School of Chemistry
FACULTY OF MATHEMATICS AND PHYSICAL SCIENCES

CHEMISTRY
UNDERGRADUATE DEGREES 2018

Come and find your place
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IMPORTANT INFORMATION

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Throughout your course, you will explore the breadth of chemistry, understanding how the tiny scale of quantum mechanics controls how reactions really happen. You’ll use this knowledge to design and control the synthesis of molecules and explore chemical processes in the natural world. Chemistry has so many applications, from the design and synthesis of medicines and biological probes to the preparation of new smart materials and investigation of our climate and environment.

Add in the wider experience you’ll gain while you’re studying here, and your degree from the University of Leeds will ensure that you stand out from the crowd and secure that all-important graduate job.

“The recognition of our commitment to student education by being named University of the Year 2017 in The Times and The Sunday Times Good University Guide is just one reflection of how, by working in partnership, students and staff create a really invigorating and vibrant atmosphere within the School.”

PROFESSOR STEVE MARSDEN
HEAD OF THE SCHOOL OF CHEMISTRY
Great things start here.

We’re proud to say that some of our recent students have achieved great things.

Sannia Farooque, who studied MChem, BSc Chemistry, was named as one of the Royal Society of Chemistry’s ‘175 Faces of Chemistry’ during its 175th anniversary celebrations in 2016.

This recognition celebrated Sannia’s achievements both professionally and personally.

Another of our recent graduates, Daniel Price, was awarded the Salters’ Graduate Prize 2016.

This prestigious prize is awarded to students who have the potential to make a very significant contribution to the chemical industry.

Plus a fantastic 97% of our recent graduates were employed or studying within six months of graduating (DLHE).

Join us and see what you can achieve.
FLEXIBLE DEGREES
We scored 92% student satisfaction in the 2016 National Student Survey, and our students enjoy the flexibility that comes with our chemistry degrees.

You’ll learn the fundamentals of physical, inorganic and organic chemistry during your course, and our range of optional modules also allows you to choose areas of chemistry that interest you most.

You can even choose to study some modules from areas other than chemistry through our discovery modules. We have hundreds of discovery modules to choose from, allowing you to pursue interests outside chemistry during your course.

INTEGRATED MASTERS
All our degrees are available as three-year BSc degrees or four-year MChem, BSc Integrated Masters degrees. An Integrated Masters is a four-year degree that extends your studies to Masters level, improving your career prospects or setting you up to do a PhD in the future.

It is possible to transfer between BSc and MChem, BSc variants of a course during the first two years of your studies, as long as you’re meeting the required academic standards.

INDUSTRIAL PLACEMENTS AND STUDY ABROAD
All our chemistry courses give you the chance to do a study abroad year or an industrial placement year.

On our MChem, BSc Chemistry and MChem, BSc Medicinal Chemistry degrees, an industrial placement year can be fully integrated into your course, meaning that it won’t add an additional year to your studies.

This means that you can achieve an Integrated Masters degree with an integrated industrial placement in just four years. During your placement year, you’ll pay a significantly reduced tuition fee.

RESEARCH-LED TEACHING
You’ll be guided through your degree by scientists who have an international reputation for their knowledge.

We’re ranked 4th in the country for research impact, and 95% of our chemistry research is rated as ‘internationally excellent’ or ‘internationally leading’.

Our team’s research will be at the heart of your learning.

ACCREDITATION
All of our single honours courses are accredited by the Royal Society of Chemistry (RSC).

RSC-accredited courses have been evaluated and approved by professional chemists.

WORLD-LEADING FACILITIES
We have all the facilities you’ll need to support and enhance your academic studies. The University is investing millions of pounds each year to ensure we maintain a first-class academic environment. From laboratories and lecture theatres to one of the largest and most impressive libraries in the UK, you’ll find everything you need for your studies right here on campus.

STUDENT SUPPORT
We take fantastic care of our students. You’ll be assigned a personal tutor to guide you through your studies with us, and can receive lots of support from fellow students through our peer mentor scheme.

Using our Virtual Learning Environment you can access learning resources including reading lists, past exam papers, skills guides and assessment guides. You’ll also be able to play back video recordings of your lectures and download lecture notes.

JOIN CHEMSOC
You can join the student-run chemistry society, ‘ChemSoc’. The society gives students a chance to meet people from their course in a social environment, and organises socials and nights out at the beginning of the year to help you settle in.
STUDENT STORY

NAMRAH SHAHID
MCHEM, BSC CHEMISTRY STUDENT

The chemistry course here is great in terms of flexibility. You have so many options, including the chance to do an industrial placement or a year abroad.

Between my second and third year I did a summer placement with Croda Europe Ltd, which manufactures chemicals. This was a great opportunity. It gave me some insight into working with the research and development team in industry and it taught me about chemistry on an industrial scale.

Being a student here has opened up so many doors for me. I’m really passionate about student-led change. I became a school representative, which allowed me to see the hunger of chemistry staff to work and engage with students to bring about positive change. I proposed an extension of opening hours to our chemistry computer cluster; the staff were quick to respond and the proposal was accepted.

I was elected as a University of Leeds delegate for the NUS Women’s and National Conferences 2017, where I finished runner-up in the Inspirational Higher Education Student Woman of the Year award! I also recently won the Equality and Diversity award at the Leeds Partnership Awards 2017.

My ambition is to make it in the world of academia. There’s a lack of female academics in chemistry and an even greater lack of minority ethnic women. I’m keen to change those statistics, share my passion for chemistry and be a role model for aspiring students.
The University of Leeds has given me the support I need to achieve my full potential. The Careers Centre has been invaluable in applying for, and securing, jobs in chemistry. Moreover, academics in the department couldn’t have been more willing to help with any challenges I’ve faced while at Leeds.

The Medicinal Chemistry course here gives great exposure to many different areas of chemistry. Knowledge is first built up in the core areas of physical, organic and inorganic chemistry and then, later in the course, there is the chance to focus more on organic and medicinal chemistry.

I am most proud of consistently working at a first-class standard throughout my degree. While it was tempting to settle for a pass in the first year, achieving a first in both first and second years allowed me to secure my industrial placement at GlaxoSmithKline. Graduating with a first-class degree in medicinal chemistry now seems very achievable and would be something I’d be extremely proud of.

My dream has always been to work in the pharmaceutical industry, developing the drugs of the future which will directly benefit patients. Thanks to the support of everyone at Leeds, and the opportunity I was given to work at GlaxoSmithKline in my placement year, I have now secured a fantastic medicinal chemistry job which I am very excited to begin later this year.
OUR COURSES

CHEMISTRY

Chemistry BSc:
UCAS code F100 / Entry grades ABB / Duration 3 years

Chemistry MChem, BSc:
UCAS code F103 / Entry grades AAB / Duration 4 years

Chemistry with a Year in Industry MChem, BSc:
UCAS code F105 / Entry grades AAB / Duration 4 years

Chemistry with Study Abroad MChem, BSc:
UCAS code F107 / Entry grades AAB / Duration 4 years

As a chemistry student at Leeds, you will discover how chemistry shapes the world around us. You can explore topics from quantum mechanics to planetary atmospheres, from making organic chemicals to producing medicinal drugs, and from bonding in metals to the structures of synthetic and biological materials.

Our chemistry courses aim to help you fulfil your potential, so our programmes take a wide-ranging view of all aspects of chemistry and prepare you for a career in any area of the subject while allowing you to develop as a researcher in a specialism of your choice.

In your first and second years you will study the fundamentals of physical, organic and inorganic chemistry and explore how these concepts integrate together. Optional modules allow you to build transferable skills, such as 'Chemistry: Idea to Market' which gives you insight into industrial new product development. You will also have the opportunity to broaden your knowledge and pursue your interests in other subjects from across the University through discovery modules.

As you progress through the course, you will be able to study more advanced topics relating to the research strengths of the School in greater detail. In the final year of the MChem, BSc degree, you will undertake a major research project, working with experienced scientists to advance our knowledge of chemistry.

“The world of chemistry is so beautiful that it never fails to amaze me. Chemistry is at the heart of modern science, and so opens up doors to a vast number of opportunities.”

SANNIA FAROOQUE,
MCHEM, BSC CHEMISTRY
Without medicinal chemists life as we know it would be impossible. Modern medicines give us pain relief, cure bacterial infections and fight viruses and cancer.

Without the arsenal of drugs at their disposal, doctors would be unable to cure many common diseases. It is the ability of medicinal chemists to have a positive impact on the health and wellbeing of millions of people worldwide that motivates many of our students on this course.

Through studying medicinal chemistry at Leeds, you will be able to gain a broad understanding of chemistry and detailed knowledge of how drugs interact in the body. We also provide opportunities for you to develop the transferable skills that employers seek.

The first year of the course develops your understanding of the fundamentals of chemistry. From the second year onwards, you will focus more on organic chemistry, with advanced teaching on drug synthesis and pharmacology. In your third year, you’ll analyse strategies used in the development of drugs in key therapeutic areas, such as the treatment of cancer and bacterial infection.

In the final year of our MChem, BSc course, you will undertake a major research project. You’ll have the chance to work with Leeds’ interdisciplinary groups, containing medics, biologists and chemists, who work collaboratively to discover new therapeutic strategies.

Using the tools of advanced mathematics to understand the diversity and complexity of the chemical world is what really drives students on our chemistry and mathematics joint honours degrees.

On this programme you’ll study alongside single honours chemists and mathematicians who are learning the same concepts and reaching the same depth of knowledge as you. As you move through the programme, you’ll have the opportunity to specialise in a range of topics in both areas of your course and vary the split between the two components to study the topics that interest you the most.

In studying mathematics, you will develop your skills in core subject areas such as linear algebra and calculus. A wide range of optional modules available to you from your second year onwards will allow you to pursue areas from probability to coding theory, special relativity and financial modelling.

You will combine your mathematical skills with the study of chemistry to understand how and why molecules react and the methods that are employed to study them. Certain areas of chemistry, particularly the physical side, can be closely linked with mathematics. You will have the option to specialise in organic, inorganic or physical chemistry.
I love how studying chemistry at Leeds not only gives me the opportunity to learn new skills but also apply them. It can be challenging at times but the support available from lecturers and tutors is excellent and the social nature of the course means you are never too far from a push in the right direction. We are encouraged to be proactive and have good time management – the department focuses a lot on developing our employability skills and preparing us for after our degrees.

The University of Leeds has a fantastic study abroad programme, which was one of the many reasons why I chose to come here. I had the choice of studying almost anywhere in the world, and, after a very simple application process, I am very fortunate to have been given the opportunity to study at the University of Calgary (Canada) next year.

One of the best parts of studying chemistry at Leeds is that many of the teaching staff are involved in research projects at the University, which they integrate into lectures, opening our eyes to possibilities of pursuing careers in their fields. As a result, I have been attracted to research in the field of developing organometallic anti-cancerous drugs.
REWARDING CAREERS

A fantastic 97% of our recent graduates have successfully secured employment or gone on to further study within six months of graduating (latest Destinations of Leavers from Higher Education survey).

A degree in chemistry is the start of many exciting and rewarding career choices available to you. Many of our recent graduates have gone on to be chemists in some of the largest and most innovative companies in the world. Others have secured PhD positions in order to make some of the big discoveries of the future. The career options available to you will be varied and could take you away from the labs to a rewarding career in government agencies, NGOs or the fast-paced financial sector.

CAREERS AND EMPLOYABILITY SUPPORT

Throughout your time with us our dedicated Faculty Employability Team will be there to support, guide and advise you.

We support you from your first year through to your final year with a series of employability and careers activities.

We’ll help you through the career decision-making process, support you in your applications for work experience and graduate jobs, and bridge the gap between you and employers.

Our specialist, qualified staff will be there to help you succeed on the path to your perfect career, so you feel supported along the way.

You’ll benefit from:

- Future Career Planning for Chemists: a comprehensive and interactive module for first years
- Skills development modules, to give you an insight into industrial product development or business start-up
- Timetabled employability sessions at all stages of your course
- Ongoing support to find internships and placements
- Practical help with developing a CV, making applications, and preparing for interviews and assessment centres
- One-to-one guidance or coaching appointments to focus on you and your future
- Royal Society of Chemistry (RSC) accreditation for our single honours courses, making your degree more valuable in the eyes of future employers.

Our Careers Centre and Employability Team organise an annual STEM Careers Fair, giving you many opportunities to meet graduate recruiters to gain an insight into graduate jobs and explore work experience and internship opportunities, giving you the best start to your career.

The University of Leeds is a top five University targeted by employers (High Fliers 2017). Some recent employers on campus include Reckitt Benckiser, Unilever, P&G and GSK.
INDUSTRIAL PLACEMENT

All of our degree programmes include the option to complete a placement year in industry, which would be the third year of your course.

Some of our programmes, such as our MChem, BSc Chemistry with a Year in Industry and MChem, BSc Medicinal Chemistry with a Year in Industry, have a placement fully integrated, meaning that it won’t add an additional year to your studies.

On our degrees without an integrated industrial placement, you can add a placement year between years 2 and 3.

Our programmes are flexible, so if you’re not yet sure if a placement year is for you, you can decide when you arrive at Leeds, normally at the start of your second year.

Either way, from year one, you will be able to access support to enable you to make the most well-informed decision regarding your placement year search and applications. We have a dedicated Employability and Placements Officer who will work with you during a series of placement information and preparation sessions. These sessions will inform you of the wide variety of options available to you, what to expect from the application process and how to apply.

There will also be opportunities to book one-to-one appointments to help with your placement search, as well as access to a range of placements on the University’s vacancy system.

We successfully place students with a range of employers. Recent examples include Roche, Lubrizol, Covance, IBM and BASF.

“I think there are several advantages of doing a placement, but the most valuable is the lab experience. As I developed my understanding of how the rigs worked it allowed me to be more independent and fix things if they weren’t working. That really boosted my confidence. I’ve also gained insight into the commercial side of things, which you don’t experience in the teaching labs.”

JESSICA WATSON, INDUSTRIAL PLACEMENT YEAR AT PROMETHEAN PARTICLES

STUDY ABROAD

All our courses give you the chance to study abroad as part of your degree.

You would typically spend your third year studying chemistry at a partner institution and then return to Leeds for your final year. Spending a year living and studying abroad is a unique prospect. You’ll have the chance to immerse yourself in another culture and gain unforgettable experiences.

You’ll also gain an overseas education and develop new skills that will impress future employers.

We have relationships with many international universities, representing some of the best places to study abroad across the world.

“All I’m doing my study abroad year in Calgary, Canada. It’s been the best and most valuable year of my life so far. It makes you a lot more mature regardless of whether you thought you were very mature already. You learn more about how your subject is taught in a different country and you learn a lot about other cultures in your school environment and in places that surround the city you’re in. The ski trips, mountain biking and the incredible nature that Canada offers are why I went there, and it’s given me some great memories.”

ALEX DOBSON, STUDY ABROAD YEAR IN CALGARY, CANADA
Leeds is a large, cosmopolitan city which, as well as being vibrant, affordable and multicultural, is also surrounded by some of the most beautiful and accessible countryside in the UK.

At the University of Leeds we guarantee an offer of accommodation for your first year, providing you apply by the deadline.

We offer a wide variety of quality accommodation, from modern, purpose-built developments to more traditional residences in a variety of locations from the heart of campus and city centre to leafy suburbs.
CULTURE

Leeds is well known for its lively arts and music scenes, offering many theatres and museums. The city is also renowned for its shopping facilities and there’s a wide range of outlets, from small boutiques to huge shopping malls. There’s also an extensive choice of places to eat and drink. All culinary tastes are catered for, from Italian to Thai, Caribbean to vegetarian. Leeds’ nightlife is legendary, with clubs and bars offering music to suit all tastes. There are lots of live music venues in the city, including the 13,500 capacity First Direct Arena, the O2 Academy and Brudenell Social Club.

EXPLORING YORKSHIRE

At the heart of Yorkshire, Leeds is one of the greenest cities in Britain and within easy reach of traditional towns and cities such as York, Ilkley, Harrogate and Saltaire, as well as Yorkshire’s stunning coastline. The spectacular countryside surrounding Leeds – including the Lake District, the Peak District, the Yorkshire Dales and the North York Moors – provides the ideal environment for University groups and societies taking part in everything from caving and kayaking to cycling and walking.

UNIVERSITY SPORT

Whether you want to play socially or compete at the highest level, Leeds Sport has a range of opportunities to suit you. The University has great sports facilities including the on-campus sports centre The Edge, which comprises a swimming pool, state-of-the art gym, squash courts and sports halls, sauna and steam room. Playing fields for hockey, cricket, football and rugby are just a short distance away.

Our social leagues are a great way to play competitively with friends against other teams each week. Or join one of our 60 plus sports clubs and become a Leeds Gryphon by representing the University of Leeds at one of several levels. Whether you’re into triathlon or prefer aikido, there’s a club for you.

MUSIC, DANCE AND PERFORMANCE

Regardless of your musical ability or taste, there are plenty of ways to get involved in music during your time at Leeds. You could join the Big Band or perform in one of the University’s many ensembles. The Students’ Union also hosts live music events for local bands to perform at where you can showcase your abilities or discover great new music. There’s a range of dance groups, from ballet to salsa to Irish dancing, offering classes for all levels. You can also get involved in theatre, be it through acting, directing, producing or writing, with Theatre Group or Pantsoc.

VOLUNTEERING

Volunteering to work with organisations or projects is a great way to broaden your experience and develop valuable skills to enhance your CV. The University has over 1,000 opportunities for student volunteers, from mentoring disadvantaged children in Leeds to helping to build school playgrounds in Africa.

CONTACT US

If you require any more information about our courses, modules, or any other aspect of studying chemistry at Leeds, please contact our Undergraduate Admissions Team.

Tel: +44 (0)113 343 6440
Email: admissions@chem.leeds.ac.uk
www.chem.leeds.ac.uk
THE APPLICATION PROCESS

ENTRY REQUIREMENTS

Our entry requirements range from AAA to ABB at A-level depending on which course you choose. Chemistry must be one of your A-level subjects (mathematics is also required for our joint honours Chemistry and Mathematics course). Where an A-level science subject is taken, we require a pass in the practical science element, alongside the achievement of the A-level at the stated grade. Excludes A-level General Studies or Critical Thinking.

We also accept a variety of alternative qualifications (check our website for details).

ENGLISH LANGUAGE REQUIREMENTS

GCSE English Language grade C (or above) or an equivalent recognised English language qualification, eg IELTS 6.0 overall with no less than 5.5 in each element.

ACCESS TO LEEDS

We’re committed to identifying the best possible applicants, regardless of personal circumstances or background.

Access to Leeds is an alternative admissions scheme which accepts applications from individuals who might be from low income households, in the first generation of their immediate family to apply to higher education or have had their studies disrupted.

For more details visit www.leeds.ac.uk/a2l

HOW TO APPLY

All undergraduate applications should be made through the Universities and Colleges Admissions Service (UCAS).

Full instructions on how to apply are available at www.ucas.com

OFFER PROCESS

Suitable applicants will be invited to an applicant day, which gives you the opportunity to meet our academic staff and students, enjoy a tour of our facilities, view student accommodation and find out more about your course.

We like to interview applicants before making an offer, so the day will also include an interview with one of our academics. This will give you the chance to discuss your application in more detail, check that it’s the right course for you and your career plans, have your questions answered and find out more about studying at Leeds.

SCHOLARSHIPS

The University of Leeds has a long-standing history of helping students to manage their finances while at University, with a comprehensive range of bursaries and scholarships available.

For more information, visit www.chem.leeds.ac.uk/undergraduate/scholarships.html

CONTACT US

If you require any more information about our courses, modules or any other aspect of studying chemistry at Leeds, please contact our Undergraduate Admissions team, go online or follow us on twitter (@scienceleeds).

Tel: +44 (0)113 343 6440
Email: admissions@chem.leeds.ac.uk
www.chem.leeds.ac.uk
Natural Sciences

NATURAL SCIENCES
UNDERGRADUATE DEGREE 2018

Come and find your place
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As a natural scientist, you will be uniquely positioned to tackle this next generation of scientific challenges because the concepts and language of multiple scientific disciplines are taught to you from day one of your degree.

At Leeds we have an active research environment which enables us to offer exciting courses taught by experts who are leaders in their fields. You’ll be directly engaged in research through project work.

Your degree from the University of Leeds and the wider experience you’ll gain while you’re studying here will help you stand out from the crowd and secure that all-important graduate job.

“Leeds has always been at the forefront of interdisciplinary research and being named University of the Year 2017 in The Times and The Sunday Times Good University Guide also shows how we translate these skills to deliver an outstanding education and exceptional student experience.”

DR PAUL BEALES
NATURAL SCIENCES PROGRAMME MANAGER
The future is interdisciplinary. Be a part of it.

The major scientific breakthroughs of the future will be interdisciplinary, with scientists from across different disciplines working together to solve the world’s biggest problems.

At Leeds, we’re at the forefront of those breakthroughs.

That’s why, for example, we established the Astbury Centre for Structural Molecular Biology. This research centre brings together scientists from across physics, biology and chemistry to explore the molecular basis of life.

Our approach to interdisciplinary research feeds into our teaching. Whether you want to understand more about how to combine physics and maths to study the quantum world, model the growth of biological populations or understand biochemistry at the atomic level, we have the perfect team to guide you.

Be a part of the future by studying Natural Sciences at Leeds.
INTERDISCIPLINARY RESEARCH AT LEEDS

Interdisciplinary research is the future which is why at Leeds we have founded several international centres where scientists can collaborate and use the best ideas and methods to give new insight into the natural world.

The Astbury Centre is known internationally for its work to understand life in molecular detail by using the latest state-of-the-art facilities in life and physical sciences. Just last year, the University further strengthened research in this field with a £17m investment in the Astbury Biostructure Laboratory, purchasing the very latest in high-field NMR machines and electron microscopes that can give atomic-level views of how biological molecules function.

The Priestley International Centre for Climate is unique in bringing together world-leading expertise in all the key strands of climate change research. The focus is on new interdisciplinary research partnerships that better link our physical, technological, economic and social understanding of climate change with strategies for mitigation and adaptation.

Advanced materials are changing all of our lives and a major new £96m international centre for engineering and physical sciences will help to foster a culture of interdisciplinary working in the development of novel materials to address 21st-century challenges.

MORE CHOICE THAN EVER BEFORE

A Natural Sciences degree is one of the most flexible courses you can study.

You choose which sciences you want to study and how much to study of each. This gives you the freedom to build your own course and become the scientist that you want to be.

We’re constantly developing our Natural Sciences course to give you even more choice.

There are now seven sciences for you to choose from, including biology, biochemistry, chemistry, environmental science, food science and nutrition, mathematics, and physics.

You also have the opportunity to spend a year studying abroad or undertaking an industrial placement. If you decide to do this, your degree will extend to five years. You can choose to do a study abroad or industrial year after the second or third year of your course.

And the great thing is that you don’t have to decide anything now. You don’t even have to tell us which sciences you want to study until you arrive at Leeds.

WORLD-LEADING FACILITIES

We have all the facilities you’ll need to support and enhance your academic studies. The University is investing millions of pounds each year to ensure we maintain a first-class academic environment. From laboratories and lecture theatres to one of the largest and most impressive libraries in the UK, you’ll find everything you need for your studies right here on campus.

STUDENT SUPPORT

We take fantastic care of our students. You’ll be assigned a personal tutor to guide you through your studies with us, and can receive lots of support from fellow students through our peer mentor scheme.

Using our Virtual Learning Environment, you can access learning resources including reading lists, past exam papers, skills guides and assessment guides. You’ll also be able to play back video recordings of your lectures and download lecture notes.
STUDENT STORY

ASIF FAZAL
Asif used his first-class Natural Sciences degree as a springboard for further study. He is currently a first year PhD student on an interdisciplinary programme funded by the Wellcome Trust.

I chose to study chemistry and biochemistry for my Natural Sciences degree, with the major focus on chemistry. These two subjects interlink especially well and the teaching provided many examples of chemistry in a biological context and vice versa.

The Natural Sciences degree course at Leeds is taught as a four-year Integrated Masters, which means that a practical based research project forms a large part of the final year. Working on live research projects during the Masters year gave me a great insight into the workings of a research group and the types of research that occur, while also being fun and exciting.

I am currently a first year PhD student in the Astbury Centre at Leeds and my PhD research so far has been a continuation of the two scientific disciplines I studied during my Natural Sciences degree.

The Astbury Centre is home to the Astbury Biostructure Laboratory, which contains brand new cutting-edge equipment, including cryo-electron microscopes and NMR machines for the study of structures in atomic detail. During the first year of my PhD, I worked on a project to solve the structure of plant and yeast forms of an enzyme involved in the biosynthesis of the amino acid histidine. The use of the new cryo-electron microscopes led to the determination of high-resolution structures of both isoforms of the enzyme, which allowed comparison of the atomic details of the two, as well as the potential development of novel inhibitors against the enzymes as new herbicide compounds.
OUR NATURAL SCIENCES COURSE

Natural Sciences is a prestigious Integrated Masters degree, designed to prepare you for taking on the scientific challenges of the future.

The course is extremely flexible, giving you the choice of which science subjects you want to study and how much you study of each subject. You can also choose whether or not to spend a year studying abroad or working in industry.

HOW THE COURSE WORKS

The course lasts for four years, and during each year you’ll study 120 credits.

YEAR 1

In your first year you’ll study three subjects and take 40 credits from each.

You can choose your three subjects from a list of seven (see subject table), and the choice is entirely yours. However, if you choose to study physics, you must also study mathematics. You must have achieved grade A in the required A-level.

Note that you cannot choose a combination of environmental science and food science and nutrition.

YEAR 2

In your second year, you must choose to continue studying two of the three subjects that you studied in your first year. You could choose to study these two subjects equally (60 credits of each), or as a major/minor split (80 credits of one subject and 40 of the other).

Alternatively, you could choose to study 50 credits of each subject and make up the remaining 20 credits by either studying the third science subject you studied in your first year or a discovery module from an area of your choosing.

If you study physics in your second year, you must also study at least 20 credits of mathematics.

YEAR 3

In your third year, you will continue to study the two subjects that you primarily studied in your second year. You could choose to study these two subjects equally (60 credits of each) or as a major/minor split (80 credits of one subject and 40 of the other).

YEAR 4

In your final year, you will study 40 credits of each of your two main science subjects. The remaining 40 credits will come from undertaking a major research project. This could be based in one scientific area or an interdisciplinary project building on both the sciences that you’re studying.

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<table>
<thead>
<tr>
<th>Subject</th>
<th>Required A-level</th>
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<tr>
<td>Biology</td>
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<td>Biochemistry</td>
<td>Chemistry</td>
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<td>Chemistry</td>
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<tr>
<td>Environmental science</td>
<td>Any two science subjects</td>
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<tr>
<td>Food science and nutrition</td>
<td>Any two science subjects</td>
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<tr>
<td>Mathematics</td>
<td>Mathematics</td>
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<tr>
<td>Physics</td>
<td>Physics and Mathematics</td>
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</tbody>
</table>

FOR FULL COURSE DETAILS, INCLUDING MODULE INFORMATION, VISIT
www.leeds.ac.uk/courses
YEAR 1
Study three science or mathematics subjects equally

YEAR 2
Study two subjects equally or as a major/minor split
You can also choose to take a third subject. This can be another science or a discovery module such as a language course

You can insert an industrial or study abroad year here

YEAR 3
Study two subjects equally or as a major/minor split

You can insert an industrial or study abroad year here

YEAR 4
Study two subjects and perform a major research project
STAFF SPOTLIGHT

DR MEGAN WRIGHT

Megan’s undergraduate studies in Natural Sciences inspired her to pursue a career in research, and she is now an independent University Academic Fellow.

Interdisciplinary research is important. The big problems don’t confine themselves to one discipline. Nature doesn’t neatly subdivide itself – chemistry happens in the atmosphere of distant planets, a cell does millions of chemical reactions and lipid membranes are materials. If we’re going to understand the world and tackle the biggest problems our society faces, we need to think and work across disciplines.

Natural scientists know what the pressing questions in science are, and how to go about tackling them. They understand the language used in different disciplines and are exposed to different ways of thinking. Natural scientists can make connections across disciplines and use their knowledge in one area to enhance their ability to tackle other areas.

Recently my research has focused on working out how a human peptide signal changes the behaviour of a bacterial pathogen. It turned out that the signal triggered the bacteria to become more resistant to antibiotics. Using our chemical tools we discovered that this occurs by binding of the signal to a particular bacterial protein receptor. It’s an intriguing example of how bacteria might be ‘listening in’ on human cell communications and changing their behaviour accordingly.

The University has made a decision to support interdisciplinary research, through initiatives like the Astbury Centre, which means that there are mechanisms, resources and support to make networking easy. This explains why Leeds is so friendly – there is a culture of researchers supporting each other and working together.
COURSE THEMES

Natural Sciences is a very flexible course, and you can build your skill sets up in a range of ways.

As well as the pure sciences themselves, here are some examples where combinations of subjects (interdisciplinary research) are having a major impact in modern science.

CHEMISTRY, BIOCHEMISTRY, BIOLOGY

CHEMICAL BIOLOGY

Chemical biology lets us use the power of chemistry to gain new insights into biological systems. Chemical synthesis enables the preparation of specific molecular probes that let us understand biological pathways in ever more detail and understand how nature is controlled at the molecular level.

NOVEL THERAPEUTICS

The modern day pharmaceutical industry uses combinations of biological and chemical methods to target disease. New therapies could be a small chemical molecule that selectively targets a biological receptor or an antibody that targets a cancer cell. Some modern therapies even contain both biological and chemical components linked together.

PHYSICS, MATHS AND BIOCHEMISTRY OR BIOLOGY

BIOPHYSICS

Application of methods from physics in the life sciences has revolutionised our understanding of how biological systems work. Thanks to these high level physics concepts we can look at processes such as the folding up of proteins one molecule at a time or understand the tiny changes in energy that occur when molecules interact. At the same time theoretical modelling methods let us simulate complex biological systems to understand them in ever greater detail.
**MATHS, BIOCHEMISTRY, BIOLOGY**

**MATHEMATICAL BIOLOGY**
Biology is hugely diverse and complex – combinations of high-level mathematics and biology let us understand these systems in unprecedented detail. From the diversity of genes to evolution and population dynamics your mathematical knowledge will help you develop new insights into these key processes.

**BIOINFORMATICS**
The human genome contains about six billion base pairs of DNA. What is the function of the products of these genes and what does the rest of the DNA outside the genes do? These questions require us to be able to handle huge quantities of data, looking for small but significant differences. By combining advanced mathematical methods, statistical analysis and biological insight bioinformaticians are slowly revealing the subtle control mechanisms buried in the heart of our DNA.

**PHYSICS, MATHS, CHEMISTRY**

**MATERIALS SCIENCE AND NANOTECHNOLOGY**
New materials with reactive and dynamic properties influence everything, from new electronics to self-repairing polymers and new materials for biomedical applications. To control the global properties of materials correctly, you need to understand how they work at the smallest scale. By combining your knowledge of physics, chemistry and maths, you will gain new insights into the nanoscale world.

**SOFT MATTER AND FOOD FORMULATION**
Complex, multiphase fluids and soft solids are highly structured forms of matter that exhibit unusual and interesting self-organising behaviours; examples include foams, emulsions, gels and liquid crystals. They have wide ranging applications including drug formulation, medical devices, soft electronics and food formulation. Understanding and predicting the properties of soft matter requires the application of fundamental concepts in applied mathematics and physics such as fluid dynamics and statistical mechanics. This, for example, can be used to optimise formulation and processing of foods to enhance their texture and mouthfeel, providing consumers with a more enjoyable gastronomic experience.

“I like how, on the Natural Sciences degree, I can keep a broad understanding and interest in wider areas of science and tie in and apply the things I learn in one subject to another.”

JAKE ALEN, MNATSC NATURAL SCIENCES

**MATHS, CHEMISTRY, ENVIRONMENTAL SCIENCE**

**SCIENCE OF THE ATMOSPHERE**
The science of the atmosphere controls our everyday lives to such a huge extent that we need to understand the reactions that take place in the atmosphere as well as how species in the atmosphere move and interact. Atmospheric scientists also study other worlds, designing models and experiments to study the atmospheres on extra-terrestrial planets and their moons.

**PHYSICS, MATHS, FOOD SCIENCE**

**SOFT MATTER AND FOOD FORMULATION**
Complex, multiphase fluids and soft solids are highly structured forms of matter that exhibit unusual and interesting self-organising behaviours; examples include foams, emulsions, gels and liquid crystals. They have wide ranging applications including drug formulation, medical devices, soft electronics and food formulation. Understanding and predicting the properties of soft matter requires the application of fundamental concepts in applied mathematics and physics such as fluid dynamics and statistical mechanics. This, for example, can be used to optimise formulation and processing of foods to enhance their texture and mouthfeel, providing consumers with a more enjoyable gastronomic experience.

FOR FULL COURSE DETAILS, INCLUDING MODULE INFORMATION, VISIT [www.leeds.ac.uk/courses](http://www.leeds.ac.uk/courses)
KIM SPIJKERS-SHAW
Kim is currently completing her second year of a Natural Sciences degree.

In my first year I studied physics, chemistry and maths. I have chosen to focus on physics and maths in my second year, with a 50/50 split. This means I do all of the core physics modules and have chosen an applied maths focus including fluid dynamics. It’s a time-consuming but rewarding course, with loads of freedom and control over the structure and the possibility to direct it towards exactly the content I’m interested in.

My subjects complement each other very well, so I feel like I’m just doing a course in all the little things that interest me. It is very interesting to see the different approaches each science has to similar problems and very rewarding to see how a topic overlaps with different sciences and understand all angles of it fully, where other students often don’t.

Interdisciplinary research is key to tackling the big questions in science today. Many of the most important topics in modern science research branch over more than one of the classical divisions of the sciences, so researchers require a good knowledge of more than one. I think it is very important that research scientists who are working together have at least a base understanding of other sciences besides their specialism.
REWARDING CAREERS

The knowledge, research skills and practical experience that you’ll gain whilst studying for a Natural Sciences degree will open the door to a wide range of employment opportunities.

The future of the planet will be shaped by the scientific advances made by graduates who are able to bring research to life and adapt new knowledge for the benefit of our everyday lives - this is what a Natural Sciences degree equips you to do. Whether advancing knowledge in a research role or leading economic, environmental, social or political change in a professional capacity, you’ll not only shape your own future but that of many others.

As part of your degree you will have opportunities to work in industry, in areas such as research and development, technical support, consultancy or general management, across a wide range of employment sectors, where your multidisciplinary skills are in high demand.

CAREERS AND EMPLOYABILITY SUPPORT

Throughout your time with us our dedicated Faculty Employability Team will be there to support, guide and advise you.

We support you from your first year through to your final year with a series of employability and careers activities.

We’ll help you through the career decision-making process, support you in your applications for work experience and graduate jobs, and bridge the gap between you and employers.

Our specialist, qualified staff will be there to help you succeed on the path to your perfect career so you feel supported along the way.

You’ll benefit from:

- Timetabled employability sessions at all stages of your course
- Ongoing support to find internships and placements
- Practical help with developing a CV, making applications, and preparing for interviews and assessment centres
- One-to-one guidance or coaching appointments to focus on you and your future
- Employer led events and workshops to allow you to gain industry insights whilst developing skills.

Our Careers Centre and Employability Team organise an annual STEM Careers Fair, meaning you get many opportunities to meet graduate recruiters, to gain an insight into graduate jobs and to explore work experience, graduate and further study opportunities, giving you the best start to your career.

The University of Leeds is a top-five university targeted by employers (High Fliers 2017). Some recent employers on campus targeting students have included CERN, Covance, Barclays, Johnson and Johnson, and GSK.
INDUSTRIAL PLACEMENT

Our Natural Sciences degree programme includes the option to complete a placement year in industry, which would be the third or fourth year of your course.

We offer flexibility, so if you're not sure yet if a placement year is for you, you can always make your mind up when you are here.

Either way, from year one, you will be able to access support to enable you to make the most well-informed decision regarding your placement year search and applications.

A placement year is a great opportunity to learn new skills and knowledge whilst putting those that you have already developed at university into practice. This is an excellent way to enhance your employability whilst getting a real understanding of what a career in industry will be like, ultimately helping you decide what kind of career you might like to follow after university.

We have a dedicated Employability and Placements Officer who will work with you during a series of placement information and preparation sessions. These sessions will inform you of the wide variety of options available to you, what to expect from the application process, and how to apply. There will also be opportunities to book one-to-one appointments to help with your placement search, as well as access to a range of placements on the University's vacancy system.

We successfully place Natural Sciences students with a range of employers.

“My placement was based in Utrecht in The Netherlands, at Diversey’s largest European R&D facility. I think all students should gain work experience before they finish university. It will help you decide which career path you want to go down and gives you the confidence to achieve what you want in life.”

ANAIS KAHVE, INDUSTRIAL PLACEMENT YEAR AT DIVERSEY

STUDY ABROAD

This course gives you the chance to study abroad as part of your degree.

You would typically spend your third or fourth year studying at a partner institution and then return to Leeds for your final year. Spending a year living and studying abroad is a unique prospect. You’ll have the chance to immerse yourself in another culture and gain unforgettable experiences.

You’ll also gain an overseas education and develop new skills that will impress future employers.

We have relationships with many international universities, representing some of the best places to study abroad across the world.

“The University is part of the Russell Group, the facilities are excellent and the academic staff are beyond helpful. The course itself ticked all the boxes in that the subject choices are so flexible and you have the option to study for a year abroad or do a year in industry if you want to. It’s literally a build-your-own science degree.”

LUCY HOLLIDAY
STAFF SPOTLIGHT

DR SANDRO AZAELE
Sandro personifies interdisciplinarity uniting maths, physics and biology in his role as a lecturer in applied mathematics.

This century has seen a major expansion in interdisciplinary research, which was born to answer new and pressing topical questions. Society has an urgent demand for scientists who are problem-solvers, able to work in multidisciplinary teams tackling highly complex problems.

I am a physicist by training. During my PhD, I started studying biology and ecology, which showed me that there are important unsolved problems that biologists and ecologists are not able to solve, simply because they do not have the necessary tools. Physicists and mathematicians can make biology and ecology more quantitative and help turn them into more predictive sciences.

I am particularly interested in the mathematical modelling of biological systems. I have a deep interest in uncovering unifying principles which are able to explain properties and patterns emerging from the observation of biological systems. In doing so, I use tools borrowed from mathematics and physics. Mathematics and physics provide well-honed theories for shaping new concepts and structuring ideas, so that they can give us quantitative models that can be compared against empirical data.

I devised a model that is able to predict the temporal evolution of ecosystems with hundreds of interacting species which live in tropical forests. This was also useful to understand how they react when they are affected by external distresses. I also came up with a model that can predict how many species one can find in regions so large that they cannot be exhaustively sampled, like the Amazon rainforest.
Leeds is a large, cosmopolitan city which, as well as being vibrant, affordable and multicultural, is also surrounded by some of the most beautiful and accessible countryside in the UK.

At the University of Leeds we guarantee an offer of accommodation for your first year, providing you apply by the deadline.

We offer a wide variety of quality accommodation, from modern, purpose-built developments to more traditional residences in a variety of locations from the heart of campus and city centre to leafy suburbs.
CONTACT US

If you require any more information about our courses, modules, or any other aspect of studying Natural Sciences at Leeds, please contact our Undergraduate Admissions Team.

Tel: +44 (0)113 343 6440
Email: natsci@leeds.ac.uk
THE APPLICATION PROCESS

ENTRY REQUIREMENTS

Our entry requirements are A*AA at A-level, including sciences relating to pathway. Your subject combination must enable you to fulfil the prerequisites to study three subjects in your first year (see table on page 8). Where an A-level science subject is taken, we require a pass in the practical science element, alongside the achievement of the A-level at the stated grade. Excludes A-level General Studies or Critical Thinking.

We also accept a variety of alternative qualifications (check our website for details).

ENGLISH LANGUAGE REQUIREMENTS

GCSE English Language grade C (or above) or an equivalent recognised English language qualification, eg IELTS 6.0 overall with no less than 5.5 in each element.

ACCESS TO LEEDS

We’re committed to identifying the best possible applicants, regardless of personal circumstances or background.

Access to Leeds is an alternative admissions scheme which accepts applications from individuals who might be from low income households, in the first generation of their immediate family to apply to higher education or have had their studies disrupted.

For more details visit www.leeds.ac.uk/a2l

HOW TO APPLY

All undergraduate applications should be made through the Universities and Colleges Admissions Service (UCAS).

Full instructions on how to apply are available at www.ucas.com

OFFER PROCESS

Suitable applicants will be invited to an applicant day, which gives you the opportunity to meet our academic staff and students, enjoy a tour of our facilities, view student accommodation, and find out more about your course.

We like to interview applicants before making an offer, so the day will also include an interview with one of our academics. This will give you the chance to discuss your application in more detail, check that it’s the right course for you and your career plans, have your questions answered and find out more about studying at Leeds.

SCHOLARSHIPS

The University of Leeds has a long-standing history of helping students to manage their finances while at University, with a comprehensive range of bursaries and scholarships available.

CONTACT US

If you require any more information about our course, modules or any other aspect of studying Natural Sciences at Leeds, please contact our Undergraduate Admissions Team, go online or follow us on twitter (@scienceleeds).

Tel: +44 (0)113 343 6440
Email: natsci@leeds.ac.uk