

Pharmacology

 BSc (Hons)

COURSE DETAILS

- A level requirements: [AAB](#)
- UCAS code: B210
- Study mode: Full-time
- Length: 3 years

KEY DATES

- Apply by: [25 January 2023](#)
- Starts: 25 September 2023

Course overview

Pharmacology is an exciting branch of experimental science in which you'll study how chemical substances interact with our bodies.

INTRODUCTION

The COVID-19 pandemic has demonstrated how medicines are taken for granted. Faced with a new disease, it is only through the development of vaccines and medicines we are now finding our way out of the pandemic. The study of pharmacology underpins how medicines are developed. You will learn about the development of new medicines and how they work in the fight against disease.

You will be studying in the UK's largest Pharmacology department which has won the prestigious [2017 Queens Anniversary](#)

[Prize](#) in recognition of its work to improve the safety and effectiveness of medicines. You will be taught by leading academics in our £30m teaching facilities. You can enrol on our Deferred Choice Programme (C130) before you decide to specialise or retain broader research interests. Ours is a rewarding programme and you'll have excellent academic and pastoral support.

WHAT YOU'LL LEARN

You'll study a range of modules in

- Classical pharmacology
- Physiology and cell biology
- Biochemistry
- Molecular toxicology
- Cancer pharmacology

Course content

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

YEAR ONE

In this first year, you'll gain an understanding of the fundamental cellular, genetic and evolutionary mechanisms and be introduced to the interactions of drugs and other chemicals on biological processes. You will develop knowledge of pharmacology and physiology along with

the experimental skills and analytical techniques needed to apply, evaluate and interpret this knowledge in these disciplines.

COMPULSORY MODULES

BIOCHEMICAL METHODS (LIFE122)

Credits: 7.5 / Semester: semester 2

This course introduces widely used laboratory concepts and practical techniques that are relevant to academic research, industry and medical applications.

ESSENTIAL SKILLS FOR THE LIFE SCIENCES I (LIFE109)

Credits: 15 / Semester: whole session

This module will develop in students the essential numerical, presentational, research and study skills needed to become successful learners. These skills will form the foundations for future skills, training and development, enabling them to successfully plan, execute, analyse and report on research projects. These skills will also enhance their employability prospects and career pathways. The module will consist of lectures, tutorials and workshops. Students will be given guided reading, and regular formative assessment exercises to enable them evaluate their understanding of the module content. The module will be assessed through completion of assessments which contribute to a portfolio.

EVOLUTION (LIFE103)

Credits: 15 / Semester: semester 1

This module describes the evolutionary processes that have resulted in the generation of the diverse life forms that populate the planet.

This includes the theory of evolution by natural selection, and the genetic processes that result in gene evolution and diversity.

Selected scenarios and case studies will apply evolutionary concepts, showing the fundamental importance of evolution to a broad range of the life sciences.

The module is split into two parts: the first part (A) is the same for all students, the second part (B) contains a number of parallel strands tailored to students interest.

Students will be advised by their programme director which strand to follow.

The lectures will be supplemented with a variety of on-line 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 continuous assessments.

EXPERIMENTAL SKILLS IN CURRENT BIOLOGY (LIFE107)

Credits: 15 / Semester: whole session

This is the first practical module that students will take in the School of Life Sciences. The skills that students acquire will be needed for other practical modules that they will take in semester 2 Year 1, and during Year 2 and will prepare them for their year 3 research project and for their subsequent career.

This module is designed to teach the basic multidisciplinary skills required in the biological sciences.

It aims to develop careful working practices, experimental design and interpretation of results. Skills acquired in this module will be both utilised and enhanced by the co-requisite module LIFE 109 (communication and study skills and quantitative skills).

The way in which LIFE 107 is taught and assessed is designed to place emphasis on encouraging students to take responsibility for their own learning. Demonstrators and academic staff will be on hand to answer questions or show students how to use lab equipment.

Resources will be available online via VITAL and include a weekly Blog, technical manual, module handbook, lab instruction manual and weekly lectures.

The module will be taught in weekly practical classes and it will be assessed through continuous assessment (assessment 1-2) and a final exam (assessment 3).

GRAND CHALLENGES IN BIOLOGY (LIFE105)

Credits: 7.5 / Semester: semester 1

This module introduces students to how grand challenges (scientific and societal) are addressed in universities and in particular at the University of Liverpool. Students will be introduced to four major topics (Infections and Global Health, Ageing, Food Security, Personalised Medicines) by experts in the respective fields. Emphasis will be placed on students understanding concepts and assembling information rather than memorizing facts. The material will be delivered based on the concept of a scientific conference with plenary talks and parallel sessions presented by the lecturers, and (in light of Covid-19 driven procedures at scientific meetings) a video session driven by student input. Assessment of lecture material and associated readings will be by continuous assessment.

INTRODUCTION TO PHYSIOLOGY AND PHARMACOLOGY (LIFE106)

Credits: 15 / Semester: semester 2

MOLECULES AND CELLS (LIFE101)

Credits: 15 / Semester: semester 1

This module describes the detailed composition of cells and the processes by which they obtain and generate energy, grow, replicate and eventually die.

The lectures will be supplemented with on-line resources and illustrated with some of the latest research methods that are used to study cell structure and function.

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 continuous assessments and by a final examination.

OPTIONAL MODULES

ANIMAL BIODIVERSITY (LIFE112)

Credits: 15 / Semester: semester 2

This module studies the body plans of the major groups of animals and explores the relationship between body form and function.

It also discusses the evolutionary origins of these basic body plans and how these have been modified to adapt to particular habitats.

The module will be taught through a mixture of asynchronous and synchronous material. The former consists of pre-recorded videos and other online learning material, the latter consists of scheduled interactive online sessions. Students will also be given guided reading, and regular formative assessment exercises will enable students to evaluate their understanding of the module.

The module will be assessed through continuous assessment.

BIOCHEMISTRY AND BIOMEDICAL SCIENCES (LIFE102)

Credits: 15 / Semester: semester 2

This module will provide the foundation for future studies on the molecular basis of life and disease. It covers basic biochemistry and immunity and how these fields can provide a molecular explanation for life and disease. The module will encourage confidence, teamwork and communication through active learning in lectures and workshops centred around authentic assessments.

MICROBIOLOGY (LIFE110)

Credits: 15 / Semester: semester 2

DEVELOPMENTAL BIOLOGY: EMBRYOLOGY AND MECHANISMS OF DEVELOPMENT (LIFE114)

Credits: 15 / Semester: semester 2

Developmental biology is the study of how multicellular organisms are transformed from a single fertilised cell to the adult form and eventually die.

In this module we will explore the developmental biology toolkit, especially the key cellular behaviours that underpin development.

Next we will explain how the developing organism progresses from a group of identical cells through the formation of the first distinct cell types to the laying down of the fundamental body plan through the process of gastrulation.

Finally we examine how the major organs of the body arise from the three layered embryo formed at gastrulation. Along the way we will introduce stem cells and investigate their role in development, encounter the germ line and gametogenesis, appreciate the connections between development and evolution and hence the value of studying more primitive organisms to understand human development.

The module will be taught by a combination of lectures and workshops and will be assessed by open book online tests and a final examination.

Programme details and modules listed are illustrative only and subject to change.

YEAR TWO

In your second year you'll cover the chemical processes that underpin biological processes, gain an understanding of synthetic chemistry, product isolation and purification techniques. In addition, you'll explore the cardiovascular, endocrine and central

nervous systems and how drugs interact with these systems as well as the mechanisms underpinning pharmacokinetics, pharmacodynamics and drug toxicity.

COMPULSORY MODULES

BIOLOGICAL CHEMISTRY (LIFE245)

Credits: 15 / Semester: semester 1

The Biochemistry and Pharmacology programmes, and at UoL require students to have studied chemistry to A level or equivalent standard. The Biological Chemistry module is designed to build on this background, and the chemical content of the Year 1 modules, especially LIFE101 and LIFE102 (which is designed for all students) to develop chemical understanding and analytical skills to support later modules in structural and mechanistic biochemistry, medicinal chemistry and pharmacokinetics. The module may also be taken by C130 or C100 students with the appropriate chemical background to equip them to study some of these later modules as part of their general programmes.

CHEMICAL TECHNIQUES (CHEM022)

Credits: 7.5 / Semester: semester 2

This laboratory module covers the basic techniques of chemical experimental science, including analysis of unknown chemicals, basic chemical synthesis and separation and computerised search for molecular information.

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 through two online assessments.

ESSENTIAL SKILLS FOR THE LIFE SCIENCES 2 (LIFE223)

Credits: 15 / Semester: whole session

This module will continue, extend, and broaden the transferable skills developed in Year 1. It will focus on improving the students' analytical, communication, quantitative, and employability skills. The communication skills component is assessed through a portfolio whereas the quantitative skills component is assessed through a group poster and SAQ.

ORGANIC CHEMISTRY FOR PHARMACOLOGY (CHEM038)

Credits: 15 / Semester: semester 2

A year 2 Chemistry module for Life Sciences. Whilst designed and aimed to offer Pharmacology students a grounding in directly relevant organic chemistry and spectroscopy, other Life Science students with an interest in Pharmacology may wish to take this as an optional module.

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.

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 continuous assessments and by a final examination.

OPTIONAL MODULES

ADVANCED BIOCHEMICAL TECHNIQUES (LIFE224)

Credits: 7.5 / Semester: semester 2

This module will provide practical experience in advanced biochemical techniques. Students, working in small groups (of 4, exceptionally 3) will plan and perform two experimental projects: one on enzyme stability, and the other on protein purification. This module is required for students intending to enter the Biochemistry Honours School and is continuously assessed.

CELL SIGNALLING IN HEALTH AND DISEASE (LIFE202)

Credits: 15 / Semester: semester 2

This module will describe the molecular mechanisms that allow cells to communicate with each other;

The basic properties common to all signalling pathways will be studied and then a series of individual pathways will be examined in more detail, in the light of these general principles;

The importance of cellular signalling mechanisms will be illustrated by examining diseases (e.g. cancer, diabetes, cardiovascular disease, obesity, neurological disorders) that result from defects in these mechanisms;

The lectures will be supplemented with on-line 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 continuous assessment

E-BIOLOGY: INFORMATICS FOR LIFE SCIENCES (LIFE225)

Credits: 7.5 / Semester: semester 1

Many aspects of modern biology are being revolutionized by high-throughput methods that make copious amounts of data available in digital form. The aim of this module is to provide students with a practical appreciation of the nature and significance of this revolution. While the focus will be on analysis of data from areas such as genome sequencing, gene expression, and protein structure studies, the module will also look at use of such data in the context of understanding higher order phenomena within cells, such as metabolism, gene regulation, and protein-protein interaction. The module is continuously assessed.

E-BIOLOGY: INFORMATICS FOR LIFE SCIENCES (S2) (LIFE242)

Credits: 7.5 / Semester: semester 2

Many aspects of modern biology are being revolutionized by high-throughput methods that make copious amounts of data available in digital form. The aim of this module is to provide students with a practical appreciation of the nature and significance of this revolution. While the focus will be on analysis of data from areas such as genome sequencing, gene expression, and protein structure studies, the module will also look at use of such data in the context of understanding higher order phenomena within cells, such as metabolism, gene regulation, and protein-protein interaction. The module is continuously assessed.

ENDOCRINE AND NEURO-PHYSIOLOGY (LIFE204)

Credits: 15 / Semester: semester 2

This module aims to provide the essential background knowledge to understand key concepts in neuroscience. It covers the principles of operation of nervous system, systematic and sensory neurophysiology, excitotoxicity and behaviour. The module also provides essential background knowledge to understand the key principles of endocrinology, and how it contributes to physiological homeostasis. It covers the secretions, functions and regulation of the major endocrine glands. The module also explores the role of the nervous and endocrine systems in the integrative control of the digestive tract. The lectures will be supplemented with on-line 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 continuous assessments and by a final examination.

MOLECULAR AND MEDICAL GENETICS (LIFE208)

Credits: 15 / Semester: semester 2

This module aims to introduce students with an interest in Genetics and Molecular Biology to the range of biological mechanisms that control structure and stability of the genetic material and their impact on health and disease.

It uses examples from both prokaryotic and eukaryotic organisms, to develop principles that explain DNA replication, repair and recombination. These principles and processes are then discussed in a clinical/medical genetics context.

The lectures will be supplemented with on-line 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 continuous assessments and by a final examination.

MOLECULAR SCIENCE (LIFE237)

Credits: 7.5 / Semester: semester 1

This module is a 6 weeks molecular biology practical to provide experience in techniques to isolate, clone and analyse genes (analysis of DNA fragments by agarose gel electrophoresis, PCR, transformations, plasmid DNA preparations, gene cloning). The module has a range of different formative and summative assessments to include in-course problem-solving exercises, online quizzes and abstract writing, which ensure the student becomes confident to continue genetic manipulations in specialist Year 2 Semester 2 practical modules and for project work in Biochemistry, Genetics and Molecular Biology. The module will encourage confidence, teamwork and communication through active learning in lectures and practicals centred around authentic assessments.

PRACTICAL HUMAN PHYSIOLOGY (LIFE229)

Credits: 7.5 / Semester: semester 1

The aim of this practical module is to develop students' core experimental skills in human physiology, including methods to measure the cardiovascular and respiratory systems. Students will thus improve their understanding of scientific method, and develop teamworking and presentation skills. During the practical classes and plenary lectures students will be introduced to various techniques for measuring physiological variables. Then they will learn how to apply appropriate statistical tools to define the normal or expected range for physiological variables. Students will learn how to design experiments and how to assess the accuracy and precision of data, and identify sources of error. The module is continuously assessed.

THE IMMUNE SYSTEM IN HEALTH AND DISEASE (LIFE221)

Credits: 15 / Semester: semester 1

The module will develop knowledge and understanding of the immune system, the molecules, cells and tissues that are involved in its function, its role in combating infection and how its dysfunction can contribute to disease.

Lectures will be supplemented with on-line resources. Problem solving workshops dedicated to case studies will be held to help students prepare for the assessments. Students will be given guided reading, and formative and summative assessment exercises held during the course will enable students to monitor and evaluate their progress and to prepare for the final assessment.

The module will be assessed by two assessments.

THE MULTICELLULAR ORGANISM: TISSUES, DEVELOPMENT, REGENERATION AND AGING (LIFE205)

Credits: 15 / Semester: semester 1

This module aims to describe the structure and function of fundamental tissues, such as epithelial and connective tissue and of specialised tissues such as bone, muscle and the nervous system. An introduction to the mechanisms by which cells differentiate to form different tissues and regenerate following injury will be included. The processes that occur during aging will be explained with special reference to changes in key tissues and organs. The lectures will be supplemented with on-line resources, guided reading and formative assessment exercises that will enable students to evaluate their understanding of the module. The module will be assessed by both continuous assessment and by a final examination.

Programme details and modules listed are illustrative only and subject to change.

YEAR THREE

In your final year, you'll study pharmacology full-time, learning the most up-to-date pharmacological concepts and knowledge from a practical viewpoint with lectures in cardiovascular and respiratory pharmacology, molecular and neuropharmacology, drug metabolism,

chemotherapy and molecular toxicology and an optional life sciences-based work placement. You'll also have the opportunity to conduct your own original research project and library dissertation in the department.

COMPULSORY MODULES

CANCER PHARMACOLOGY (LIFE314)

Credits: 15 / 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 continuous assessment in the form of a student presentation, and by a final examination. Module material will be delivered primarily through standard lectures. For independent learning, materials such as lecture handouts and links to research articles will be available on VITAL. Students will be directed to further key articles in the literature (textbooks, original papers, and review articles) and be expected to use this material to inform their independent learning. One class revision tutorial will be held at the end of the course.

CARDIOVASCULAR AND RESPIRATORY PHARMACOLOGY (LIFE313)

Credits: 15 / Semester: semester 1

The aim of this module is to develop advanced knowledge and understanding of cardiovascular and respiratory pharmacology. It will develop an awareness of the basic pathophysiology of major cardiovascular and respiratory diseases. It will also explain the mechanisms of action of drugs at the molecular, cellular, organ, and system levels in health and disease. The module is taught through short asynchronous course content delivery and face to face tutorial and revision sessions held in person in lecture theatres. It will be assessed according to the two teaching-cycle model with an assessment at week 8 (40%, 1,250 words) and a final assessment at the end of the course (60%, 1,750 words).

CHEMOTHERAPY AND CELLULAR PHARMACOLOGY (LIFE312)

Credits: 15 / Semester: semester 2

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 principle 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 VITAL 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 will 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 METABOLISM AND DRUG RESPONSE (LIFE315)

Credits: 15 / Semester: semester 1

The aim of this module is to demonstrate the relevance and importance of the principles of drug metabolism and pharmacokinetics. It will stress the importance of the relationship between drug disposition and drug response. The module will be mainly taught through formal lectures. Formative exercises will be submitted electronically and feedback will be provided electronically. In-class online problem solving workshops will address the topics pharmacokinetics and PBPK and demonstrate the use of software. The module will be assessed through coursework and an exam.

MOLECULAR AND NEUROPHARMACOLOGY (LIFE317)

Credits: 15 / Semester: semester 1

The aim of this module is to provide a contemporary review of drug treatment for the most 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.

MOLECULAR TOXICOLOGY (LIFE316)

Credits: 15 / Semester: semester 2

The aim of this module is to introduce current concepts of mechanisms by which cells are killed by toxic chemicals with particular emphasis on drugs. It will also outline the main defence mechanisms that cells possess against injury. The module will be assessed by both continuous assessments and by a final examination.

PHARMACOLOGY RESEARCH PROJECTS (PHAR660)

Credits: 30 / Semester: whole session

Pharmacology Research Projects (PHAR660) is a 30 credit module that runs throughout both semesters in Year 3. The module is designed to provide students with experience in conducting research projects, poster presentations, oral presentations and in preparing project reports and dissertations.

OPTIONAL MODULES

LIFE SCIENCES WORK BASED PLACEMENT (LIFE399)

Credits: 15 / Semester: semester 1

This module allows students to undertake an employment placement that will be undertaken during the summer-break between Year 2 and Year 3. Students will have to find and secure their own placement, which will need to be approved by the module leader beforehand. Placements will typically be 6-8 weeks. Early in Year 2 there will be an introductory event to present the module and advise students on how to search for placement opportunities. This session will be available to all students (including those who do not wish to enrol on the placement module). Students will be encouraged to search for placements during Semester 1, with the support of Academic Advisers and the Careers and Employability Service. Other seminar activities will take place during Semester 2 of Year 2 to prepare students for the placement work. More taught sessions will be delivered in early Semester 1 of Year 3, which include lectures on relevant psychological theories and research (e.g., workplace performance, leadership, motivation) and reflective group sessions on placement experience. The module will provide students with an opportunity to develop their employability skills by direct engagement in a commercial, research, voluntary or similar professional organisation that will support future plans, develop skills and graduate attributes. Module assessments include a skill audit and reflective log to be completed before and during practical work placement, and final written recommendations-to-employer report based on reflection on the placement experience of the individual student and the wider cohort, supported by relevant employability and occupational theories.

Programme details and modules listed are illustrative only and subject to change.

HOW YOU'LL LEARN

You will be taught using a balanced mix of lectures, workshops, seminars and tutorials and practical laboratory sessions, working cooperatively in small groups right from the beginning. Academic staff are available for 1-2-1 feedback and support. Course material is available

24/7 on our online learning platform, Canvas. Your third year will comprise of formative activities such as presenting seminars, creative writing and peer teaching along with your research project which will be done either individually or in a small groups.

HOW YOU'RE ASSESSED

Students on this course are assessed with a combination of exams and coursework. Coursework includes essays, group projects, presentations and research projects. You'll submit coursework which contributes to your final grade and during your final year, you'll also submit your dissertation and sit your final exams.

As well as factual knowledge and understanding, life scientists need practical and organisational skills, and an ability to work both alone and with other people. You'll be assessed with a combination of exams and continuous assessment of course work during each semester.

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.

Careers and employability

We also offer support for making career choices right from the beginning. In your first year you will have the opportunity to consider potential career pathways within and outside the field of pharmacology.

Employability is embedded into the Pharmacology BSc (Hons) programme and can be the necessary stepping stone into a successful career in many life science sectors in clinical trials, manufacturing, regulatory affairs, intellectual property and scientific writing.

4 IN 5 LIFE SCIENCES STUDENTS FIND THEIR MAIN ACTIVITY AFTER GRADUATION MEANINGFUL.

Graduate Outcomes, 2018-19.

Common employers of pharmacology graduates include:

- Pharmaceutical, environmental and biotech industries

- Civil Service
- Department of Health and Social Care
- Intellectual Property Office (IPO)
- National Health Service (NHS)
- Universities

PREPARING YOU FOR FUTURE SUCCESS

At Liverpool, our goal is to support you to build your intellectual, social, and cultural capital so that you graduate as a socially-conscious global citizen who is prepared for future success. We achieve this by:

- Embedding employability within your curriculum, through the modules you take and the opportunities to gain real-world experience offered by many of our courses.
- Providing you with opportunities to gain experience and develop connections with people and organisations, including

student and graduate employers as well as our global alumni.

- Providing you with the latest tools and skills to thrive in a competitive world, including access to Handshake, a platform which allows you to create your personalised job shortlist and apply with ease.
- Supporting you through our peer-to-peer led [Careers Studio](#), where our career coaches provide you with tailored advice and support.

Fees and funding

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

TUITION FEES

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 tuition fees, funding and student finance.](#)

UK fees	
Full-time place, per year	£9,250
Year in industry fee	£1,850
Year abroad fee	£1,385

International fees	
Full-time place, per year	£24,200

Fees stated are for the 2022-23 academic year and may rise for 2023-24.

ADDITIONAL COSTS

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This includes the costs associated with placements or internships, and the optional field course in Uganda.

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

SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries to help cover tuition fees and help with living expenses while at university.

[Scholarships and bursaries you can apply for from the United Kingdom](#)

Select your country or region for more scholarships and bursaries.

Entry requirements

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

Your qualification	Requirements About our typical entry requirements
A levels	<p>Typical A level offer AAB</p> <p>Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is ABB with A in the EPQ.</p> <p>You may automatically qualify for reduced entry requirements through our contextual offers scheme.</p> <p>If you don't meet the entry requirements, you may be able to complete a foundation year which would allow you to progress to this course.</p> <p>Available foundation years:</p> <ul style="list-style-type: none">• Biological Sciences (with a Foundation Year) leading to BSc (Hons)
GCSE	4/C in English and 4/C in Mathematics
Subject requirements	<p>Chemistry A level plus a second science, preferably Biology, at A level.</p> <p>For applicants from England: Where a science has been taken at A level (Chemistry, Biology or Physics), a pass in the Science practical of each subject will be required.</p>

Your qualification	Requirements About our typical entry requirements
BTEC Level 3 National Extended Diploma	<p>D*DD in Applied Science with a selection of preferred units in Biology and Chemistry, to include Distinction in Units 1 and 5 (Principles and Applications of Science I and II).</p> <p>For previous BTEC (QCF) qualification: D*DD in Applied Science with a selection of preferred units in Biology and Chemistry, with at least 120 Level 3 credits at Distinction.</p> <p>Please note alternative BTEC subjects are not acceptable for this programme.</p>
BTEC Applied Science unit requirements	<p>Download our BTEC Applied Science unit requirements for School of Life Sciences document for more information.</p>
International Baccalaureate	<p>34 points, including 6 in Higher Level Chemistry, and 5 in another Higher Level</p>
Irish Leaving Certificate	<p>H1, H1, H2, H2, H2, H3</p>
Scottish Higher/Advanced Higher	<p>Not accepted without Advanced Highers at grades AAB</p>
Welsh Baccalaureate Advanced	<p>Accepted at grade B as equivalent to a third non-science A level at grade B.</p>
Access	<p>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 Biology. GCSE Mathematics and English grade C/4 also required.</p>

Your qualification	Requirements About our typical entry requirements
International qualifications	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Select your country or region to view specific entry requirements. </div> <p>guaranteed a place on your chosen course.</p> <p>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 University of Liverpool International College, means you're</p>

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

REDBRICK