

For general undergraduate
enquiries contact:

The Enquiry Centre

t: +44 (0)115 951 5559

e: undergraduate-enquiries@nottingham.ac.uk

w: www.nottingham.ac.uk/faqs

Mathematical Sciences Undergraduate study 2014

www.nottingham.ac.uk/mathematics



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Front cover image:
Students working on a group project in the Mathematical Sciences Building.

Welcome to the School of Mathematical Sciences

Choosing a university and course that match your aspirations is always a challenge. We feel confident, however, that you will find The University of Nottingham a stimulating and enjoyable place in which to study mathematics. We have a strong commitment to teaching and research of the highest quality and have an excellent record in independent reviews.

A number of factors have helped us build this outstanding reputation. These include: offering a wide variety of modules across applied mathematics, pure mathematics and probability and statistics; flexible structures that offer opportunities to study exciting modern topics such as financial mathematics, mathematical medicine, cryptography and modern quantum theory, as well as a diverse range of complementary subjects; a beautiful campus with excellent facilities; a huge variety of student clubs and societies and easy access to the local attractions in the city centre; courses that develop the intellectual and personal skills that employers actively seek; and above all, a caring environment in which all students can develop and prosper.

Our curriculum is dynamic: our Undergraduate Ambassador Scheme provides opportunities to hone skills in communicating mathematics; project-based modules, such as our Professional Skills module, encourage the development of teamworking and presentation skills; and our highest-level modules provide an insight into cutting-edge mathematics, reflecting the richness and variety of staff research interests.

We hope you will find this brochure helpful. Thank you for taking the time to consider us; we are confident that you will find studying at Nottingham rewarding and enjoyable and we look forward to welcoming you to the school soon.

Professor David Riley
Head of the School of Mathematical Sciences



University of Nottingham: School of Mathematical Sciences

Catching up between lectures in the Mathematical Sciences Building on University Park Campus.

Why study mathematics at Nottingham?

Teaching quality

The School of Mathematical Sciences has a record to be proud of in terms of reviews of its teaching and research. We were rated 'excellent' in the most recent independent assessment of teaching and our lecturers have been recognised with honours such as the Lord Dearing Award, which recognises outstanding achievements of University of Nottingham staff in enhancing the student learning experience, and in the University's 'Staff Oscars' which are voted for by students.

In the most recent Research Assessment Exercise, over 60% of our research in pure mathematics, applied mathematics and statistics was judged to be 'world-leading' or 'internationally excellent'. This allows us to offer a wide range of specialised modules taught by academic staff who are world authorities in many areas of mathematics.

We also have high satisfaction levels among our students which is reflected in our scores in the latest National Student Survey (NSS), with 91% of our students saying they were satisfied with the quality of their course.

Research

In applied mathematics, our areas of research expertise include quantum gravity, complex and disordered systems, quantum information theory and computing, mathematical medicine, biology and neuroscience, industrial mathematics, fluid mechanics, scientific computation and solid mechanics. In statistics we specialise in stochastic modelling of epidemics, statistical shape and image analysis, Bayesian multi-level modelling and probability theory. Our research interests in pure mathematics include number theory, arithmetic, geometry, algebra and mathematical analysis.

Although these may mean nothing to you at the moment, when you come to study with us you will have the opportunity to understand and develop an interest in one or more of these areas, since our research interests inform and shape the third and fourth years of our courses. These advanced modules allow you to come close to the frontiers of mathematical research.

State-of-the-art building

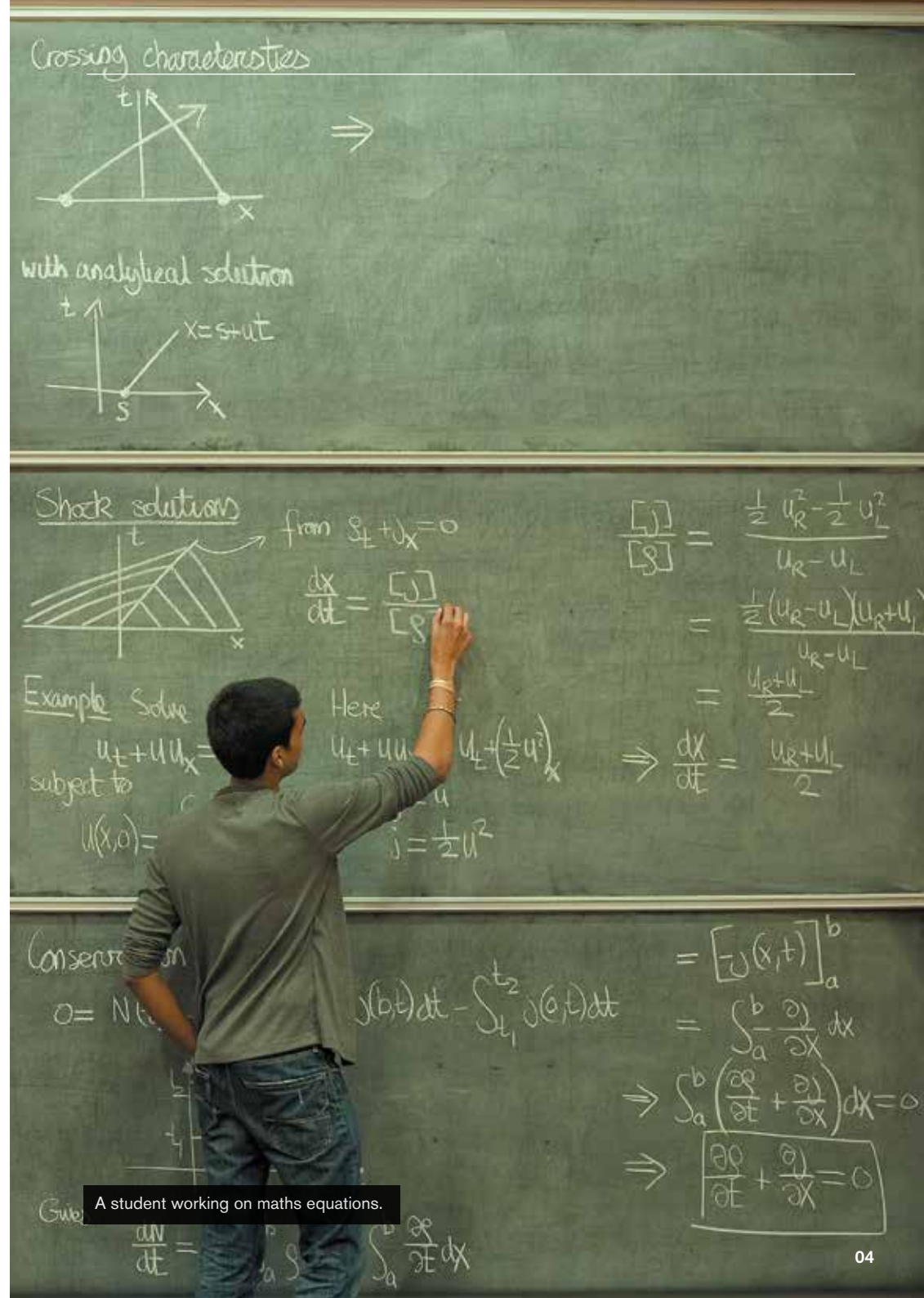
The school sits in a dedicated facility that was opened in autumn 2011. The building has been designed to contribute positively to the educational process by carefully integrating academics and students throughout all levels of the building, providing greater opportunities for social and academic interaction. Undergraduate facilities include a silent study workroom, a group workroom, a common room, breakout pods and a computer workroom.

Summer internships

Some of our students take advantage of the research expertise available in the school to do summer internships. These paid positions give students a chance to gain experience of hands-on mathematical research by working on a project with an academic member of staff and frequently result in publication of work in leading research journals.

Student contribution

Students can also actively contribute to the school by participating in the Learning Community Forum, through which they can influence the running and development of our modules and courses, and by joining the Mathematics Society, which offers activities such as public lectures as well as organising social events for mathematical sciences students.



A student working on maths equations.

Degree courses

Mathematical Sciences	UCAS code	Duration	A levels	IB	Places
Single honours					
BSc Mathematics	G100	3 years	A*AA-AAB [†]	38-36	80
MMath Mathematics	G103	4 years	A*AA-AAB [†]	38-36	62
BSc Mathematics (International Study)	G104	4 years	A*AA-AAB [†]	38-36	10
Single honours with a minor subject					
BSc Financial Mathematics	G120	3 years	A*AA-A*AB [†]	38-36	15
BSc Mathematics with Engineering	G1HD	3 years	A*AA-A*AB [†]	38-36	5
Joint honours					
BSc Mathematical Physics	F326	3 years	A*AA-AAA ^{††}	†††	17
MSci Mathematical Physics	F325	4 years	A*AA-AAA ^{††}	†††	
BSc Mathematics and Economics	GL11	3 years	A*AA-AAA [†]	38-36	12
BSc Mathematics and Management Studies	GN12	3 years	A*AA-A*AB [†]	38-36	9

[†] Three A levels, or equivalent, including mathematics at grade A. Evidence of additional achievement in mathematics such as grade A* in mathematics, grade A in A or AS level further mathematics or grade 2/merit in STEP/AEA may also be required.

^{††} Including three A levels, or equivalent, including mathematics and physics grade A, plus one other academic subject.

^{†††} 6 in maths, plus a 6 and a 5 in two other subjects (one of which must be physics) all at Higher Level.

We expect typical offers to lie within the range indicated in the table. For the most up-to-date typical offer, please see www.nottingham.ac.uk/ugstudy

In all our courses, year one is a qualifying year. This means that although the work is crucial as a foundation for succeeding years, your marks will not count towards your final degree classification. You must, however, be successful in year one in order to progress to year two. Marks that you then obtain in years two and three (and four, if applicable) will count towards your degree.

Course structure

We offer a range of courses in which mathematics can be studied on its own or in combination with other subjects. Courses offering mathematics as a single subject include the four-year BSc Mathematics (International Study) in which you can spend a year studying at one of our overseas partner universities, while our other courses allow you to spend a semester abroad.

Please note that these single honours courses also allow you to take modules in other subject areas.

Two of our courses combine mathematics as a major subject, accounting for about 70% of your studies, with a minor subject (finance or engineering). Our other combined courses offer a roughly equal split with the second subject.

Three or four years?

When a subject combination is offered both as a three-year BSc and as a four-year MMath/MSci, we are happy for you to transfer between them, as it is straightforward in the first two years. We treat applicants to both versions in the same way during the admissions process if you are unsure at this stage which option is best for you.

BSc courses provide you with a broad background in your chosen subjects, with the opportunity to specialise. The MMath/MSci courses allow you to study particular areas to a deeper level, enabling you to complete a substantial dissertation in the final year on a subject close to the frontiers of research.

A level preparation

Our courses are designed so that they can be taken by a good student with a minimum of grade A in A level mathematics (or equivalent). We will not assume that you have taken further mathematics or indeed any mathematics modules that are optional at A level.

If you have not taken further mathematics at A level you may find that you have to work harder in the first year than some of your fellow students, as more of the topics you encounter may be new to you. You can be assured, however, that you will not be disadvantaged in the long term. Students entering without further mathematics are on an equal footing by the end of the first year and do just as well in subsequent years.

If you have taken further mathematics at A level then you will still find plenty to challenge you. The first-year syllabus contains material that is new to all students and even topics that you have already encountered will be given a new slant.

Getting the foundations right

A key element in all our courses is the year-one mathematics core. This is an integrated set of modules designed to provide you with a solid foundation for study in later years, and to help you with the transition to university-style learning. You will find that the core allows you to consolidate and extend your knowledge of A level mathematics. It will also introduce you to new topics that will be important later on in your studies with us.

On most courses, besides the mathematics core you will take some additional mathematics modules in year one, in at least one subject area from pure mathematics, applied mathematics and probability and statistics. You need not have studied optional modules in any of these three subject areas at A level in order to take corresponding year-one modules.

What's in the maths core teaching syllabus?

The core contains some material that will be familiar from school and some that will be new. Of course, familiar topics may be given a new slant here at the University.

The core includes such topics as:

- foundations (eg language of mathematics, analysis, computer algebra)
- calculus (eg differentiation and integration, differential equations)
- linear mathematics (eg vectors, matrices, systems of linear equations, complex numbers)

Single honours

Mathematics

Course description

Mathematics degrees at Nottingham encompass an enormous variety of topics, ranging from the abstract ideas of algebra and number theory to financial applications of statistics and the mathematical modelling of biological phenomena. While no student is expected to study all the topics available, the wide variety of modules on offer means that you will find plenty to keep you interested, whether your particular preferences lie in probability and statistics or in pure or applied mathematics.

Furthermore, a mathematics degree is highly valued by employers and leads to a wide variety of stimulating and financially rewarding careers, so you can look forward to a bright future while studying something that you enjoy.

We offer three courses in which mathematics is taken as a single subject: a three-year BSc offering a broad education in mathematics with the ability to specialise; a four-year MMath including a substantial dissertation and more advanced study in a specialisation of your choice; and a four-year BSc which adds a year of study abroad to the standard BSc.

In the first year of these courses, you will study core material common to all our degrees and also take foundation modules in the specialisations of probability and statistics and of pure and applied mathematics. In the second year, you will be able to begin specialising in one or more of these areas and in subsequent years you will choose from a wide range of options across mathematics.

Key features of the courses include:

- flexibility in choice of modules across a wide range of topics
- the possibility to opt for a named degree such as Mathematics with Statistics (which is accredited by the Royal Statistical Society), obtained by applying for either the G100 or G103 course and then choosing specified modules during your degree

International study

The programme for the four-year BSc with an international study year (G104) is the same as for the three-year BSc (G100) but includes an additional year of study at an overseas university between the second and final years. Students on other mathematics courses may apply to spend a semester abroad.

Placement on the year abroad, which must be passed but does not contribute directly to degree classification, may be competitive and dependent upon having a sufficiently strong academic record in years one and two. Students on G104 BSc Mathematics (International Study) who are not accepted for overseas study will be offered a transfer onto the three-year BSc, subject to normal progression rules.

BSc/MMath Mathematics (G100/G103) (with International Study – G104)			
Year one	Year two	Year three (year four for G104)	Year four (MMath only)
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Other modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Foundation modules in pure mathematics, applied mathematics and probability and statistics 	<p>Optional modules (100-120 credits mathematics; 0-20 credits other) include:</p> <ul style="list-style-type: none"> ▪ Algebra and Number Theory ▪ Complex Functions ▪ Introduction to Mathematical Physics ▪ Mathematical Analysis ▪ Modelling with Differential Equations ▪ Statistical Models and Methods ▪ Professional Skills for Mathematicians 	<p>Optional modules (100-120 credits mathematics; 0-20 credits other) include:</p> <ul style="list-style-type: none"> ▪ Advanced Quantum Theory ▪ Game Theory ▪ Mathematical Finance ▪ Mathematical Medicine and Biology ▪ Medical Statistics ▪ Number Fields and Galois Theory ▪ Topics in Scientific Computation 	<p>Core module (40 credits):</p> <ul style="list-style-type: none"> ▪ Dissertation project <p>Optional modules (60-80 credits mathematics; 0-20 credits other) include:</p> <ul style="list-style-type: none"> ▪ Algebraic Geometry ▪ Biomedical Statistics ▪ Complex Analysis ▪ Non linear waves ▪ Time Series Forecasting ▪ Theoretical Neuroscience ▪ Quantum Information Science

Preparing for a lecture in the
Mathematical Sciences Building.



Single honours with a minor subject

Financial Mathematics

Course description

The financial world is heavily reliant on mathematics and on the skills of analytical reasoning and problem solving that a mathematical education offers. This course is designed to enable you to develop a thorough grounding in mathematics, with emphasis on aspects that are of particular relevance to finance, while at the same time enabling you to study a broad range of topics within finance itself.

Key features of the course include:

- having around 70% of the modules dedicated to mathematics, with the remaining 30% being spread across a range of financial and economics topics taught by the Business School
- having a mathematics side of the course that is oriented towards financial mathematics as well as probability and statistics – modules can also be taken in other areas of mathematics
- no requirement to have previously studied finance or related subjects
- being designed to provide you with specific knowledge but also mathematical techniques and skills suitable for entry to a wide range of careers in the financial world and elsewhere
- students on this course can apply to spend a semester studying abroad

BSc Financial Mathematics (G120)

Year one	Year two	Year three
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Probability and statistics modules (20 credits):</p> <ul style="list-style-type: none"> ▪ Probability ▪ Statistics <p>Finance modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Business Finance ▪ Financial Accounting ▪ Management Accounting and Decisions ▪ Microeconomics for Business 	<p>Mathematics modules (90 credits):</p> <ul style="list-style-type: none"> ▪ Introduction to Numerical Methods ▪ Differential Equations and Fourier Analysis ▪ Mathematical Analysis ▪ Probability Models and Methods ▪ Professional Skills for Mathematicians ▪ Statistical Models and Methods <p>Finance modules (30 credits):</p> <ul style="list-style-type: none"> ▪ Computational Finance ▪ Financial Management ▪ Financial Reporting 	<p>Mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Mathematical Finance ▪ Optimisation ▪ Vocational Financial Mathematics <p>Optional mathematics modules (20-40 credits) include:</p> <ul style="list-style-type: none"> ▪ Coding and Cryptography ▪ Game Theory ▪ Statistical Inference ▪ Time Series Analysis <p>Optional finance modules (20-40 credits) include:</p> <ul style="list-style-type: none"> ▪ Corporate Finance ▪ Financial Analysis ▪ Financial Economics ▪ Financial Markets ▪ Stochastic Models

Mathematics with Engineering

Course description

Mathematics plays a crucial role in modern commerce and industry. This course will develop the key mathematical tools used in such fields while at the same time providing you with a broad base of knowledge in potential areas of application in engineering and industry.

The course combines subjects from a range of engineering disciplines with an education in mathematics to honours degree level, where an emphasis is placed on using mathematics in practical situations. The first two years combine a study of core foundational modules in mathematics with options that include technical and management-related modules in engineering.

In subsequent years, modules are chosen from a wide variety of topics in mathematics and engineering according to your particular interests.

Key features of the courses include:

- a mixture of skills and experience attractive to employers leading to excellent career prospects
- the opportunity to study a variety of engineering subjects and mathematics that can be applied to problems of practical significance
- opportunities to undertake project work, applying mathematics to physical and engineering problems, and to research topics in applied mathematics
- students on this course can apply to spend a semester studying abroad

BSc Mathematics with Engineering (G1HD)

Year one	Year two	Year three
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Mathematics modules (20 credits):</p> <ul style="list-style-type: none"> ▪ Applied Mathematics <p>Engineering modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Introduction to Communications Engineering ▪ Ergonomics in Design ▪ Thermodynamics and Fluid Mechanics 	<p>Mathematics modules (90 credits):</p> <ul style="list-style-type: none"> ▪ Complex Functions ▪ Differential Equations and Fourier Analysis ▪ Introduction to Numerical Analysis ▪ Modelling with Differential Equations ▪ Probability ▪ Statistics ▪ Vector Calculus <p>Optional engineering modules (30 credits) include:</p> <ul style="list-style-type: none"> ▪ Automated Manufacture ▪ Construction Issues ▪ Signal Processing and Control Engineering ▪ Sustainable Transport Planning ▪ Thermodynamics and Fluid Dynamics 2 ▪ Transport Infrastructure 	<p>Mathematics modules (80 credits):</p> <ul style="list-style-type: none"> ▪ Differential Equations ▪ Fluid Dynamics ▪ Topics in Scientific Computation ▪ Vocational Mathematics <p>Optional mathematics modules (up to 20 credits) include:</p> <ul style="list-style-type: none"> ▪ Probability Models and Methods ▪ Mathematics for Engineering Management <p>Optional engineering modules (20-40 credits) include:</p> <ul style="list-style-type: none"> ▪ Advanced Dynamics of Machines ▪ Control and Instrumentation ▪ Control Systems Design ▪ Digital Communications ▪ Structural Vibration 2 ▪ Sustainable Construction ▪ Water in the Environment

Joint honours

Mathematical Physics

Course description

Mathematics is the language of physics and the two subjects have been closely linked for many centuries. Newton, for example, invented calculus in order to give his theories of motion and gravity predictive power.

Key features of the courses include:

- a thorough background in the mathematical techniques and core concepts of modern physics
- a combination of suitable elements from the single honours programmes in physics and mathematics together with modules developed with mathematical physicists in mind

- BSc year three – a range of options, core modules and a compulsory project
- MSci year three – fewer options than on BSc but additional core components, including a communication skills module that is essential preparation for year four
- MSci year four – formal lectures partially replaced by student-centred learning activities including seminars, projects and dissertations, to develop your broader skills such as researching advanced scientific topics and communicating them effectively, while further developing your knowledge of theoretical physics and mathematics
- a theoretical physics or mathematics project and a range of more traditional modules
- optional modules listed on the right can be replaced by alternative options subject to approval from the course director

BSc/MSci Mathematical Physics (F326/F325)			
Year one	Year two	Year three	Year four (MSci only)
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Physics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ From Newton to Einstein ▪ Quantitative Physics ▪ Computing for Physical Sciences 	<p>Mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Complex Functions ▪ Differential Equations and Fourier Analysis ▪ Mathematical Analysis ▪ Vector Calculus ▪ Introduction to Mathematical Physics <p>Physics modules (40 credits)</p> <ul style="list-style-type: none"> ▪ Optics and Electromagnetism ▪ Thermal and Statistical Physics <p>Optional modules (20 credits) include:</p> <ul style="list-style-type: none"> ▪ Force and Function at the Nanoscale ▪ Structure of Galaxies ▪ Structure of Stars ▪ Symmetry and Action Principles in Physics 	<p>BSc modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Atoms, Photons and Fundamental Particles ▪ Introduction to Solid State Physics ▪ Project in mathematics or physics <p>BSc optional modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Coding and Cryptography ▪ Game Theory ▪ From Accelerators to Imaging ▪ Soft Condensed Matter <p>MSci modules (100 credits):</p> <ul style="list-style-type: none"> ▪ Advanced Quantum Theory ▪ Atoms, Photons and Elementary Particles ▪ Introduction to Solid State Physics ▪ Physics project ▪ Relativity <p>MSci optional modules (20 credits) include:</p> <ul style="list-style-type: none"> ▪ Atmospheric Physics ▪ Introduction to Cosmology ▪ Extreme Astrophysics ▪ Nonlinear Dynamics and Chaos 	<p>Mathematical physics module (30 credits):</p> <ul style="list-style-type: none"> ▪ Mathematical physics project <p>Optional mathematics modules (40-60 credits) include:</p> <ul style="list-style-type: none"> ▪ Black Holes ▪ Differential Geometry ▪ Introduction to Quantum Information Science ▪ Quantum Field Theory <p>Optional physics modules (30-50 credits) include:</p> <ul style="list-style-type: none"> ▪ Advanced Gravity ▪ Magnetic Resonance Techniques ▪ Nonlinear Dynamics and Chaos ▪ Theoretical Elementary Particle Physics ▪ Quantum Coherent Phenomena

Mathematics and Economics

Course description

The Mathematics and Economics course provides a broad education in mathematics, and substantial degree-level studies in economics. The course combines the flexible skills of mathematics, such as problem solving and numeracy, with valuable subject knowledge in economics. This combination is attractive to employers and the course leads to excellent career prospects.

In the first year, you will take the core mathematics modules common to all of our courses along with foundation modules in probability and statistics; the economics side includes macroeconomics and microeconomics.

In subsequent years, you will choose modules in a roughly equal split between the two subjects. Options include topics such as mathematical analysis, game theory, international trade and econometrics.

Key features of the course include:

- being aimed at mathematically minded students seeking to enter the business or financial sector
- no requirement to have previously studied economics
- a wide range of options in mathematics and economics
- students on this course can apply to spend a semester studying abroad

BSc Mathematics and Economics (GL11)		
Year one	Year two	Year three
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Probability and statistics modules (20 credits):</p> <ul style="list-style-type: none"> ▪ Probability ▪ Statistics <p>Economics modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Introduction to Microeconomics ▪ Introduction to Macroeconomics 	<p>Optional mathematics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Introduction to Numerical Methods ▪ Probability Models and Methods ▪ Statistical Models and Methods <p>Optional economics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Econometrics I and II ▪ Introduction to Political Economy ▪ Microeconomic Theory ▪ Monetary Economics ▪ Public Sector Economics 	<p>Optional mathematics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Coding and Cryptography ▪ Game Theory ▪ Mathematical Finance ▪ Statistical Inference ▪ Stochastic Models ▪ Topics in Statistics <p>Optional economics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Advanced Financial Economics ▪ Advanced International Trade Theory ▪ Advanced Public Economics ▪ Health Economics ▪ Numerical Methods in Economics

Mathematics and Management Studies

Course description

The ability to reason quantitatively and logically is at the heart of many management decisions. This course is designed to equip you with the skills needed to succeed in a wide range of business and management careers. You will receive a broad education in mathematics, which will be integrated with the study of the theory and practice of business management and entrepreneurship.

In the first year, you will take the core mathematics modules along with modules in probability and statistics; management topics include entrepreneurship and business.

In subsequent years, you will choose modules in a roughly equal split between the two subjects.

Key features of the course include:

- being suited to careers in management consultancy, accountancy or as a city analyst
- the opportunity to study a wide range of topics in mathematics and management
- no requirement to have previously studied management or business studies
- students on this course can apply to spend a semester studying abroad

BSc Mathematics and Management Studies (GN12)		
Year one	Year two	Year three
<p>Core mathematics modules (60 credits):</p> <ul style="list-style-type: none"> ▪ Analytical and Computational Foundations ▪ Calculus ▪ Linear Mathematics <p>Probability and statistics modules (20 credits):</p> <ul style="list-style-type: none"> ▪ Probability ▪ Statistics <p>Management modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Business Economics A ▪ Business Economics B ▪ Entrepreneurship and Business ▪ People and Organisations 	<p>Optional mathematics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Introduction to Numerical Methods ▪ Probability Models and Methods ▪ Statistical Models and Methods <p>Management modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Contemporary Economic Policy ▪ Designing and Managing Organisations ▪ Economics of Business Decisions ▪ Organising and Managing in Practice <p>Optional management modules (20 credits) include:</p> <ul style="list-style-type: none"> ▪ Corporate Entrepreneurship ▪ Economics of Innovation ▪ Introduction to Finance ▪ Marketing Strategy 	<p>Optional mathematics modules (60 credits) include:</p> <ul style="list-style-type: none"> ▪ Coding and Cryptography ▪ Game Theory ▪ Mathematical Finance ▪ Statistical Inference ▪ Stochastic Models ▪ Topics in Statistics <p>Management modules (40 credits):</p> <ul style="list-style-type: none"> ▪ Human Resource Management ▪ Strategic Management <p>Optional management modules (20 credits) include:</p> <ul style="list-style-type: none"> ▪ Business Ethics ▪ Corporate Finance ▪ Economics of Regulation ▪ Introducing Entrepreneurship ▪ Logistics and Supply Chain Management ▪ Risk Management Processes ▪ Science, Technology and Business

How will I study?

Teaching and learning

You will learn through a wide variety of activities, including formal lectures, but also small-group tutorials, problem classes and, increasingly important at university, self-directed study.

Some optional modules may not involve lectures at all and might instead be centred, for example, on working in groups or individually on projects, supported by regular meetings with a member of staff, or even on time spent teaching mathematics under supervision in a local school.

Lecture-based modules

These modules will form the backbone of your studies in the first year, when you will be taking six modules at any given time. Each module will typically involve two hours of formal lectures per week with another hour devoted to supporting activities such as tutorials, problems classes or computer labs, adding to about 18 hours of timetabled activity per week. In later years, you may take fewer, larger modules and you will also have the opportunity to take modules based on activities such as project work.

Some of our lectures are recorded and the resulting audio-visual materials placed on iTunesU, YouTube and The University of Nottingham U-Now facility, allowing you to go back and revisit topics in your own time. See www.nottingham.ac.uk/podcasts and unow.nottingham.ac.uk

Self-directed study

Throughout your degree, self-directed study will play a central role in your learning. Timetabled activities, such as lectures, are very important and will introduce you to the key new ideas, but in order to fully understand any mathematical topic, it is important that you spend time thinking about the underlying ideas and trying problems for yourself.

Sometimes it will be most appropriate to do this individually, but it can also be very helpful to work with groups of friends. The recently-built Mathematical Sciences Building is ideal for this purpose, offering a number of breakout rooms and common areas in which students can meet and discuss their work.

Pastoral support

The culture of studying you encounter at university, with its greater emphasis on autonomy, and taking advantage of the maturity of its students, is a much more effective (and enjoyable!) way of learning in the long term. It can seem daunting, however, having to adjust to this new freedom from the more structured environment of school. For that reason, we have a number of measures in place to help our students make the transition successfully.

Personal tutor

Throughout your degree you will have a tutor on hand to offer support on matters such as module choice and career direction. Your tutor will meet you in small groups of four to six students in the first year to work through the material covered in core modules and will generally be available to help you with any questions you have about your modules or other issues.

Teaching officer

The school also employs a Teaching Officer who has experience of teaching mathematics at school and university and is therefore ideally qualified to help students adapt to the style and content of university mathematics. The Teaching Officer runs drop-in sessions where students can get additional help for their first-year modules if they think they need it and can, for example, help you catch up if illness or other problems have prevented you from attending lectures.

Library and computing services

At Nottingham, you will benefit from access to an extensive collection of printed and online library resources.

In addition, you will have both on- and off-campus access to a very wide range of databases, e-journals and ebooks, relevant both to your subject and any modules in other subjects.

Key Information Sets

Key Information Sets (KIS) are comparable sets of information about full or part time undergraduate courses and are designed to meet the information needs of prospective students. All KIS data is published on the Unistats website: www.unistats.co.uk

For Nottingham's KIS data, please see individual course entries at: www.nottingham.ac.uk/ugstudy



The Mathematical Sciences Building has spaces that are perfect for quiet study.

How will I be assessed?

All undergraduate degree programmes in the University are modular, which means you undertake modules of study with assessment at the end of each semester.

Assessment methods

Lecture-based modules will typically be assessed primarily by an exam at the end of the semester in which they finish. The final mark for these modules may also have a smaller component arising from interim tests or coursework. Some of our optional modules are continuously assessed, typically those based on project work, learning professional skills or gaining teaching experience.

Modules and credits

Modules are self-contained units of study which may run either for a semester or a year. The majority of modules are worth 10 or 20 credits each and you will study modules totalling 120 credits in each year. This system gives you some flexibility in the way you construct your course.

Some modules are compulsory; others are optional. Some modules are prerequisites for others. Your personal tutor will be available throughout your time at Nottingham to advise and guide you through the academic pathways available.

The teaching year

The year is divided into two semesters. The first semester lasts for 14 weeks, with 12 weeks for teaching and revision and two weeks for assessment. The second semester follows the same pattern, but there is an additional fortnight at the end to complete the assessment process and to enable returning students to discuss their results with tutors and begin to plan the next session's work.

Although the teaching year is divided into two semesters for organisational purposes, this is fitted into the traditional pattern of three terms: one before Christmas; one between Christmas and Easter; and one after Easter.

Your final degree classification

The emphasis in the first year is on helping you to adjust to university study and on giving you a strong mathematical grounding for the more specialised material you will encounter later in your degree.

The marks you get in first year do not count towards your final degree classification: you simply need to do well enough to demonstrate that you are sufficiently prepared for further study.

On most BSc courses your second year counts half as much as the third year (so the marks are used in the ratio 1:2). The exception to this is the four-year BSc Mathematics (International Study), in which the third year, spent abroad, must be passed but does not count towards your final degree. For this degree, the second and fourth years are weighted in the ratio 1:2.

For students on MMath or MSci courses, marks gained in the second, third and fourth years are used in the ratio 1:2:2.



There are plenty of places for group study in the Hallward Library.

Career and employment prospects

The University of Nottingham is the second most targeted university by Britain's leading graduate employers.*

Our Careers and Employability Service can help you find employment, through invitations to recruitment sessions by employers, individual careers advice and a vacancy information service.

In addition, the school has a specialised careers programme to help you develop your CV and start early planning for your future career.

Mathematics is a wide-ranging and versatile subject and the list of careers open to you as a mathematics graduate is extensive. Some graduates make specific use of mathematics while others use the more general skills they have gained, such as analysis and problem solving, high-level numeracy and a capacity to learn independently.

Working in the foyer of the Mathematical Sciences Building.

Graduate career destinations

Our graduates are in high demand from prospective employers and have been well received into a broad range of careers in commerce, industry, the professions and government.

The University of Nottingham is one of a small number of leading universities whose graduates are targeted for recruitment by various top companies. Of our graduates entering the employment market directly after graduation, typical recent destinations are:

- financial services (eg accountancy, actuarial work, banking)
- IT (eg programming, systems analysis, software engineering)
- industrial (eg management, research and development, retail)
- government (eg civil service, taxation)

Average starting salary

The average starting salary for 2010/11 full-time graduates of the School of Mathematical Sciences was £21,757.**

Recent graduates

Recent graduates include James Shuttleworth – Executive Officer, HM Revenue and Customs; Helena Nicol – Senior Associate, Deloitte; Robert Kropholler – PhD, University of Oxford.

Postgraduate research

You might decide to continue your studies at higher-degree level, either here at Nottingham or elsewhere. In previous years, our students have achieved higher degrees in subjects such as mathematics, computing, education and engineering. Each year some of our best students choose to stay at Nottingham and join our lively group of postgraduate research students in the School of Mathematical Sciences.

Our seven research groups – Algebra and Analysis; Industrial and Applied Mathematics; Mathematical Medicine and Biology; Mathematical Physics; Number Theory; Scientific Computation; and Analysis, Statistics and Probability – each offer a large number of diverse and interesting research projects. Please see our website for further details:

www.nottingham.ac.uk/mathematics

Careers and Employability Service

Our Careers and Employability Service, which is based on University Park Campus, offers an extensive range of careers-oriented services, including CV-writing sessions, interview advice, presentations by major employers and general career advice.

As a University of Nottingham graduate, you will receive lifelong support from the service. This means that you can ask a careers adviser to look over your job application by email or Skype, or in person, and you can also access a database of graduate vacancies. For more information see www.nottingham.ac.uk/careers

The Nottingham Advantage Award

The University's Advantage Award is a programme of activities developed to recognise and reward extracurricular responsibilities. It allows you to gain recognition for participating in a wide range of activities accredited by the University and shows employers that you have gained valuable skills. For further information, please visit www.nottingham.ac.uk/advantageaward

* The Graduate Market in 2013 – High Fliers Research.
** Average starting salary from known destinations of first-degree leavers who studied full-time, 2010/11.

“I enjoy the variety of subjects taught on this course. It takes maths to a completely new level and it is interesting to learn the applicability of maths in everyday life. I spend most of my time in the maths building as the facilities there are excellent.”

Priya Lanka / MMath Mathematics

Find out more about Priya's experience at
www.nottingham.ac.uk/mathematics/profiles



Scan the code to see more student profiles on your smartphone.

Priya is preparing for a meeting with her personal tutor in the Mathematical Sciences Building.

Your student experience – everything you need to know



Catching up outside the Trent Building on University Park Campus.

You've read everything there is to know about the degree programme you are interested in, now it is time to explore life outside of the lecture theatre. Read on to discover why being a student at The University of Nottingham is a truly exciting experience.

There really is something for everyone to get involved in, and you may be surprised at the sheer volume of activities and opportunities on offer; all designed to make your time at university as memorable as possible. University is not all work, work, work; there is much more to it than that!

Your University of Nottingham – at home and around the world

We are proud of our stunning campuses and are continually investing in our grounds, buildings and facilities to ensure that you have only the best surroundings in which to live and study. Our main UK campuses have all gained external recognition, in the form of numerous awards over the years, and it's not hard to see why.

A free bus ride can transport you from the striking architecture and innovative technology of Jubilee Campus, to rolling parkland and period buildings at University Park, through to the rural and beautiful setting of Sutton Bonington. Combine this with features including sports centres, cafes, art galleries, shops, woodland, contemporary gardens and extensive wildlife, and you have an outstanding environment that inspires and excites students and visitors alike.

With campuses in China and Malaysia, as well as links with more than 320 partner institutions in over 40 countries, studying at The University of Nottingham will also give your degree a truly global perspective and the chance to explore the world around you. Find out more:
www.nottingham.ac.uk/about/campuses

Your opportunity to study abroad

Students on our courses can apply to spend time in the third or fourth year studying abroad, either in another European country or further afield with one of our partners in the Universitas 21 group. We currently have links with universities in Australia, Canada, France, Germany, Singapore, Spain and the USA.

If you are interested, it is something you will be able to consider, with guidance from our Director of International Affairs, in the second year of your course. However, if you are particularly keen on overseas study you might find you want to consider the BSc Mathematics (International Study), which allows you to spend the entire third year abroad.

If you do decide to apply to study abroad, the University's International Office will offer support from the application stage right through to your return to the UK, with advice on everything from immigration regulations to possible sources of financial support. Find out more:
www.nottingham.ac.uk/studyabroad

Your support network

At all times throughout your University journey there are numerous people on hand to support you, including tutors and dedicated staff who will be able to advise you on various aspects of life as a student.

In addition, our Student Services Centres, found on all three UK campuses, provide a range of support, information and specialist services to enhance your student experience, and form part of a comprehensive network of services at the University, designed to support you through your studies:

Academic Support provide a personal and practical approach to academic study – the service also provides specialist academic support for students with dyslexia, dyspraxia and other specific learning difficulties; Disability Support co-ordinates support and access arrangements for disabled students and those with long term medical conditions; Financial Support provide information on the sources of finance available from government agencies and the University itself, and advice about financial matters.

Student Services also advise on a number of other issues, ranging from childcare, counselling and health, to international student support, chaplaincy and faith support, as well as advice on paying your fees, for tuition or accommodation. Whatever you may need support with, they will be able to help or point you in the right direction of someone who can. Find out more:

www.nottingham.ac.uk/student-services

Your new home from home

The University of Nottingham offers a guarantee of University accommodation for one year to all new full-time undergraduate students, subject to the following conditions: that you make Nottingham your firm choice, return your accommodation application by the set deadline*, accept your offer of accommodation by the deadline given, and have an unconditional status no later than August 2014.

If you are an international student, this guarantee applies for the duration of your course. Rooms are available as single or shared, en suite or shared bathroom, all the way through to studio flats, and vary from self-catered, partially catered (five evening meals per week) to fully catered (19 meals per week). We have halls of residence on campus (ideal for rolling out of bed and into lectures) and off-campus if you'd prefer. Prices reflect the room and facilities chosen, and range from £3,701 per year for hall accommodation, to £7,258 for studio flats. For more information, including a breakdown of the pricing, see www.nottingham.ac.uk/accommodation

* For details of the deadline, please check www.nottingham.ac.uk/accommodation

Getting involved in your Students' Union

As soon as you start at The University of Nottingham, you are automatically a member of the Students' Union, considered one of the best in the country. There are literally hundreds of activities that you could be a part of, providing you with the perfect opportunity to take up a new hobby or pursue existing interests. Choose from over 200 student-run societies, covering all interests and abilities, more than 70 sports clubs, as well as local and national volunteering projects, to which you can commit as much or as little time as you wish.

The Students' Union is also home to a number of highly professional student-run media groups, which enable you to gain practical work experience both behind the scenes or centre stage as a presenter, actor or journalist.

The Nottingham New Theatre, Impact Magazine, Nottingham University Television Station (NUTS) and University Radio Nottingham (URN) have all been recognised as the best in their field, winning a clutch of awards for outstanding achievements. You could get involved with the Best Broadcaster, the Guardian Student Publication of the Year, the Best Student Station in the country or the winner of seven awards at the National Student Drama Festival.

However you decide to become involved, you can be sure that you will make new friends and learn new skills, as well as have a lot of fun! Find out more: www.su.nottingham.ac.uk

Exploring your new city

A swift 10-minute bus ride from University Park campus, Nottingham city centre has plenty to offer, whatever you like to get up to in your spare time. For music lovers, you can take your pick from the world-famous Rock City, Capital FM Arena or one of the smaller gig venues for a more intimate musical experience. Nottingham is also rich in performance venues, with comedy clubs and theatres catering for lovers of drama, musicals, ballet, and panto. We are very proud of our sporting heritage, and with Nottingham Forest and Notts County grounds, along with Trent Bridge and the National Ice Centre all on your doorstep, you might just become a sports fan as well.

History and culture can be found in all corners of the city, with Nottingham Castle, the Galleries of Justice Museum, Nottingham Contemporary – one of the largest contemporary art spaces in the UK, art house cinemas and three of the world's oldest pubs all providing points of interest. If you enjoy shopping, Nottingham is perfect for you; independent boutiques and vintage shops in the bohemian area of Hockley mix with high street names in our large shopping centres to make Nottingham a veritable shopping haven.

Find out more: www.nottingham.ac.uk/nottinghamlife

Download our city guide: www.nottingham.ac.uk/ugstudy/downloads

Access our GlobalNotts app: www.globalnotts.co.uk

Nottingham city centre is always buzzing with people and interesting sights.



Applying for a place

We are looking for students who have the ability and motivation to benefit from our courses, and who will make a valued contribution to the school and the University. Candidates for full-time admission are considered on the basis of their Universities and Colleges Admissions Service (UCAS) form. For more information on how to make your application stand out, have a look at our online prospectus:

www.nottingham.ac.uk/ugstudy/applying

Application process

All applications for an undergraduate place to study at The University of Nottingham (including applications by overseas students) must be made through UCAS. Applications should be made online at www.ucas.com. Candidates will be notified of decisions through UCAS using the Students' Portal.

Entry numbers

For information on how many students the school plans to admit on each course, please see the table on page 5.

Your personal statement

This is the section of your UCAS form that tells us most about you, and you should make the best use of it. Be as specific and detailed as you can – we would like to see that you are a student who can work hard, be self-motivating and make the best possible use of the opportunities this course might have to offer you.

Required subjects

Most applicants will have studied three or more A levels and will be expected to achieve a minimum of grade A in A level mathematics. Our offers are generally based on grades achieved in three A levels, and all subjects are accepted with a small number of exceptions which currently include general studies, critical thinking and citizenship studies.

We normally also ask for evidence of additional achievement in mathematics, such as grade A* in mathematics, grade A in AS or A level further mathematics or grade 2/merit in STEP/AEA.

For our joint honours courses, it is not always necessary to have studied the non-mathematics component at A level. Other qualifications (International Baccalaureate, BTEC and others) are considered on an individual basis, with offers equivalent in standard to the A level package.

We do not require you to have studied further mathematics and we recognise that some schools and colleges offer limited support for this subject. While the extra mathematical experience gained by taking further mathematics at A level or AS level may be helpful to you in your first year, you should not be disadvantaged in subsequent years of study if you have not taken these.

Advanced Extension Award

We recognise that many schools cannot provide the support required for students to take the Advanced Extension Award (or STEP) in mathematics. Therefore we do not require this qualification, although when offered we may accept it as evidence of further achievement in mathematics.

Alternative qualifications

In this brochure you will find our A level entry requirements but we accept a much broader range of qualifications. These include:

- Access to HE Diploma
- Advanced Diploma
- BTEC HND/HNC
- BTEC Extended Diploma
- Cambridge Pre-U
- International Baccalaureate
- Irish Leaving Certificate
- Scottish Advanced Highers
- Welsh Baccalaureate Advanced Diploma

The list is not exhaustive; we will consider applicants with other qualifications on an individual basis. The entry requirements for alternative qualifications can be quite specific; for example you may need to take certain modules and achieve a specified grade in those modules. Please contact us to discuss the transferability of your qualification.

Flexible admissions policy

We recognise that some educational and personal circumstances affect achievement. If we judge that you have exceptional circumstances that have adversely affected your achievement, we will consider them when assessing your academic potential. Some courses may vary the offer as a result. For the most up-to-date information about our offers, please see the course fact files in our online prospectus and for more information about this policy, please see

www.nottingham.ac.uk/ugstudy/applying

Mature applicants

We encourage applications from mature students (which means all those aged 21 or over when the course begins) and you should apply in the normal way through UCAS. While we accept a range of qualifications, you should check our specific requirements on UCAS course entry profiles. If in doubt, please contact the admissions tutor, who will be happy to answer any specific queries you have about applying as a mature student. Please email your questions to the Director of Undergraduate Admissions:
e: maths-ug-admissions@nottingham.ac.uk
t: +44 (0)115 951 3853

For more information about being a mature student, please see

www.nottingham.ac.uk/mature

Part-time study

The school does not currently offer any part-time degree courses.

International applicants

We welcome applications from international students and have students from many parts of the world studying with us at undergraduate and postgraduate level. All international candidates for undergraduate courses should apply through UCAS. The University's International Office offers guidance and advice on matters such as visa and immigration regulations, working and living in the UK, entry requirements and preparing for coming to Nottingham – and arranges a Welcome Programme and coach pick-up service for new international students each September. If you would like to visit the University and are unable to attend an open day, the International Office will be happy to arrange a tailor-made visit for you. For further information please visit

www.nottingham.ac.uk/international

English language requirements

IELTS 6.5 (no less than 6.0 in any element)
TOEFL iBT 87 (minimum 20 in speaking and 19 in all other elements)

Deferred entry

Applicants who wish to defer their entry by a year will not be at a disadvantage. Please tell us something about your plans for your gap year in your UCAS personal statement.

Equal opportunities policy

The University aims to create the conditions whereby students and staff are treated solely on the basis of their merits, abilities and potential, regardless of gender, race, colour, nationality, ethnic or national origin, age, socio-economic background, disability, religious or political beliefs, trade union membership, family circumstances, sexual orientation or other irrelevant distinction.

There are plenty of study spaces
across campus with computer access.



Frequently asked questions

How much are the fees?

Like many universities in England, Nottingham charges full-time UK and EU students an annual tuition fee of £9,000. However, you will not have to pay your fees while studying – the government will lend eligible students the money, which you will start to pay back once you have left university and are earning at least £21,000. For more information, please see

www.nottingham.ac.uk/fees

Fees for students from outside the EU vary from subject to subject. For more information, please see the 'New international students' section on www.nottingham.ac.uk/fees

What bursaries and scholarships are available?

Around a third of students at Nottingham are likely to be eligible for a non-repayable University of Nottingham Core Bursary. Some students will also be eligible for support through Nottingham Potential Bursaries and the National Scholarship Programme. These are in addition to any support you may receive from the government. For more information please see

www.nottingham.ac.uk/financialsupport

Each year we offer scholarships to a number of our best international applicants. The details vary from year to year, but are typically worth at least £2,000 in each year of study subject to academic performance. To find out more, please contact us or visit the school's website:

www.nottingham.ac.uk/mathematics

What support do you offer for students with disabilities?

The School of Mathematical Sciences, like the University, is committed to promoting access for students who have a disability, dyslexia or a long-term medical condition. Services provided by the University aim to enable students to fulfil the inherent requirements of the course as independently as possible. The University's Disability Statement, which lists services, facilities and opportunities available throughout the University can be viewed at

www.nottingham.ac.uk/disability

What support is available for students with children?

There is a range of services provided to support students with children, including a University day nursery, a playscheme and playcentre day care. There is also a scheme to help students fund childcare. For more information, see

www.nottingham.ac.uk/child-care

