

Biochemistry

 BSc (Hons)

COURSE DETAILS

- A level requirements: [ABB](#)
- UCAS code: C700
- Study mode: Full-time
- Length: 3 years

KEY DATES

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

Course overview

Biochemistry is the study of molecular structures and interactions in living organisms. Biochemists seek to understand living organisms in terms of chemical reactions.

INTRODUCTION

If you have a natural curiosity for science and a proven understanding of biology and chemistry, coupled with a desire to learn how science can be exploited for the benefit of mankind, then you have a fascinating career ahead of you.

Biochemists are in great demand by employers and this degree will provide you with the knowledge and skills that employers want in medical and agricultural research, the pharmaceutical and other biotechnology industries, as well as in education.

Programme in detail

How does the structure and function of proteins and other macromolecules explain life at the molecular level? What is the biochemical basis of disease? How does DNA control our development, our

metabolism and our personal characteristics? How do enzymes work and how do hormones control biological function? These are just some of the fascinating questions addressed in this programme.

In Year Three you will have the opportunity to complete a project in one of our excellent research laboratories, in Life Sciences, in our Medical, Veterinary and Dental Schools or even in a local hospital. You will become proficient in IT and will use the latest software to retrieve and analyse data. Communication skills, scientific writing and oral presentation, together with a range of other employability skills are also taught, enabling you to present your findings effectively to a range of audiences.

WHAT YOU'LL LEARN

- Independent and collaborative work
 - Becoming literate in finding, interpreting, evaluating, managing and sharing information
 - Self-management skills
 - Problem-solving
 - Using programming language for analysis and visualisation of large data sets
 - Using lab equipment correctly and safely
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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

In addition to core modules, you choose [one module from the indicative optional module list](#).

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.

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.

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.

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.

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.

INTRODUCTION TO GENETICS AND DEVELOPMENT (LIFE128)

Credits: 15 / Semester: semester 2

This module introduces students to modern genetics and developmental biology at an introductory level. Using examples taken from across the biosciences and medicine, students will develop their understanding of the inheritance of genetic traits, how mutation can lead to disease and the molecular techniques used to study genes. They will also be introduced to development from meiosis and germ cell formation through to organogenesis, emphasising both the underlying genetic and molecular mechanisms involved and the embryological processes. Students will explore current advances in both fields including current and potential use of gene editing techniques and stem cells in therapeutics, and will consider the ethical implications of these advances.

The module is taught through a combination of lectures and workshops incorporating problem solving and discussion, with an emphasis on an appreciation of the techniques and experimental evidence underpinning the material. Assessment is by a combination of a written examination and a group ethics poster presentation.

COMMUNICATION AND STUDY SKILLS FOR THE LIFE SCIENCES (LIFE130)

Credits: 7.5 / Semester: whole session

QUANTITATIVE SKILLS FOR THE LIFE SCIENCES (LIFE113)

Credits: 7.5 / Semester: semester 1

For any student studying the Biological Sciences a firm grasp of quantitative skills is an absolute necessity. This module will provide you with the knowledge and skills you need to manipulate numbers and analysis/visualise data using digital tools. The module emphasises a "learn by doing" approach to the development of quantitative skills and is heavily workshop based.

OPTIONAL MODULES

INTRODUCTION TO PHYSIOLOGY AND PHARMACOLOGY (LIFE106)

Credits: 15 / Semester: semester 2

MICROBIOLOGY (LIFE110)

Credits: 15 / Semester: semester 2

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

YEAR TWO

In addition to core modules, you choose two module list.
modules from the indicative optional

COMPULSORY 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.

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.

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.

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.

FROM GENES TO PROTEINS (LIFE201)

Credits: 15 / Semester: semester 1

This module aims to provide students with an understanding of the fundamental processes whereby genetic information is expressed as proteins in prokaryotic and eukaryotic cells. 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 two assessments.

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.

STRUCTURE AND DYNAMICS OF MACROMOLECULES (LIFE203)

Credits: 15 / Semester: semester 2

This module aims to provide an introduction to the detailed structure of biomolecules (particularly nucleic acids and proteins), the different techniques used to determine this structure and how structural features define biological function. LIFE245 is a prerequisite. Examples will be included to show how altered structure leads to altered function in disease. It will introduce cutting-edge technologies used to investigate protein structure and behaviour from actually visualising molecules using cryo-electron microscopy and X-ray crystallography, to determining how molecules move and interact using nuclear magnetic resonance (NMR). The uses, advantages and limitations of these techniques will be illustrated using case studies of specific macromolecular complexes. 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.

TECHNIQUES IN CELL BIOLOGY (LIFE227)

Credits: 7.5 / Semester: semester 1

This practical module aims to provide practical and theoretical experience in techniques currently used in cell biology. These techniques include assay, culture, histology and microscopy. The module is assessed through coursework and a final exam.

OPTIONAL MODULES

BIOTECHNOLOGY (LIFE210)

Credits: 15 / Semester: semester 2

This module will examine the ways in which biological processes are applied for solving technological processes.

Examples of specific processes will be used including production of antibiotics, biomass, single cell protein, biopolymers, vaccines and other therapeutic agents.

The lectures will be supplemented with on-line reading 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 two assessments.

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.

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.

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.

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.

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.

ENDOCRINE AND NEURO-PHYSIOLOGY (LIFE204)

ENDOCRINE AND NEUROPHYSIOLOGY (LIFE207)

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.

VIROLOGY (LIFE209)

Credits: 15 / Semester: semester 1

This module is an introduction to modern virology.

The module provides an overview of different virus families and aims to explain the fundamental properties of different viruses, their infection in different organisms, their detection and control, and positive applications of viruses.

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.

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

YEAR THREE

Students spend about three days per week throughout the whole of year three on their research projects, usually in one of the laboratories of the molecular medicine, cell signalling, chemical biology or structural

biology research groups. Students may also take projects within the Schools of Medicine, Veterinary Science, Dentistry, or even in local hospitals.

COMPULSORY MODULES

ADVANCED SKILLS IN BIOCHEMISTRY (LIFE301)

Credits: 15 / Semester: semester 1

This module aims to provide a set of communication and critical reflection skills in the context of biochemistry. These skills will help students enhance the execution and presentation of research projects, prepare them for Level 6 assessments and maximise their employment and personal development opportunities. The module is taught through seminars and tutorials, but has a strong emphasis on independent learning. Learning material is provided through VITAL. The module is assessed by continuous assessment.

BIOCHEMICAL MESSENGERS AND SIGNAL TRANSDUCTION (LIFE304)

Credits: 15 / Semester: second semester

This module will examine how cells respond to external signals and how information is transferred inside cells, emphasising experimental approaches to their analysis, the modular nature of signalling, and the complexity of signalling networks. The range of different strategies for dealing with signalling information will be investigated in detail. All the events involved in the transfer of signalling information from an occupied receptor on the cell surface to changes in gene expression in the cell nucleus will be described and linked to human biology. The module will be assessed by both continuous assessment and a final examination.

GENES AND CANCER (LIFE302)

Credits: 15 / Semester: semester 2

The main aim of this module is to develop students' understanding of the molecular and cellular mechanisms that lead to tumour formation and be able to critically read published papers on the biology of cancer. In the first part of the module, the students will learn about the molecular and cellular mechanisms that lead to tumour formation. This includes understanding the origin of cancer by studying the mutations causing cancer and the genome instability. A bioinformatic workshop and a case study exercise on mutations in cancer cells will complement the lectures. This leads to the identification of oncogenes and tumour suppressor genes. The second part focuses on the general cancer hallmarks acquired during the development of human cancer, including the role of tumour microenvironment and cancer stem cells. The third part of the module will cover therapeutic strategies including drug design, targeted therapies, and a clinical viewpoint. The module will be assessed by both continuous assessment and a final examination.

MOLECULAR MEDICINE (LIFE306)

Credits: 15 / Semester: semester 2

This module introduces advanced principles of the application of molecular approaches to the study and treatment of human disease. Selected topics, namely inherited disorders, post-genomic medicine and drug discovery, the therapeutic potential of stem cells in regenerative medicine, and diseases associated with the extracellular matrix are presented in detail. The module will be assessed by both continuous assessment and a final examination.

PROTEIN STRUCTURE, FUNCTION AND ORGANISATION (LIFE303)

Credits: 15 / Semester: semester 1

Understanding protein structure and function is vital to elucidate the mechanisms of biological processes and if proteins are to be used as drug targets. For a protein to acquire function it must fold into a correct conformation. The course will cover how proteins fold into a three-dimensional conformation, and the modern techniques for determining the three-dimensional structures of proteins, including X-ray crystallography, NMR and Mass spectrometry. It will also address how proteomics is used to characterise the function of proteins. To study protein structure and functions, it is important to obtain pure protein and the module will cover how recombinant and native proteins are produced and purified. The module is taught mainly through lectures and one bioinformatics workshop. It will be assessed by continuous assessments and a final examination.

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.

GENE EXPRESSION AND DEVELOPMENT (LIFE323)**Credits: 15 / Semester: semester 1**

This module aims to provide students with a systematic knowledge and critical understanding of how patterns of gene expression in an organism alter in response to environmental changes, growth and development;

It will explain the steps at which control of gene expression can be exerted, focusing on eukaryotic cells;

The module will be taught through lectures and assessed by both continuous assessments and by a final examination.

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.

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

HOW YOU'LL LEARN

You will experience a range of learning environments during your studies at Liverpool. These will include student-centred activities as well as lectures, tutorials, laboratory practicals, dissection classes, fieldwork, data handling sessions and computer workshops. Some of these activities will be performed individually, such as personal research projects, and others in small tutorial or project groups, in addition to formal lectures and workshops. You will have research staff as well as your own academic adviser for individual tuition on our acclaimed tutorial programme.

HOW YOU'RE ASSESSED

As well as factual knowledge and understanding, biologists need practical and organisational skills, and an ability to work both alone and with other people. We record the development of these abilities through continuous assessment during each semester and by final examination.

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

As a Life Sciences graduate from the University of Liverpool, you will have an excellent set of career options ahead of you. For those committed to a career as a professional scientist, higher degrees (M BiolSci, MSc, MRes, MPhil or PhD) at the University of Liverpool or elsewhere provide a flexible set of options for further study.

In the public sector, Life Sciences graduates are in demand in research institutes, government departments, the National Health Service, forensic science and the Environment Agency. Commercial sectors that actively recruit graduates from the Life Sciences include the pharmaceutical, food, biotechnology, water and agriculture industries.

There is also an increasing demand for life scientists to contribute to the public understanding of science as journalists and information/liaison officers, in view of the ethical and environmental issues that arise, for example, by developments in molecular biology and biotechnology.

A number of routes are available for graduates to enter the teaching profession one of which is taking a postgraduate qualification (PGCE). There are significant financial inducements provided to meet the current demand for science teachers. In addition to all of the opportunities for graduates in general, including careers outside of biology (such as management, accountancy and human resources), where the skills you have obtained in our degree programmes will be of considerable benefit. Our degree programmes are also popular

routes to postgraduate Medicine, Dentistry or Veterinary Science.

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

Graduate Outcomes, 2018-19.

Recent employers:

- AstraZeneca
- BBC
- Blue Planet Aquarium
- Chester Zoo
- Crown Prosecution Service
- Eli-Lilly
- Glaxo SmithKline
- Home Affairs, Security and International Development
- United Utilities
- RSPCA
- NHS
- Ministry of Defence
- Unilever
- Vodafone
- Public Health England
- Red X Pharma
- Royal Society of Biology
- The Environment Agency

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.
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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 ABB.</p> <p>Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is BBB 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>Biology and Chemistry 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	33 including 6/5 at higher level in Biology/Chemistry
Irish Leaving Certificate	H1, H2, H2, H2, H3, H3 including grade H2 in both of Higher Level Biology and Higher Level Chemistry.
Scottish Higher/Advanced Higher	Not accepted without Advanced Highers at grades ABB
Welsh Baccalaureate Advanced	Accepted at grade B as equivalent to a third non-science A level at grade B.
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 Biology and Chemistry. GCSE Mathematics and English grade C/4 also required.

Your qualification	Requirements About our typical entry requirements
International qualifications	<div data-bbox="491 497 927 633" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Select your country or region to view specific entry requirements. </div> <p data-bbox="1002 501 1414 577">guaranteed a place on your chosen course.</p> <p data-bbox="491 667 922 1079">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