UNDERGRADUATE

MATHEMATICS

www.swansea.ac.uk/maths

ANALYST

Elian, MMath Mathematics
PhD Mathematical Analysis

WELCOME

I am sure that you will find this brochure interesting and useful and that it will encourage you to study a degree involving Mathematics. We have a staff of enthusiastic mathematicians, who love their subject and take great care of their students. We look forward to you visiting us to find out more about our courses. We will gladly help in any way we can. Our departmental teaching and research centres on modern applicable mathematics – algebra and topology, partial differential equations, stochastic processes, and their applications to physics, finance and engineering, as well as image and data processing, feature extraction, computational geometry and mathematical biology.

Professor Biagio Lucini
Head of Department

DISCLAIMER

The following message contains some very important information. Please read it before you use this brochure. This brochure was printed in the Spring of 2017. It contains information on the undergraduate programmes in Mathematics that Swansea University intends to run for students who are planning to start university in the Autumn of 2018. We have made every reasonable effort to ensure that the information provided is both helpful and accurate as at the date of publication. However, some changes, for example to programmes, study location, placement opportunity, facilities or fees may become necessary due to legitimate staffing, financial, regulatory and academic reasons. We will endeavour at all times to keep any changes to a minimum and to keep prospective students informed appropriately. Any changes to the information contained in this brochure will be updated quarterly at **www.swansea.ac.uk/undergraduate-programme-changes** and on the online course pages at: **www.swansea.ac.uk/maths/undergraduate**

"

I really enjoyed my course. I loved the varied nature of the work that we did and the expertise of the staff; you can tell they are passionate about what they teach. My course definitely set me up for my career as I can apply my degree directly to some of the work I do. Since working as an underwriter for Zurich Financial Services, I have been in four different roles as part of the graduate rotation scheme. In my current role I am working in pricing and underwriting for our range of small and medium-sized enterprise products. My job is varied in nature but my main day-to-day jobs are very numerically focussed, using my Excel and mathematical skills.

....

Vicky Stockley
BSc in Mathematics for Finance

100% IN **GRADUATE EMPLOYMENT OR FURTHER STUDY** SIX MONTHS AFTER LEAVING UNIVERSITY

(HESA data 2014/15)

13TH IN THE UK OVERALL
Guardian University Guide 2017

Consistently high **student satisfaction** scores in the National Student Survey
94% IN 2016

HIGH EMPLOYABILITY

we are **14th in the UK** for graduate prospects
Complete University Guide 2016

TOP 25 MATHEMATICS DEPARTMENTS IN THE UK

TOP THIRD IN THE WORLD

Consistently listed as one of the
TOP DEPARTMENTS IN THE QS WORLD RANKINGS

YEAR IN INDUSTRY
PROGRAMMES AVAILABLE

TEACHING & RESEARCH CENTRES on modern applicable mathematics

£31m Computational Foundry
for computer and mathematical sciences will provide the most up-to-date and high quality teaching facilities

(From September 2018)

SWANSEA A CITY THAT HAS IT ALL

Studying at Swansea University you'll become part of a world-class research institution with grand ambitions. You'll receive an outstanding learning and teaching experience with a distinct emphasis on employability. But you'll also fall in love with the city.

Wherever you go in Swansea, you're by the sea. It's a fantastic location and an upcoming city; warm and friendly, it's compact, yet offers it all.

The latest National Student Survey (NSS) placed us 8th in the UK for student satisfaction, and the highest-ranking university in Wales. Swansea is as rich an environment for living as well as learning. From its breathtaking sweep of beaches and coves to its dazzling nightlife, eclectic dining to unique shopping experiences it's 378km^2 of everything you need to make your student experience amazing.

MATHEMATICS IS...

ANCIENT

Mathematics is more than 6000 years old, unsurpassed by any other scientific subject. Over 4000 years ago, the Babylonians were fascinated by numbers. The Greeks started a systematic study of numbers and geometry over 2000 years ago. Some of the problems they raised were only solved in the last 200 years. Fermat's last theorem, which is over 400 years old, was finally proved in 1995. There are still many more problems to solve. For example, it is still not known whether each even number is the sum of two prime numbers, or whether there is an odd number which is the sum of its proper factors.

MODERN

As the development of science and information technology continues, more sophisticated Mathematics is required. Topics which have been studied theoretically in the past are now proving to be important in quantum physics, computer design, engineering, and the financial industry. On the other hand, new mathematical topics are emerging, being investigated and being used to explain discoveries in physics, chemistry, biology, and environmental science.

USEFUL

In addition to its importance in scientific applications, a mathematical training develops logical reasoning and equips students to solve problems in all walks of life. A Mathematics degree is highly valued in the job market and graduates from Swansea have little difficulty in finding interesting and rewarding employment.
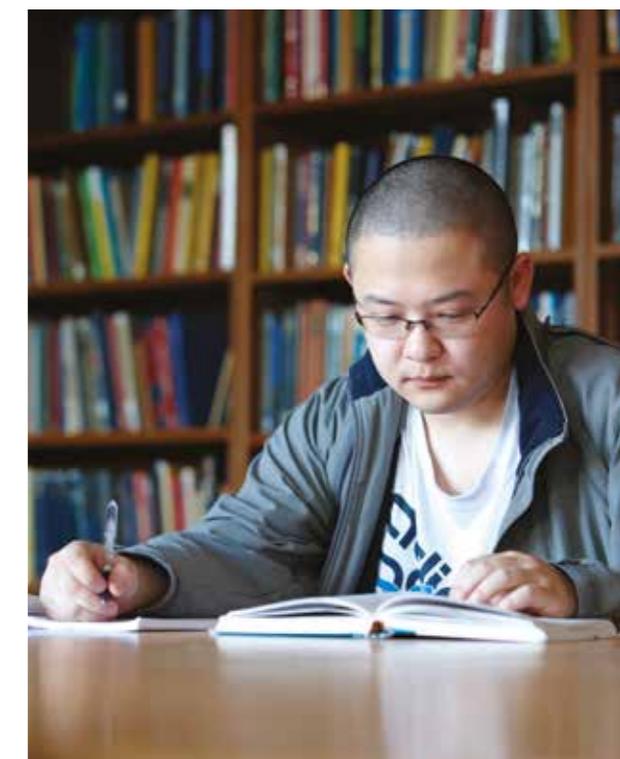
EXCITING

There is nothing quite like the special joy and satisfaction that you get from solving a problem, or developing theories to deal with new types of questions. And this is what Mathematics is all about - developing new ways to solve problems, giving us that excitement time and time again, and with it, a unique understanding of the world.

We offer the following degree programmes:

G103	4 years	Full Time	**MMath Mathematics**
G100	3 years	Full Time	**BSc Mathematics**
G110	3 years	Full Time	**BSc Pure Mathematics**
G120	3 years	Full Time	**BSc Applied Mathematics**
G101	4 years	Full Time	**BSc Mathematics (with integrated Foundation)**
G190	3 years	Full Time	**BSc Mathematics for Finance**

BSc Joint Honours in Mathematics and:

GC16	3 years	Full Time	**Sports Science**
X2G7	3 years	Full Time	**Education**

COMPUTATIONAL FOUNDRY

This is an exciting period in the history of Computer Science at Swansea. During September 2018 we will be moving to a new building based at the heart of the Swansea University Bay Campus. This new £31million world-class Computational Science facility will act as a beacon for research collaborations and will look to attract leading researchers to Wales, placing Swansea at the heart of a thriving regional ecosystem of digital companies and research.

The Computational Foundry will be a bespoke environment built from the ground up to house Computational Scientists. The Foundry is designed to allow increased collaboration between industry and academia, and will include inspirational spaces, events and seminar rooms, and meeting areas to enable conversations to flourish.

Students will be an integral part of this endeavour: The Foundry will come with new teaching facilities and computer laboratories; our students will have access to research project equipment at various points during their studies; to put it simply, our students are an important part of our thriving community of computational scientists.

The Research Crucible based within the Foundry will host space for over 150 researchers and includes Research and Development Laboratories, Postgraduate and Researcher areas, and networking spaces. It will encompass bespoke research laboratories that support industrial proof-of concept and prototyping work, stimulating commercial opportunities, entrepreneurship and job creation all leading to meaningful industrial engagement with business of all sizes and across all sectors.

The Foundry will establish an internationally renowned, digital ecosystem for world-class computational science research that brings together interdisciplinary research and addresses grand challenges for the economy and society under the three themes of Sustaining Life; Enhancing Life; and Securing Life.

WHAT ARE THE MAIN DIFFERENCES BETWEEN THE PROGRAMMES?

Our flagship MMath programme is a four-year degree aimed at giving exceptionally talented students a thorough grounding in all aspects of Mathematics. This is intended for those who wish to follow a highly mathematical career or postgraduate study.

Our three-year Single Honours programmes all cover the general range of mathematical material while allowing you either to focus on one particular aspect of the subject (Pure, Applied or Finance), or to cover a breadth of material with the Mathematics degree.
Our joint honours degree schemes offer the chance to combine Mathematics with either Sports Science or Education. These schemes open up further career options or allow the possibility of accelerated progression in a teaching career. If you take Mathematics or Mathematics for Finance you will have the opportunity of spending a year in an industrial placement between your second and third year of study.

We also offer an Honours programme with an integrated Foundation year (year 0) suitable for applicants not possessing the necessary background for entry at year 1. In that foundation year students will study modules based closely on the core A level Mathematics syllabus, along with a module on study skills, and some complementary modules from other subjects within the College of Science. These are delivered in a way aimed at easing the transition into University study. After the foundation year, the scheme follows the same structure as the BSc Mathematics degree.

LIFE AS A MATHS STUDENT

MODULES

A degree programme is made up from a set of modules. Typically four or five modules are taught in each 11 week semester (September to December, February to May). Every degree programme has certain criteria, stating which modules are compulsory, providing the essential core material for that programme, and which options you have. Some more information about our modules is given in the following pages, and full details can be found on our departmental website:
www.swansea.ac.uk/maths

For each module, you will normally have two or three lectures per week, in which the lecturer will describe the key ideas and theory, often illustrating these with worked examples. You will then deepen your knowledge and understanding with regular example sheets, problem classes, and independent study. Our single honours Year 1 students attend a total of about 17 hours of classes per week, made up of 12 lectures, four problem classes and one tutorial.

LECTURES

Lectures are 50 minutes long. The lecturer will guide you through the material using appropriate media - often a board or data projector, maybe a video, or even a soft toy cat in some cases. Much is covered in one lecture, more than at school, and at a greater depth than most students will initially be used to. Our support system of problem classes and tutorials will help you with problems you cannot resolve.

ADDITIONAL SUPPORT: PROBLEM CLASSES, TUTORIALS, AND OFFICE HOURS

PROBLEM CLASSES:

Problem Classes are 50 minutes long and in Year 1 take place for each module once per week. During these sessions, the person taking the class will work through examples, and address any common problem areas that have been highlighted in the work submitted by the students.

TUTORIALS:

Our Year 1 students are assigned an academic tutor at the start of the year, and meet with this tutor weekly with a small number (typically five or six) of other students for a tutorial. As well as answering specific mathematical queries, tutors may also use the time to give an overview or a different slant or perspective on

topics you have studied in lectures, or to discuss different aspects of Mathematics.

COMPUTER LABS:

A number of our optional modules in Years 1-3 include computational components, taught using modern industry standard mathematics and statistics packages including SPSS and MATLAB. These modules typically include a weekly 50-minute computer lab session during which students learn computational methods, guided by worksheets and online resources, and overseen by one or more members of staff.

OFFICE HOURS:

All Mathematics students are able to consult academic staff during designated Office Hours, during which staff are available in their offices to answer questions on any issue.

COURSEWORK AND EXAMINATIONS

The best way to learn Mathematics is through practice. Students are expected to hand in coursework regularly: one example sheet in each module every week throughout Years 1 and 2. Usually this coursework contributes 20% towards the overall mark awarded for the module, with the remaining 80% provided by a formal 2-hour examination that takes place shortly after the teaching period ends. Having 20% of the final mark coming from coursework both takes the pressure off the formal examination, and also gives both us and you a chance to monitor your progress. Marks from Year 2

and subsequent levels will be combined, with more weight given to the higher Levels, to determine your final degree classification.

PERSONAL TUTORS

Mathematics students in all years are assigned a personal tutor who:

- is your first point of contact with the university administration
- can put you in touch with university agencies, such as Wellbeing Services
- will advise and monitor your academic progress
- will provide references when it comes to applying for jobs

SUPPORT THROUGH THE MEDIUM OF WELSH

Welsh-speaking students may opt to have tutorials in Welsh, and some lecture materials in Welsh are available. Projects taken in final year can also be supervised in Welsh. Many of our degree programmes are eligible for scholarships from y Coleg. For further details please contact Dr. Kristian Evans (K.Evans@Swansea.ac.uk).

SUMSOC: OUR STUDENT SOCIETY

SUMsoc (Swansea University Mathematics Society) is a student run society that aims to help Swansea Mathematics students from all years to get to know one another and help one another. Weekly

drop-in sessions, where students can come along and ask the society's committee questions concerning example sheets, lecture notes or other aspects of their course, are very popular, as are the society's social events.

FACILITIES

The Aubrey Truman Room, located in the centre of the Department of Mathematics, houses the departmental library and computers for student use. It is a popular venue for students to work independently on the regular example sheets set by their lecturers, and to discuss Mathematics together.

Our main university library, Information Services and Systems (ISS), contains a notably extensive collection of Mathematics books.

Well-equipped university computers are available to all students for private study and coursework, in PC labs and libraries.

PRIZES

We award a number of Departmental prizes:

Junior Foulkes Prize in Pure Mathematics
Awarded to the student who completes Year1 with exceptional distinction in Pure Mathematics.

Lynne Charles Prize in Mathematics
Awarded to a student who shows exceptional merit in work assessed by the Department of Mathematics for Year 2.

Senior Foulkes Prize in Pure Mathematics
Awarded to the student who graduates with exceptional distinction in Pure Mathematics.

Oldroyd Prize in Applied Mathematics
Awarded to the student who graduates with the most distinguished performance in Applied Mathematics.

David Pryce History of Mathematics Project Prize
Awarded for the best final year Mathematics project at Year 3.

Rowland Wilson Prize in Pure Mathematics
Awarded to a graduate student who has completed a piece of work of exceptional merit which has subsequently been accepted for publication or for a Master's Degree of Swansea University.

"

Further to my studies at Swansea University as a Master of Science graduate in Financial Mathematics, I am currently working at Deutsche Bank in London as part of the Structured Financial Services team providing client services for corporate lending and debt portfolios.

The complex nature of the course has helped me become a logical decision maker and a highly skilled problem solver. These transferable skills are very useful in the world of Finance since the role is highly challenging working towards deadlines and structured transaction targets.

My studies at Swansea University have also enriched me with leadership, motivational skills and have enhanced my communication skills. I work in a close team of 10 people within a large department which encourages a culture that strives towards learning and effective teamwork.

I thoroughly enjoyed my time at Swansea University and cherish the many fond memories. I am so pleased to be expanding my horizon within a major financial centre.

Rhian Ivey, BSc Mathematics,
MSc Mathematics and Computing for Finance
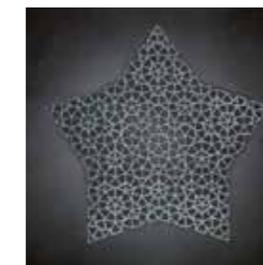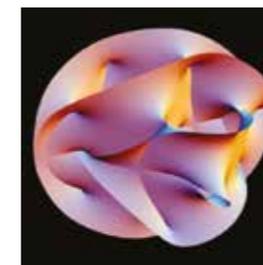
WHAT WILL YOU LEARN?

YEAR 1

All our students, both single honours students studying for either one of our three-year BSc degrees or the four-year MMath degree, and those pursuing joint honours programmes combining Mathematics and another subject, acquire a solid foundation for their mathematical education by taking a common core of four modules in Year 1.

These four core modules are made up of two analysis modules: Introductory Calculus and Introductory Analysis, which introduce and develop concepts such as sets, functions, limits, differentiation and integration, and two algebra modules:

Foundations of Algebra and Introductory Linear Algebra, that cover the basics of logic, proof and algebraic manipulation. Students are then introduced to abstract algebraic structures, complex numbers, vectors, matrices and a first taste of abstract vector spaces.

Semester 1 *(October - January)* Core modules for all students	Semester 2 *(February - June)* Core modules for all students
Introductory Calculus	Introductory Analysis
Foundations of Algebra	Introductory Linear Algebra

This common core will make up half of your first year modules. For joint honours students, the other half of your studies will be in your other subject; for details, see our website **www.swansea. ac.uk/maths**

For most of our single honours students, there are a further three compulsory modules in the first semester: Methods of Algebra and Calculus, which consolidates and reinforces fundamental methods in algebra and calculus, building on what you will have met at A-level and linking with the core algebra and analysis modules, Classical Geometry, that introduces basic geometric structures in two and three dimensions and a Key Skills module, which develops mathematical problem solving, use of computational software packages, and presentation skills.

Such students usually then choose two out of three optional modules in the second semester, depending on their own mathematical interests and tastes. The three streams are Applied Statistics, Classical Mechanics (of particles) and Computational Methods (with Matlab). Some degree programmes require these choices to include a specific module. For example, for the BSc in Pure Mathematics, the two choices should include the module Applied Statistics, and for the BSc in Applied Mathematics, Classical Mechanics (of particles) should be taken. Students following the BSc in Mathematics for Finance degree programme take the modules Computational Methods (with Matlab) and Applied Statistics.

Semester 1 *(October - January)* Compulsory modules for single honours students	Semester 2 *(February - June)* Optional modules for single honours students
Methods of Algebra and Calculus	Applied Statistics
Classical Geometry	Classical Mechanics (of particles)
Key Skills for Mathematicians	Computational Methods (with Matlab)

YEAR 2

Our Year 2 modules follow a similar structure to the Year 1 modules, developing into more advanced material. The common core is deepened and strengthened with a further four modules in algebra and analysis that are taken by all students.

The optional Year 2 modules for single honours students in the first semester cover Advanced Geometry and Numerical Methods (with Matlab). In the second semester the options are Probability, Game Theory and Optimization, and Classical Mechanics (of rigid bodies).

Students on the BSc in Mathematics for Finance scheme take the modules Further Methods of Algebra and Calculus, Numerical Methods, Probability, and Game Theory. MMath students must take Probability Theory.

|	Semester 1 (October-January)	Semester 2 (February-June)
Core modules for all students	Real Analysis and Metric Spaces Vector Spaces	Vector Calculus and Measure Theory Groups and Rings
Compulsory modules for single honours students	Further Methods of Algebra and Calculus	
Optional modules for single honours students	Advanced Geometry Numerical Methods (with MATLAB)	Probability Theory Classical Mechanics (of rigid bodies) Game Theory and Optimisation

YEAR 3 AND M (MMATH)

In these years the modules become more specialised, probing particular areas in depth. Two advanced compulsory modules are taken by all our students in their third year:

- Complex Variables, which develops calculus for complex valued functions, a topic that has many applications in Mathematics and physics
- Higher Algebra, which studies groups, rings and fields as abstract algebraic objects and introduces categories as a language and unifying force in modern Mathematics.

PROJECT MODULE

Most students will take a project module that makes up one quarter of the marks for their final year. This provides an excellent opportunity to explore a mathematical topic and learn new subjects independently, and to develop abilities in literature searching, project planning, written and verbal presentation and report writing. Such skills are highly valued by employers.
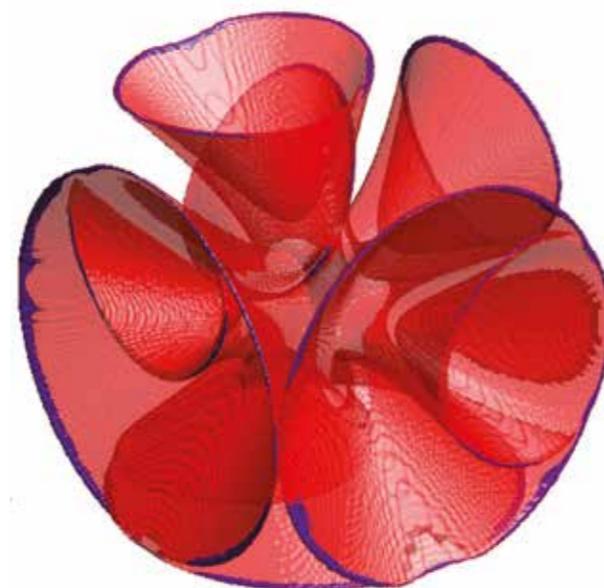
OPTIONAL MODULES

A wide and diverse choice of options is available to our students at Years 3 and M, allowing individual students to use the solid foundation built up during their first two years of study to specialise according to their own tastes. Many of these choices reflect and draw on the research interests and expertise of members of our staff. Here is a selection of topics that are regularly offered:

- Financial Mathematics
- Functional Analysis
- Fourier Analysis
- Differential Equations
- Partial Differential Equations
- Differential Geometry
- Topology
- Lie Groups and Lie Algebras
- Applied Algebra: Coding Theory
- Stochastic Processes
- Itô Calculus and Stochastic Differential Equations
- Black-Scholes Theory
- Numerical Analysis
- Numerics of Ordinary Differential Equations and Partial Differential Equations
- Analytical Dynamics
- Electromagnetics
- Statistical Mechanics
- Mathematical Modelling
- Biomathematics
- Teaching Mathematics via a School Placement

RESEARCH AT SWANSEA

The research excellence of our Department of Mathematics was recognised in the 2008 U.K. Research Assessment Exercise (RAE), with our Department being rated the strongest in Wales. Even more important than the RAE is how the international community views our research. In the International Review of Mathematics U.K. 2010, the work of our researchers in the field of stochastic analysis was highlighted as contributing to the U.K.'s world leadership in this area.

Our Department's research interests divide roughly into five main strands: algebra and topology, analysis and nonlinear partial differential equations, stochastic analysis, mathematical methods in biology and life sciences and image and data processing, feature extraction and computational geometry. Here is a taste of some specific topics currently exciting our researchers in each of these five groups. You will notice connections between these research areas and the wide range of module options offered to our students in Year 3 and M (MMath).

ALGEBRA AND TOPOLOGY

- Noncommutative geometry
- Hopf algebras, coalgebras and corings
- Categorical methods in algebra and topology
- Triangulated categories
- K-theory
- Algebras of operations and cooperations for cohomology and K-theory
- Homotopy theory and homological algebra
- Topology of moduli spaces, operads and low-dimensional topology
- Ring and module theory

ANALYSIS AND NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS

- Regularity theory for p-Laplace type operators
- Navier-Stokes equations in fluid dynamics
- Concentration phenomena in nonlinear Schrödinger equations
- Complexity in the calculus of variations
- Reaction-diffusion-convection equations and systems
- Pseudo-differential operators generating semi-groups

STOCHASTIC ANALYSIS

- Functional inequalities and applications
- Stochastic partial differential equations and applications to fluid mechanics
- Lévy-type processes
- Non-commutative (quantum) probability
- Stochastic modelling of fractal, multifractal and multiscale systems
- Numerical simulation of stochastic processes
- Infinite dimensional stochastic analysis

IMAGE AND DATA PROCESSING, FEATURE EXTRACTION AND COMPUTATIONAL GEOMETRY

- Noise reduction from images and data sets
- Approximation and interpolation of sparsely-sampled data
- Multiscale medial axis
- Feature extraction from images and geometrical objects e.g. edges, corners, intersections, endpoints of curves, boundaries of surfaces
- Oscillation detection for images and data sets
- Computational methods for image processing
- Applications to medical images and computer-aided geometric design

MATHEMATICAL METHODS IN BIOLOGY AND LIFE SCIENCES

- Mathematical pharmacology
- Heat and mass transfer models for plant cooling
- Modelling cellular signal transduction dynamics
- Mathematical Oncology: Multiscale modelling of cancer growth, progression and therapies, and modelling-optimized delivery of multi-modality therapies
- Multi-scale Analysis of Individual-Based Models
- Spreading speeds and travelling waves in ecology
- High Performance Computing

Analyst

"Mathematical Analysis is my passion – it is at the foundation of a wide range of subjects."
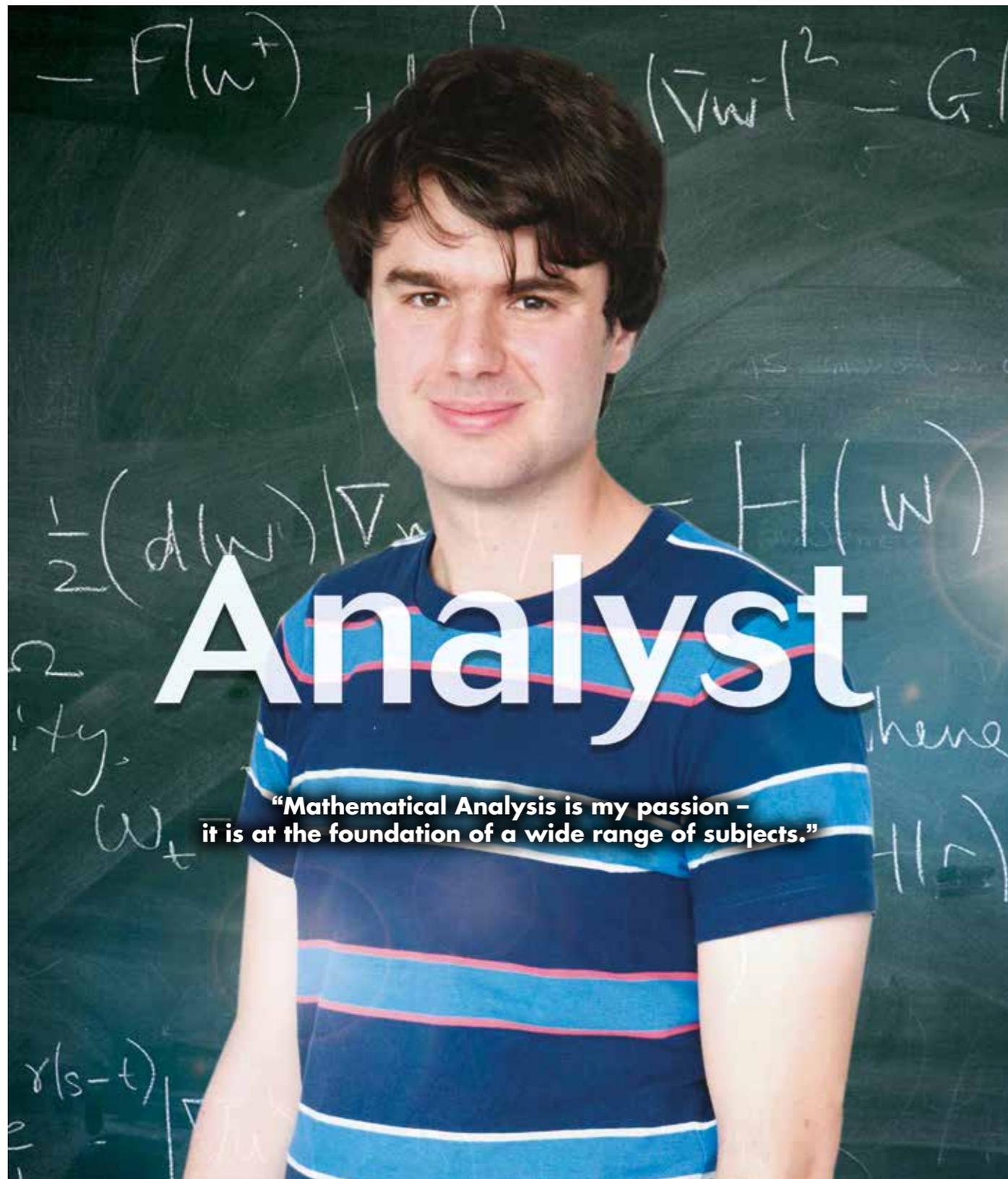
ELIAN RHIND, 23
STUDYING FOR A PHD IN MATHEMATICAL ANALYSIS

"

Mathematical Analysis is my passion – it is at the foundation of a wide range of subjects. I would love to develop what could be the basis of new and exciting maths. To contribute something of use to the field would be very fulfilling.

Mathematicians try to model the world we live in on a piece of paper. As we spot patterns or interesting behaviour among different things we make conjectures on what we believe is the reason behind our observations. The hard part, though, is to prove these claims. This is where our excitement comes in as we try to prove something that wasn't generally accepted as true before.

A lot of things we take for granted today would simply not be there if mathematicians hadn't pushed the boundaries to expand our knowledge of how the world functions.

In five years Swansea University has got me this far – but not just because my lecturers have guided and supported me. Participating in university life has developed my skills and the self-confidence needed to complete my work.

At my graduation I won the award for outstanding performance in the final year on the MMath (Hons) Mathematics.

I came to Swansea because it had the best rated maths department in Wales along with a strong selection of sports and clubs. I swim a lot, so the Olympic-sized pool was a bonus.

I quickly felt at home at the Maths Department but joining societies was an ideal way to meet new people and grow more independent. I very much enjoyed my time as an undergraduate and continue to enjoy postgraduate life.

I thought I was quite a quiet person but now I work with the department to help and encourage school pupils and promote the study of Further Mathematics.

The university is also at a great location. Being next to the beach and close to the city centre and Mumbles it provides plenty of options for you to get out and enjoy yourself.

"

I came to Swansea because it had the best rated maths department in Wales along with a strong selection of sports and clubs.

....

Elian Rhind
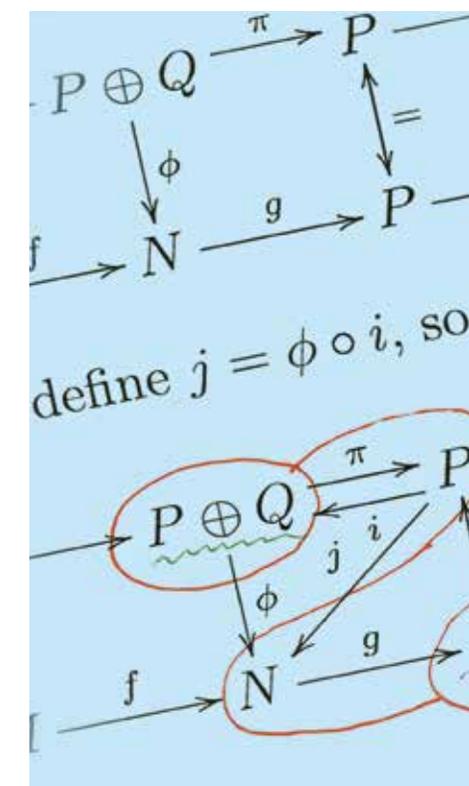
CAREER PROSPECTS

One of the University's key aims is to "prepare and promote the employability of students". The Careers and Employability Service plays a key role in fulfilling this aim by providing services that can help you develop the knowledge, skills and qualities to get your first job. These attributes will subsequently enable you to manage your future career effectively. Career skills are embedded in the Mathematics curriculum from Year 1 through to Year M and Employability Workshops with talks by graduate employers such as PriceWaterhouseCoopers, IBM, the Government Statistical Directorate and from a variety of professional bodies including the Institute of Mathematics and its Applications (IMA) are regularly organised.

Another recent initiative introduced by the Swansea Employability Academy is "SPIN" (Swansea Paid Internship Network) which helps undergraduate students gain valuable knowledge and experience of working life. Students can undertake a project or range of projects with a business during the summer period. For more details, visit the Swansea Employability Academic website: **www.swansea.ac.uk/sea/**

Our degrees will prepare you for a rewarding career in a wide range of areas such as the actuarial profession, the financial sector, IT, teaching, computing and opportunities within business and industry where employers need mathematicians for research and development, statistical analysis, marketing and sales. Recent graduates have obtained roles at Deutsche Bank, the Office of National Statistics, AXA, BA, Shell Research, BMW, KPMG, Tesco, Procter and Gamble, Zurich Financial Services, Rolls-Royce Submarines, PRA International, Health Authorities and Local Government for instance.

www.swansea.ac.uk/sea

AN INTERNATIONAL PERSPECTIVE

The Department of Mathematics and the College of Science have a rich international community with many international links. Students from 80 countries around the world have chosen to study our undergraduate, postgraduate and research degrees.

The department is thoroughly international with staff from Australia, Belarus, China, Germany, India, Italy, the Middle East, Poland, Russia, Spain, the USA, and Ukraine. This means we have a lot of experience of the challenges that students face when coming from another country.

- Swansea is a safe and friendly multi-cultural city with lower living costs than most of the UK
- We are three hours from London by direct train
- We offer free academic English support classes for enrolled, full-time international students
- A free International Student Advisory Service is available for help and advice with healthcare, visas and more

Visit the international pages on our website for country-specific information, student videos, and much more - **www.swansea.ac.uk/science/international**

"

I am really enjoying the range of topics on the course. The lecturers are also always friendly and available if you have any problems.

....

Malgorzata Swietlik (from Poland)
MMath Mathematics

HOW TO APPLY

Students from the UK and the European Union (EU) should apply via UCAS, the standard application system for UK universities - **www.ucas.ac.uk**

Applicants from outside the EU may apply directly via the website: **www.swansea.ac.uk/international/students/apply**

When we receive your application, we will invite you to come to one of our Applicant Visit Days. These are a great opportunity for you to explore Swansea University and all it has to offer. Guided tours of the campus, accommodation and sports facilities are normally available in the morning, and in the afternoon you will have the opportunity to discuss your interests with us individually in an interview, to find out more about the degree, to get a first taste of university Mathematics in a short lecture, to meet staff and current students and ask any questions you may have.

If you are unsure whether to apply for the three-year BSc in Mathematics (G100) or the four-year MMath degree (G103), please note that it is usually possible to transfer between these programmes within the first two years of study. We also try to be as flexible as possible in allowing students to move between other degree programmes.

WHAT QUALIFICATIONS DO I NEED IF I AM A UK APPLICANT?

BSc: A-levels/Welsh Baccalaureate: AAB-BBB or equivalent to include Maths IB: 32-34 to include at least 6 in HL Maths

MMath: A-levels/Welsh Baccalaureate: AAA or equivalent to include Maths IB: 36 to include at least 6 in HL Maths

If you do not meet the entry requirements, you may be considered for the BSc Mathematics (with Integrated Foundation).

Please check the individual course pages on our website for more up to date, detailed and subject specific criteria, including recommended subjects: **www.swansea.ac.uk/undergraduate/courses**

WHAT QUALIFICATIONS DO I NEED IF I AM EUROPEAN UNION OR AN INTERNATIONAL APPLICANT?

We welcome EU and international applicants with a wide range of qualifications. We have included most of these on the table below. Please note that these are for guidance only. If your country is not listed, please get in contact with **study@swansea.ac.uk** or for International enquiries please contact **international-science@swansea.ac.uk**

English Language - We require IELTS 6.0 (with 6.0 in each component) or equivalent English test

BURSARIES & SCHOLARSHIPS

The Department of Mathematics has a tradition of offering a number of departmental scholarships up to a total value of £3000, awarded on the basis of a competitive examination that takes place prior to Easter for students starting their studies the following September. Students who apply to us will be sent details if these scholarships are being offered in a particular year.

Financial assistance from several sources is available to help students to study at Swansea. Swansea University award a number of Excellence Bursaries to all students who achieve AAA at A-level (or equivalent) worth £3000 over three years; Merit Scholarships to all students who achieve AAB at A-level (or equivalent) worth £2000 over three years; Income Related Bursaries; Sporting Scholarships; as well as the Departmental Scholarships detailed above.

For details of scholarships for international students, visit our International Development Office website - **www.swansea.ac.uk/international/students/fees-andfunding/scholarships**

For the latest information on our entry requirements please visit our website. **www.swansea.ac.uk/science**

LATEST INFORMATION

For up to date information on studying at Swansea, please visit **www.swansea.ac.uk/undergraduate** and for information about studying Mathematics at Swansea, please visit **www.swansea.ac.uk/maths/undergraduate**

CONTACT

For enquiries or further information about Mathematics at Swansea, please contact **study@swansea.ac.uk** or telephone **+44 (0)1792 295111**

The University holds Open Days for potential applicants during the Summer and Autumn, at which the Department of Mathematics runs events: see **www.swansea.ac.uk/open-days**. If you are unable to come to an Open Day and would like to visit on a different date, please contact us and we will be happy to make arrangements.

"

Without this scholarship I would not have had any time to enjoy my time at Swansea, or may not have managed to come to University at all. Studying at Swansea University has been a pleasure. The past two years have been a wonderful adventure, from discovering some of the Welsh culture, to learning from some of the best lecturers I have ever met.

The thing that really stands out about Swansea is the huge support you get as a student - from absolutely everyone! Whenever I have had problems - whether personal, academic or financial - I have had someone to advise me, to listen to me and to help me.

After my degree, I want to pursue postgraduate study in Cryptography or Coding Theory. I am very excited about this because my time as student here has definitely prepared me to face the world and to keep working towards my dreams.

....

Alissa Kamilova
PhD Student, University of Oxford

" Mathematicians try to model the world we live in on a piece of paper. As we spot patterns or interesting behaviour among different things we make conjectures on what we believe is the reason behind our observations. "

#SwanseaScience