

Chemistry

Undergraduate guide
2017



The University of
Nottingham

UNITED KINGDOM · CHINA · MALAYSIA



Imagine...

It's #MeantToBe

www.nottingham.ac.uk/chemistry

Imagine... studying chemistry at Nottingham

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Visiting us

Open days

Visiting us in person is the best way to get a feel for student life at Nottingham. You can explore our campuses, facilities and accommodation, speak to staff and current students and find out key information about your course. Visit www.nottingham.ac.uk/opendays or call +44 (0)115 951 5559 to book your place.

UCAS visit days

Offer-holders have the opportunity to visit the school and find out more about their chosen course at a UCAS visit day. Visit www.nottingham.ac.uk/go/visitdays to view the dates and book your place.

#UoNOpenDay



UoNApplicants



@UoNApplicants

Welcome to the School of Chemistry

I am delighted that you are considering studying chemistry at The University of Nottingham. I hope that you will find this brochure useful in finding a course that's right for you.

The School of Chemistry at Nottingham is one of the leading chemistry departments* in the UK with an excellent reputation for both teaching and research. We continue to receive high student satisfaction scores in the National Student Survey and the results of the latest Research Excellence Framework, a national assessment of university research, judged 95% of our research activity to be internationally excellent or world-leading.

Our school provides a dynamic and highly stimulating environment with dedicated staff who are committed to teaching and learning, modern teaching laboratories and lecture theatres and highly motivated and enthusiastic students.

Whatever your ambitions, our aim is to help you achieve them.

We hope to welcome you to Nottingham soon.

Professor Jonathan Hirst
Head of the School of Chemistry



Third year undergraduate students working on a tutorial assignment.

* The 2015 National Student Survey placed Nottingham in the top three Schools of Chemistry within the Russell Group.



Find out where a degree in chemistry could take you:
www.nottingham.ac.uk/chemistry

Studying chemistry at Nottingham

Chemistry is key to our understanding of the natural world and to the enhancement of our quality of life and the environment. Advances in chemistry provide the understanding that underpins much of modern science; an understanding that contributes directly to our everyday lives, from the food we eat and the medicines we take to the environment in which we live.

Our success as teachers of chemistry owes much to our ability to include ground-breaking research results in our teaching curriculum and to provide our students with access to excellent teaching and research facilities. Not only will you be taught by researchers working at the forefront of chemical science, you will have many opportunities to get involved with cutting-edge research through research projects.

Our annual undergraduate intake is typically around 180 students. This number allows us to maintain an important balance: the small group teaching sizes are small enough for us to know all of our students as individuals and the total class size is large enough to allow us to offer a range of specialist options, meaning that you will be able to tailor your degree to your scientific interests.

New teaching facilities

- Undergraduate laboratories
- An Engineering and Science Library

New research facilities

- The Centre for Sustainable Chemistry
- The Nanoscale and Microscale Research Centre
- The School of Chemistry Nuclear Magnetic Resonance Facility

95%

of our research activity judged as internationally excellent or world leading.*

95%

of chemistry students satisfied with the quality of their degree.**

TOP 3

Schools of Chemistry within the Russell Group.**

* Research Excellence Framework, 2014.

** National Student Survey, 2015.

A high-quality learning environment that includes modern undergraduate teaching laboratories.

How will I study?

The School of Chemistry offers a range of stimulating BSc and MSci degree courses with programmes that exploit the enthusiasm of the staff and students for all aspects of chemistry.

Teaching

Your degree course is designed to exploit your curiosity for chemistry, to encourage you to express your ideas clearly and logically and to develop your approach towards independent learning. We achieve this through a series of modules that deepen and broaden your previous knowledge, and introduce you to topics that you may not have encountered at school or college. The academic year is divided into two semesters and you will complete 120 credits of study per year. There are typically 10 lectures per week in addition to laboratory classes.

Small-group tutorials

You will also take part in a series of small-group tutorials that provide an opportunity for you to analyse and use the material that has been presented in lectures and laboratory classes. These meetings also ensure that you have grasped the key points of the lectures and that you fully understand the course material.

Laboratory experience

You will gain laboratory experience in hands-on practical classes that typically run for up to eight hours per week during the first year of your course, and which extend to 12 hours per week in the second and third years. These classes introduce you to the current synthetic and analytical approaches in chemistry and the operation of modern instrumentation. Practical sessions are held in modern laboratories housed within the School of Chemistry. In your third year you will work on short-term, team-based projects to develop your independence and time management skills. These projects will prepare you for your fourth year research project.

Research projects

During the fourth year, MSci students are invited to join an active research group within the school to contribute to projects at the cutting edge of chemistry. You will be given greater independence and will be responsible for driving your own project, although an academic member of staff in your research group will always be available to help.

Personal tutors

You will be assigned a personal tutor who will guide your studies and help you to select modules that match your interests and ambitions. Your personal tutor is your first port of call in the school if you have any problems or questions and they will take an interest in your personal and academic development, offering you help, encouragement and guidance.

Accreditation

Details of the accreditation of our courses by the Royal Society of Chemistry can be found at www.nottingham.ac.uk/chemistry/studywithus



For more information about studying chemistry visit www.nottingham.ac.uk/chemistry

Our courses

Chemistry	UCAS code	Duration	A levels [^]	IB
Single honours				
BSc Chemistry*	F100	3 years	AAB-ABB	34-32
MSci Chemistry**	F101	4 years	AAA-AAB	36-34
MSci Chemistry with an International Study Year**	F103	4 years	AAA-AAB	36-34
MSci Chemistry with a Year in Industry**	F105	4 years	AAA-AAB	36-34
BSc Medicinal and Biological Chemistry***	FC17	3 years	AAB-ABB	34-32
MSci Medicinal and Biological Chemistry**	FC1R	4 years	AAA-AAB	36-34
MSci Medicinal and Biological Chemistry with an Assessed Year in Industry**	CF71	4 years	AAA-AAB	36-34
BSc Chemistry and Molecular Physics	FF31	3 years	AAB	34
MSci Chemistry and Molecular Physics	FFH1	4 years	AAB	34
BSc Biochemistry and Biological Chemistry	C720	3 years	AAB	34
MSci Biochemistry and Biological Chemistry	C721	4 years	AAB	34

* Transfer to the MSci Chemistry courses (F101, F103 or F105) may be considered at the end of year one depending on your performance.

** If you place the University of Nottingham as your firm choice and you do not meet the MSci grades in your offer but meet the BSc grades then you will automatically be offered a place for the BSc degree.

*** Transfer to the MSci Medicinal and Biological Chemistry courses (FC1R or CF71) may be considered at the end of year one depending on your performance.

[^] Applicants taking A level biology, chemistry and/or physics are also required to pass the practical element of assessment (where it is assessed separately).

English language requirements

GCSE English C (or equivalent) or IELTS 6.0 (no less than 5.5 in any element) except for BSc/MSci Chemistry and Molecular Physics, which requires IELTS 6.5 (no less than 6.0 in any element).

For more information and a list of the alternative English language requirements we accept, please see

www.nottingham.ac.uk/go/alternativerequirements

Preparing to study in English

Students who require extra support to meet the English language requirements for their academic course can attend a pre-session course at the Centre for English Language Education (CELE) to prepare for their future studies. Students who pass at the required level can progress directly to their academic programme without needing to retake IELTS. For more information, please visit www.nottingham.ac.uk/cele

Over one third of our UK students receive our means-tested core bursary, worth up to £2,000 a year. For details, see www.nottingham.ac.uk/financialsupport

For more information about studying chemistry visit www.nottingham.ac.uk/chemistry

How do I apply?

All applications for an undergraduate place to study at The University of Nottingham, including applications by international students, must be made through the Universities and Colleges Admissions Service (UCAS). Applications should be made online at www.ucas.com and candidates will be notified of decisions through UCAS using UCAS Track.

Your personal statement

This is the section of your UCAS form that tells us most about you, and you should make the best use of it. Be as specific and detailed as you can – we would like to see that you are a student who can work hard, be self-motivated and make the best possible use of the opportunities that our courses offer you. We would also like to hear about any skills you have gained through extracurricular activities.

Alternative qualifications

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

These include:

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

This list is not exhaustive; we will consider applicants with other qualifications on an individual basis. Please contact us to discuss the suitability of your qualification.

For more information about applying visit www.nottingham.ac.uk/ugstudy/applying

Flexible admissions policy

We recognise that some educational and personal circumstances affect achievement. If we judge that you have experienced circumstances that have adversely affected your achievement, we will consider them when assessing your academic potential. Some courses may vary the offer as a result. For the most up to date information about our offers, please see the entry requirements section of our course pages on our online prospectus.

For more information about this policy, please see www.nottingham.ac.uk/ugstudy/applying

Mature applicants

We encourage applications from mature applicants who have a significant gap in education. You should apply in the normal way through UCAS. More information for mature students can be found at www.nottingham.ac.uk/mature

International applicants

The University's International Office offers guidance and advice on applying through UCAS. If you would like to visit the University and are unable to attend an open day, the International Office will be happy to arrange a tailor-made visit for you. For further information please visit www.nottingham.ac.uk/international

Deferred entry

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

Equal opportunities policy

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

BSc/MSci Chemistry

These courses provide a strong background in chemical theory and practice and will prepare you for entry into a wide variety of careers. The final year of the four-year MSci course involves a major research project at the cutting edge of chemistry carried out within a research group in the school. Transfer between the BSc and MSci courses can be considered throughout the first 15 months of study.



Year one

Building on your pre-university studies, you will spend approximately two-thirds of your first year gaining core chemical knowledge and understanding. A wide range of optional modules are available and account for the remainder of your study time. If you do not possess A level mathematics (or equivalent) then you will take in-house modules to prepare you for this aspect of the chemistry course.

Year two

In the second year, theoretical and practical modules further develop the knowledge and understanding gained in the first year. The core material accounts for approximately 100 credits of your study with a further 20 credits taken as optional modules.

Year three

You'll study the three major branches of chemistry in increasing depth in 60 credits of core modules. Practical work, which consists of a series of mini projects, is covered by a 30 credit module. You will also have a choice of specialist optional modules to provide a further 30 credits.

Year four (MSci students)

You will undertake a major 60 credit research project in Nottingham or at a partner university in Europe. The project will develop not only your practical ability, team working and problem-solving skills, but also your appreciation of the published literature, your use of library and computer database resources and your presentation skills. You will complete a further 60 credits of optional modules in year four.

“ Throughout my degree, not only did I learn about molecular orbital theory and how to draw an organic mechanism, but I also learnt skills in project management, public speaking and written communication. Since joining Croda, I use these transferable skills on a day-to-day basis, and they are fundamental in allowing me to do my job well. ”

Katie Lamport, MSci Chemistry – graduated in 2015



For more detailed course content visit
www.nottingham.ac.uk/chemistry

Typical modules for BSc Chemistry (F100) and MSci Chemistry (F101)

Year one	Year two	Year three	Year four
Compulsory modules <ul style="list-style-type: none"> • Chemistry Study Skills • Foundation Laboratory Work • Introduction to Organic Molecules and their Reactivity • Introduction to Spectroscopy, Energy and Bonding in Chemistry • Introduction to Structure, Periodicity and Coordination Chemistry • Chemical Calculations Optional modules <ul style="list-style-type: none"> • Frontiers in Chemistry • Introduction to Green Chemistry and Processing • Molecules that Changed the World • Mathematics for Chemistry A[^] • Mathematics for Chemistry B^{^^} 	Compulsory modules <ul style="list-style-type: none"> • Core Laboratory Work • Equilibria, Rates and Interfaces • General Inorganic Chemistry • Quantum Chemistry and Spectroscopy • Synthesis and Spectroscopy Optional modules <ul style="list-style-type: none"> • Advanced Calculus and Differential Equation Techniques • Atmospheric Chemistry • Medicinal Chemistry and Molecular Biology • Principles of Analytical Chemistry 	Compulsory modules <ul style="list-style-type: none"> • Advanced Laboratory in Chemistry • Bioinorganic and Metal Coordination Chemistry • Catalysis • Chemical Bonding and Reactivity • Organometallic and Asymmetric Synthesis • Pericyclics and Reactive Intermediates • Solids, Interfaces and Surfaces Optional modules <ul style="list-style-type: none"> • Chemical Biology and Enzymes • Communicating Chemistry • Contemporary Drug Discovery • Drug Discovery: The Development of New Medicines • Molecular Modelling • Protein Folding and Biospectroscopy • Topics in Inorganic Chemistry 	Compulsory modules <ul style="list-style-type: none"> • Chemistry Research Project Optional modules <ul style="list-style-type: none"> • Advanced Physical Chemistry • Contemporary Organic Synthesis and the Construction of Bioactive Targets • Contemporary Physical Chemistry • Enterprise for Chemists • Inorganic and Materials Chemistry • Medicines from Nature and Pharmaceutical Process Chemistry • Nucleic Acids and Bioorganic Mechanism • Self-assembly and Bottom-up Approaches to Nanostructure Fabrication

[^] Optional for students offering at least grade C in A level mathematics (or equivalent).

^{^^} Compulsory for students not offering at least grade C in A level mathematics (or equivalent); unavailable to students offering at least grade C in A level mathematics (or equivalent).

The modules we offer are inspired by the research interests of our staff. As a result modules may change due to research developments or legislative changes, for example. The above list is an example of typical modules that we offer, not a definitive list.

MSci Chemistry with an International Study Year

This four-year course provides in-depth chemistry training of our MSci Chemistry course (see pages 8 and 9 for full details about this course), with the added opportunity of an international study year in year three.

Years one and two

You will follow the same course of study as the MSci Chemistry degree during years one and two. You will apply to potential host universities for entry into year three and you will be supported in this process by the School of Chemistry.

Progression onto the third year of the MSci Chemistry with an International Study Year degree will depend on a good level of performance in years one and two.

Year three

In year three you will have the opportunity to study in the chemistry department at one of our partner universities, which currently include:

Australia: Australian National University, Monash University, University of Melbourne, University of New South Wales, University of Queensland, University of Sydney

Canada: Concordia University, McGill University, University of British Columbia

Hong Kong: The University of Hong Kong

Ireland: University College Dublin

New Zealand: University of Auckland, University of Canterbury

Singapore: The National University of Singapore

USA: University of Arizona, University of Connecticut, University of North Carolina at Chapel Hill

You will study a framework of core modules at the host school which builds on the foundation of years one and two and which will prepare you for the final year in Nottingham. Optional modules will allow you to benefit from the unique opportunities for study at the host school.

Year four

The final year is the same as for the MSci Chemistry course. You will also undertake a major research project, which provides an opportunity to experience research methods employed in modern chemistry.

“As a global university, Nottingham excels at giving you the opportunity to participate in your studies abroad, enabling you to gain a new perspective on your education whilst experiencing what your host country has to offer. With a wide range of partner universities, Nottingham gives you the chance to broaden your knowledge in a variety of new countries and this was why I chose to study here – and I enjoyed every second!”

Pippa Oxford, MSci Chemistry with an International Study Year



For more detailed course content visit
www.nottingham.ac.uk/chemistry

MSci Chemistry with a Year in Industry

This four-year course provides in-depth chemistry training of the MSci Chemistry course (see pages 8 and 9 for full details about this course), with the added opportunity of an assessed year spent in a research laboratory of a major chemical company in year three.

Years one and two

You will follow the same course of study as the MSci Chemistry degree during years one and two. You will apply to potential companies for your year three placement and you will be supported in this process by the School of Chemistry.

Progression onto the third year of the MSci Chemistry with a Year in Industry degree will depend on a good level of performance in years one and two.

Year three

Progression onto the assessed third year gives you an opportunity to work on a 90 credit research project in a research laboratory of a major chemical company located either in the UK or in mainland Europe where you will be a salaried employee. Three 10 credit distance-learning theory modules will develop your core chemistry knowledge; comprehensive academic and pastoral support will be provided. Recent destinations for placement students have included Actelion (Switzerland), AstraZeneca, BP, GlaxoSmithKline, Janssen (Belgium) and Lubrizol.

Year four

The final year follows a similar course as for the MSci Chemistry course. You will also undertake a major research project, which provides an opportunity to experience research methods employed in modern chemistry.



For more detailed course content visit
www.nottingham.ac.uk/chemistry

BSc/MSci Medicinal and Biological Chemistry

These courses combine comprehensive training in chemistry with aspects of biochemistry and pharmacology relevant to understanding human disease and drug design. The course content has been tailored to produce graduates with an excellent practical and theoretical knowledge of synthetic and analytical chemistry. The modules making up the course are given by members of the Schools of Chemistry and Life Sciences.

Year one

In the first year you will follow introductory courses in chemistry, physiology and pharmacology, including practical training. You will spend approximately two-thirds of your first year gaining core chemical knowledge and understanding that builds upon your pre-university studies. If you do not possess A level mathematics (or equivalent) you will take in-house modules to prepare you for this aspect of the chemistry course.

Year two

You will cover topics in physical, inorganic and organic chemistry in more depth, as well as complementary courses in spectroscopy, biological chemistry and pharmacology, which includes a case study on the development of a recent drug.

Year three

You will follow advanced courses in organic, inorganic, biological and medicinal chemistry. If you are pursuing the MSci course you may take an optional drug discovery module taught in collaboration with staff from GlaxoSmithKline.

Year four (MSci students)

You will undertake a major 60 credit research project in Nottingham or at a partner university in Europe. The project will develop not only your practical ability, team working and problem-solving skills, but also your appreciation of the published literature, your use of library and computer database resources and your presentation skills. You will complete a further 60 credits of optional modules in year four.

“ My degree gives me the opportunity to study a wide variety of topics in biochemistry and pharmacology all relating to medicinal chemistry but without restricting the amount of other areas in chemistry I am exposed to. One of the highlights has to be the module in third year which is co-run with GlaxoSmithKline which gave real insight into how medicinal chemistry works in an industrial environment. ”

Jamie Cadge, MSci Medicinal and Biological Chemistry



For more detailed course content visit
www.nottingham.ac.uk/chemistry

Typical modules for BSc Medicinal and Biological Chemistry (FC17) and MSci Medicinal and Biological Chemistry (FC1R)

Year one	Year two	Year three	Year four
Compulsory modules <ul style="list-style-type: none"> • Chemistry Study Skills • Foundation Laboratory Work • Introduction to Organic Molecules and their Reactivity • Introduction to Spectroscopy, Energy and Bonding in Chemistry • Introduction to Structure, Periodicity and Coordination Chemistry • Human Physiology • Chemical Calculations 	Compulsory modules <ul style="list-style-type: none"> • Basic Molecular Pharmacology • Core Laboratory Work • Equilibria, Rates and Interfaces • General Inorganic Chemistry • Medicinal Chemistry and Molecular Biology • Pharmacology • Pharmacology Dissertation: Drugs and Diseases • Quantum Chemistry and Spectroscopy • Synthesis and Spectroscopy 	Compulsory modules <ul style="list-style-type: none"> • Advanced Laboratory in Chemistry • Bioinorganic and Metal Coordination Chemistry • Catalysis • Chemical Bonding and Reactivity • Organometallic and Asymmetric Synthesis • Pericyclic Chemistry and Reactive Intermediates • Solids, Interfaces and Surfaces Optional modules <ul style="list-style-type: none"> • Chemical Biology and Enzymes • Communicating Chemistry • Contemporary Drug Discovery • Drug Discovery: The Development of New Medicines • Molecular Microbiology and Infections • Molecular Modelling • Protein Folding and Biospectroscopy • Topics in Inorganic Chemistry 	Compulsory modules <ul style="list-style-type: none"> • Chemistry Research Project Optional modules <ul style="list-style-type: none"> • Advanced Biocatalysis, Biosynthesis and Chemical Biology • Advanced Physical Chemistry • Contemporary Organic Synthesis and the Construction of Bioactive Targets • Contemporary Physical Chemistry • Enterprise for Chemists • Inorganic and Materials Chemistry • Medicines from Nature and Pharmaceutical Process Chemistry • Nucleic Acids and Bioorganic Mechanism • Self-assembly and Bottom-up Approaches to Nanostructure Fabrication
Optional modules <ul style="list-style-type: none"> • Mathematics for Chemistry A[^] • Mathematics for Chemistry B^{^^} 			

[^] Optional for students offering at least grade C in A level mathematics (or equivalent).

^{^^} Compulsory for students not offering at least grade C in A level mathematics (or equivalent); unavailable to students offering at least grade C in A level mathematics (or equivalent).

The modules we offer are inspired by the research interests of our staff. As a result modules may change due to research developments or legislative changes, for example. The above list is an example of typical modules that we offer, not a definitive list.

MSci Medicinal and Biological Chemistry with an Assessed Year in Industry

The first two years of this course are common to the BSc/MSci Medicinal and Biological Chemistry courses (see pages 12 and 13 for full details about this course). On completion of this degree, you can progress into careers in the pharmaceutical, agrochemical and biotechnology industries, as well as higher research and vocational degrees.

Years one and two

You will follow the same course of study as the MSci Medicinal and Biological Chemistry degree during years one and two. You will apply to potential companies for your year three placement and you will be supported in this process by the School of Chemistry.

Progression onto the third year of the MSci Medicinal and Biological Chemistry with an Assessed Year in Industry degree will depend on a good level of performance in years one and two.

Year three

Progression onto the assessed third year gives you an opportunity to work on a 90 credit research project in a research laboratory of a major chemical or pharmaceutical company located either in the UK or in mainland Europe where you will be a salaried employee.



Three 10 credit distance-learning theory modules will develop your core chemistry knowledge; comprehensive academic and pastoral support will be provided. Recent destinations for placement students have included AstraZeneca, GlaxoSmithKline and Roche (Switzerland).

Year four

The final year follows the same course as for the MSci Medicinal and Biological Chemistry course. You will also undertake a major research project, which provides an opportunity to experience research methods employed in modern chemistry.

Typical modules for MSci Medicinal and Biological Chemistry with an Assessed Year in Industry (CF71)

Year one	Year two	Year three (Year in industry)	Year four
<p>Compulsory modules</p> <ul style="list-style-type: none"> • Chemistry Study Skills • Foundation Laboratory Work • Introduction to Organic Molecules and their Reactivity • Introduction to Spectroscopy, Energy and Bonding in Chemistry • Introduction to Structure, Periodicity and Coordination Chemistry • Human Physiology • Chemical Calculations <p>Optional modules</p> <ul style="list-style-type: none"> • Mathematics for Chemistry A[^] • Mathematics for Chemistry B^{^^} 	<p>Compulsory modules</p> <ul style="list-style-type: none"> • Basic Molecular Pharmacology • Core Laboratory Work • Equilibria, Rates and Interfaces • General Inorganic Chemistry • Medicinal Chemistry and Molecular Biology • Pharmacology Dissertation: Drugs and Diseases • Quantum Chemistry and Spectroscopy • Synthesis and Spectroscopy 	<p>Compulsory modules</p> <ul style="list-style-type: none"> • Distance Learning Inorganic Chemistry • Distance Learning Organic Chemistry • Distance Learning Physical Chemistry • Year in Industry Research Project 	<p>Compulsory modules</p> <ul style="list-style-type: none"> • Chemistry Research Project <p>Optional modules</p> <ul style="list-style-type: none"> • Advanced Biocatalysis, Biosynthesis and Chemical Biology • Advanced Physical Chemistry • Contemporary Physical Chemistry • Contemporary Organic Synthesis and the Construction of Bioactive Targets • Enterprise for Chemists • Inorganic and Materials Chemistry • Medicines from Nature and Pharmaceutical Process Chemistry • Nucleic Acids and Bioorganic Mechanism • Self-assembly and Bottom-up Approaches to Nanostructure Fabrication

[^] Optional for students offering at least grade C in A level mathematics (or equivalent).

^{^^} Compulsory for students not offering at least grade C in A level mathematics (or equivalent); unavailable to students offering at least grade C in A level mathematics (or equivalent).

The modules we offer are inspired by the research interests of our staff. As a result modules may change due to research developments or legislative changes, for example. The above list is an example of typical modules that we offer, not a definitive list.



For more detailed course content visit

www.nottingham.ac.uk/chemistry

BSc/MSci Chemistry and Molecular Physics

These courses focus on the area of overlap between the traditional disciplines of chemistry and physics. The BSc and MSci degrees are a unique alternative to chemical physics courses offered elsewhere and our graduates enter a wide range of science based careers or progress to research-level degrees. The courses are designed to be flexible so it may be possible to transfer to a chemistry or physics degree at the end of the first year, depending on your performance in year one.

Year one

In the first year you will study introductory chemistry, physics and mathematics modules. You will take practical chemistry classes in our teaching laboratories and a special module on data analysis and scientific computing.

Year two

In the second year, lectures will concentrate on physical chemistry, spectroscopy, quantum mechanics and electromagnetic fields, and there are laboratory classes in both chemistry and physics. There is a choice of optional modules, covering specialised topics such as nanotechnology and atmospheric chemistry.

Year three

In the third year, core modules cover energetics and kinetics, magnetic resonance, surface science, solid-state physics, and atomic and particle physics. You will develop communication skills and undertake project-based practical work to develop your understanding of these key areas. Optional modules include molecular modelling and catalysis.

Year four (MSci students)

You will carry out a major research project in Nottingham or at a university in mainland Europe. As well as formal lectures, emphasis is placed on the development of problem-solving and communication skills.

“ The course combines the aspects of chemistry and physics I enjoy most and allows me to learn a diverse range of modules. This, as well as the attractive campus and lively city, was my main reason for choosing to study here. ”

Florence Jones, Chemistry and Molecular Physics



For more detailed course content visit
www.nottingham.ac.uk/chemistry

Typical modules for BSc Chemistry and Molecular Physics (FF31) and MSci Chemistry and Molecular Physics (FFH1)

Year one	Year two	Year three	Year four (FFH1 only)
Compulsory modules <ul style="list-style-type: none"> • Computing For Physical Science • From Newton to Einstein • Fundamental Inorganic Chemistry • Fundamental Organic Chemistry • Fundamental Physical Chemistry • Introductory Laboratory Work • Mathematics for Physics and Astronomy Optional modules <ul style="list-style-type: none"> • Frontiers in Chemistry • Introduction to Green Chemistry and Processing 	Compulsory modules <ul style="list-style-type: none"> • Classical Fields • Core Laboratory Work • Experimental Techniques and Instrumentation • Intermediate Inorganic Chemistry • Intermediate Physical Chemistry • Spectroscopy and Quantum Chemistry • The Quantum World Optional modules <ul style="list-style-type: none"> • Atmospheric Chemistry • Force and Function at the Nanoscale • Principles of Analytical Chemistry 	Compulsory modules <ul style="list-style-type: none"> • Advanced Laboratory Techniques • Atoms, Photons and Fundamental Particles • Chemical Bonding and Reactivity • Chemistry and Molecular Physics Literature and Communication Skills[^] • Fourier Methods • Introduction to Solid State Physics • Physics Project • Solids, Interfaces and Surfaces Optional modules <ul style="list-style-type: none"> • Bioinorganic and Metal Coordination Chemistry • Catalysis • Chemistry and Molecular Physics Literature and Communication Skills^{^^} • Molecular Modelling • Topics in Inorganic Chemistry 	<p>You can choose one of the following modules:</p> <ul style="list-style-type: none"> • Chemistry or Physics Research Project • Chemistry or Physics Research Project (Overseas) Optional modules <ul style="list-style-type: none"> • Advanced Physical Chemistry • Contemporary Physical Chemistry • From Accelerators to Medical Imaging • Functional Medical Imaging • Imaging and Manipulation at the Nanoscale • Inorganic and Materials Chemistry • Quantum Dynamics • Self-assembly and Bottom-up Approaches to Nanostructure Fabrication • Semiconductor Physics • The Politics, Perception and Philosophy of Physics

[^] Compulsory module for FFH1 students.

^{^^} Optional module for FF31 students.

The modules we offer are inspired by the research interests of our staff. As a result modules may change due to research developments or legislative changes, for example. The above list is an example of typical modules that we offer, not a definitive list.

BSc/MSci Biochemistry and Biological Chemistry

The teaching of these courses is split between the School of Life Sciences and the School of Chemistry. Both courses focus on the chemistry of biological molecules (for example, proteins and DNA) in order to understand how they function and is equally split between chemistry and biochemistry. The courses are accredited by the Royal Society of Chemistry. These courses are especially suited to those with a strong interest in chemistry and biochemistry.

Year one

During this introductory year, you will study fundamental aspects of cell biology, biochemistry, genetics and cellular control together with essential chemistry, including molecular structure and reactivity, bonding, chemical equilibria and kinetics. These courses are supported by practical studies in cell biology, biochemistry and chemistry. Students with maths below A level grade B will be required to take chemical calculations modules.

Year two

In this year, your studies continue at greater depth, covering structures of amino acids and carbohydrates, principles of spectroscopy and stereochemistry, protein and gene structure and function, extracellular signals, metabolic regulation, oxidative phosphorylation, organic and biological inorganic chemistry. The course also includes laboratory classes in chemistry, analysis of proteins and enzymes, and practical gene cloning, plus optional modules.



Year three

You will take courses in advanced gene cloning, biochemistry of cancer and other diseases, protein folding and life cycles, bio-organic mechanisms and enzymology, biospectroscopy and chemical synthesis alongside courses developing transferable skills of presentation, interpretation and criticism of scientific data. Your studies will be supported by advanced laboratory work in biochemistry and chemistry.

Year four (MSci students only)

A substantial feature is an extended individual project in biochemistry or chemistry, which may be either lab or bioinformatics based and assessed by dissertation, viva and oral presentation. Modules in organic synthesis, nucleic acid chemistry, biochemistry of cancer, signal transduction, molecular immunology, nanochemistry and enterprise for chemistry can be taken.

Typical modules for BSc Biochemistry and Biological Chemistry (C720) and MSci Biochemistry and Biological Chemistry (C721)

Year one	Year two	Year three	Year four (MSci only)
<ul style="list-style-type: none"> • Essential Molecules, Genes and Cells • Core Skills in Biochemistry and Biological Chemistry • Physiology • Fundamental Physical Chemistry • Fundamental Organic Chemistry • Fundamental Inorganic Chemistry • Introductory Chemistry Laboratory Work • Chemical Calculations 1 and 2 • Mathematics for Chemistry 1 and 2 • Molecules that Changed the World • Frontiers in Chemistry 	<ul style="list-style-type: none"> • Laboratory Analysis of Proteins and Enzymes • Proteins: Structure and Function • Intermediate Inorganic Chemistry • Intermediate Organic Spectroscopy and Stereochemistry • Intermediate Physical Chemistry • Introductory Signals and Metabolic Regulation • Principles and Analysis of Gene Function • Lipid Metabolism and Oxidative Phosphorylation 	<ul style="list-style-type: none"> • Chemical Biology and Enzymes • Biochemistry of Disease • Molecular Microbiology and Infections • Advanced Biochemistry • Bio-inorganic and Metal Co-ordination Chemistry • Protein Folding and Biospectroscopy • Organometallic and Asymmetric Synthesis • Advanced Biochemistry Lab Work • Advanced (Chemistry) Lab Techniques 	<ul style="list-style-type: none"> • Signal Transduction • Biochemistry or Chemistry Research Project • Cellular and Molecular Immunology • Contemporary Organic Synthesis • Nucleic Acids and Bio-organic Mechanisms • Enterprise for Chemists • Nanostructure Fabrication

The modules we offer are inspired by the research interests of our staff. As a result modules may change due to research developments or legislative changes, for example. The above list is an example of typical modules that we offer, not a definitive list.

“ At Nottingham, I had the unique opportunity to read a challenging interdisciplinary course that gave me skills and knowledge in several sciences. This was an incredible and memorable part of my university life and no doubt will influence my future for the better. ”

Kayleigh Fung, Biochemistry and Biological Chemistry



Imagine... landing your dream career

The University of Nottingham is consistently named as one of the most targeted universities by Britain's leading graduate employers.*

As a Nottingham chemistry graduate you will be well prepared for a wide range of employment and postgraduate study opportunities. The chemical industry continues to be one of the strongest industrial sectors in the UK and the emerging materials and biotechnology sectors require trained chemists who can generate the new materials, products and knowledge that are needed in these areas.

In addition to equipping you with theoretical and practical skills in chemistry, a degree in chemistry from Nottingham also demonstrates that you can think logically and critically, solve complicated problems and manage your time effectively. Consequently, our graduates may also be employed in professions including those in finance, education, marketing and the media.

87%

of first-degree graduates in the school who were available for employment had secured work or further study within six months of graduation.**

£21,757

The average starting salary was £21,757 with the highest being £31,200.**

Our careers team are on hand to offer advice and guidance after you graduate.

Find out more about the Careers and Employability Service:
www.nottingham.ac.uk/careers



Recent destinations of graduates from our school include:

Boots, Cancer Research, GlaxoSmithKline, HSBC, Intellectual Property Office, NHS and Unilever.

Many graduates continue their studies in chemistry or a related discipline, working towards a doctorate degree at Nottingham as a result of the enthusiasm they developed during their fourth year project.

Careers and Employability Service

Our Careers and Employability Service has a team dedicated to Faculty of Science students. They will be on hand to offer you specialist support and guidance throughout your degree and for life after you graduate.

Whether you need help writing a CV, preparing for an interview or exploring career ideas, you can book one-to-one appointments or come along to a workshop. Each term there is also an exciting events schedule, bringing you face-to-face with employers offering real-life insight into their professions. For more information see www.nottingham.ac.uk/careers

The Nottingham Advantage Award

The award-winning Nottingham Advantage Award recognises and rewards your extracurricular activities. With a choice of over 200 modules, you can hone the key skills employers want. From developing your leadership skills and learning a language to public speaking and volunteering, you will leave university with demonstrable experience that sets you apart from other graduates. For further information, please visit www.nottingham.ac.uk/careers/advantage



Find out where Nottingham could take you and network with our graduates on LinkedIn.

“ I have now chosen Nottingham twice, once for my undergraduate degree and now again for my PhD. The first time I chose chemistry at Nottingham because of the sheer enthusiasm of both staff and students for their subject. Throughout my degree I was given some wonderful opportunities to apply the chemistry I had learnt; by the time I graduated I had done three summer research projects at Nottingham, a year in industry abroad and a Masters research project. I enjoyed these experiences so much that I returned to start my PhD with the newly opened Centre for Doctoral Training in Sustainable Chemistry the September after my graduation. ”

Grace Lowe, PhD Chemistry



* The Graduate Market in 2013-2016, High Fliers Research.

** Known destinations of full-time home and EU first-degree graduates, 2013/14.

Imagine... a world beyond your studies

There's so much for you to get involved in and explore at the University and around the city. Whether you're interested in sports, learning a language or just having fun with friends alongside studying, you'll be spoilt for choice.

Getting involved in your Students' Union

As soon as you start with us, you are automatically enrolled as a member of our Students' Union. There are hundreds of activities to provide you with the perfect opportunity to take up a new hobby or pursue existing interests. Choose from over 300 student-run societies – including ChemSoc, the University of Nottingham Society for undergraduate and postgraduate Chemistry students. Find out more: www.su.nottingham.ac.uk



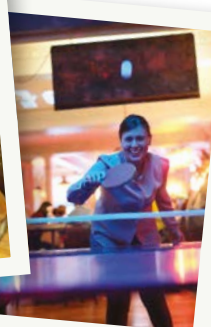
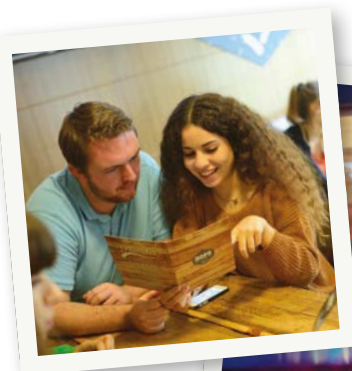
Sports

The University of Nottingham is one of the UK's leading universities for sport and is currently ranked 4th in the university sport rankings*. We have one of the biggest portfolios of sports facilities in the country including the brand new £40m David Ross Sports Village. We also have a rich heritage of supporting Olympic medallists and therefore whether you are an elite athlete or simply looking to enjoy sport as a hobby, we can cater for your needs. Find out more: www.nottingham.ac.uk/sport



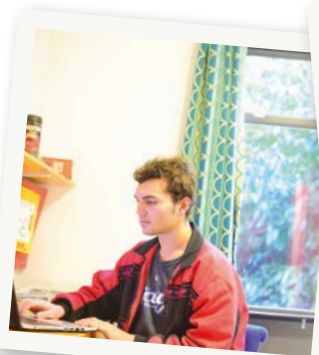
Exploring your new city

Nottingham city centre is just a 10-minute bus ride away from University Park Campus, so you're always close to the action. For music lovers, you can take your pick from the world-famous Rock City, Motorpoint Arena or one of the smaller gig venues for a more intimate live show. If you enjoy shopping, there are independent boutiques and vintage shops as well as high street names in our large shopping centres. Nottingham is also a hotspot for dining, with a mix of chain and independent cafes, restaurants and delis on offer. Find out more: www.nottingham.ac.uk/nottinghamlife



Your opportunity to study abroad

We offer a range of study abroad opportunities with the majority of students having the option to live and study in another country as part of their university career, either at a partner institution or undertaking an overseas work placement. Studying or working abroad is a fantastic opportunity to broaden your horizons, experience different cultures, and develop the key skills that employers are looking for. Find out more: www.nottingham.ac.uk/studywithus/studyabroad



Your new home from home

At Nottingham we offer a wide range of room types on and off campus, in both catered and self-catered accommodation. From standard single rooms with shared bathrooms to large en-suite studios, whatever your budget and preferences, there should be a room to suit you. For a breakdown of pricing and to find out more: www.nottingham.ac.uk/accommodation

* British Universities and Colleges Sport Standings, 2015-16.



Find out more about Nottingham life: www.nottingham.ac.uk/nottinghamlife

Learn a language

The University's Language Centre gives you the opportunity to study a language alongside your course. All languages are offered from beginners' level with some going up to near native competency. The inter-faculty languages programme offers credited modules, which are free for students if taken as part of your credit allocation (check with your course tutor before you enrol). There are also evening classes that are open to everyone (fee-paying). Find out more: www.nottingham.ac.uk/languagecentre

Music

All student musicians at The University of Nottingham are encouraged to get involved with the vibrant musical life on campus. Find out more: www.nottingham.ac.uk/music/performance



The University of
Nottingham

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