Sheffield really is one of the most fantastic cities to live in as a student. The nightlife is up there with the greatest in the country; there’s always something on whatever day of the week it is. The music scene attracts some of the biggest names to a multitude of different venues, and there are so many smaller shows that you’ll never struggle to find some new music to lose yourself in. The clubs in Sheffield are not to be missed, with venues such as The Leadmill and the infamous Corporation, which you’ll grow to learn more about. For quieter nights the Steel City does not disappoint either, boasting some of the best independent cinemas and theatres along with a wide variety of independent pubs throughout the city.

Of course it’s not all about the nights. Sheffield in the day has lots to offer. Integrated throughout the city are more green spaces than any other in Europe, which are perfect in the summer for barbecues or great all year round for running or walks. With that in mind, we are also lucky enough to be on the doorstep of the Peak District which is one of the most beautiful National Parks in the country! There are also a multitude of sports venues where you can train or spectate. There are two football teams, Sheffield United and Sheffield Wednesday (you’ll have to pick one to support), as well as an ice hockey team and everything you can think of in between! The University itself has every sport imaginable to offer and facilities that can’t be beaten so you can definitely stay active outside of your studies.

In addition to all the fun you could have in Sheffield, this Review will also serve to give you more information about the academic opportunities that you can partake in with the School of Mathematics and Statistics (SoMaS). There are a few options within the department all of which have great benefits. All our programmes give the opportunity for a year in industry, offering you the chance to take a year out from studying and work full-time in a field that might eventually be your career. More often than not these placements lead to employment after university and provide you with a wealth of knowledge and understanding. Another option is to take a year to study abroad. This fantastic opportunity would allow you to truly immerse yourself in another culture and continue your studies in a completely fresh environment. Destinations are available throughout Europe as well as further afield, such as Canada, Australia, Hong Kong, and the USA.

SoMaS also offers the opportunity for students to become directly involved in the research being performed by the lecturers, via a scheme known as the Sheffield Undergraduate Research Experience (SURE). This scheme provides a great insight into the work done by the University, as well as giving students experience and skills that can be used in their studies and also later life. It’s a great opportunity to learn and enhance your abilities as well as giving you something to add to your CV. I hope that this Review provides some insight to what you could be a part of at Sheffield, and should you want to find out more, then please do contact us to book in for an open day (at www.sheffield.ac.uk/maths/prospectiveug).

Dan Threlfall
Secretary of the Sheffield University Maths Society (SUMS)
The staff and students in the School of Mathematics and Statistics love their subject and many work on maths and stats problems in their spare time as well as at the University.

**Undergraduate Challenge 2017**
This year saw the fourth SoMaS challenge, a collection of mathematical problems suggested by staff for students to think about in teams over a period of two weeks. The event promotes collaborative coffee shop mathematics (all prizes are vouchers which we hope are used at the student union coffee shop to accompany deep mathematical discussions :-) ), and aims to remind everyone that mathematics is greatly enjoyable when you remove the stress and pressure of examinations.

The organisers this year were entertained with work of great innovation and humour, and we really enjoyed hearing from all the teams who submitted work. Among many excellent honourable mentions, "Trivial Group" took the Overall Best Submission award, the Most Valuable Solution award went to "The Evgeny Tribute Band", and the Best Team Name award went to "Root(4me)".

Of the five problems this year, one was a much enjoyed guest problem suggested by an academic from the Broad Institute of Harvard and MIT:

"It is a classical problem to use a biased coin which flips a head with probability p, strictly between 0 and 1, to produce an experiment with two outcomes of equal probability (you are encouraged to think of how to do so, or look it up online).

Suppose that you are given a fair coin. For which p between 0 and 1 can you use your coin to produce an experiment which has an outcome with probability p^2?"

If you want to see more challenge questions you can browse through all problems, and our students’ thoughts, musings, and moments of magic over the last four years, here: http://roukema.staff.shef.ac.uk/somas_challenge.html

We are looking forward to many more SoMaS challenges and we hope that you will take part!

Fionntan, James, Jayanta, Madeleine

**Pizza Seminars**
Both mathematics and pizza are wonderful; the former is the most beautiful form of human reasoning and is the foundation for the modern world, and the latter tastes amazing! So, SoMaS runs an Undergraduate Pizza Seminar Series to combine both!

The series consists of a motley collection of mathematical seminars led by Sheffield mathematicians pitched at a level accessible to first year undergraduate students. The seminar is very informal, with lots of participation, and lots of delicious pizza!

Among other speakers and topics, this year, Dr James Cranch told us about "nice" real numbers and Dr Simon Willerton told us about how his research in pure mathematics allows scientists to measure how "closely related" different species are to one another.

Details of the 2016-2017 series are available at http://roukema.staff.shef.ac.uk/pizza_seminar16-17.html

It’s been enjoyable for the organisers and speakers to share some mathematics not on the formal syllabus with our students, and we continue to look forward to doing so over the coming years.

Evgeny and Fionntan
Sheffield University Maths Society (SUMS) is a student-run society, dedicated to giving maths students the best university experience they possibly can. They are a Students’ Union society and Sheffield Students’ Union has been voted the best in the UK so, being part of SUMS can really help you to make the most of your time as a student here. It is also a great way to make friends and meet new people outside of lectures and really get to know others on your course.

Sports
There are many different sports that the maths society has to offer to keep you active outside of your studies. The men’s football team is unbeaten for the past two seasons, which has seen them win the league for the past two years. The SUMS netball team have been finalists for the past two years. You can also get involved in hockey, squash and dodgeball so there’s plenty to keep you entertained with a variety of different people!

“Bigs and Littles” scheme
This scheme pairs newly arrived first years with students in higher years, to help with settling in and making the transition to university life easier.

Fundraising and Volunteering
As a society, SUMS hosts events throughout the year to raise money for Project Buzz, a charity that helps underprivileged school children in after school clubs. From bake sales on Pi Day to staff vs student football matches we try do as much as we can for a great cause and have a lot of fun at the same time. On top of this, groups of students also go into struggling schools and put on maths workshops which are mostly maths themed games. It gets the kids involved and is always good fun for everyone involved.
**Socials**

We host many events across the whole year including coffee mornings, laser quest, ice skating, pub quizzes and paintball. We’re so lucky to live in such a busy city as Sheffield, there’s always something to do! We host a freshers social at the start of the year which is always a laugh and a great way to get to know your new coursemates. Later on in the year there’s a trip abroad which is a must do. Past destinations include Paris and Amsterdam.

**Ball**

The most popular event is the end of year ball where everyone gets dressed up and ends the year on a bang. This year we’ve sold over 150 tickets for our ball at the Holiday Inn and it’s guaranteed to be a memorable event with games and high quality food throughout the evening. It’s the perfect end to a brilliant year in Sheffield.

**Careers**

SUMS supports students in researching careers and applying for jobs. Activities include careers talks, cv workshops and help with interview preparation.

Fancy dress for PI day.

The human pyramids were taken as a challenge for pub golf.
Undergraduate Ambassadors Scheme (UAS)

UAS is a national scheme that allows students to gain course credit for working as “student tutors” in local schools. It began in 2002, and was the brainchild of the author and broadcaster Simon Singh who was concerned with the decline in the numbers of those studying science, technology and mathematics (STEM subjects) in schools and universities.

Charlotte Hall

When I heard about the UAS, I was really excited by the opportunity to help young people in the local community to develop their mathematical ability. The nature of the scheme provides a great opportunity to practise a wide range of valuable skills, such as professionalism and organisation, opportunities that the module would provide. The module has given me so much new knowledge of teaching in so many ways. I am more aware of difficulties facing education today and have come across ways to overcome these too.

A typical day at school first consists of a staff briefing at 8.20am which is where the teachers are informed of upcoming events within school. This is then quickly followed by registration at 8.40am. The students are then usually completing exam papers during the time before classes start at 9.15am. My first lesson is with a top set year seven class for an hour. I normally help out the pupils with any problems they may have and occasionally get to go through a set question with them on the board. The second lesson is with a top set year ten class for another hour. Again, I help out with any problems that may arise and generally support the teacher.

Undergraduate Ambassadors

I first decided to take the Undergraduate Ambassadors Scheme module to gain more school experience. I have wanted to be a teacher since a very young age so knew that I would probably enjoy the

in a completely different environment to other SoMaS modules. The UAS helped me to decide whether a teaching career is indeed for me, and the positive experiences I had helped me to confirm my decision and apply for a PGCE.

I was placed in a challenging school, which I visited once a week for ten weeks. What I did on a typical afternoon varied each week, and this diversity helped me to build a strong foundation of skills, and have lots of fun. One particularly enjoyable lesson involved investigating Eisenstein’s Handshaking Lemma with a Year 9 group. I found that the challenging environment gave me the chance to really get stuck-in, motivating the children. I felt a great sense of achievement when I saw the children understanding or enjoying a topic under my influence. During my placement, I was offered the opportunity to team-teach two lessons, which really helped me to prepare for my PGCE, and develop my communication skills. I especially enjoyed creating innovative and creative techniques to aid the children’s understanding.

I also undertook a special project where I produced a mini research project into how the socio-economic background of a child affects their attitude towards mathematics. Alongside developing a wide range of skills, this gave me the chance to further my understanding of the educational needs of others. It also opened my eyes to the challenges that teachers can face, and the demanding nature of the profession. As a person, the UAS has also improved my confidence delivering presentations, and has given me an increased professional working attitude. I am very grateful for the opportunity that I have been given in doing the UAS, and I think that is a brilliant chance for SoMaS undergraduates to have fun whilst developing their employability.

Grace Charalambous

I feel the Undergraduate Ambassadors Scheme has taught me so much. I have learnt that not all pupils are perfectly behaved and eager to learn all the time, that organising a school trip involves a mountainous pile of paper work, and that schools can be tough to work in. However most importantly, the scheme has confirmed to me that I would like to teach in the future.

In addition to this, through taking part in the UAS, I have learnt how to take a more independent approach in my actions, my time management skills have strengthened and I feel as though my communication skills have also improved through speaking with the pupils about their future aspirations.

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Matthew Allcock – MMath with a year abroad at Monash University, Victoria, Australia

I spent the third year of my MMath degree studying at the largest university in Australia: Monash University. It gave me the unique opportunity to visit some of the world’s most beautiful places, whilst experiencing the academic, cultural, and social differences between two leading universities.

Academically, I found the experience demanding but rewarding. It can be difficult to fit in to the different academic system of a new university. I had to work hard to catch up with some required material at Monash University that was not covered at Sheffield, giving me a better understanding of mathematics as a result.

I made the most of the different academic strengths that Monash University has by studying dynamical meteorology with the world-leading atmospheric science department. This involved studying the mathematics behind large scale weather systems, in particular the extreme and often dangerous Australian weather.

During my year abroad I took advantage of the university clubs and societies to continue old hobbies and start new ones. I continued my passion for rock climbing by joining the Monash Outdoors Club. With friends that I met through this, I spent several weekends climbing at the beautiful Mount Arapiles, a huge sandstone monolith known as ‘the Uluru of Victoria’. I even learnt how to swim at the local lake with the Monash Cycling and Triathlon Club – it is never too late to learn something new! Joining clubs is the best way to find a social group of like-minded students in a relaxed and informal environment.

The Australian and British seasons are in antiphase, meaning I had a long Summer holiday over Christmas between my two semesters at Monash University. This gave me the fortunate opportunity to visit some of Australia’s famous natural landmarks including: diving at the Great Barrier Reef; cycling and hiking up Australia’s highest mountain, Mt Kosciuszko; and camping along the Great Ocean Road. I had been doubtful about the classic ‘bucket list’ adventures, but I would say that the Great Barrier Reef absolutely lives up to the hype – it is another world down there!

As a word of warning, do not underestimate Australia’s size! It is tempting to go with the aim of visiting many different places that make the country so famous without realising that, for example, travelling from the Great Barrier Reef in Queensland to Uluru (Ayers Rock) in the Northern Territory is further than travelling from Sheffield to Moscow!

My year abroad was a wonderfully fulfilling experience which has given me valuable international social and academic connections. The continued support from the University of Sheffield and SoMaS made the whole process, from application to studying, simple and efficient. I would highly recommend a year abroad to future students who are academically comfortable and keen to experience life in a new part of the world.

Annabelle Sheldon – MMath with a year abroad at the University of North Carolina, Chapel Hill, NC, USA

For my study abroad I visited the University of North Carolina at Chapel Hill. During my stay, I immersed myself in the southern American culture and spent a whole year living with and working with American students. In particular, I had a roommate for the first time and that was an interesting experience and I feel that I learned a lot from that.

I was also able to experience a different education style in America as the university system is very different there. I think that experiencing different teaching and assessment styles improved my independent study skills. Due to the differences in systems, it was also easy for me to take classes outside of the mathematics department. This was one of my favourite parts of the experience as I think it really helped to diversify my education experience and I developed a number of skills that I may not have gotten otherwise.

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Summer Projects

SoMaS students have the opportunity to apply for scholarships to work on summer research projects in partnership with a member of the academic staff. Under the Sheffield Undergraduate Research Experience (SURE) scheme, students receive a bursary of up to £1080 for a project which they generally undertake in the first six weeks of the summer vacation. Other projects are funded by research councils and by the department. Last summer four SoMaS students worked on varied projects. Some recent examples are described here.

Jordan Williamson
(SURE Supervisor Simon Willerton)

My SURE project was entitled “Calculating Knot Invariants” and the aim of the research was to produce a computer program that implemented an algorithm to calculate ‘knot invariants’. A knot is just like we would imagine from everyday life, such as our shoelaces or our earphones in our pockets. A knot invariant assigns a number (or some algebraic object) to each knot to provide us with a method to distinguishing between different knots.

I really enjoyed the opportunity to undertake research since it gave me an insight into a style of learning that I hadn’t encountered in my module work. Although reading textbooks and papers at first was extremely frustrating, after a while I got to grips with independent study, and I feel this ability has helped me in my module work throughout this year. Also to undertake my project I had to develop my coding skills beyond what I had learned in MAS115 Mathematical Investigation Skills, and I feel that skills such as this will stand me in good stead for my future.

Through my research, I managed to go to the British Conference for Undergraduate Research, and I feel these experiences have helped boost my confidence. I would highly recommend a SURE project, as it gives you experience and insight into research, which is otherwise not discovered. Overall, the experience of the SURE project confirmed for me that I wanted to continue my studies and do a PhD. Currently, I am now a PhD student at the University of Sheffield studying algebraic topology, which is closely related to the topic of my SURE project.

“I really enjoyed the opportunity to undertake research since it gave me an insight into a style of learning that I hadn’t encountered in my module work.”
Hope Thackray
(SURE Supervisor Eun-Jin Kim)

I have always had a keen interest in applied mathematics, so naturally my SURE project followed down that route. Working with Dr Eun-Jin Kim, my SURE project “Modelling of Self-Organisation in Turbulence” solves certain nonlinear dynamical systems. More specifically, we studied a variation of the Lorenz system (general case shown below), which is a well-known system of nonlinear differential equations that exhibits chaotic behaviour when given certain perturbations.

\[
\begin{align*}
\frac{dx}{dt} &= \sigma(y-x), \\
\frac{dy}{dt} &= x(\rho-z)-y, \\
\frac{dz}{dt} &= xy-\beta z.
\end{align*}
\]

The behaviour of the system depends on the values of the coefficients $\sigma$, $\rho$, and $\beta$. We observe different movements of the point $(x,y,z)$, depending on how large the coefficients are, and the velocity of the point is described by our system of differential equations.

For example, the parameters might not be large enough for movement to sustain itself, and it may just go back to being still, or the movement might become periodic or even chaotic, which is unpredictable.

My task was to examine these behaviours. I looked for periodic orbits by solving the system for various different coefficients using Matlab. I had never really used this sort of software, so this was a whole new experience for me. I can now appreciate the time and effort that researchers put into coding when solving problems numerically!

The project taught me perseverance, as your work may not go the way that you hope 100% of the time. It also gave me a good feel for the type of environment I would experience if I were to stay on at the university. The skills I acquired through my project were extremely helpful for the following year’s work: I did my SURE project between my third year and my Master’s year, and so I had experience with independent study before I started my MMath report.

Though I did not personally enjoy the computing side of my project, it was a good opportunity to see what kind of mathematics I might be interested in pursuing in the future. As a result of this experience, I am settled on an applied mathematics PhD project in magneto-hydrodynamics, and my work is leaning more towards the analytical side of applied mathematics than the computational.

During the summer vacation last year, I completed a research project entitled “Analysing uncertainty for emulator models.” This was a fantastic opportunity that has deepened my understanding of Mathematics and has actually motivated me to apply for a PhD project.

An emulator is a statistical tool that helps to speed up computer algorithms. My project was centred around programming, allowing me to write some sophisticated computer code which I really enjoyed doing. It is extremely satisfying when your code does exactly as you expect and by the end of my project I was very proud of the code that I had developed.

The project was my first experience of independent study, learning from books rather than lectures, which I have since found to be very important for higher education. During the project, I also felt like I was properly applying the theoretical statistics that I had already learnt throughout university. It’s a wonderful feeling when your research is helping somewhere else.

Abigail Verschueren
(Supervisor Jeremy Oakley, EPSRC vacation bursary)

“During the project, I also felt like I was properly applying the theoretical statistics that I had already learnt throughout university. It’s a wonderful feeling when your research is helping somewhere else.”
Sarah Browne

I never thought I was good enough to go to university, but I applied due to advice from teachers and family. I applied for the BSc in Mathematics at Sheffield since the city appealed to me, the course had plenty of choice and I had family living close by. I will never forget the day I visited Sheffield and it felt like home. I sat next to a professor with whom I talked about mathematics and it felt so natural, the people were all friendly and the degree had plenty of interesting modules on offer. That day I returned home and told my parents all about it. I just could not shut up about the people I had met and the maths that had been discussed whilst visiting. These are all the reasons I chose to study at the University of Sheffield.

The day I arrived in Sheffield to start my degree, I attended an introductory lecture, sitting right at the back hiding like a little girl in a huge crowd. Although the staff were all amazing and I made friends I did not believe in my own abilities and ended up nearly quitting a few months in to my first year. I had a two hour conversation with a professor and she gave me reasons to believe in myself. She even said “You will be coming to see me about doing a PhD in a few years time” and I just laughed not even knowing what a PhD was. I know without the support of the lecturers at the University of Sheffield I would never have finished my undergraduate degree.

As the years passed I became more confident due to my lecturers having faith in me so I decided to look into PhDs. I changed from the BSc to the MMath in mathematics and applied for PhDs during my fourth year. Despite my lack of confidence, at graduation I won a prize for coming top in my year. My confidence grew in my fourth year since I had the opportunity to aid younger students in tutorials and I have taught ever since. I managed to secure funding at Sheffield and stayed for another four years. Throughout these further years of PhD study, my faith in my abilities has continued to increase and I have become an independent researcher. Additionally, I have managed to secure my dream job – a two year research position with teaching at Pennsylvania State University in the USA.

Daniel Graves

The area of my research is algebraic topology. Loosely speaking this is the study of geometric objects, for example shapes and spaces, using algebra. Whilst it is a cornerstone of modern pure mathematics, it also has “real world” applications in areas such as data analysis and robotics.

I have always enjoyed mathematics but it was only part way through my degree that I truly started to appreciate the real beauty of pure mathematics. I took my undergraduate degree here in Sheffield – a choice I made based upon a combination of being impressed with the department and an attraction to the city itself. An attraction that I can honestly say has not waned over time. I would strongly recommend taking a four year course as it provides both a broader foundation of knowledge and the opportunity to undertake a supervised research project. Both of these aspects I have found invaluable when starting a PhD.

Having studied a wide range of pure mathematics as an undergraduate, it was algebraic topology which most captured my imagination. As a novice researcher, my time is primarily spent working through research papers and learning some necessary background material. Whilst I cannot deny that this can be frustrating at times, it feels hugely rewarding when I understand new concepts. There are also a number of interesting seminars, both within my research group and throughout the department, where one can find out about advances that people are making at other institutions.

There are many reasons that I decided to continue studying at Sheffield. As well as my aforementioned love of the city, my primary reason for continuing was the vibrant research community. The department also offers excellent opportunities to teach and assist with tutorials for a selection of undergraduate courses. This allows you develop your skills in expressing mathematics so that others can understand – an essential skill for any researcher.

There are many social benefits to living in Sheffield as well. The university has clubs and societies to cater for all tastes. This provides the perfect chance to try something new. I became involved with the darts society, despite having only played darts a handful of times previously, and have since represented the university competitively. Such societies provide a great way of meeting people from different subject areas. 
Outreach

With assistance from students studying in the department, the School of Mathematics and Statistics reaches out to enthusiastic high school students with a passion in mathematics.

STEP

This year we had our largest-ever uptake for our STEP preparation course, which is designed to prepare students from the Sheffield region for the STEP exam, which features in offers for mathematics degrees made by universities such as Cambridge, Warwick, Bath and Imperial.

Classes are mostly run by SoMaS’s outreach officer James Cranch, and Emeritus Professor Alan Zinober, together with occasional guest lecturers and PhD student helpers. Each class is themed around some area of the A-level syllabus in Mathematics or Further Mathematics, and develops skills at solving hard problems in that area.

Y12 and Y13 problem-solving classes

In addition to the STEP classes, we also run classes for students from the beginning of Year 12 to Christmas of Year 13, encouraging them to develop problem-solving skills.

These have seen another successful year, with students turning up from many schools in Sheffield and beyond.

Team competitions

This year the School of Mathematics and Statistics hosted two team events for local school pupils.

The first was the Senior Team Mathematics Challenge in November, which is organised by two charities: the Further Maths Support Programme, and the United Kingdom Mathematics Trust. This saw schools send teams of four sixth-formers: teams come to compete from Sheffield and further afield in north Derbyshire, Doncaster, Wakefield and Halifax.

The second was the Maths Feast in March, which is for local students in Year 10.

Both were held in the University’s impressive Firth Hall, which provides a comfortable space for more than twenty teams at such events.

Maths Academy

Fionntan Roukema ran a sequence of five seminar-style talks, given by five different members of the department, on a range of topics: these included Sarah Browne on mathematical paradoxes, Jonathan Jordan on the mathematics of Monopoly, and Magdalini Flari on “Counting Without Counting”.

After the talks, there are a lot of refreshments to encourage students to stay around and talk about mathematics.
The School of Mathematics and Statistics has just under 200 overseas undergraduates from 12 countries. Such students bring experiences and knowledge that enliven the life of the School and also gain much from their time with us. Here two overseas students reflect on their experiences.

Rui Ma  
BSc Accounting & Financial Management and Mathematics, 2016

After graduating from a top-ranked high school in China, I decided that I would like to study in the UK. Among the most important factors that encouraged me to make this choice was the high reputation of the UK education system and the opportunity to experience a totally different culture from that I knew China. Although I knew that I would face various difficulties like leaving family and friends; getting used to differences in education and culture; and the challenge of my courses, I still really wanted to study alongside excellent people from all over the world and in a more active way than I could do in China. However, to be honest, I had no idea what my university life would really be like until I arrived here.

In the UK, a university education is aimed at encouraging students to continue investigating the areas they are enthusiastic about and developing the theoretical and practical skills they need in their future career. Studying at the University of Sheffield has changed my way of thinking not only about Mathematics and Statistics but also of the world. Through my course, a BA in Accounting, Financial Management and Mathematics, I have realized the beauty and intricacy of numerical models and theorems, and equipped myself with the skills to perform advanced calculations needed in business. Most importantly though, I’m encouraged to question, assess and evaluate the information that I learn. This has been the greatest difference from China. In the UK, lecturers and tutors are keen to promote students to become knowledge seekers instead of the knowledge acceptors encouraged in Chinese education.

I have found both the lecturers and tutors very helpful and kind. The lecturers explain things clearly and try to make even the less exciting theorems and examples interesting and practical. I really appreciate that they use most of their holiday to write lecture notes and improve them continuously. This helps me considerably in both my study and exam preparation. I have also found my personal tutor has helped me a lot both in my studies and daily life. When I started university here, I initially found the totally different environment, culture and education system quite difficult. In particular I wasn’t used to, or understand why, there was group work, presentations and assignments that I’d never seen before I came to the UK. At one point, I had almost decided to quit and go back to China. Fortunately, I booked an appointment with my personal tutor and talked through with him the difficulties I was having and the fact I was home sick. He helped guide me on how to adapt to the transition between high school and university, and find my own way to study. Most importantly, he succeeded in explaining that I wasn’t on my own and encouraged me to make friends with both the Chinese and local students. I found this really helped and, as a result of this I developed a much more positive attitude towards my university life.

As an international student, I am also encouraged to participate in various volunteering works and paid jobs. The university provides numerous job opportunities and career fairs for students. I volunteered in Action Tutoring which aims to tutor pupils and help prepare them for GCSE math tests. It is so rewarding when the pupils I help write me letter or cards of thanks. Overall, I am really grateful for the unbelievable experience I have had in Sheffield. You only get one opportunity to live your life and I could not have expanded my knowledge, met such nice teachers and experienced a different culture without having studied in Sheffield.
My wonderful experience in the University of Sheffield

Guopeng Li
BSc Mathematics, Level 3

I am an international student from China, and I have spent four years studying at the University of Sheffield (one year at the University of Sheffield International College and then three years on the BSc Mathematics programme). I have always been fascinated by the British style of education. This is one of reasons why I chose England. It is undoubtedly a memorable undergraduate experience. I love the city of Sheffield which is famous for its fruitful educational resources and is an ideal place to experience the British culture and social life.

In the first year of undergraduate study, my Personal Tutor helped and inspired me a lot. I found it easy to adapt to the new environment and managed to arrange my study and life. I have developed a very solid mathematical basis. I think second and third year are genuinely designed for different people with different career pathways. I have always had a keen interest in academic research, so my course combination is relatively pure and challenging. I even get the chance to choose some masters-level courses and I have cherished the opportunity to delve into the postgraduate studies in advance.

In order to prepare for applying for a PhD, I had good conversations with mathematicians who currently work in relevant areas in the department. On the other hand, I have friends who are interested in finance and economy and intend to change their Majors after they finish their Bachelors degrees, which is another popular option of maths students. There are a wide range of options in the third year to help with this, such as financial mathematics and operation research, which are fundamental in finance and economy.

It has also been a great honour to be one of the members of the School of Maths and Stats Teaching Committee. I regard it as a chance to make little positive changes to the teaching in the School. I’ve been involved in several discussions such as, last semester’s module review in the light of reports from lecturers and student questionnaire responses. We also considered proposals for new modules or new degrees, the results of the National Student Survey, and a wide range of questions to do with how teaching is conducted. During this experience I found that the School is making great efforts to improve teaching methods based on the feedback from students.

Overall, the School of Maths and Stats at Sheffield is so good for an international student like me. My Personal Tutor helped me fit into my new life and the people around are so friendly to work with. I fully enjoy the competitive but not aggressive environment, where the atmosphere and pressure is just right to push me forward. I certainly made the right decision to be here, and it is an unforgettable experience.

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Employment Experience

Studying at Sheffield you have the option of taking a break from your studies mid-degree and going on a year-long work placement to obtain a “Degree with Employment Experience”. This employment experience gives you an opportunity to find out about the kind of job you might do after graduation as well as looking good on a CV. You’ll learn a great many transferable skills which are useful both when you come back to study and when applying for jobs.

Sarah Brill
BSc Maths with Employment Experience, 2015

For my placement year I worked for NHS England as an Operational Research Analyst. It was a challenging year but I would recommend a year of employment experience to anyone. I was really nervous when I first started and didn’t have a clue what I was doing. But everyone was really friendly and helpful and my line manager ensured I received the training I needed. Soon I was given my own projects to complete, as well as working with team members on collective projects. I learnt so many transferable skills from doing this and my confidence grew significantly. I am so glad that I took the year because as well as teaching me the skills I need to go into a graduate job, it has also given me perspective on my strengths and weaknesses and what kind of job I would be suited to. I had support from my managers at work and staff at the University, so if there were any problems they were easily sorted. I am now much more confident when applying for jobs and I have been much more productive in my final year of University as I know how to manage my time.

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University of Sheffield prepared me well for the high standards of knowledge and professionalism that are expected at PhD level.

Whilst doing a PhD you may be invited to present your findings at conferences around the world. I have been lucky enough to present my work at a combinatorics conference in Maratea, a small town in the province of Potenza in Italy. These are great opportunities to network with other researchers in your field.

The University of Sheffield’s students’ union is by far the best in the country – check out all of the awards if you don’t believe me. The city of Sheffield itself is full of life and character. Being within close proximity of the Peak District, it’s easy to have a quick, short getaway. I am proud to say that I studied at the University of Sheffield, it is a well-respected university in many aspects and I hope one day to return.

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Graduate Profiles

We are very proud of all of our graduates and are delighted when they keep in touch. Here some recent ones reflect on their time in Sheffield and tell us a bit about what they’re doing now.

Chris Knapp
MMath 2013, currently studying for a PhD at Brunel

I studied for an MMath at the University of Sheffield and was inspired to continue my studies into doing a PhD. Studying for a PhD is challenging; if it wasn’t, I’m sure most people would do it. However the feeling you get when you discover a new result that nobody else in the world knows is indescribable.

I’m what they call a combinatorist; I count things. Whether it be the number of Euromillions lottery combinations or the unique rearrangements of the words in this sentence. 139,838,160 and over 10 quadrillion respectively, if you’re interested. My work is mainly concerned with constructing graph algorithms and determining the computational complexity of computing them. My thesis relies heavily on the research of Alan Turing, whose life you may have seen portrayed in the film ‘The Imitation Game’. The University of Sheffield prepared me well for the high standards of knowledge and professionalism that are expected at PhD level.

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Lindsay Lee  
BSc Maths, 2005, MSc Stats, 2006, PhD, 2010

I decided to do a maths degree whilst crying down the phone to my mum from a little town in Germany where I was supposed to be working as part of my German degree at the University of Lancaster – I remember saying ‘but I really miss doing maths’. I quit my German degree midway through and went to work for an IT company back home. I worked on a lot of projects in Sheffield and after a visit to a friend in the city decided to ring the University of Sheffield and enquired about maths degrees.

In the first year of my degree I decided I really wasn’t a fan of statistics and when asked what I would do when I graduated the only thing I was really sure of was, and I quote ‘not statistics’. Something happened in my second year though. I think it might have been building the transition matrices for Markov chains, it suddenly all made sense and I could see that statistics was useful in the real world. I went to admissions and convinced them that the applied maths modules I was supposed to do in the second year would be better replaced with statistics modules – I was hooked!

I went on to do the MSc in Statistics at Sheffield – applied statistics really appealed to me and I found some of the projects captivating, like using cluster analysis to identify the origins of language, the statistics behind the mass media and estimating the number of left-hand pound coins in circulation (as a leftie myself I was just thrilled to know they existed). I also really enjoyed learning about Bayesian statistics and computer simulation – this ended up being the foundation of my whole career. My MSc dissertation used statistics (particularly time series analysis) to quantify the uncertainty in layer counting of ice cores – this was when I decided I really wanted to apply the statistics I’d learnt to uncertainty in earth science.

Lucky for me, a PhD position was advertised in the Statistics group at Sheffield, working with colleagues in Applied Maths and Animal and Plant Sciences to use statistics to study how the concentrations of atmospheric carbon from plants, trees and soil changed with the climate.

I grew to love Sheffield during my time at the University and didn’t really want to move. During a scan of jobs.ac.uk I spotted what I thought would be my perfect job. It was using similar techniques to those in my PhD but looking now at how computer modelling leads to uncertainty in the concentrations of small atmospheric particles that can affect climate and air quality. Even better it was in Leeds so I could still live in Sheffield.

I now work in the School of Earth and Environment in Leeds with those who model the Earth’s atmosphere. When I arrived I was the only statistician in the department. I have learnt a lot about Earth sciences and how the Earth is modelled in computers. This has allowed me to apply the statistics I learnt during my time in Sheffield to study the uncertainties that come from using computers to simulate the real world. I now get invited to talk at international conferences, at university seminars, and at public lectures. I have been able to travel the world to present my research and now the international community is realising the value of statisticians in Earth science departments. In fact, in Leeds we now have three and hopefully we’ll be staying for a while.

Ashis Patel  
BSc Maths with Employment Experience, 2017

During my placement year I was a financial risk analyst for Lloyds Banking Group located in Halifax. I was part of the capital team within the Mortgages Credit Risk division. Aside from my job role I was given a lot of opportunities to get involved in a range of activities, including attending a group convention, shadowing various roles around the office and getting involved in fund-raising work with charities.

The placement year really helped me to develop a range of skills, including team work, organisation, communication and presentation skills. Over the year, I became much more independent. My placement year confirmed my belief that this is a career path I am suited for and it has given me a great foundation to build a successful career.
Contact details
www.shef.ac.uk/maths/prospectiveug
Admissions Hotline: 0114 222 3999
E-mail: maths.admiss@sheffield.ac.uk
Follow us on Facebook: Mathematics and Statistics, University of Sheffield

By post:
Miss Lesley Hudson
Undergraduate Recruitment Secretary
School of Mathematics and Statistics
The University of Sheffield
Sheffield S3 7RH