UNIVERSITY OF EXETER

MATHEMATICS

UNDERGRADUATE SUBJECT BROCHURE 2019
CORNWALL AND EXETER CAMPUSES

CONTENTS

My advice for future students would be: don't panic if you don't understand everything straight away, make a note of what you don't understand and come back to it, you will get there eventually. Also, make use of office hours! They are such a useful tool; lecturers are more than happy to help and talking to them often clears up problems very quickly.

Mary, studying MMath Mathematics with Professional Experience

MATHEMATICS

80% of Mathematics students in graduate level employment or further study within six months of graduating[1]

Undertake a professional placement at companies such as Lloyds Banking Group, Coca-Cola, Met Office and Pwc

Study abroad at one of our partner universities in Europe, USA, Canada, Australia and China

Maths with Accounting, Economics, Management or Finance programmes taught in partnership with the University of Exeter Business School

Distinct programmes taught over two campuses with specialist MScis aligned to our research groups

"I know that I can use my degree to make the world a better place; that is what makes me passionate about studying Mathematical Sciences. In the future I aspire to become a researcher and the applied nature of this programme will definitely help me achieve this aspiration."

Sophie, studying
Mathematical Sciences (Penryn Campus)

Mathematics is not only studied because of its applications; it has a fascination and beauty of its own, characterised by precision and logical rigour.

We will provide you with the freedom to choose from a large number of degree pathways which all share common aims – to develop your complex and critical thinking, introduce you to new and progressive ideas, and provide you with the techniques and language to interpret problems, systems and behaviours.

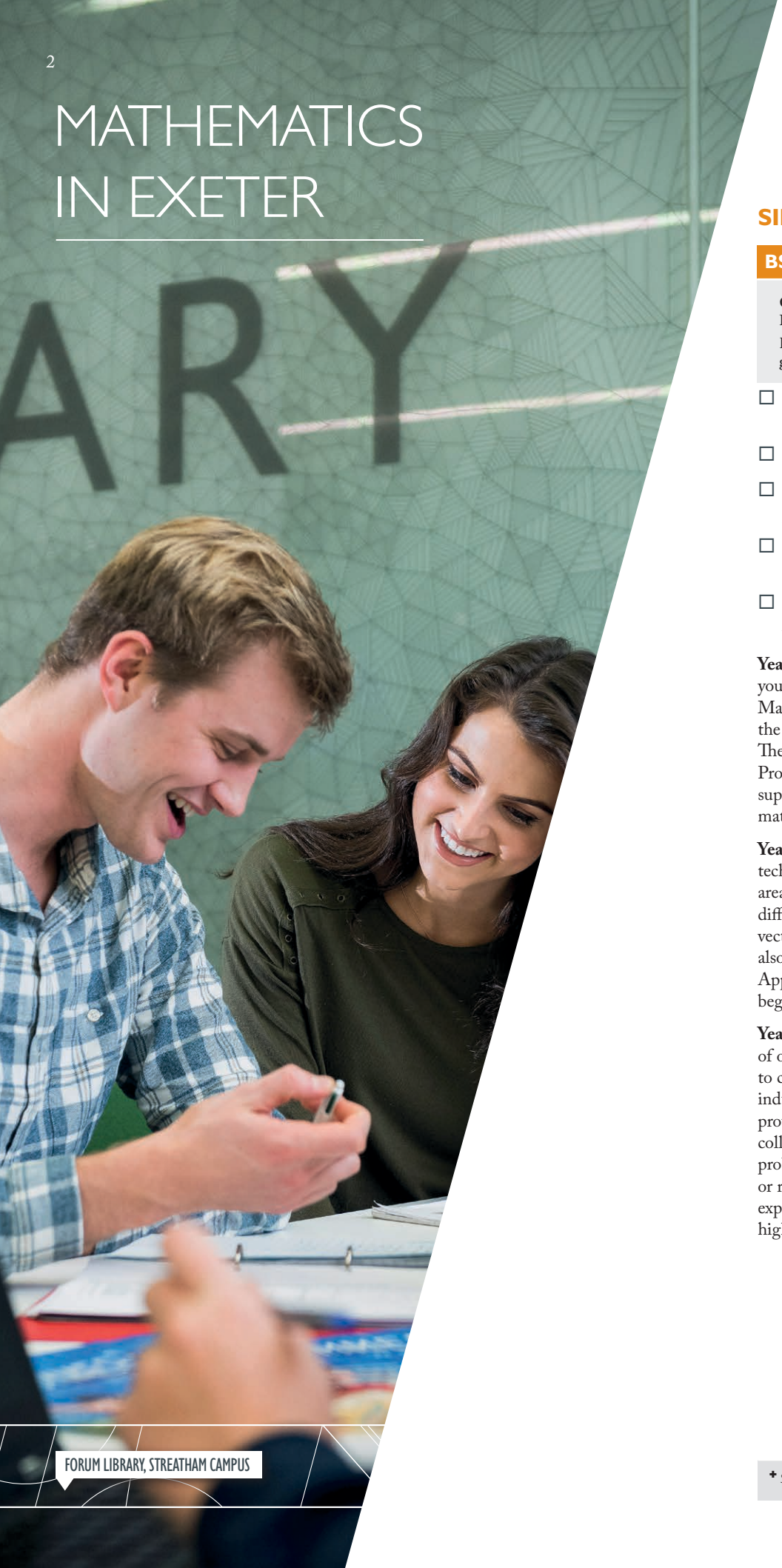
As a member of our department you will be able to take advantage of the University's wider strengths in science and business, following your interests into relevant numerate subjects with a named degree pathway. You will be able to undertake a professional placement or spend a semester studying at a different university abroad as part of your degree. We also offer specialist programmes aligned to our research groups that feature a research project in the final year.

On completing your degree you will possess the investigative, insightful and diagnostic skills required to solve problems, in whatever career you choose.

www.exeter.ac.uk/ug/maths

[1] *Destination of Leavers from Higher Education Survey (DLHE) of 2015/16 undergraduates.*

MATHEMATICS IN EXETER



FORUM LIBRARY, STREATHAM CAMPUS

SINGLE HONOURS

BSc Mathematics (EXETER)

G100 3 yrs | A*AA-AAB | IB: 38-34 | BTEC: D*DD-DDD

Required subjects: GCE AL Mathematics✚ grade A or IB Mathematics HL6.

- ☐ Provides a strong foundation in all the main areas of Mathematics
- ☐ Options to specialise in one or more areas
- ☐ Problem solving and analytical skills, prepare you for a wide range of careers
- ☐ Core first year allows you identify areas of interest that you can follow in later years
- ☐ Switch between this programme and MMath Mathematics, or vice versa

Year 1 The first-year modules introduce you to all the main areas of university-level Mathematics, consolidating and building on the material you will have learned at A level. The modules Mathematical Modelling and Probability, Statistics and Data include supervised group work to tackle open-ended mathematics problems.

Year 2 You will cover concepts and techniques that are widely used in many areas of mathematics, such as analysis, differential equations, linear algebra and vector calculus and applications. You will also be able to select streams in Pure, Applied, Modelling and Statistics as you begin your tailored learning route.

Year 3 Your final year offers a wide range of optional modules, and the opportunity to complete a relevant group project or industrial experience. The group project provides you with experience of working collaboratively on an open mathematical problem that may be applicable to industry or research. The experience of applying your expertise to a professional environment is highly valuable post-graduation.

✚ *See Entry Requirements box on page 5.*

MSci Mathematics (Climate Science) (EXETER)

G103 4 yrs | A*AA-AAB | IB: 38-34 | BTEC: D*DD-DDD

Required subjects: GCE AL Mathematics+ grade A; IB Maths HL6.

- ☐ Mathematics is essential to understanding and predicting the climate system
- ☐ Learn how different areas of Mathematics, such as fluid dynamics, statistics and numerical computing, apply directly to the study of the topic
- ☐ Graduates are well equipped to work in climate modelling, and other related areas

Years 1 and 2 Please see BSc Mathematics.

Year 3 Start translating physical, real-world problems into appropriate mathematical systems using computer-generated models. For example, using differential equations, calculus and the use of small parameters to approximate and simplify climate system problems.

Year 4 The advanced mathematics modules will include topics such as the mathematics of human-induced climate change; the fluid dynamics of atmospheres and oceans; and mathematical modelling of weather and climate.

MSci Mathematics (Mathematical Biology) (EXETER)

- ☐ Advance medical knowledge with sophisticated Mathematical thought and reasoning
- ☐ Directly applicable to the 'bioinformatics revolution'
- ☐ Industry advancement has lead to large volumes of graduate roles in this exciting sector

Years 1 and 2 Please see BSc Mathematics.

Year 3 Start to understand how mathematics directly applies to biosciences. You will learn techniques used to quantify complex data, build and analyse models used to draw conclusions about behaviour and conduct research in a chosen research theme.

Year 4 Mathematics modules cover the mathematical analysis of biological systems and the key mathematical tools for systems biology, including techniques for understanding the stability of networks and systems. You will also have the opportunity to take modules in Natural Sciences and Biosciences.

MSci Mathematics (Geophysical and Astrophysical Fluid Dynamics) (EXETER)

- ☐ Learn how mathematics contributes to our understanding of fluid dynamics
- ☐ Examine fluid flows in atmospheres, oceans, and astrophysical systems
- ☐ Graduates are well-suited to positions in meteorology, atmospheric science, oceanography and other related fields

Years 1 and 2 Please see BSc Mathematics.

Year 3 Study numerous mathematical techniques, essential to both mathematics and physics. You will also be introduced to fluid dynamics, as you explore the applications and branches it offers.

Year 4 Advanced mathematics modules cover various aspects of fluid dynamics and magnetohydrodynamics. You will also complete a substantial piece of research work.

MMath Mathematics (EXETER)

G102 4 yrs

with International Study G106 4 yrs

with Professional Experience G104 4 yrs

A*AA-AAB | IB: 38-34 | BTEC: D*DD-DDD

Required subjects: GCE AL Mathematics+ grade A or IB Mathematics HL6.

- ☐ Four-year degree, in which you will dedicate your studies to Advanced Mathematics
- ☐ Highly self-directed programme, enabling you to tailor your learning to your interests, particularly in Year 4
- ☐ Complete a semester abroad at one of our partner universities
- ☐ Undertake professional work placement that contributes towards your degree
- ☐ Opportunity to study modules outside of Mathematics

Years 1 and 2 Please see BSc Mathematics.

Year 3 (All MMath) Tailor your learning experience to your personal interests. The only core module is a research project in mathematical sciences. Set in at least four distinct research themes, this module introduces you to scientific thinking and abstraction, and develops core research skills; reading, interpreting, writing and presenting for the mathematical sciences.

Year 3 (Professional Experience) You will undertake a professional placement in the summer break between Years 2 and 3 (six to 10 weeks, subject to suitable arrangements). This is followed by an extended individual project during Year 3, specifically designed around your placement. You will be encouraged to stay in touch with your placement host throughout the completion of your academic project and to continue this relationship for your Year 4 project.

Year 3 (Study abroad) Complete a semester at one of our partner universities in the USA, Canada, Australia or New Zealand. You will take a variety of optional modules at Exeter, and similar modules during your semester abroad.

Year 4 Along with a wide variety of optional modules, you will complete an independent research project, enabling you to showcase skills you have developed throughout your degree. Your research can be an extension of your Year 3 research project, and will be supervised by a member of staff.

MATHEMATICS WITH BUSINESS PROGRAMMES

BSc/MSci Mathematics with Accounting, Economics, Finance or Management (EXETER)

with Accounting MSci G1N5 4 yrs | BSc G1N4 3 yrs

with Economics MSci G1N7 4 yrs | BSc G1L1 3 yrs

with Finance MSci G1N8 4 yrs | BSc G1N3 3 yrs

with Management MSci G1N6 4 yrs | BSc G1N2 3 yrs

A*AA-AAB | IB: 38-34 | BTEC: D*DD-DDD

Required subjects: GCE AL Mathematics+ grade A; IB Maths HL6.

- ☐ Taught in partnership with the University of Exeter Business School
- ☐ Three- or four-year options leading to BSc (3-year) and MSci (4-year) qualifications
- ☐ Opportunity to engage with business leaders through regular guest lectures
- ☐ Be a part of two complementary student communities, building friendships and connections that will stay with you into your professional life
- ☐ Highly applicable degree designed for those with aspirations to become the business specialists of the future

Year 1 Study a blend of mathematics and business modules. The mathematics modules are the same as a single honours Mathematics programme. The business modules are specific to each programme but you can expect to study complementary content. For further information about modules for each programme please see page 12.

Year 2 (applies to all) You will take a range of core and optional modules in mathematics. The options include areas relevant to business, such as such as statistical modelling or microeconomics.

Accounting Gain a thorough grasp of the major techniques of modern management accounting, and see how mathematical tools such as linear programming are used in commercial decision-making.

Economics Gain a deeper understanding of the tools used in economic analysis and their applications to many key economic issues.

Finance Study and understand the tools used in microeconomic analysis, and start to see how mathematics directly relates to the world of finance.

Management Learn about operations management, marketing and consumer behaviour.

Year 3 Choose from a wide range of optional mathematics modules. You can also apply your expertise to a professional environment by undertaking commercial experience. You can also complete a group mathematical project where you can start developing the communication skills needed in the world of business.

Accounting Study theoretical and practical aspects of the key investment questions faced by firms and by individuals.

Economics See how mathematical techniques are used in valuing and managing financial instruments, and how statistical techniques are applied to economic data.

Finance Learn about the theory and importance of decision-making.

Management Gain an understanding of the 21st century competitive landscape from a strategic management perspective, and develop the ability to analyse strategic issues using a number of approaches.

Year 4 (MSci only) Choose from further advanced modules relevant to your pathway, and a substantial research-led Masters level project supervised by a staff member in the appropriate research group.

OTHER COMBINED HONOURS

BSc/MSci Computer Science and Mathematics (EXETER)

BSc GG41 3 yrs

with Industrial Placement GG4C 4 yrs

MSci GG4D 4 yrs

A*AA-ABB | IB: 38-32 | BTEC: D*DD-DDM

Required subjects: GCE AL Mathematics+ grade B; IB Maths HL5.

- ☐ Collaboratively taught between the Mathematics and Computer Science departments
- ☐ Equal split of modules, covering core element of both subjects
- ☐ Both subjects complement and influence one another
- ☐ Study over three (BSc) or four (MSci) years
- ☐ Option to complete a year in industry on the BSc variant

Year 1 Gain a firm foundation in mathematics and the fundamentals of programming and computer systems. You can study topics such as web development, the internet, data structures and vectors and matrices.

Year 2 From your second year, you'll have a choice of optional modules which allows you to tailor your degree towards your preferences in Mathematics and/or Computer Science. Core modules will consist of software development and engineering, along with differential equations and vector calculus and applications.

Year 3 Apply your learning to a substantial piece of individual project work. It involves initial research and literature review, and specification and design of a software system, followed by implementation, testing, evaluation, and demonstration of the system. Appropriate guidance and advice will be provided by a staff member. You'll also have an extensive range optional modules to choose from. These include computer graphics, nature inspired computation, number theory, cryptography and more. The Industrial Placement version of this degree includes work experience in a business or commercial setting that is of direct relevance

to your development as an experienced computer scientist. You will be encouraged to use your imagination and creativity in problem to develop communication skills, planning and time management and team-working skills.

Year 4 (MSci only) The four-year MSci Computer Science and Mathematics programme covers more advanced material and offers a higher level qualification. The final year includes a substantial project involving elements of both Computer Science and Mathematics, as well as a range of advanced optional modules in the two subjects such as computer vision, modelling the weather, machine learning and more.

BSc Mathematics and Physics
(EXETER)

FG31 3 yrs

A*AA-AAB | IB: 38-34 | BTEC: D*DD-DDM

Required subjects: At least one grade A and a grade B in GCE AL Mathematics✚ and Physics; at least one HL6 and one HL5 in IB Mathematics and Physics.

- ☐ Collaboratively taught between the Mathematics and Physics departments
- ☐ Explore the interplay between the two disciplines and understand the ways in which they co-exist and complement each other
- ☐ Content covers both theoretical and experimental physics, which you will investigate in our teaching laboratories
- ☐ Choose from a wide range of optional modules across both subjects

Year 1 Study both Mathematics and Physics modules, as you develop the foundation knowledge to excel in this programme. You will understand how both subjects complement and one another, as you begin to learn the tools and skills needed to answer complex, multidimensional problems.

Year 2 Gain a firm foundation in mathematics and physics, and the principles that constitute the framework of the two subjects. In Physics, you will take core modules in Electromagnetism and Quantum Mechanics, while you explore the use of mathematics to give these principles a precise form. The Algebra module is also core, and will cover concepts and techniques that are widely used in many areas of mathematics.

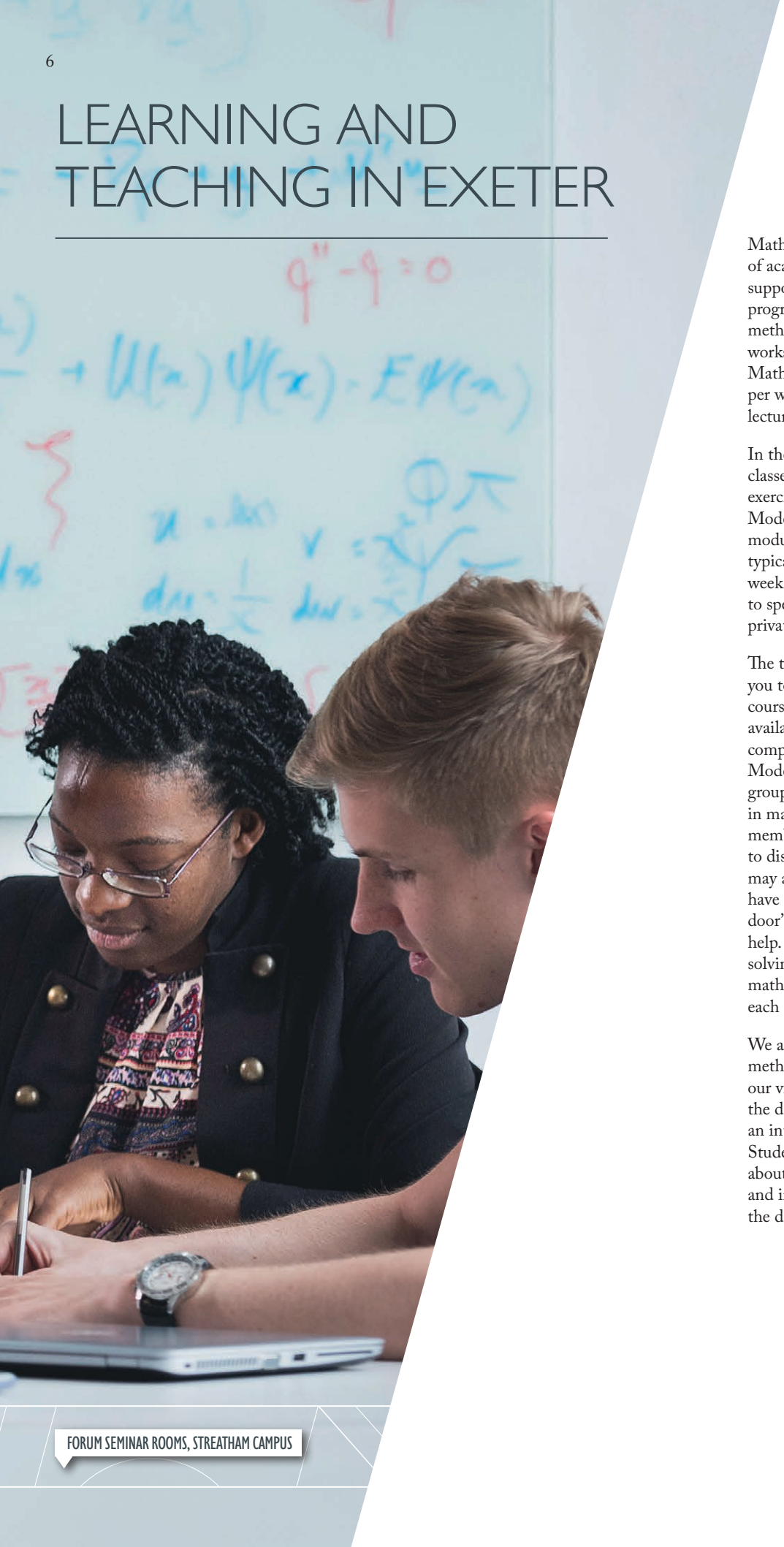
Year 3 You will take a core module in Nuclear Physics and an advanced Electromagnetism course, as well as undertaking an extended (open-ended) project in our newly refurbished third year teaching lab. You can also choose from a very wide range of modules, ranging from to Pure Maths (eg, Combinatorics) to Applied Maths (eg, Cryptography and the Mathematics of Climate Change), and including topics such as Fluid Dynamics, Theoretical Physics, Biophysics and Astrophysics.

ENTRY REQUIREMENTS: MORE INFO

✚Candidates may offer GCE AL Mathematics, Pure Mathematics or Further Mathematics. Applicants studying a BTEC Extended Diploma will also require GCE AL Maths grade A.

HARRISON BUILDING, STREATHAM CAMPUS

LEARNING AND TEACHING IN EXETER



FORUM SEMINAR ROOMS, STREATHAM CAMPUS

Mathematics at Exeter combines a breadth of academic expertise with a caring and supportive learning environment. All of our programmes involve a variety of teaching methods; including lectures, seminars, workshops and tutorials. Most modules in Mathematics involve three one-hour lectures per week, so you would typically have 12 lectures per week.

In the first year there are regular tutorial classes for the two core modules plus exercise classes and computing labs for the Modelling, Probability, Statistics and Data modules. Thus, in the first year, you would typically have around 15 contact hours per week. In addition to this, you are expected to spend about 20 hours per week in private study.

The tutorials and exercise classes enable you to discuss the lecture material and coursework problems. Further support is available at lunchtime mathematics and computing surgeries. The Mathematical Modelling and Probability modules include group work to tackle open-ended problems in mathematics under the supervision of a member of staff. You are also encouraged to discuss any problems or questions that may arise, with the lecturer. All lecturers have advertised office hours or an 'open door' policy, so are available to provide help. Working through examples and solving problems is a vital part of learning mathematics, so coursework is set in each module.

We are actively engaged in introducing new methods of learning and teaching, including our virtual learning environment; where the details of all modules are stored in an interactive, easily navigable website. Students can access detailed information about modules and learning outcomes, and interact through activities such as the discussion forums.

STUDY SPACE IN HARRISON BUILDING

Computing space	Independent study space	Student meeting rooms	Software licences you can access
☐ 30 x Linux i7,over 180 individual HP i7 machines	Newly built 'Engine Room', several study 'pods' and communal zones located throughout the department	Bookable meeting spaces in the department reserved exclusively for students	Matlab R LaTex Maple Python Mathematica

COMPUTER SOFTWARE

Computers are an essential tool in all areas of mathematics and using them to investigate particular examples can often help you in understanding mathematical concepts. Many of our modules involve some element of computing, using software such as the programming language MATLAB, the computer algebra system MAPLE, or the statistical package R.

PROJECTS

For BSc students, during your final year you can complete a one-term project, which may be theoretical or experimental, and is normally undertaken as part of a group. MMath and MSci students will take a two-term individual project; these are usually inspired by research in the department, although you may propose your own topic for investigation.

MATHSOC

MathSoc is one of the largest academic student societies in the University. As a member, you will be welcomed into a vibrant community with an exciting calendar of events. You can represent MathSoc in a number of sporting capacities; intramural teams compete in football, hockey, netball and more. In addition to frequent social events, there are two major events – the Christmas and summer balls.

MathSoc is a great place to network; through the society you can meet students of all years, recent graduates and external speakers. Many students find placements and internships through the connections they form at MathSoc.

Athena SWAN Silver Award

The Athena SWAN Charter recognises and celebrates good employment practice for women working in Science, Technology, Engineering, Mathematics and Medicine (STEMM) in higher education and research. We believe it is vitally important that women are adequately represented in what has traditionally been a male-dominated area and we strive for equality. The University is proud to have held a Bronze institutional award since 2011, and we were awarded a Bronze award at departmental level in 2014, and later gained a Silver award in 2016. Find out more at **www.exeter.ac.uk/mathematics/about/swan**

I wanted to study a subject that would engage and interest me – the breadth of mathematics lends itself to this; whilst at university in Exeter I have been able to learn about a wide variety of things from Number theory, which deals with the fundamental constructs which mathematicians use everyday, to the Mathematics of Climate Change which details how we can apply maths to describe the climate system in order to understand and tackle one of humanity's biggest issues.

There is a great community feel to the department. MathSoc (our maths society) is a really active society and a great place to meet new people; it is where I made many of my friends. It has the mantra 'Maths Society doesn't do maths' and instead pits maths students to challenges such as rock climbing and paint balling, while also running great socials such as the MathSoc Christmas dinner and summer ball.

Neil, studying Mathematics (Climate Science)

YOUR SUCCESSFUL CAREER – EXETER

RECENT GRADUATES ARE NOW WORKING FOR▲:

- MediaCom
- Apple
- E.ON
- The Centre for Workforce Intelligence
- Lloyds
- KPMG
- Met Office
- BAE Systems
- Amazon
- Dyson
- Civil Service

CAREERS SERVICES

We have a dedicated, award-winning Careers Service, with offices at our Exeter and Penryn campuses, ensuring you have access to careers advisors, mentors and the tools you need to succeed in finding employment in your chosen field on graduation. We offer the Exeter Award and the Exeter Leaders Award which include employability-related workshops, skills events, volunteering and employment which will contribute to your career decision-making skills and success in the employment market. Our graduates compete very successfully in the employment market, with many employers targeting the University when recruiting new graduates. For further information about our Careers Service please visit: **www.exeter.ac.uk/careers**

Mathematics at Exeter will shape you into a multitalented individual, who is able to succeed in a wide variety of professional roles.

RECENT GRADUATES ARE NOW WORKING AS▲:

- Account Manager
- Transport Planner
- Materials Planning Analyst
- Management Consultant
- Design Engineer
- Marketing Analyst
- Associate Developer
- Trader
- Software Developer
- Investment Analyst

▲ *This information has been taken from the Destinations of Leavers from Higher Education (DLHE) Surveys 2014-2015. Please note that, due to data protection, the job titles and organisations are listed independently and do not necessarily correspond.*

SUMMER-TIME INDUSTRIAL PLACEMENTS AVAILABLE TO ALL STUDENTS:

Undertake extensive practical work experience in a business or commercial setting that is of direct relevance to your development as an experienced professional. You will have the opportunity to develop a work-based project, with academic and professional supervision, following your placement. This 6-10 week placement between Years 2 and 3 contributes directly towards your degree classification.◆

◆ *MMath Mathematics with Professional Experience also available. See page 3.*

QUEEN'S BUILDING, STREATHAM CAMPUS

"I want to work in the green energy industry; providing clean energy to the country! My programme helps me build up knowledge of the Mathematics that are applicable to this industry."

James, studying
Mathematical Sciences (Penryn Campus)

MODULES IN EXETER

KEY
C = Core
● = Optional
+ = Taught by the Business School

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year. For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/maths**

Year 1 Modules

Module Name	MMath/ BSc/MSci Mathematics	BSc/Msci Mathematics with Accounting	BSc/Msci Mathematics with Economics	BSc/Msci Mathematics with Finance	BSc/Msci Mathematics with Management	BSc Mathematics and Physics
Foundations	●	●	●	●	●	●
Mathematical Structures	C	C	C	C	C	C
Mathematical Methods	C	C	C	C	C	
Probability, Statistics and Data	C	C			C	
Introduction to Financial Accounting		C				
Introduction to Management Accounting		C				
Microeconomics 1			C	C		
Macroeconomics 1			C			
Introduction to Finance				C		
Theory and Practice of Management					C	
Fundamentals of Marketing					C	
Mathematical Modelling	C					
Modules in Physics						C

Year 2 Modules

Module Name	MMath/ BSc/MSci Mathematics	BSc/Msci Mathematics with Accounting	BSc/Msci Mathematics with Economics	BSc/Msci Mathematics with Finance	BSc/Msci Mathematics with Management	BSc Mathematics and Physics
Analysis	●	●	●	●	●	●
Algebra	●	●	●	●	●	C
Differential Equations	●	C	C	C	C	●
Vector Calculus and Applications	●	●	●	●	●	●
Modelling: Theory and Practice	●	●	●	●	●	●
Statistical Modelling and Inference	●	●			●	
Ambassadors for Science	●	●	●	●	●	
Operations Management					C	
Microeconomics 2			C	C		
Financial Markets and Decisions 1				C		
Macroeconomics 2			●			
Financial Accounting A		C				
Financial Accounting B		C				
Intermediate Management Accounting		C				
Modules in Physics						C

Year 3 Modules

In the third year, a wide range of modules is available on all programmes, which give you the opportunity to specialise in one area of mathematics, or to continue with a broad-based programme. Those listed below are examples of some of the modules available. Full details can be found on our website at **www.exeter.ac.uk/ug/maths**

Module Name	MMath/ BSc/MSci Mathematics	BSc/Msci Mathematics with Accounting	BSc/Msci Mathematics with Economics	BSc/Msci Mathematics with Finance	BSc/Msci Mathematics with Management	BSc Mathematics and Physics
Research in Mathematical Sciences	C	C◆	C◆	C◆	C◆	
Number Theory	●	●	●	●	●	●
Mathematical Biology and Ecology	●	●	●	●	●	●
Fluid Dynamics	●	●	●	●	●	●
Partial Differential Equations	●	●	●	●	●	●
Nonlinear Systems and Control	●	●	●	●	●	●
Advanced Statistical Modelling	●	●	●	●	●	●
Mathematics: History and Culture	●	●	●	●	●	●
Combinatorics	●	●	●	●	●	●
Graphs, Networks and Algorithms	●	●	●	●	●	●
Stochastic Processes	●	●	●	●	●	●
Cryptography	●	●	●	●	●	●
Special Topics in Statistics	●	●	●	●	●	●
Statistical Inference: Theory and Practice	●	●	●	●	●	●
Mathematics of Climate Change	●	●	●	●	●	●
Applications of Geometry and Topology	●	●	●	●	●	●
Galois Theory	●	●	●	●	●	●
Computational Nonlinear Dynamics	●	●	●	●	●	●
Topology and Metric Spaces	●	●	●	●	●	●
Bayesian statistics, Philosophy and Practice	●	●	●	●	●	●
Commercial and Industrial Experience	●	●	●	●	●	●
Theory of Weather and Climate	●	●	●	●	●	●
Advanced Management Accounting		C				
Advanced Financial Reporting		C				
Level 3 Economics module			C			
Financial Markets and Decisions				C		
Strategic Management					C	
Modules in Physics						C

◆ *Compulsory for MSci only.*

MODULES IN EXETER CONTINUED

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year.
For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/maths**

YEAR 1

Foundations	This module serves as a bridge between pre-university mathematics and material covered in Year 1 of our Mathematics degrees. In part, it will provide revision of key concepts from A level Mathematics or equivalent, but it will also introduce some basic ideas from A level Further Mathematics, such as complex numbers and matrices.
Mathematical Structures	This module introduces students to university-level pure mathematics. The building blocks of mathematics are developed, from sets and functions through to proving key properties of the standard number systems, group theory and vector spaces. The ideas and techniques of this module are essential for the two second-year streams: Analysis and Algebra, and pure mathematics modules in Years 3 and 4.
Mathematical Methods	You will learn key mathematical tools and techniques essential to your further studies. This will include differential and integral calculus, computing limits and convergence of sequences and series, geometry and the fundamentals of vectors and matrix algebra.
Probability, Statistics and Data	Our ability to collect and analyse data is increasingly driving our world. Statistics is concerned with both the practice of analysing data to learn about the world, and the theory that underpins the methods and models used for data collection and analysis. This theory is itself based on probability, the mathematics of chance and uncertainty. In this module, you will learn about the mathematics of probability, and the key ideas of statistical modelling and inference, in which probability is used to quantify uncertainty. You will also gain experience of employing these ideas to analyse data using advanced statistical software.
Mathematical Skills	This module allows Mathematics and Physics students to gain a sound grasp of mathematical methods and a good level of 'fluency' in their application. This module covers areas such as differential calculus, complex numbers and matrices, and emphasises problem solving with examples taken from physical sciences.
Computers and the Internet	Establish a solid understanding of how business and other technical fields use computers and networking technologies. By the end of the module, you should be well placed to make use of an extensive range of hardware and software. In addition, you will have gained the knowledge and skills to enable you to analyse existing computer-based information systems, and to design and develop web-based applications from informal specifications.
Fundamentals of Marketing	Designed to help introduce you to the marketing process. You will learn about the basic concepts, practices and analytical methods of marketing, and study how successful organisations conduct marketing strategy to build sustainable competitive advantage over their competitors.
Introduction to Finance	An overarching module, designed to give you an understanding of the world of financial markets. Topics covered include the role of the stock markets and the mechanics of investment, principles of investment, and the present value model of investment.
Introduction to Financial Accounting	Develop your understanding of financial markets, and study topics such as the role of the stock markets and the mechanics of investment, principles of investment and the present value model of investment.
Introduction to Management Accounting	Management accounting provides information which supports business decisions, whether it is setting selling prices, or understanding costs, assessing performance, and investing in new products. At an introductory level, this module considers costs and revenues, and how they can be measured and used to calculate profit and help make decisions, both in the short and long term. It also examines how budgets are prepared, and used as benchmarks to assess performance.
Macroeconomics I	Studied over two semesters, you will cover core theory and applied extensions from the main course textbook. Semester 1 starts by looking at the determination of short run equilibrium in the goods and money markets respectively, then brings them together, before introducing open economy features. The medium run is introduced with the labour market, and the long run with capital accumulation and technological growth. Semester 1 finishes with an application to the Crisis of 2007-2010. In semester 2, students participate in a live, virtual macroeconomy, at the same time as reviewing the core theory of semester 1, before investigating extensions of this framework to a range of applied policy issues.
Mathematical Modelling	Study theory and learn the tools for analysing real physical systems, including pendulums, planetary motion and predator-prey models. As part of a team, you will explore this theory with computer-generated models, developing your programming skills, and writing up your findings and conclusions of your investigations of the models you develop.

Mathematics for Physicists	Designed to consolidate your skills in foundation topics in mathematics, you will be introduced to some of the mathematical techniques that are most frequently used in physics; giving you the experience of using and application. Emphasis is placed on the use of mathematical techniques rather than their rigorous proof.
Microeconomics I	This is the first course in Microeconomic Theory for the first year undergraduates. It covers the fundamental topics which you can later use as tools to learn/understand many other topics in Economics. You will understand the key tools for conducting microeconomic analysis and will be introduced to several policy applications. The specific topics include consumption and production theories, perfectly competitive markets, market power, game theory, risk and uncertainty, and market failures.
Practical Physics and IT Skills	The practical laboratory work in this module provides a broad foundation in experimental physics, upon which experimental work for the Stage 2 year and project work in Stage 3 builds. You will also learn to produce high-quality typeset reports using LaTeX and a stylesheet. The module also introduces you to the GNU Octave numerical mathematics package.
Object-Oriented Programming	You will be introduced to object-oriented problem-solving methods and provide you with By the end of this module, you will be able to apply these skills to design and implement small applications.
Properties of Matter	Understanding properties of matter is both a basic aspect of physics and very important in view of its increasing technological importance. The coverage of condensed matter within the degree programmes is spread over a number of modules, this being the first. The aim of this module is to develop a sound understanding of the basic concepts of properties of matter.
Theory and Practice of Management	You will be introduced to major contemporary developments in business and management, to the most influential management theories, and to seminal debates about management practice. While you are encouraged to reflect on past developments, the overall focus of the module is on the likely future direction of management practice and on the key explanatory factors.
Vector Mechanics	Study Newtonian classical mechanics and special relativity in this module. Although some of the concepts will be familiar from A level, vector notation will be used throughout. Particular emphasis is placed on the precise and consistent application of the laws and methods.
Waves and Optics	The concepts of oscillation and wave propagation permeates the whole of physics. This module identifies and applies the underlying principles, enabling you to understand many apparently unrelated systems. A wide range of physical phenomena are used as examples.

"I chose to do the four-year MMath Mathematics course because I liked the flexibility it gives me. I was unsure what exactly I wanted to do after university and I liked the varied options this degree opens, whether that be further study or a graduate job."

Ben, studying MMath Mathematics

YEAR 2

Analysis	On completion, you will have studied properties of the real and complex number systems, limits of functions and continuity, continuous functions, and differentiation and integration of real and complex functions. By the end of this module, you will have developed your analytical thought processes and gained experience in logical argument and deduction.
Algebra	In this module, you will explore some of the key techniques of modern algebra, including the theory of abstract vector spaces and ring theory. Whilst the roots of these topics lie in the arithmetic and geometry studied by the earliest mathematicians, much of the unifying power of this subject lies in the modern axiomatic treatment of this material dating from the 19th and 20th century.
Differential Equations	Differential equations are at the heart of nearly all modern applications of mathematics to natural phenomena. Computerised applications play a vital role in many areas of modern technology. Mathematically, all rates of change and acceleration can be described by derivative functions. These include the growth of plants and organisms, the spread of diseases, physical forces acting on an object or even the fluctuations of the stock market. You will learn the basic principles of differential equations, and will apply that knowledge to some everyday phenomena.
Vector Calculus and Applications	You will study vector calculus and its applications, especially in relation to fluid dynamics. The module consists of two parts, which are closely linked. In the first part of the module, you will learn about the mathematical theory and techniques of vector calculus. You will develop your competence in using vector calculus in both differential and integral forms. The second part of the module gives an introduction to fluid dynamics as an application of vector calculus. It lays down some basic principles using a number of simplifying assumptions. The module will emphasise inviscid, incompressible flow; later modules will cover the subject of viscous flow.
Modelling: Theory and Practice	This module explores the use of computers to solve mathematical problems by means of numerical approximation, developing mathematical theory and involving practical project work. The techniques discussed form the basis of the numerical simulation and computer modelling of problems in science and business.
Statistical Modelling and Inference	We often want to know about the relationship between different variables, for example between lifestyle, environment and health. We discuss linear statistical models and how they can be used to describe such relationships and to make predictions. We learn how to conduct statistical investigations and use statistical software, and we learn about careers in statistics in a series of guest lectures.
Ambassadors for Science	As an ambassador for your discipline, you will design, deliver and reflect on a series of sessions in which you support others to learn about your subject. Through the gathering and judicious selection of evidence, you will prepare a portfolio to showcase your work, reflecting on both the practical aspects of your ambassadorial work, as well as the underpinning theory in the educational and subject literature.
Electromagnetism I (BSc Mathematics and Physics)	Survey the phenomena associated with electrostatics (charges at rest) and magnetostatics (the magnetic effects associated with steady currents). You will be introduced and taught the uses of the electric and magnetic field vectors, and learn to relate them by considering electromagnetic induction at a classical level. The connection between these fields and conventional lumped-circuit parameters R, C and L is also developed.
Financial Accounting A	Financial accounting is the branch of accounting that focuses on producing information for external users of financial reports, including shareholders and creditors. The information is crucial for the efficient operation of world financial markets. The accounting information system collects data, processes that data and produces information. This information manifests itself in the form of the annual report, issued by all companies (the financial statements forming part of the annual report).

Financial Accounting B	On completion, you will have a solid foundation in accounting theory and practice of consolidated financial reporting. This distinctive module examines accounting theory and regulation through a critical lens. You will develop skills that enables you to critically reflect and appraise overlapping financial reporting topics, review the merits and demerits of extant accounting standards and financial reporting practice and to appraise how financial accounting could be improved moving forwards. You will be exposed to the theories and concepts underlying financial reporting including regulation, income measurement, earnings management, impression management, creative accounting, fraud and value relevance. In addition, you will also develop your financial reporting practical skills including the preparation of basic group accounts and a cash flow statement.
Financial Markets and Decisions I	You will study theories of decision-making under risk and the economics of information, discussing applications of the theory in the areas of banking and finance. The topics covered include expected utility theory, CAPM, adverse selection, moral hazard, the Modigilani-Miller theorems and the incentive effects of debt and equity. Applications are discussed including auctions and insurance.
Intermediate Management Accounting	Managers are faced with a wide range of decisions under resource constraints involving varying time frames in an uncertain environment. Managers have to decide on the price of a product, determine the optimum production plan under resource constraints, make operational and strategic investment decisions and advise on the acceptance or otherwise of a project. Businesses today operate within a competitive environment. Downward pressure on prices, coupled with the need to deliver quality, means that effective cost management and value creation is no longer an option. Effective performance management is undoubtedly critical to the achievement of the objectives of the organisation. This module will equip you with the relevant tools and techniques to deal with these issues.
Microeconomics II	Designed to equip you with key microeconomic principles necessary for the analysis of a range of basic economic problems and policies. You will build on your first-year microeconomics and aim to both deepen and widen your formal knowledge of economic theory and its application. In particular, you will increase your abilities to, independently, pose and solve economic questions, especially those relating to policy issues. It emphasises the fundamental conceptual foundations in microeconomics and provides concrete examples of their applications.
Operations Management	Operations management is concerned with managing processes, and how organisations create value in the production of goods and services. This field of study is applicable in manufacturing and the service sector, from small retailers and professionals to banks and insurance companies, hospitals and utilities. You will study how firms achieve competitive success through improving the processes involved in delivering products and services, and reducing costs through increased efficiencies. You will cover operations strategy, process design, planning and control, project management, quality, global supply and supply chain management, and improving how the product or service is delivered.
Quantum Mechanics I (BSc Mathematics and Physics)	You will understand the mathematical expression of the basic principles of quantum mechanics, and methods for finding solutions of problems that permit straightforward mathematical analysis. These solutions demonstrate many of the general features of the subject and will be applied in subsequent modules in the Physics programme.

YEAR 3

Research in Mathematical Sciences	This is a unique module that runs in several research themes and provides you with a taste for and experience in research in mathematical sciences. The themes are broadly aligned with fourth-year options. Each theme consist of lectures, student-led discussion, reading and practical sessions. In the first part of the module, you will pick two themes to follow closely, to get exposed to different types of research. In the second part of the module, you will concentrate on one theme and get deeper experience in research approaches and skills.
Number Theory	Number theory is a vast and fascinating field of mathematics, consisting of the study of the properties of whole numbers. From this module, you will acquire a working knowledge of the main concepts of classical elementary number theory, together with some appreciation of modern computational techniques.
Mathematical Biology and Ecology	Learn how mathematics may be applied to the biosciences in order to quantify population and demographic phenomena. You will build and analyse models using real world examples from nature, then draw conclusions about likely behaviours.
Fluid Dynamics	The aim of this module is to provide you with a further understanding of the basic concepts of fluid dynamics associated with flow of incompressible (constant density) fluids with both viscosity and inertia. You will learn to translate a physical problem into an appropriate mathematical system. Furthermore, you will learn about the many important applications of fluid dynamics in different branches of science and why solutions of fluid dynamics for many real physical problems cannot be obtained.
Partial Differential Equations (PDE)	A PDE is a differential equation in which the unknown function is a function of multiple independent variables and the equation involves its partial derivatives. You will learn which types of PDEs can be solved exactly, and which require a numerical approach. Furthermore, you will discover how PDEs can be well-posed or ill-posed, and will find out about a range of analytical techniques used to solve PDEs.
Nonlinear Systems and Control	The aims of the module include helping you to understand nonlinear models and phenomena, and the qualitative behaviour of second order linear systems and near equilibrium points. You will study the stability of the perturbed systems, the small gain theorem, controllability condition, the principles of Lyapunov-based feedback design techniques and a set of mechanical and biological examples.
Advanced Statistical Modelling	Statistical modelling lies at the heart of modern data analysis. The module discusses Generalised Linear Models, and goes on to consider extensions involving random effects, Generalised Linear Mixed Models, Generalised Additive Models and also models for failure time data with partially observed information. We will use the statistical software R as the main platform to fit this wide range of models.
Mathematics: History and Culture	This module provides an appreciation of the history and philosophy of mathematics and its place in human history and culture. It develops skills in research, essay-writing and presentation.
Combinatorics	Combinatorics is the mathematical study of finite and discrete structures. This module focuses on enumerative combinatorics – counting classes of combinatorial objects. Topics include multinomial coefficients, recurrence relations, generating functions, Catalan numbers, Stirling numbers, Bell numbers, rook polynomials, integer partitions and combinatorial designs.
Graphs, Networks and Algorithms	Graphs are a structure used to describe the underlying connectedness of a system and, therefore, have a vast range of applications from designing circuit boards to running a business efficiently. In this module, you will learn the theory of graphs and explore their practical application to solve a range of mathematical problems.
Stochastic Processes	A stochastic process is one that involves random variables. A large number of practical systems within industry, commerce, finance, biology, nuclear physics and epidemiology can be described as stochastic and analysed using the techniques developed in this module. The systems considered may exist in any one of a finite, or possibly infinite, number of states. The state of a system may be examined continuously through time, or at fixed and regular intervals of time.
Cryptography	The aim of this module is to apply elementary number theory to problems in the real world where it is important to transmit information in a secret way. For example, cryptography is used in bank accounts, and is traditionally applied in military science.
Special Topics in Statistics	This module provides the opportunity for students to study in depth one or more specialised aspects of statistics which are not covered in other modules. The topic(s) and syllabus for the module will vary from year to year depending upon the lecturer(s) concerned. Topics will reflect particular practical application areas, or recent developments in the subject, or research interests of the lecturer(s).
Statistical Inference: Theory and Practice	Inference is how we learn about, and make predictions about, the world from data. This module examines three inferential approaches from a theoretical point of view. We consider classical inference and modern approaches based on the likelihood and on computer simulation.

Mathematics of Climate Change	Understand the mathematics used to decipher climate change. By undertaking this module you will gain a good general understanding of the climate system, against which to assess the likely role of anthropogenic forcing factors. You will learn to apply a range of mathematical methods, including differential equations, calculus, and the use of small parameters to approximate and simplify climate system problems. Topics of study will include observations of climate change, the greenhouse effect, regimes of atmospheric absorption, climate feedbacks, climate tipping points and geoengineering.
Applications of Geometry and Topology	On this module, you will have the opportunity to study mathematical topics involving geometry, topology, and their applications in science and technology. Firstly, you will become familiar with the mathematical description of curves and surfaces, and the idea of topological equivalence. Secondly, you will learn about various topics from geometry and topology, such as knot theory, classification of surfaces, and the shape of bubbles and soap films.
Galois Theory	Drawing on key ideas in the theory of groups and fields, you will learn core elements of the theory of field extensions. You are already familiar with the idea that the real numbers can be extended to the complex numbers by introducing a new number as the square root of -1; Galois theory formalises such constructions and explores the intriguing relationship between groups and field extensions.
Computational Nonlinear Dynamics	Most mathematical problems in engineering and science lead to systems of nonlinear equations that cannot be solved with pencil and paper, and where a numerical approach does not give a complete answer. In this module you will use theory and mathematical methods from your earlier years to solve realistic problems as they occur in nonlinear dynamics in engineering and science.
Topology and Metric Spaces	Topology and metric spaces provide a set of powerful tools that are used in many other branches of mathematics (from Algebraic Topology and Numerical Analysis to Dynamical Systems and Ergodic Theory). Fundamental to these topics is the idea of generalising the idea of "closeness" of two objects in a set to a very general setting.
Bayesian statistics, Philosophy and Practice	This module will introduce Bayesian statistical inference, describing the differences between it and classical approaches to statistics. It will develop the ideas of subjective probability theory for decision-making and explore the place subjectivity has in scientific reasoning. It will develop Bayesian methods for data analysis and introduce modern Bayesian simulation based techniques for inference.
Commercial and Industrial Experience	Undertake practical work experience in a business, commercial or public sector setting that is of direct relevance to your development as an experienced professional. You will apply the knowledge and skills from taught modules to authentic problem solving in the workplace which will give you important insights into your potential job role once you graduate from university.
Theory of Weather and Climate	Cover the key physical processes determining the behaviour of the Earth's atmosphere. Topics covered will include radiative energy transfer, the structure, motion and thermodynamics of the atmosphere, the surface energy balance, and the main components of the general circulation (Hadley cells, Walker cells, jet streams, etc). The emphasis, where possible, will be on simple analytical models for commonly observed phenomena and on the development of physical intuition.
Advanced Management Accounting	Management control systems play an important role in the success of organisations. It is essential that organisations maintain strategic and management control by having the necessary systems in place to influence the behaviour of employees towards the achievement of the organisation's objectives. The design of such systems, however, is a challenging task; one that requires the consideration of the interplay and interconnections between the various components that make up the package of systems, and the effects of situational contingencies. This module will provide students with valuable insights, aided by case studies, on the design of management control systems and the unintended consequences arising from the use of the different types of controls.
Advanced Financial Reporting	The aim of the module is to enhance your knowledge of the theory and practice of financial reporting and analysis. To this end, the module will cover advanced financial reporting topics such as: accounting for changing price levels, financial instruments, employee benefits, various types of business combinations (eg, subsidiaries, associates, joint arrangements, indirect holdings and acquisitions-in-stages), and theories of accounting regulations and policy choice. In addition, the module will also cover practical financial analysis techniques that allow students to analyse and interpret financial statements.
Financial Markets and Decisions II	Furthering knowledge on Financial Markets and Decisions I.

Strategic Management	Like many of the other disciplines in business, strategic management has evolved since its first modern iteration in the 1950s and 60s. This module looks at how strategy is currently practiced in a wide variety of contexts – from commercial and entrepreneurial to social and not-for-profit. The module encourages exploration of, and a critical approach to, the key concepts that underpin strategic management; and the tools managers use to analyse their environment, frame choices and put the resulting strategies into action.
Complex Analysis	Complex analysis is one of the most beautiful and complete theories in mathematics. Invented in the 19th century by Gauss, Cauchy and Riemann, it has developed into a powerful tool, indispensable to all mathematicians, pure and applied. In this module, you will see the theory emphasising the wide range of useful applications. You will learn to develop complex analysis in a logical and satisfying way that provides insight into the geometric and topological foundations of the subject.
Nuclear and High Energy Physics	Delivered as a series of lectures and integrated self-study packs, you will be introduced to nuclear and particle physics. You will also learn through tutorials and problem-solving classes.
Stars from Birth to Death	The study of stellar systems encompasses a wide range of physics, including gravitation, quantum mechanics, and thermodynamics. This module takes these fundamental physical concepts, learned in the core modules, and uses them to derive the properties of stars. You will understand the basic internal structure of stars, study the ageing and death of both high- and low-mass objects, and then investigate how stars form.

YEAR 4

Fluid Dynamics of Atmospheres and Oceans	Understand large scale weather patterns and ocean circulation. You will study dynamics that can occur in stratified and rotating fluids, and be introduced to key concepts (such as conservation and balance) that are used to understand and analyse such flows.
Functional Analysis	Functional analysis is an abstract theory that studies mathematical structures from a very general viewpoint. The theory it develops is of importance to topics from different branches of mathematics; for example: integral equations, dynamical systems, optimisation theory and mathematical physics.
Analytic Number Theory	The aim of this module is to gain a deep understanding of the distribution of primes and the prime number theory which will culminate with the proof of the Prime Number Theorem. Recent and advanced topics will be studied in this module and they include: the theory of the Riemann zeta-function, Dirichlet L-functions, sieve methods, arithmetic functions and many others.
Mathematical Theory of Option Pricing	On this module, you will be expected to study stochastic models of finance, including the Black Scholes option pricing model. You will have the opportunity to study numerical methods in order to solve partial differential equations.
Dynamical Systems and Chaos	The aim of this module is to expose you to qualitative and quantitative methods for dynamical systems, including nonlinear ordinary differential equations, maps, bifurcations and chaos. The phenomena you will study occur in many physical systems of interest.
Algebraic Number Theory	The aim of this module is to expose you to an important area of modern pure mathematics, namely the theory of algebraic number fields and their rings of integers. This underlies much contemporary research in number theory and arithmetic geometry, as well as finding applications in areas such as cryptography.
Algebraic Curves	The module aims to introduce you to some of the central concepts of modern algebraic geometry in an accessible form. The treatment will be in the language of varieties, and will cover the standard properties of affine and projective curves over an algebraically closed field.
Fractal Geometry	This module aims to give an introduction to fractals, to develop basic tools for their study, especially various notions of dimension, and to give applications to other fields of mathematics, especially Diophantine approximation, dynamical systems and Ergodic Theory. The basic notions of measure, box dimension, Hausdorff dimension, etc, will be introduced and developed. Important examples of fractals will be introduced and studied.
Statistical Modelling in Space and Time	In many applications of statistics data are referenced by space and time. Points that are close together are correlated so we cannot use methods that assume they are independent. Real world examples will be given, from computer modelling, the environment and health.
Advanced Probability Theory	The central objects of probability theory are random variables, stochastic processes and events. This course discusses how sums of independent random variables converge in distribution. The results covered are fundamental to statistical estimation and probability theory.
Logic, Models and Sets	This module will start by introducing propositional logic and deduction in propositional logic, as well as examining some of its properties (such as completeness and soundness). Then we will do the same for predicate calculus, and then go on to discuss some of the basics of Model Theory, showing how predicate calculus can describe mathematical structures.

Space Weather and Plasmas	Major new discoveries and knowledge gained from space missions and ground-based observations, theory, and modelling are providing a wealth of engaging and inspiring topics for mathematicians and physicists to explore the physics of our space environment.
Mathematical Modelling in Biology and Medicine	This module aims to introduce you to some of the advanced mathematical and computational modelling methods that are currently used in modern mathematical biology research. It will give you experience of hands-on modelling approaches, and develop an interdisciplinary viewpoint of biology.
***(Core module)* Individual Research Project**	This independent research project gives you the chance to showcase the skills you have developed throughout your degree programme. It consists of a piece of work in an area of the mathematical sciences that you will choose yourself from a provided list. Using your independent learning skills, you will undertake the project individually, supervised by a member of staff. There will be a range of projects for you to choose from: some involve working on a practical problem, some involve developing or using computer programmes and packages, and others involve reviewing a theoretical area or tackling a theoretical problem. Prerequisite module: specific to the project topic concerned.
Mathematical Modelling in Biology and Medicine	Focus on modern applications of mathematical techniques to cutting-edge research in these areas. You will be introduced to advanced topics in biochemical networks, physiology, epidemiology and biomedical data analysis.
Modelling the Weather and Climate	Study this topic through exploring key aspects of mathematical and computational modelling within a simpler model framework. Once you have gained a broad overview, you will look at one element of climate physics in detail, whilst studying the predictability of the atmosphere.
Waves, Instabilities and Turbulences	Waves and turbulence are both ubiquitous phenomena in fluid flows, and both are often associated with the instability of simpler flows. They arise in many important theoretical and practical applications, ranging from engineering to meteorology and astrophysics. This module will extend your ability to formulate fluid flow problems in terms of partial differential equations, and develop a range of mathematical techniques for analysing the fluid behaviour.
Magnetic Fields and Fluid Flows	Examine how the mutual interaction of the fluid flow and the electromagnetic field reveals a variety of new and interesting phenomena. You will learn how to formulate a real physical problem in terms of a system of partial differential equations. We will solve these using a variety of techniques of applied mathematics.

MATHEMATICS IN CORNWALL

Mathematics is an important and fundamental subject that has developed in conjunction with scientific and technological progress.

Studying mathematics in Cornwall embraces the intertwining of rigorous thinking and real-world applications. You will develop core and advanced mathematical skills and, by working closely with scientists and engineers, gain experience in using mathematics in a context of global challenges such as energy security, human health and wildlife disease.

Take advantage of strong connections between cutting edge mathematics, data analysis and statistics, and world class science – a key feature of the Penryn Campus. From your first year you will be immersed in interdisciplinary approaches – a common theme in many modules such as Fundamentals of Interdisciplinary Mathematics.

As a Mathematical Sciences graduate, you will have applied investigative techniques to a variety of new problems in an evolving world. You can expect to pursue your interests in an enhanced range of exciting and rewarding careers.

SINGLE HONOURS

BSc Mathematical Sciences
(CORNWALL)

G140 3 yrs
AAB-ABB | IB: 34-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade A; IB Maths HL6.

- ☐ Three-year degree, in which you will apply your knowledge to challenges of profound importance
- ☐ Learn the analytical techniques and handle big data sets in order to understand complex problems
- ☐ Gain the numerate and analytical skills found at the core of both modern research and the digital economy
- ☐ Option to include work experience as part of your degree, leading to BSc Mathematical Sciences with Professional Experience
- ☐ Opportunity to study modules outside of Mathematics, including Biology, Business, Energy Engineering, Environmental Sciences, Geography and Geology
- ☐ Small class sizes, allowing you to easily engage with content and our passionate academics

Year 1 *Core:* Calculus and Geometry, Vectors and Matrices, Advanced Calculus, Dynamics, Fundamentals of Interdisciplinary Mathematics with Professional Skills, Probability and Statistics, Scientific Computing.

Year 2 *Core:* Linear Algebra, Differential Equations, Data, Signals and Systems, Statistical Modelling, Advanced Interdisciplinary Mathematics. Optional modules also available in Ecology, Geography, Renewable Energy and Business.

Year 3 *Core:* Data Analytics and Machine Learning, Work Placement, Mathematical Sciences Project.

Optional: Advanced Statistical Modelling, Partial Differential Equations, Dynamical Systems and Control, and more.

MSci Mathematical Sciences
(CORNWALL)

Ecology and Evolution GF17 4 yrs
Energy Systems and Control GF16 4 yrs
Environmental Science GF15 4 yrs
AAB-ABB | IB: 34-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade A; IB Mathematics HL6.

- ☐ Four-year specialist programmes, designed around significant social and environmental challenges
- ☐ Explore your interests at a greater depth, whilst gaining a higher level qualification
- ☐ Undertake an independent PhD-style research project in your final year

Years 1, 2 and 3 Similar to BSc Mathematical Sciences, however you will take specialist modules in your chosen field. Please see our website for additional information.

Year 4 (Ecology and Evolution) Study modules in Ecological Dynamics and Advanced Statistical Methods as well as options in Evolutionary and Behavioural Ecology, and Biodiversity and Conservation. The field course provides you with a unique opportunity to put your mathematical skills into action. The research project allows you to make an in-depth study in a chosen area of specialisation.

Year 4 (Energy Systems and Control) Study modules in Control and Optimisation, Computational Modelling and Simulation and further options in Advanced Wind Energy, Solar Energy Research and Innovation, and Advanced Marine Renewable Energy. The combined Industrial Placement and Research Project allows you to specialise in an area of interest and develop hands-on practical skills and work experience.

Year 4 (Environmental Science) Modules include Computational Modelling and Simulation, Advanced Statistical Methods and further options in Climate, Hazards and Risk Assessment, and Understanding Environmental Change. The field course provides you with a unique opportunity to put your mathematical skills into action. The research project is an in depth study in a chosen area of specialisation.

FLEXIBLE COMBINED HONOURS

Mathematical Science may also be studied under our innovative Flexible Combined Honours scheme.

- ☐ Combine two subjects where there is currently no existing Combined Honours degree at the University. These subjects can fall across departments, creating a cross-college degree
- ☐ Study three subject areas if compulsory modules allow
- ☐ Take modules from a variety of departments by studying one of our thematic pathways

Further information and the full list of available subjects can be found at **www.exeter.ac.uk/ug/flexible**

ENTRY REQUIREMENTS: MORE INFO

+Candidates may offer GCE AL Maths, Pure Maths or Further Maths. Applicants studying a BTEC Extended Diploma will also require GCE AL Maths grade A.

LEARNING AND TEACHING IN CORNWALL

Throughout your degree you will be taught in different formats; including lectures, seminars and troubleshooting tutorials. In addition to this, you will also partake in relevant field trips that are designed to teach you the practical applications of your work; and panel debates or expert-led discussions that are designed to challenge and expand your thinking. You are expected to carry out independent study outside of your timetabled hours. However, if questions arise, you can discuss them with your tutors outside of classes, as our staff exercise an open door policy.

ASSESSMENT

Assessments are tailored to learning outcomes and, in addition to coursework and exams, include poster and oral presentations, computer code, technical reports and logbooks aimed at demonstrating your knowledge, skills and expertise.

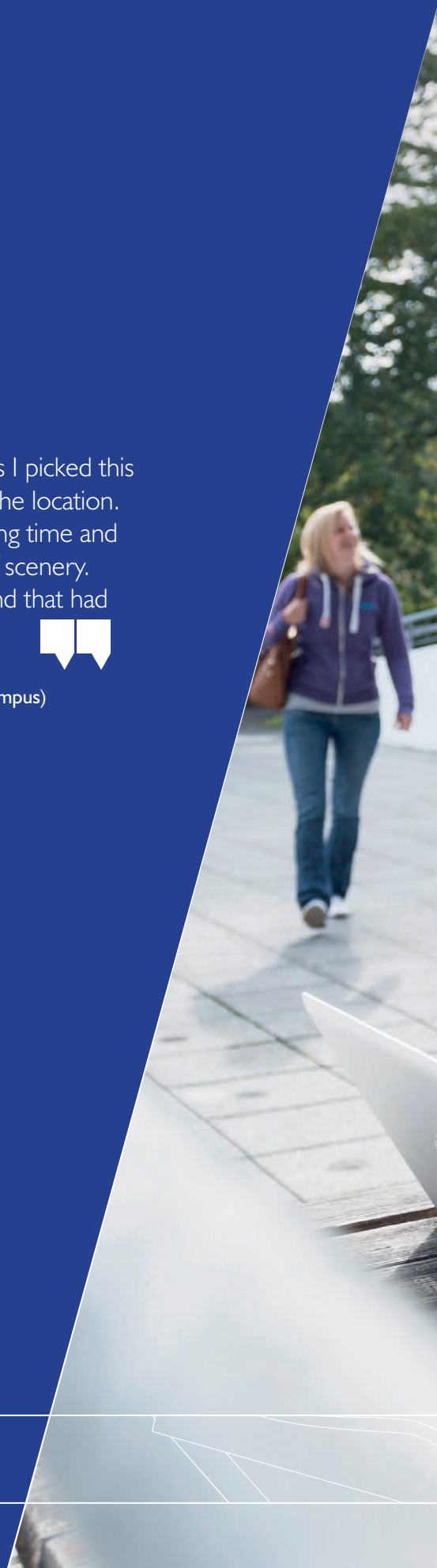
PROJECTS

During your final year you can complete a project, which may be theoretical or experimental, and is normally undertaken independently or in a group. Projects are normally inspired by research in the department, although you may propose your own topic for investigation. Recent project topics include:

- Geo-engineering: A control problem of global proportion
- Robust management of natural populations
- Complex analysis: Simple mathematics with profound applications
- Harvesting power from the sea: Optimal control of oscillating water columns

"One of the reasons I picked this university was because of the location. I have lived in London a long time and I really wanted a change of scenery. It's so peaceful and calm and that had such an impact on work."

Christopher, studying Mathematical Sciences (Penryn Campus)



DAPHNE DU MAURIER BUILDING, PENRYN CAMPUS

THE EXCHANGE, PENRYN CAMPUS

MODULES IN CORNWALL

KEY C = Core
● = Optional

For up-to-date details of all our programmes and modules, please check **www.exeter.ac.uk/ug/maths**

Year 1 Modules

Module Name	MSci/BSc Mathematical Sciences	Flexible Combined Honours BSc Mathematics and Business
Calculus and Geometry	C	C
Advanced Calculus	C	C
Probability and Statistics	C	●
Vectors and Matrices	C	C
Scientific Computing	C	
Fundamentals of Interdisciplinary Mathematics	C	●
Dynamics	C	●
Business Awareness		C
Theory and Practice of Management		C
Options in Business		●

Year 2 Modules

Module Name	MSci/BSc Mathematical Sciences	Flexible Combined Honours BSc Mathematics and Business
Differential Equations	C	C
Linear Algebra	C	C
Data, Signals and Systems	C	C
Statistical Modelling	C	C
Advanced Interdisciplinary Mathematics	C	C
Stochastic Processes	●	
Vector Calculus and Applications	●	
Project Management	●	C
Strategic Concepts for Business	●	C
Sustainable Enterprise Economy	●	●
Options in Ecology and Evolution	●	
Options in Energy Systems and Control	●	
Options in Environmental Science	●	
Options in Business	●	●

I think the best thing about the programme is that it's not just Maths, because it ensures that we can apply our mathematical knowledge to things like science. We have a joint module with Science students and we have to sit together and work together on a report. I think that is really useful, because in the real world that is what we are going to be doing, so it's a good way to get some practice in.

Roweena, studying Mathematics

MODULES IN CORNWALL CONTINUED

Year 3 Modules

Module Name	MSci/BSc Mathematical Sciences	Flexible Combined Honours BSc Mathematics and Business
Mathematical Sciences Project	C	C
Work Placement	C	C
Data Analytics and Machine Learning	C	C
Mathematical Biology and Ecology	●	●
Advanced Statistical Modelling	●	●
Dynamical Systems and Control	●	●
Partial Differential Equations	●	●
Graphs, Networks and Algorithms	●	●
Mathematics of Climate Change	●	●
Social and Technological Innovation	●	●
Globalisation and Internationalisation	●	●
Small Business Management	●	●
Sustainability	●	●
Crisis, Change and Creativity in Organisations	●	●
Options in Ecology and Evolution	●	●
Options in Energy Systems and Control	●	●
Options in Environmental Science	●	●
Options in Business	●	●

Year 4 Modules (MSci)

Module Name	MSci Mathematical Sciences (Ecology and Evolution)	MSci Mathematical Sciences (Energy Systems and Control)	MSci Mathematical Sciences (Environmental Science)
Research Project	C	C	C
Field Course	C		C
Industrial Placement		C	
Spatio-temporal Modelling	C	●	C
Data Handling and Visualisation	●		C
Ecological Dynamics	C		
Evolutionary and Behavioural Ecology	●		
Marine Biodiversity and Conservation	●		
Terrestrial Biodiversity and Conservation	●		
Computational Modelling and Simulation		C	
Control and Optimisation		C	
Advanced Marine Renewable Energy		●	
Advanced Wind Energy		●	
Solar Energy Research and Innovation		●	
Climate, Hazards and Risk Assessment			●
Ecological Responses to Climate Change			●
Environmental Sustainability in Practice			●
Understanding Environmental Change			●

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year. For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/maths**

YEAR 1

Calculus and Geometry	Calculus has its origins in the study of planetary motion. Calculus is fundamental to mathematics and provides tools for analysing a diverse range of problems across the physical, engineering, life and environmental sciences. You will apply calculus tools to a range of applications in science and engineering.
Vectors and Matrices	Mathematics is all about numbers and structures. Vectors are one of the most fundamental structures in mathematics and, more generally, across science, engineering and business. They underlie all areas of mathematics, computer science and engineering. They are the fundamental to describing multi-dimensional objects and the natural language of information retrieval systems, computer aided design, 3D graphics, and pattern recognition. Matrices are the operators that transport vectors.
Advanced Calculus	Learn advanced methods of calculus, whilst emphasising your practical methods and problem solving in scientific and engineering applications. The advanced calculus topics in this module form the core knowledge base for mathematical sciences. They build on topics from Calculus and Geometry and introduce key methods relating to partial differentiation and differential equations. Partial differentiation is vital for modelling the real world, and you will use it for calculus problems in more than one dimension. Differential equations are essential to many scientific and engineering problems.
Dynamics	Be introduced to Newtonian dynamics and its many applications. You will learn how to use calculus, vectors and matrices for modelling physical man-made and natural systems, and how systems change with time. Starting with moving objects (for example, individual projectiles and pendulums) and energy (balance) equations, you will move onto more complicated problems such as motion of a particle in a potential landscape, damped and driven oscillators, coupled oscillators, and nonlinear dynamics of interacting species (for example, predator-prey models) and models for climate (for example, basics of chaos in a Lorenz system).
Fundamentals of Interdisciplinary Mathematics with Professional Skills	The module has a number of distinctive features: Each exploration starts with a plenary-style colloquium from an expert scientist or engineer; in small classroom-based group work sessions you will develop and apply a variety of mathematical, statistical and computational techniques to analyse and dissect the expert opinion. You will communicate the analyses from your group to your peers for discussion, and report your findings. A series of workshops will help you to understand how your mathematical and professional skills connect to the workplace, and you will be supported in identifying appropriate work placements.
Probability and Statistics	Study the fundamental concepts in probability, with a focus on their application to statistical theory. The module starts with a review of set theory and the axioms of probability, before exploring the notion of probabilistic outcomes defined in terms of combinatorial experiments. From this basis we introduce discrete random variables and the concept of probability distributions, including their extension into continuous ranges and multiple dimensions. This module provides the essential tools for understanding and conceptualising uncertainty, and is a prerequisite for various subsequent modules.
Scientific Computing	Gain a comprehensive introduction to scientific computing. The overarching aim is to explore the use and capability of computers in modern mathematical and scientific contexts, demonstrating how you can use them to solve and visualise the solutions to a range of diverse problems in mathematical sciences. In the first half of the module, you will develop core skills in logic, algorithms and programming implemented in Python, a powerful, open-source and widely used programming language. In the second half of this module you will be building on this crucial groundwork in computing and apply your programming skills to implement various methods in numerical mathematics, such as interpolation, solving linear systems and numeric integration and differentiation.

YEAR 2

Advanced Interdisciplinary Mathematics	Continuing to work in small groups, you will integrate more advanced mathematical, computational and statistical modelling tools with key questions and issues from scientific and engineering applications. You will also broaden your understanding of scientific questions and engineering challenges; and the relevance of modern mathematics to their solution.
Options in Business	The Business School in Cornwall delivers business and management modules with an ethos of ethics and sustainability, and a focus on entrepreneurship for science and technology. You can study modules that cover core business skills as well as others designed to address the challenges in growing businesses in the current climate change era. Options, chosen by Mathematical Sciences students, include Strategic Concepts for Business and Sustainable Enterprise Economy.
Data, Signals and Systems	Solar flares occur on 11-year cycles; surfers wait for 'every seventh wave'; porpoise calls have a distinctive signature that can be detected against the background noise of their marine environment; bats locate prey by elaborate use of sonar. In each case, complex time-series data is decomposed into frequency-determined characteristics. This decomposition is then used for explanative and predictive purposes.
Differential Equations	Study the various types of ordinary and partial differential equations and a number of analytical and numerical techniques used to solve them. Differential equations are at the heart of countless modern applications of mathematics to natural phenomena and man-made technology. Computational implementation plays a vital role in many areas of engineering, science, finance, healthcare, etc.
Options in Energy Systems and Control	Renewable Energy Engineering encompasses topics ranging from the scientific principles of renewable energy technology, to the management skills required to meet global emissions targets and take control under soaring energy prices, through to hands-on skills in designing and building turbine generators. You have the opportunity to study a wide range of engineering modules. Options, chosen by Mathematical Sciences students, include Renewable Energy Systems II and Energy Management.
Options in Environmental Science	Environmental Science draws on interdisciplinary skills to understand local and global environmental change. You can gain an understanding of environmental systems and the critical global issues and challenges of the 21st century. Vital to modern environmental science is the collection, analysis and interpretation of large environmental data sets, for example obtained from satellite remote sensing, and you have the opportunity to enhance your skill set with modules in this area. Options, chosen by Mathematical Sciences students, include: Remote Sensing for Environmental Management; Geographical Information Science and Systems; Atmosphere and Ocean Systems; Biogeography.
Options in Evolution and Ecology	Evolution and Ecology are intimately linked, with ecological interactions driving evolutionary change, and evolution determining diversity in ecology. You have the opportunity to study wide range of biosciences modules focussing on different aspects of this complex interactivity. Options, chosen by Mathematical Sciences students, include: Population and Community Ecology; Evolutionary Ecology; Development of Behaviour.
Linear Algebra	Investigate vector spaces and linear systems, giving a rigorous treatment of algebraic techniques. You will cover material that underpins several subsequent modules. Building on Vectors and Matrices, you will focus on further in-depth studies of properties and characterisation of vector spaces, and manipulation of elements of vector spaces via linear maps; providing you with algebraic techniques, methodologies and some fundamental notions of modern algebra. Linear Algebra provides you with a solid base for your further studies, as it contributes to almost every field and topic within Mathematical Sciences.
Statistical Modelling	Statistics is concerned with the collection and summarisation of data, and the methods introduced in this module are employed in many fields, including finance, medicine, engineering, epidemiology and risk management, to name but a few. This module will introduce you to fundamental concepts in statistical theory, inference and modelling. The module balances theory and practice using the statistical language R.
Stochastic Processes	Evaluate the role of randomness in dynamical processes is key to understanding many complex, real-world systems. In this module you will be introduced to a variety of models of correlated random processes, such as Markov chains.

Vector Calculus and Applications	This module introduces you to vector calculus and its applications, especially fluid dynamics, in science and engineering. First, you will learn about the mathematical theory and techniques of vector calculus. You will become competent in using vector calculus in both differential and integral forms. Then the module provides an introduction to fluid dynamics. It lays down some basic principles using a number of simplifying assumptions, in particular assumptions of inviscid, incompressible flow. Physical applications include meteorology and oceanography.

YEAR 3

Advanced Statistical Modelling	This module introduces the field of Generalised Linear Modelling, which greatly extends the range of systems we can model using regression. We then extend this into a hierarchical modelling framework. Finally we introduce the Bayesian paradigm as an alternative framework, and its use in modelling complex systems.
Options in Business	You can gain expertise in specialist business topics through optional Business School modules including Social and Technological Innovation, Globalisation and Internationalisation.
Mathematics of Climate Change	Understand the mathematics used to decipher climate change. By undertaking this module you will gain a good general understanding of the climate system, against which to assess the likely role of anthropogenic forcing factors. You will learn to apply a range of mathematical methods, including differential equations, calculus, and the use of small parameters to approximate and simplify climate system problems. Topics of study will include observations of climate change, the greenhouse effect, regimes of atmospheric absorption, climate feedbacks, climate tipping points and geoengineering.
Data Analytics and Machine Learning	Recent advances in science and computing technology has resulted in an explosion of available data, in fields as diverse as medicine, finance, marketing and biology. This has led to the development of new statistical methodologies, aimed at meeting the challenges associated with processing and understanding 'big data'. In this problem-solving oriented module, you will develop hands-on skills and techniques needed to turn complex data sets into useful information, implementing techniques developed in bioinformatics, data mining and machine learning, and learning how to apply these in various data analytics packages and their open-source versions.
Dynamical Systems and Control	Dynamical systems and control aims towards a fundamental understanding of interconnected dynamical systems (technological, biological, socioeconomic, etc), and the use of feedback to improve their performance. This module will introduce a number of key concepts and techniques from dynamical systems and control, both linear and nonlinear, such as the notions of observability, controllability and stabilisability, and methods of linear and nonlinear feedback design. Appreciation of the mathematics will be reinforced through practical sessions and computational examples which use state of the art software for control system design.
Options in Ecology and Evolution	You can study advanced topics in ecology and evolution in numerous optional biosciences modules including: The Behavioural Ecology of Information Use, Co-evolutionary Interactions, Evolutionary Biology of Health and Disease.
Options in Energy Systems and Control	You can gain specialist knowledge in renewable energy technologies, by following optional renewable energy engineering modules including: Marine Renewable Energy; Wind Energy; Life Cycle Analysis; Computational Engineering for Renewable Energy Systems.
Options in Environmental Science	You can study advanced topics in the environmental sciences in numerous optional geography modules including: The Complexity of Human Societies; Antarctica: Science from a Frozen Continent; Marine Climate and Environmental Change.
Mathematical Sciences Project	The project consists of a piece of work in an area of the mathematical sciences and is supervised jointly from mathematics and the relevant applications area. You may work individually or, ideally, with a student from the applied discipline.
Partial Differential Equations	The project consists of a piece of work in an area of the mathematical sciences and is supervised jointly from mathematics and the relevant applications area. You may work individually or, ideally, with a student from the applied discipline.
Work Placement	To provide work experience you will work during the summer on an industrial or research oriented project. This gives you the opportunity to apply your mathematical and statistical skills in the real world.

YEAR 4 (including a sample of outside options)

Advanced Marine Renewable Energy	In this module, you will develop an advanced understanding of design and installation requirements within the sector of Marine Renewable Energy; specifically within the fields of Hydrodynamics, Offshore Structure Design, Risk and Project Management, and Resource Characterisation and Consenting.
Spatio-temporal Modelling	Ecological and epidemiological systems often have strong spatio-temporal components. In this module you will learn the underlying theory of statistical spatio-temporal modelling, including spatial and temporal clustering methods, time series analysis, the analysis of spatially continuous, point pattern and area data. You will learn how to implement these methods in open-source software.
Computational Modelling and Simulation	Renewable energies involve complex interactions of technology and the natural environment, such as marine structures in hostile conditions. In this module you will study and apply physical modelling techniques and simulation approaches, for example computational fluid dynamics for wave energy devices.
Control and Optimisation	Optimisation and control lie at the core of renewable energy systems. In this module you will explore the key techniques needed to optimise and stabilise integrated technologies. You will use case studies from wave energy, wind and solar power and anaerobic digestion to motivate the mathematical tools developed.
Ecological Dynamics	Key advances in our understanding of ecological processes, such as multi-species or predator/prey interaction, island biogeography, or critical transitions in ecosystems, have been based on mathematical theories. In this module you will learn about the classical and current theories in ecology and how they can be used to explore the dynamic processes underlying observed patterns and phenomena.
Environmental Sustainability in Practice	Challenge yourself to critically engage with the principles and practices of sustainable development, and understand how these have shaped the environmental field more broadly. A range of learning modes will enable you to understand the principles and processes of environmental decision-making.
Evolutionary and Behavioural Ecology	This module includes the study of evolution at the genetic and individual levels and how this relates to population dynamics. The module particularly focuses on mating systems, sexual selection and sexual conflict, evolutionary conflict, the genetic basis to behaviour, group making decisions and cooperation, and life history evolution. A major emphasis is placed on preparing you to critically assess current primary research in the field.
Industrial Placement Projects	To provide work experience within the energy sector, you will work on a real industrial project, established during the summer placement stage, but the execution of which is extended through into the academic year. This provides an opportunity for in-depth academic study, analysis and design. The module aims to encourage the use of creativity, imagination and initiative, and professional conduct and discipline in executing the project.
Research Project	This project consists of a piece of work in an area of the mathematical sciences which you will undertake individually under the supervision of a member of staff. Projects might involve working on a practical problem, or developing or using computer programmes and packages. Others involve reviewing a theoretical area or tackling a novel theoretical problem. The aim is to extend the knowledge acquired in formal modules and strengthen skills in research and report writing.
Solar Energy Research and Innovation	An advanced course covering state-of-the-art advanced solar technologies, including advanced solar measurements, solar thermal and photovoltaic technologies. This may include: optimum day-lighting measurements, solar angle determinations, concentrating solar power technologies for process heat and power generation, physics of Silicon based technologies, thin film technologies, excitonic solar cells, deployment, economics and environmental impact. The module is designed to motivate and enable you to choose technologist, designer or consultant roles in the field of solar energy sectors in general.
Understanding Environmental Change	Examine claims that we now live in a new geological epoch, the Anthropocene where humans have become the key driver of planetary change. You will discuss what this means for sustainable development, sustainability and sustainability science. Through your review of key ideas in sustainability, you will look at the Limits to Growth report, published 40 years ago, and contrast this with ideas framing recent and contemporary debates, such as Planetary Boundaries. Through research, scholarship and policy documents that promote and challenge the notion of sustainable development, you interrogate foundational concepts around growth, prosperity, resilience and ecosystem services. You will examine what concepts of sustainability mean in policy areas of biodiversity, climate change and forests. This gives you a solid grounding in key concepts and themes, essential for developing research and career interests.

◆ *Field course destinations are subject to change. The Kenya trip forms part of the MSci Mathematical Sciences (Ecology and Evolution) and MSci Mathematical Sciences (Environmental Science) programmes.*

FIELD COURSE◆

Ever wanted to collect meaningful data while watching African wildlife do its thing on the savannah? In this course you will spend two weeks in Kenya witnessing much of the fascinating wildlife of Africa first-hand, while also learning how to design, carry out and interpret your very own data collection and modelling study. You will be trained to take systematic, ecological observations in the field and then carry out a mathematical research project based on these observations.

SWANPOOL BEACH, CORNWALL

KEY INFORMATION AT A GLANCE

STREATHAM CAMPUS, EXETER	UCAS CODE	TYPICAL OFFER
Single Honours		
BSc Mathematics	G100	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
BSc Mathematics with Accounting	G1N4	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
BSc Mathematics with Economics	G1L1	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
BSc Mathematics with Finance	G1N3	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
BSc Mathematics with Management	G1N2	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MMath Mathematics	G102	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MMath Mathematics with Professional Experience	G104	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MMath Mathematics with International Study	G106	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MSci Mathematics	G103	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MSci Mathematics with Accounting	G1N5	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MSci Mathematics with Management	G1N6	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MSci Mathematics with Economics	G1N7	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
MSci Mathematics with Finance	G1N8	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD
Combined Honours		
BSc Mathematics and Physics	FG31	A*AA-AAB; IB: 38-34; BTEC: D*DD-DDD

STREATHAM CAMPUS, EXETER

Website: **www.exeter.ac.uk/ug/maths**
www.exeter.ac.uk/enquiry
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PENRYN CAMPUS, CORNWALL	UCAS CODE	TYPICAL OFFER
Single Honours		
MSci Mathematical Sciences (Ecology and Evolution)	GF17	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
MSci Mathematical Sciences (Energy Systems and Control)	GF16	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
MSci Mathematical Sciences (Environmental Science)	GF15	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
BSc Mathematical Sciences	G140	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
Flexbile Combined Honours example		
BSc Mathematics and Business	Y004	AAA-ABB; IB 36-32; BTEC Extended Diploma DDD-DDM

PENRYN CAMPUS, CORNWALL

Website: **www.exeter.ac.uk/ug/maths**
www.exeter.ac.uk/enquiry
Phone: +44 (0)1326 371801

We make every effort to ensure that the entry requirements are as up-to-date as possible in our printed literature. However, since this is printed well in advance of the start of the admissions cycle, in some cases our entry requirements and offers will change.

For further details on all our entry requirements, please see our Mathematics pages at **www.exeter.ac.uk/ug/maths**

We strongly advise that you check this before attending an Open Day or making your application. Some programmes at the University require prior study of specific subjects and may also have minimum grade requirements at GCSE or equivalent, particularly in English Language and Mathematics.

International students

If you are an international student you should consult our general and subject-specific entry requirements information for A levels and the International Baccalaureate but the University also recognises a wide range of international qualifications. You can find further information about academic and English language entry requirements at **www.exeter.ac.uk/ug/international**

For information on the application, decision, offer and confirmation process, please visit **www.exeter.ac.uk/ug/applications**

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For further information please visit **www.exeter.ac.uk/ug/maths**

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[1] 98% of our research was rated as 2*,3* or 4* in the Research Assessment Exercise 2014.

[2] Between 2006/07 – 2015/16, the University of Exeter saw the greatest rise in research income, compared to all other Russell Group universities.

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