint major in both Maths and German.

Another of Lancaster’s stand-out points is its collegiate system. The idea of having a smaller community within the University itself really appealed to me. Being able to make friends from other courses and years meant I could meet a much more diverse group of students. And of course, having 8 different bars and common rooms on campus is a huge plus! Each has its own character and being able to study with friends over a meal in County before going for a round of drinks and a game of pool in Grizedale is great.

I’ll look back fondly on my years here. The careers scheme has helped me to land a job as a programmer at a biostatistics company in London. I really look forward to using what I’ve learnt here, and I’ll be proud to say that I’m an alumnus of Lancaster University!

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Kris Morcom
BSc Mathematics
Second year and beyond

Second year
In your second year you will build on the content covered in first year, studying familiar topics. You will be introduced to computational and mathematical problem solving methods and will learn how to use the programming language R and the type-setting language LaTeX. Our project skills modules will enhance both your subject specific and transferable skills. You will complete both an individual and group project with opportunities to develop your scientific writing, research and presentation skills.

Analysis
+ Real Analysis
+ Complex Analysis

Algebra
+ Linear Algebra
+ Abstract Algebra

Probability and Statistics
+ Probability
+ Statistics

Project Skills
+ Dynamics and Analysis Projects
+ Geometry and Algebra Projects
+ Modeling and Probability Projects
+ Discrete Mathematics and Computing Projects

Computational Mathematics
+ Computational Mathematics
+ Computational Statistics
+ Computational Modelling

Third year
The third year allows greater flexibility in terms of module choices. You are able to pick from a range of options across key areas in mathematical sciences. This allows you to focus on areas of the subject that are of interest to you and where your strengths lie. Examples of topics covered in third year:

Algebra and Geometry
+ Mathematical Cryptography
+ Groups and Symmetry
+ Combinatorics
+ Commutative Algebra
+ Algebraic Curves
+ Geometry of Curves and Surfaces

Analysis
+ Lebesgue Integration
+ Metric Spaces
+ Hilbert Space
+ Differential Equations
+ Linear Systems

Probability
+ Dynamic Modeling
+ Probability Theory
+ Stochastic Processes
+ Mathematics for Stochastic Finance

Statistics
+ Mathematics for Artificial Intelligence
+ Changepoint Detection
+ Time Series Analysis
+ Medical Statistics
+ Likelihood Interference
+ Bayesian Interference
+ Statistical Models

Fourth year
During the fourth year of the MSci course you will be able to choose from a range of specialist modules which link to research interests of academics within the School. Many advanced third year modules are also available to study.

Examples of previous specialist topics include:
+ Principles of Epidemiology
+ Clinical Trials
+ Stochastic Calculus for Finance
+ Computer Intensive Methods
+ Extreme Value Theory
+ Galois Theory
+ Longitudinal Data Analysis
+ Operator Theory
+ Lie Groups and Lie Algebra
+ Topology and Fractals

You will also complete an MSci dissertation which can be taken in Statistics or Pure Mathematics.

For more information please visit lancaster.ac.uk/maths
Daniel is from Malaysia and chose Lancaster to study his degree in Mathematics, Operational Research, Statistics and Economics (MORSE) (Industry).

I am a final year undergraduate studying MORSE, which stands for Mathematics, Operational Research, Statistics and Economics, not the MORSE code! I have been fascinated by statistics since I was young, and I often state things like, “the chances of that happening is 80%”. I had no evidence to back that up previously, but my degree at Lancaster University has now equipped me to actually quantify the probabilities of events happening, and much more!

Studying a maths-based degree at Lancaster University is challenging but incredibly rewarding. The academic staff push students to grow and develop independent mathematical skills, but provide comprehensive support when students need it with their friendly and approachable attitude. They have also been a source of advice on my future career plans in data science.

What I love about Lancaster University is how it’s surrounded by nature, cultivating a peaceful environment. The campus itself is beautiful, but Lancaster University is also close to the Lake District, which is simply stunning!

During my time at Lancaster University, I’ve also picked up pool, playing with friends regularly and once participating in a college pool competition. I’ve also been a Leading Lights academic mentor and Maths Ambassador, which has been a good opportunity to build various soft skills. Whatever you’re interested in, there’s lots of opportunities to try new things at Lancaster University.

Studying at Lancaster University has been a fulfilling experience, where I’ve developed strong friendships and acquired new skills. Lancaster University will always hold a special place in my heart, even long after I graduate.
**Computer Science and Mathematics**

**BSc - GG14**
**BSc (Placement Year) - GG1L**
**MSci - GG1K**

Mathematics underpins technology and so these two subjects create an exciting combination. The computer science component of this degree covers languages and logic, software engineering, communications and systems. The course contains a careful balance of theory and practice which will prepare you well for graduate-level jobs in industry.

**First year**
Covering the common core content of the single honours programmes for both computer science and mathematics, you will also be introduced to the fundamentals of computer science and to software development.

**Second year and beyond**
In the second year, you will complete a group project in computer science and will enhance your knowledge of software design whilst introducing you to human-computer interaction software. You will also be required to study linear algebra plus other subjects from the School of Mathematical Sciences. The third year allows for more flexibility and you will be required to take modules in each of the subject areas. Those on the MSci pathway will complete a dissertation in mathematics or statistics or may complete a computer science project. You will also be able to choose from a wide range of specialist modules linked to the research expertise of both the School of Mathematical Sciences and the School of Computing and Communications.

"Gail Collyer-Hoar
MSci Computer Science and Mathematics, PhD Computer Science"

My MSci in Mathematics and Computer Science has been extremely useful and has expanded my post-degree options massively. The two subjects work incredibly well together, and the combination of having two departments has been fantastic for making friends. I’m now using the statistical foundation I gained from my degree to pursue a PhD in Computer Science.

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**Data Science**

**BSc - G900**
**BSc (Placement Year) - G901**
**BSc (Study Abroad) - G902**
**MSci (with Industrial Experience) - G903**

Data science plays a vital role in all aspects of the modern world. This course will ensure you have a strong foundation in this rapidly expanding, highly in-demand field. You will gain cutting-edge knowledge and skills through state-of-the-art equipment and excellent teaching offered by leading academics in both the School of Mathematical Sciences and the School of Computing and Communications.

**First year**
In your first year, you will receive a comprehensive grounding in the theory and practical skills of computer science and gain an understanding of mathematical methods and concepts. You will also enhance your data analysis, problem-solving and quantitative reasoning skills.

**Second year and beyond**
In the second and third year, you will learn the significant contemporary developments in research, practice, and technology. This means you will further deepen your knowledge in linear algebra, probability and statistics, as well as computer science modules in our Software and Data and Algorithms themes.

In the final year you will have the opportunity to specialise in a range of enriching research-informed optional modules, as well as undertaking a substantial data science individual project.

For more information please visit lancaster.ac.uk/maths
Combined courses

**Accounting, Finance and Mathematics**

**BSc - NG41**
**BSc (Industry) - NG42**

This course will develop your knowledge of advanced mathematical and statistical methods and will provide you with the skills to apply this in a professional context to the fields of accounting and finance.

**First year**
In the first year you will study the Mathematical Methods module whilst also taking one module in Principles of Economics and an Introduction to Accounting and Finance. This will introduce you to a wide range of concepts and techniques including financial accounting, managerial finance and financial analysis.

**Second year and beyond**
In the second year, you will cover probability, statistics, linear algebra and computational mathematics whilst also developing skills in auditing, accounting systems and management accounting. The final year develops your skills in financial accounting and will introduce you to likelihood inference. You will also enhance your employability skills through sector specific careers modules delivered as part of this programme.

**Mathematics with Economics**

**BSc - G1L1**
**BSc (Placement Year) - G1L2**

This programme will equip you with mathematical and analytical skills whilst also developing the knowledge and tools to understand the important role of economics in government, business and society.

**First year**
You will study the Mathematical Methods and the Mathematical Concepts modules alongside a core module in Principles of Economics during which you will be introduced to the principles of economics both at microeconomic and macroeconomic levels. You will also study a careers module through which you will gain an insight into the graduate labour market.

**Second year and beyond**
The mathematical content of the second year includes probability, linear algebra, statistics and computational mathematics. In Economics, you will be able to choose from a range of topics, such as Micro- and Macroeconomics (providing an essential foundation for first year modules), Econometrics, Applied Economics and Game Theory. The final year of the course allows you to choose from a range of options offered by both the School of Mathematical Sciences and Lancaster University Management School.

**Mathematics with Finance**

**BSc - GN13**
**BSc (Placement Year) - GN1J**

Our Mathematics with Finance programme provides a thorough grounding in mathematics & statistics, finance, quantitative methods and economics. This will give you a wide range of skills and knowledge that employers in the finance sector are looking for.

**First year**
You will study the same Mathematics & Statistics modules as the single honours programme, that is, Mathematical Methods and Mathematical Concepts.

In the remainder of your time, you will study ‘Introduction to Accounting and Finance’, where you will encounter a wide range of concepts and techniques from financial accounting, managerial finance and financial analysis.

**Second year and beyond**
The second year will cover the topics of probability, statistics and real analysis whilst also developing your understanding of the principles of finance and introducing you to management economics.

In the final year you will have the flexibility to choose from a range of relevant modules.

**Language Studies and Mathematics**

**BA French - GR11**
**BA German - GR12**
**BA Spanish - GR14**
**BA Chinese - T1G1**

These programmes will allow you to study a modern language to an advanced level whilst also gaining strong analytical skills. Spending your third year abroad, you will get the chance to put your language skills into practice whilst experiencing a new culture.

This programme prepares you for a range of careers such as in the diplomatic service, civil service and teaching.

**First year**
You will study the Mathematical Methods module and take a core module in your chosen modern language in which you will develop your speaking and writing skills and enhance your cultural knowledge. It is highly recommended that you also study the Mathematical Concepts module.

**Second year and beyond**
You will be required to take second year mathematics modules whilst developing your oral and written skills and studying culture modules relating to your target language country(ies). Following your third year abroad, during which you will complete a reflective assignment, the fourth year of the course will further enhance your mathematical and language skills. You will also be able to choose from a wide range of modules covering the culture(s) of the target language country(ies) as well as mathematics and statistics.

**Mathematics, Operational Research, Statistics and Economics (MORSE)**

**BSc - GLN0**
**BSc (Industry) - GLN1**

This course will develop your knowledge of advanced mathematical and statistical methods and will provide you with the skills to apply this in a professional context to the fields of business modelling, analytics and decision support.

**First year**
In the first year you will study the Mathematical Methods module whilst also being introduced to key topics in other departments: Business Analytics and Principles of Economics.

**Second year and beyond**
The second year will cover linear algebra, statistics, business modelling and optimisation. You will also develop knowledge of both micro- and macroeconomics. The final year will allow you to specialise in areas that suit your interests, choosing modules from across all relevant departments.

**Theoretical Physics with Mathematics**

**BSc - F3GC**
**MSci - F3G1**
**MSci (Study Abroad) - F3G5**

This engaging programme combines pure mathematics with the theoretical concepts of physics. Mathematical models can be used to describe known facts and to predict new phenomena. The combination of the two subjects creates a challenging and exciting programme of study.

**First year**
You will study the Mathematical Concepts and Modules modules whilst developing your knowledge of key physics concepts including mechanics, quantum physics, vector calculus, electric and magnetic fields and the thermal properties of matter.

**Second year and beyond**
Throughout the second and third year you will take a number of compulsory modules which will develop your theoretical knowledge and application skills in both mathematics and physics. In the third year you will undertake both an independent and group project based on an open-ended theoretical physics project (excluding Study Abroad students, who will spend this year overseas).

For those on the MSci pathway, you will undertake a Master’s project and complete a literature review. This will be on a topic of your choice from a range of options based on School research specialisms. You will also take specialist modules from both Physics and Mathematics.
Entry requirements

The A level entry requirements for each of our programmes are listed below. For alternative qualifications and international entry requirements, please visit the programme’s dedicated web page.

<table>
<thead>
<tr>
<th>Programme of study</th>
<th>Including Mathematics (at grade A)</th>
<th>Including Mathematics and Further Mathematics (at least one at grade A)</th>
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</thead>
<tbody>
<tr>
<td>MSci/MSci (Study Abroad)</td>
<td>AAA</td>
<td>AAA</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Mathematics with Statistics</td>
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<tr>
<td>MSci Computer Science and Mathematics</td>
<td>AAA</td>
<td>AAA</td>
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<tr>
<td>BSci/BSc (Placement Year)</td>
<td>AAA</td>
<td>AAB</td>
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<td>Mathematics</td>
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<tr>
<td>Computer Science and Mathematics</td>
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<td>Mathematics with Finance</td>
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<td>Mathematics with Economics</td>
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<tr>
<td>BSci (Industry)</td>
<td>AAA</td>
<td>AAB</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Operational Research, Statistics and Economics (MORSE)</td>
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<tr>
<td>BA/BA (Placement Year)</td>
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<td>AAB</td>
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<td>Mathematics and Philosophy</td>
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<tr>
<td>BA French Studies and Mathematics</td>
<td>AAB (including language grade B and Maths or Further Maths grade A)</td>
<td>ABB (including language grade B and Maths or Further Maths grade A)</td>
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<tr>
<td>BA German Studies and Mathematics</td>
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<td>BA Spanish Studies and Mathematics</td>
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<td>BA Chinese Studies and Mathematics</td>
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<tr>
<td>BSci/BSc (Industry)</td>
<td>AAB (including Maths or Further Maths grade A)</td>
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<tr>
<td>Accounting, Finance and Mathematics</td>
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<tr>
<td>BSci/MSci/MSc (Study Abroad)</td>
<td>AAA (including Maths and Physics grade A)</td>
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<tr>
<td>Theoretical Physics with Mathematics</td>
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<tr>
<td>BSc Data Science</td>
<td>AAB (including Maths or Further Maths grade A)</td>
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<tr>
<td>BSc (Placement Year) / BSc (Study Abroad) /</td>
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<tr>
<td>MSci (with Industrial Experience) Data Science</td>
<td>AAA (including Maths or Further Maths grade A)</td>
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</tbody>
</table>

For more information please visit lancaster.ac.uk/maths

Additional test: AEA

We welcome the Advanced Extension Award (AEA) in Mathematics as adding value to a student’s academic profile.

For many courses which typically require an A level in Mathematics, such as our undergraduate degree schemes in Mathematics, we may make a lower offer in recognition of this. In those cases, you would receive two offers: our usual offer plus an offer at one grade lower plus a Merit in the AEA. For example, we may make an offer at AAB, or ABB plus a Merit in the AEA.
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lancaster.ac.uk/maths

Disclaimer
The information provided in this brochure relates primarily to 2025/26 entry to the University and every effort has been taken to ensure the information is correct at the time of printing in June 2024. The University will use all reasonable effort to deliver the course as described but the University reserves the right to make changes after going to print. You are advised to consult our website at www.lancaster.ac.uk/study for up-to-date information before you submit your application. Further legal information may be found at www.lancaster.ac.uk/compliance/legalnotice.