

# Medicinal Chemistry with Pharmacology with a Year Abroad

MChem

## COURSE DETAILS

- A level requirements: [ABB](#)
- UCAS code: FIB1
- Study mode: Full-time
- Length: 5 years

## KEY DATES

- Apply by: [29 January 2025](#)
- Starts: 22 September 2025

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## Course overview

Chemistry graduates are at the heart of science, underpinning some of the world's most dynamic and exciting industries. Combining the study of chemistry with pharmacology, this MChem qualification makes an ideal foundation for a wide range of career pathways or to study for a PhD.

## INTRODUCTION

This programme will give you a broad and detailed understanding of every aspect of advanced medicinal chemistry and pharmacology. On completion you will be ready to embark on a PhD in either chemistry or pharmacology or on a career in the pharmaceutical industry.

All our programmes have a common chemistry core which provides a good measure of flexibility and choice for you during the first two years. This programme shares this common chemistry core but you devote around 25% of your time to studying pharmacology and biomedical sciences.

The first two years of this programme are identical to the first year of the BSc Medicinal Chemistry (FIB2) programme. There are no optional modules, instead students take designated modules in biomedical and biological sciences and medicinal chemistry. These first two years progress rapidly, with a mix of theory and practical modules to give you a solid grounding in the subject.

Since students enter the Department with a wide range of experience in mathematics (which is essential for studying chemistry to a high level) we provide a flexible tiered maths for chemistry course allowing you to develop your skills at your own pace.

During your year abroad, you will gain transferable skills that come with living and adapting to life in a different country; skills that will help with your employability and career prospects.

In year four, you continue with the Inorganic and Organic sections of the MChem Chemistry (F102) programme but instead of physical chemistry, you take designated pharmacology modules. You will start to apply your knowledge of chemistry and pharmacology to pharmaceutical problems, with particular reference to drug design and development.

Your final year brings you to the frontiers of chemistry and pharmacology and the basic concepts of both subjects are fully integrated. You will take core organic chemistry modules as well as core pharmacology modules such as drug metabolism and drug response, and cancer pharmacology.

Chemical research is particularly important in year four and involves you conducting a significant project with a strong medicinal chemistry theme as a member of one of the research groups in the department.

This degree programme has a year abroad option. The year abroad is an incredible new opportunity to spend one academic year at one of our partner universities expanding your academic and cultural horizons. You'll spend this time abroad in between your second and third years of study and your degree will extend by one year.

The Department of Chemistry is committed to continuous improvement of our curriculum. We are undergoing a curriculum review to further prepare our graduates for the next stage of their career by developing our degree programmes to incorporate knowledge and skills for the future workforce and ensure a positive learning experience for all students. Module and programme structures may change as we further develop an inclusive curriculum with enhanced sustainable, digital, and analytical chemistry elements. These aspects will sit alongside all the expected core chemistry components including organic, inorganic, and physical chemistry and professional skills.

## **WHAT YOU'LL LEARN**

- Maths for Chemistry
- Drug design and development
- How drugs metabolise
- Cancer pharmacology
- Problem solving
- Computational modelling
- Molecular visualisation

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## **ACCREDITATION**

This programme has master accreditation from the Royal Society of Chemistry (RSC).

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# Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

## YEAR ONE

### COMPULSORY MODULES

#### FOUNDATIONS OF MEDICINAL CHEMISTRY (CHEM141)

**Credits: 15 / Semester: semester 1**

This module will introduce the area of medicinal chemistry and the underpinning cellular biology where it is applied. The course will delve into the chemical aspects of molecular and cellular biology and the processes that allow life to exist, and subsequently discuss the key cellular targets of interest to a medicinal chemist in the drug design process. This material will form the foundations needed to progress onto higher years of medicinal chemistry where modern case studies and the principles of pharmacology will be looked at in greater depth.

#### INTRODUCTION TO PHYSIOLOGY AND PHARMACOLOGY (LIFE106)

**Credits: 15 / Semester: semester 2**

This module introduces students to the fundamentals of human physiology and pharmacology and how they complement each other. The lectures will be supported with a range of learning support materials, for example multimedia and text based resources. Students will also be provided the opportunity to consolidate and extend their learning through a variety of assessments. The module will be assessed via two assessments; the first in week 6, which is a group poster worth 25% and an individual abstract for the poster worth 15%; the second at the end of the module, after week 12, which is a MCQ / MAQ assessment worth the remaining 60% for the module.

This module has a focus on the fundamental principles of physiology such as homeostasis and control of normal function, including examples such as the cardiovascular, respiratory, and nervous systems, plus others. In addition, the module introduces the underlying elements required to develop an understanding to study pharmacology in more detail. Its systems approach provides a solid foundation upon which a number of Biological and also Biomedical degrees can flourish.

#### INTRODUCTORY INORGANIC CHEMISTRY (CHEM111)

**Credits: 15 / Semester: semester 1**

This module gives an introduction to the chemistry of the main group elements, using the periodic table as the underpinning framework for understanding this chemistry, and develops students' analytical chemistry skills including volumetric and spectrophotometric techniques applied to materials that are familiar in everyday life.

## **INTRODUCTORY ORGANIC CHEMISTRY (CHEM130)**

**Credits: 30 / Semester: whole session**

An Introduction to Organic Chemistry consisting of lectures, workshops and laboratory classes assessed continuously by an online quiz, two class tests and a final exam

## **INTRODUCTORY PHYSICAL CHEMISTRY (CHEM152)**

**Credits: 15 / Semester: semester 2**

This module builds on the thermodynamics and kinetics that students have studied prior to University. Learning is supported by both problem-solving workshops and undertaking experiments in the laboratory

## **INTRODUCTORY SPECTROSCOPY (CHEM170)**

**Credits: 15 / Semester: whole session**

This module will provide an introduction to a variety of spectroscopic techniques. Students will explore the theory underpinning various spectroscopic methods, how they are put into practice when acquiring spectra, and the interpretation of spectra to identify unknown substances.

## **KEY SKILLS FOR CHEMISTS 1 (CHEM180)**

**Credits: 15 / Semester: whole session**

The aim of this module is: (i) to equip students with the basic quantitative transferable skills required for the first year of a Chemistry degree programme. (ii) to broaden a student's perspective of chemistry whilst developing their general transferable skills focusing on communication and employability. The overarching learning outcome is for students to have the key skills that will equip them to perform well in the rest of their chemistry degree programme.

Quantitative Key Skills will be taught using a lecture/workshop format involving problem solving classes, using computers where necessary. General Key Skills will involve a series of lecture-based presentations given by staff from the Department of Chemistry and the Careers Service together with a database workshop and small group tutorials. Extensive use of online platforms will be made.

*Any optional modules listed above are illustrative only and may vary from year to year. Modules may be subject to minimum student numbers being achieved and staff availability. This means that the availability of specific optional modules cannot be guaranteed.*

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## **YEAR TWO**

## **COMPULSORY MODULES**

### **AN INTRODUCTION TO MEDICINAL CHEMISTRY (CHEM248)**

**Credits: 7.5 / Semester: semester 2**

This module introduces students to the fundamental principles that underpin modern medicinal chemistry.

### **COORDINATION AND ORGANOMETALLIC CHEMISTRY OF THE D-BLOCK METALS (CHEM214)**

**Credits: 15 / Semester: semester 2**

The module introduces the descriptive coordination and organometallic chemistry and the concepts underpinning our understanding of this chemistry.

### **KEY SKILLS FOR CHEMISTS 2 (CHEM280)**

**Credits: 15 / Semester: whole session**

This module aims to (i) further develop the quantitative skills of a student, (ii) introduce students to the Chemistry Key Skill of Molecular Modelling, and (iii) maintain student development of general transferable and employability skills. The overarching learning outcome is that students will gain the necessary key skills to perform well in their chemistry degree programmes. By the end of the module students will have improved their ability to perform and apply mathematical techniques to problems in kinetics, thermodynamics, quantum mechanics and molecular symmetry. They will have developed abilities to employ force-field and Quantum Chemistry techniques in Molecular Modelling using the Spartan package. They will also have further developed their range of transferable and employability skills, including written and oral communication and team working.

### **MEASUREMENTS IN CHEMISTRY (CHEM246)**

**Credits: 15 / Semester: semester 2**

This is a practical module in which students learn the practice of taking physical measurements, the critical analysis and evaluation of experimental data, the application of measurements to the study of chemical phenomena and the dissemination of results.

### **ORGANIC CHEMISTRY II (CHEM231)**

**Credits: 15 / Semester: semester 1**

This module is the core Organic Chemistry module for Year 2 Chemistry students. It introduces important carbon-carbon bond forming reactions within a mechanistic and synthetic framework, together with exposure to a selection of stereochemical issues.

## **PHYSICAL CHEMISTRY II (CHEM260)**

**Credits: 15 / Semester: whole session**

This module expands on the fundamentals of Physical Chemistry that were introduced in Year 1. The principles and applications of thermodynamics, kinetics and spectroscopy are covered in detail with more emphasis on derivation of key results than in Year 1. Quantum mechanics is developed from the basic principles and mathematical description of quantum phenomena. It is applied to describe bonding in small molecules and in solids, and is linked to spectroscopy via detailed description of molecular energy levels and the possible transitions between these permitted by quantum mechanics.

## **PRACTICAL PHARMACOLOGY (LIFE234)**

**Credits: 7.5 / Semester: semester 2**

This module aims to provide practical experience in many of the techniques specifically used in the study of Pharmacology. It will also provide you with the specialist skills and knowledge of techniques necessary to undertake practical work and project work in Year Three. Each practical will be introduced through a 15-20 minute presentation and will run for 3 hours. The module will be assessed through a report describing the experimental techniques and main findings of one of the key practicals, and through a final online assessment aimed at evaluating student understanding of the experimental approaches, underpinning pharmacological principles and data processing/interpretation.

## **PREPARATIVE CHEMISTRY: SYNTHESIS AND CHARACTERISATION (CHEM245)**

**Credits: 15 / Semester: semester 1**

The module presents a unified approach to the synthesis and characterisation of organic and inorganic compounds, introducing a range of synthetic techniques, experiments and analytical methods.

## **PRINCIPLES OF PHARMACOLOGY (LIFE207)**

**Credits: 15 / Semester: semester 1**

This module will provide an understanding of the quantitative aspects of drug action on cellular receptors and will address the relationship between drug efficacy and chemical structure.

The module will introduce the basic principles of pharmacokinetics, outline the relationship between drug concentration and response, and include an introduction to the principles of toxicity of drugs and their metabolites.

The module will provide knowledge of the molecular biology of receptors.

The lectures will be supplemented with online resources. Students will be given guided reading, and regular formative assessment exercises will enable students to evaluate their understanding of the module.

The module will be assessed by both an online test and a final examination.

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## **YEAR THREE**

You are required to spend the year abroad on an approved placement at a European or overseas partner institution.

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## **YEAR FOUR**

In year four, you further develop your skills in organic and inorganic chemistry as well as taking 30 credits of pharmacology modules.

### **COMPULSORY MODULES**

#### **ANTIMICROBIAL CHEMOTHERAPY FOR CHEMISTS (LIFE348)**

**Credits: 15 / Semester: semester 2**

This module is aimed specifically at FIB2 and FIBF students. The aim of this module is to reinforce the relevance and importance of the principles of chemotherapy learned in level 5 (antibacterial chemotherapy) and extend the application of these principles to diseases caused by viruses (e.g. HIV/AIDS) and parasites (e.g. malaria). The module will be assessed by coursework which will consist of TWO separate assessments.

Module material will be delivered primarily through a mixture of recorded and live online lectures as well as face-2-face on-campus sessions (subject to Covid-19 restrictions), supported by materials on Canvas and other web-based resources for students' independent learning. Students will be directed to key articles in the literature (textbooks, original papers and review articles) and be expected to use this material to inform their independent learning. A revision tutorial will prepare students for the second assessment (Week 13/14).

#### **DRUG ACTION (LIFE206)**

**Credits: 15 / Semester: semester 2**

This module aims to enable students to develop their understanding of the cardiovascular, endocrine and central nervous systems and the mechanisms by which drugs interact with physiological processes operating within each of these systems. They will also gain an appreciation of the drug development process, including clinical trials and drug regulation. The lectures will be supplemented with on-line resources. Students will be given guided reading, and regular formative assessment exercises in class will enable students to evaluate their understanding of the module. The module will be assessed by an online test and a final examination.

## **FURTHER ORGANIC CHEMISTRY (CHEM333)**

**Credits: 15 / Semester: semester 1**

An extension of second year organic chemistry, covering pericyclic reactions, rearrangements and fragmentations, radical reactions, some important palladium-catalysed coupling reactions and the uses of phosphorous, sulphur and selenium in synthetic chemistry.

Some core physical-organic concepts are introduced along with revision of basic mechanisms.

## **INORGANIC MATERIALS CHEMISTRY (CHEM313)**

**Credits: 15 / Semester: semester 1**

This module builds on the fundamental inorganic chemistry that students have studied previously to give an appreciation of the science underpinning the development of modern materials. It will discuss the fundamentals of crystalline and disordered solids, and magnetism; methods for synthesising materials; characterisation techniques; applications of inorganic materials; and the link between the chemistry, structure and function of materials.

## **HETEROCYCLIC CHEMISTRY AND DRUG SYNTHESIS (CHEM338)**

**Credits: 7.5 / Semester: semester 2**

The module presents the synthesis and reactivity of the most important classes of heterocyclic compounds and shows case studies drawn from major drug classes.

## **KEY SKILLS FOR CHEMISTS 3 (CHEM385)**

**Credits: 7.5 / Semester: semester 1**

This module aims to help Chemistry students develop skills needed for further educational opportunities (i.e. MSc/PhD) or employment in a wide range of chemical and non-chemical based sectors. During the 'Employability skills' section, students will look at a variety of employability related skills, job application exercises, interview preparation techniques and presentation experience. This will be in the form of asynchronous lectures, online and in-person workshops and in-person tutorials and will require reflective thinking and group work – this will be facilitated by the module staff and other colleagues from the institution and wider industry. During the 'database' section, students will further their knowledge of the scientific literature developed during years 1/2 by engaging with more advanced aspects of various databases and writing a scientific electronic report of an experiment the students have completed in the laboratory.

## **MEDICINAL CHEMISTRY OF ANTI-INFECTIVES (CHEM335)**

**Credits: 7.5 / Semester: semester 1**

This module will introduce students to the fundamental principles that underpin modern medicinal chemistry of anti-infective drugs, building on the principles taught in the introductory medicinal chemistry module CHEM248.



## **PRACTICAL CHEMISTRY YR3 FOR MCHEM STUDENTS – SHORTER VERSION (CHEM355)**

**Credits: 15 / Semester: semester 1**

In this module, students will carry out a bespoke collection of advanced experiments in the areas of Organic and Physical Chemistry.

## **PRACTICAL CHEMISTRY PROJECT YEAR 3 – AN INTRODUCTION TO RESEARCH METHODS (CHEM366)**

**Credits: 15 / Semester: semester 1**

This module is taken by year 3 MChem students in the 2nd semester. Students will be assigned mini research projects based on their project preference and potential projects offered by academic staff. Students carry out these projects in research labs for 9 weeks.

## **PROTEIN STRUCTURE AND DYNAMICS (CHEM452)**

**Credits: 7.5 / Semester: semester 1**

This module discusses the application of basic physical chemistry concepts for understanding protein structure and dynamics and shows how advanced physical chemistry methods are used for investigating these important aspects of proteins.

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## **YEAR FIVE**

### **COMPULSORY MODULES**

#### **ASYMMETRIC SYNTHESIS AND SYNTHETIC STRATEGY (CHEM433)**

**Credits: 7.5 / Semester: semester 1**

This module will develop and extend the students' knowledge of modern organic chemistry, so that they will be able to enter directly into a PhD programme or embark on a career as a specialist chemist.

#### **CANCER PHARMACOLOGY FOR MEDICINAL CHEMISTS (LIFE402)**

**Credits: 7.5 / Semester: semester 2**

The aim of this module is to provide an understanding of cancer development and progression and how this is exploited in the rational design of drugs to target cancer. A further aim is to explain the molecular mechanism of anti-cancer drugs and the potential for side-effects, drug toxicity and drug resistance. The module will be assessed by a summative exercise and by a final examination.

## **CARDIOVASCULAR PHARMACOLOGY (LIFE401)**

**Credits: 7.5 / Semester: semester 1**

The objective is to extend to Masters level the students' previous knowledge and understanding of cardiovascular pharmacology. The key topics covered in this module will include prevention and treatment of cardiovascular diseases including atherosclerosis, heart failure, hypertension, ischemic heart disease, arrhythmia, and drug-induced cardiovascular toxicity. Several classes of drugs currently used in cardiovascular medicine that were introduced in previous modules will be discussed in more detail, including lipid lowering therapy, anticoagulants, antiplatelet medications, antihypertensives, and anti arrhythmic drugs. Interindividual variability in response to cardiovascular medications will be covered as well as personalisation of drug therapy that has been established in the field of cardiovascular medicine. Several examples of how genetic makeup of an individual can affect response to medications will be discussed. A number of drugs from different clinical areas that have adverse effects on the heart and vascular system will be also covered. The module is taught through lectures. The assessment will take the form of a summative exercise covering aspects of the taught material.

## **CHEM480 - CHEMICAL RESEARCH PROJECT (CHEM480)**

**Credits: 60 / Semester: whole session**

The aim of this module is to develop the skills necessary to undertake independent chemical research. Students carry out a research project of their choice in an area that is presently active in the department and that is aligned with our research clusters in Chemical Models, Chemistry of World Health, Energy and Interfaces, Materials Chemistry, and, Organic Chemistry and Catalysis. This is delivered by becoming a member of a research group led by academic staff of the Department of Chemistry and by carrying out experimental or theoretical/computational work as a member of that research group.

## **DRUG METABOLISM AND RESPONSE (LIFE403)**

**Credits: 7.5 / Semester: semester 1**

The aim of this module is to demonstrate the relevance and importance of the principles of drug metabolism and pharmacokinetics with a focus on medicinal chemistry. It will stress the importance of the relationship between drug disposition and drug response.

The module will be mainly taught through online lectures. Formative exercises will be submitted electronically, and feedback will be provided electronically. Online problem solving workshops will address the topics pharmacokinetics and physiologically-based pharmacokinetic modelling and will demonstrate the use of software.

The module will be assessed by two coursework assessments.

## **MAIN GROUP ORGANIC CHEMISTRY (CHEM431)**

**Credits: 7.5 / Semester: semester 1**

The aim of this module is to broaden and extend the knowledge of modern Organic Chemistry, so that students will be able to enter directly into a PhD program or embark on a career as a specialist chemist. By the end of the module students will have achieved a solid foundation in Organic Chemistry.

## **NEUROPHARMACOLOGY (LIFE369)**

**Credits: 7.5 / Semester: semester 1**

The aim of this module is to provide a review of drug treatment for common disorders of the brain, focusing on pathophysiology, receptors and ion channels as drug targets, and the mechanisms of action of key classes of neuropharmacological agents. The module will be assessed by both continuous assessment and by a final examination.

## **OPTIONAL MODULES**

### **APPLICATION OF ENZYMES IN ORGANIC SYNTHESIS - INDUSTRIAL BIOTECHNOLOGY (CHEM486)**

**Credits: 7.5 / Semester: semester 1**

The aim of this module is to provide students with a knowledge and understanding of the application of enzymes in organic synthesis with a focus on selectivity and sustainability. Selected industrial examples will illustrate where biocatalysis can replace or be combined with conventional chemical reactions in drug synthesis. The module will include an introduction to molecular biology, exciting new developments in the field such as directed evolution for the creation of designer enzymes, creation of artificial enzymes by combining chemo- and biocatalysis and development of synthetic pathways using enzymes. Industrial biotechnology is an important area for a sustainable future and this module will provide a solid foundation from a chemistry perspective.

### **ASYMMETRIC CATALYSIS FOR ORGANIC AND PHARMACEUTICAL CHEMISTRY (CHEM496)**

**Credits: 7.5 / Semester: semester 1**

The aim of the module is to introduce students to the main aspects of asymmetric catalysis and its application in synthetic organic chemistry.

## **INTRODUCTION TO NANOMEDICINE (CHEM426)**

**Credits: 7.5 / Semester: semester 1**

Nanomedicine is an increasingly important multidisciplinary, global science. This is an introductory module which aims to provide students with the essential knowledge required to understand the rapidly advancing field of Nanomedicine. Following some introductory lectures, students will undertake self-directed learning alongside lectures to examine leading published research related to the design of advanced nanomedicines and clinical trials.

This module will be useful chemists who wish to develop a deeper understanding of colloid materials, gain a detailed insight into the advanced synthetic approaches used to produce nanomedicines and broaden their knowledge of pharmacology concepts.

## **NANO ENERGY MATERIALS (CHEM482)**

**Credits: 7.5 / Semester: semester 1**

The module will deal with nanoscale energy materials focusing on the aspects relevant to catalysis, electrocatalysis, plasmonic heating, batteries and thermal energy storage. Particular emphasis will be placed on the reasons why nanomaterials are desirable for energy storage applications.

The goals of the module are (i) to introduce nanomaterials for energy storage; (ii) to introduce nanocarbons for thermal energy storage; (iii) to describe general methods for synthesis of nanomaterials.

## **SOLAR ENERGY CONVERSION (CHEM464)**

**Credits: 7.5 / Semester: semester 1**

In part 1 the course covers the underpinning theory of electronic structure of solids relevant to solar energy conversion materials. In part 2 the course examines a range of established and developing solar energy conversion technologies using the concepts developed in part 1. The course revises and builds on the contents of core inorganic and physical chemistry modules from years 2 and 3.

## **SOLID STATE CHEMISTRY AND ENERGY STORAGE MATERIALS (CHEM442)**

**Credits: 7.5 / Semester: semester 1**

The course will build upon foundations of descriptive aspects of solid state chemistry delivered in Year 1 (CHEM111) and more advanced topics delivered in Year 3 (CHEM313) to address a wide variety of research-led topics in the area of solid state chemistry synthesis and characterisation, with a focus on some of the relevant applications in energy materials. This will provide the student with a deep and high level understanding of the properties of solids, and currently active areas of research, to enable the student to pursue their interests to a deeper level independently (for example to PhD level).

## **SUPRAMOLECULAR CHEMISTRY (CHEM446)**

**Credits: 7.5 / Semester: semester 1**

Supramolecular chemistry – or, "chemistry beyond the molecule" – covers a wide range of systems including host-guest systems, clathrates, cavitands, supramolecular polymers and gels, and makes use of non-covalent interactions. These weak and reversible forces—such as hydrogen bonds, hydrophobic forces, van der Waals forces, and metal–ligand coordination—are key to understanding biological processes and self-assembling systems, and to constructing complex materials and molecular machinery. This module is an introduction to this truly interdisciplinary and evolving field.

In this module, the students will be introduced to concepts such as molecular self-assembly, host-guest complexes and biological mimics. The course will also cover the latest developments in supramolecular chemistry, and highlight some of the key challenges in the field being addressed by researchers at Liverpool and beyond.

## **APPLIED ORGANIC CHEMISTRY: BIOSYNTHESIS AND INDUSTRIAL SYNTHESIS OF NATURAL PRODUCTS (CHEM436)**

**Credits: 7.5 / Semester: semester 1**

This module focuses on the utility of organic chemistry for the industrial synthesis of a range of important natural products used in medicine, agriculture, food and perfume industry and domestic sector. It will help students to put a general knowledge of different classes of organic compounds and their reactivity into the context of real-world applications. The module will also highlight the history of discovery of some notable natural products and will demonstrate how rather obscure original findings were translated into successful industrial processes using recent developments in organic synthesis and catalysis.

## **PROTEIN STRUCTURE AND DYNAMICS (CHEM452)**

**Credits: 7.5 / Semester: semester 1**

This module discusses the application of basic physical chemistry concepts for understanding protein structure and dynamics and shows how advanced physical chemistry methods are used for investigating these important aspects of proteins.

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## **HOW YOU'LL LEARN**

Laboratory classes in years one and two prepare you for independent laboratory work in years three and four.

In year three you will carry out mini research projects, while in year four you will carry out research alongside PhD and postdoctoral researchers on cutting edge projects, often leading to a first scientific publication.

Computational modelling and molecular visualisation are introduced as interactive animated models from year one, reinforced as a key skill in later years and by year four you will be able to perform your own calculations to underpin final year research projects.

## **HOW YOU'RE ASSESSED**

You are assessed by examination at the end of each semester (January and May/June) and by continuous assessment of laboratory practicals, class tests, workshops, tutorials and assignments.

You have to pass each year of study before you are allowed to progress to the following year. Re-sit opportunities are available in September at the end of years one and two.

If you take an industrial placement, a minimum standard of academic performance is required before you are allowed to embark on your placements. All years of study (with the exception of year one) contribute to the final degree classification.

## **LIVERPOOL HALLMARKS**

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

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# Careers and employability

Visits to the department by leading companies such as GlaxoSmithKline and Unilever ensure that you make contact with prospective employers at key stages in your final year. Graduates find employment in many areas, from the pharmaceutical industry to business management.

Typical careers of our graduates include:

- assistant analyst
- development chemist
- research assistant
- site chemist.

Recent employers of our graduates are:

- AstraZeneca
- GlaxoSmithKline
- IOTA Nansolutions Ltd
- Johnson Matthey
- Perstorp Caprolactones
- Shell
- Towers Watson
- Unilever
- United Utilities

**4 IN 5** CHEMISTRY STUDENTS FIND THEIR MAIN ACTIVITY AFTER GRADUATION MEANINGFUL.

*Graduate Outcomes, 2018-19.*

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# Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

## TUITION FEES

<b>UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)</b>	
Full-time place, per year	£9,535
Year abroad fee	£1,385

<b>International fees</b>	
Full-time place, per year	£29,100
Year abroad fee	£14,550

*The UK full-time tuition fee, international course fee and fee for the year abroad for international students shown are correct for 2025/26 entry. We are currently awaiting confirmation of whether the year abroad fee for UK students will change, so the fees shown are for 2024/25. Please note that the year abroad fee also applies to the year in China.*

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support. [Learn more about fees and funding](#).

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## ADDITIONAL COSTS

Your tuition fee covers almost everything but you may have [additional study costs](#) to consider, such as books.

Find out more about the [additional study costs](#) that may apply to this course.

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## SCHOLARSHIPS AND BURSARIES



We offer a range of scholarships and bursaries that could help pay your tuition and living expenses.

We've set the country or region your qualifications are from as United Kingdom. [Change it here](#)

- **UNDERGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP**

- [International students](#)

[If you're a high-achieving international student starting an undergraduate degree with us from September 2024, you could be eligible to receive a fee discount of up to £5,000. You'll need to achieve grades equivalent to AAA in A levels. Most of our undergraduate degrees are eligible, with the exception of clinical programmes in Medicine and Dental Surgery.](#)

- **THE LIVERPOOL BURSARY**

- [Home students](#)

[If you're a UK student joining an undergraduate degree and have a household income below £35,000, you could be eligible for a Liverpool Bursary worth up to £2,000 for each year of undergraduate study.](#)

- **ASYLUM SEEKERS SCHOLARSHIP**

- [Home students](#)

[Apply for an Asylum Seekers Scholarship and you could have your tuition fees paid in full and receive help with study costs. You'll need to have applied for asylum in the UK, or be the dependant of an asylum seeker, and be joining an eligible undergraduate degree.](#)

- **CARE LEAVERS' OPPORTUNITY BURSARY**

- [Home students](#)

[If you've spent 13 or more weeks in Local Authority care since age 14, you could be eligible for a bursary of £3,000 per year of study. You'll need to be a UK student joining an eligible undergraduate degree and be aged 28 or above on 1 September in the year you start.](#)

- **COWRIE FOUNDATION SCHOLARSHIP**

- [Home students](#)

[Are you a UK student with a Black African or Caribbean heritage and a household income of £25,000 or less? You could be eligible to apply for a Cowrie Foundation Scholarship worth up to £8,000 for each year of undergraduate study.](#)

- **ESTRANGED STUDENTS BURSARY**

- [Home students](#)

[If you're a UK student identified as estranged by Student Finance England \(or the equivalent UK funding body\), you could be eligible for a bursary of £1,000 for each year of undergraduate study.](#)

- **GENESYS LIFE SCIENCES SCHOLARSHIP**

- Home students

Joining a School of Biosciences degree and have a household income of less than £25,000? If you're a UK student, you could apply to receive £4,500 per year for three years of your undergraduate course.

- **GRADUATE ASSOCIATION HONG KONG & TUNG UNDERGRADUATE SCHOLARSHIPS**

- International students

- Hong Kong

If you're an undergraduate student from Hong Kong who can demonstrate academic excellence, you may be eligible to apply for a scholarship worth £10,000 in partnership with the Tung Foundation.

- **KAPLAN DIGITAL PATHWAYS EXCELLENCE SCHOLARSHIP**

- International students

Completed a Kaplan Digital Pathways Foundation Certificate? We're offering a £5,000 fee discount off the first year of undergraduate study for a maximum of two high achieving students joining one of our non-clinical degrees from an online Kaplan Foundation Certificate.

- **NOLAN SCHOLARSHIPS**

- Home students

Do you live in the Liverpool City Region with a household income of £25,000 or less? Did neither of your parents attend University? You could be eligible to apply for a Nolan Scholarship worth £5,000 per year for three years of undergraduate study.

- **RIGBY ENTERPRISE AWARD**

- Home students

Are you a UK student with a household income of £25,000 or less? If you've participated in an eligible outreach programme, you could be eligible to apply for a Rigby Enterprise Award worth £5,000 per year for three years of your undergraduate degree.

- **ROLABOTIC SCHOLARSHIP**

- Home students

Are you a UK student with a household income of £25,000 or less? Did neither of your parents attend University? You could be eligible to apply for a ROLABOTIC Scholarship worth £4,500 for each year of your undergraduate degree.

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## **SPORT LIVERPOOL PERFORMANCE PROGRAMME**

- [Home and international students](#)

[Apply to receive tailored training support to enhance your sporting performance. Our athlete support package includes a range of benefits, from bespoke strength and conditioning training to physiotherapy sessions and one-to-one nutritional advice.](#)

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## **TECHNETIX BROADHURST ENGINEERING SCHOLARSHIP**

- [Home students](#)

[Joining a degree in the School of Electrical Engineering, Electronics and Computer Science? If you're a UK student with household income below £25,000, you could be eligible to apply for £5,000 a year for three years of study. Two awards will be available per academic year.](#)

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## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE EXCELLENCE SCHOLARSHIP**

- [International students](#)

[Completed a Foundation Certificate at University of Liverpool International College \(UoLIC\)? We're offering a £5,000 fee discount off the first year of undergraduate study to some of the highest achieving students joining one of our non-clinical degrees from UoLIC.](#)

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## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE FIRST CLASS SCHOLARSHIP**

- [International students](#)

[We're offering a £1,000 fee discount for years 2 and 3 of undergraduate study to eligible students progressing from University of Liverpool International College. You'll need to be studying a non-clinical subject and get an average of 70% or above in year 1 of your degree.](#)

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## **UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE IMPACT PROGRESSION SCHOLARSHIPS**

- [International students](#)

[If you're a University of Liverpool International College student awarded a Kaplan Impact Scholarship, we'll also consider you for an Impact Progression Scholarship. If selected, you'll receive a £3,000 fee discount off the first year of your undergraduate degree.](#)

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## **YOUNG ADULT CARER'S (YAC) BURSARY**

- [Home students](#)

[If you're a young adult and a registered carer in the UK, you might be eligible for a £1,000 bursary for each year of study. You'll need to be aged 18-25 on 1 September in the year you start your undergraduate degree.](#)

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# Entry requirements

The qualifications and exam results you'll need to apply for this course.

Your qualification	<b>Requirements</b> <a href="#">About our typical entry requirements</a>
A levels	<p>ABB including two science A levels, Chemistry and a second science. Acceptable second sciences are: Mathematics, Further Mathematics, Physics, Biology, Geography, Geology, Computing, Computer Science and Economics.</p> <p>Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is <b>BBB</b> with <b>A</b> in the EPQ.</p> <p>You may automatically qualify for reduced entry requirements through our <a href="#">contextual offers scheme</a>.</p>
GCSE	4/C in English and 4/C in Mathematics
Subject requirements	<p>Where Chemistry is the only science A level offered, an offer may be made at AAB including an A in Chemistry.</p> <p>For applicants studying A levels with English exam boards: Where a science has been taken at A level (Chemistry, Biology, Geology or Physics), a pass in the Science practical of each subject will be required.</p>
BTEC Level 3 National Extended Diploma	<p>D*DD in relevant diploma. Students will be invited to attend interview and take an assessment.</p> <p>Applicants must be completing the BTEC National Extended Diploma in Applied Science and be studying the following optional modules:</p> <ul style="list-style-type: none"><li>• Applications of Inorganic Chemistry</li><li>• Applications of Organic Chemistry</li><li>• Practical Chemical Analysis.</li></ul> <p>For previous BTEC (QCF) qualification:</p> <p>The Applied Science pathway is acceptable and the following optional modules must be studied:</p>

<b>Your qualification</b>	<b>Requirements</b> <a href="#">About our typical entry requirements</a>
	<ul style="list-style-type: none"> <li>• Chemical Periodicity and its Applications</li> <li>• Industrial Applications of Organic Chemistry and/or Industrial Chemical Reactions</li> <li>• Mathematical Calculations for Science and/or Using Statistics in Science</li> <li>• Chemical Laboratory Techniques and/or Chemistry for Biology Technicians.</li> </ul>
International Baccalaureate	33 points including 6 points from Chemistry at higher level and 5 points from one other science at higher level.
Irish Leaving Certificate	H1, H2, H2, H2, H3, H3 (including Chemistry and one other Science)
Scottish Higher/Advanced Higher	Not accepted without Advanced Highers.
Welsh Baccalaureate Advanced	Accepted at grade B, including 2 science A levels at grades AB including Chemistry.
Access	45 Level 3 credits in graded units in a relevant Diploma, including 30 at Distinction and a further 15 with at least Merit. 15 Distinctions are required in each of Chemistry and a second science. Students will be invited to attend interview and take an assessment.
International qualifications	Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the <a href="#">University of Liverpool International College</a> , means you're guaranteed a place on your chosen course.

## ALTERNATIVE ENTRY REQUIREMENTS

- If your qualification isn't listed here, or you're taking a combination of qualifications, [contact us](#) for advice
  - [Applications from mature students](#) are welcome.
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**THE ORIGINAL**

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