UNIVERSITY OF LIVERPOOL

Biotechnology MSc

COURSE DETAILS

- Full-time: 12 months
- Part-time: 24 months

KEY DATES

- Apply by: 29 August 2025
- Starts: 22 September 2025

Course overview

Biosciences and technology are an integral part of the global economy. Our Biotechnology MSc has been designed with input from major industry players to ensure that current skill gaps and emerging skill needs are being addressed.

INTRODUCTION

WHAT YOU'LL LEARN

- Modern biotechnology and bioimaging tools and approaches
- Statistical techniques in the design of experiments in biological research
- Theoretical and technical knowledge in sequence analysis, phylogenetics, and the modelling of proteins, and others
- The understanding of the grand challenges in biotechnological applications
- Key aspects of computational biology
- The understanding of proteomic and metabolomic techniques and related data analysis

Course content

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

SEMESTER ONE

LIFE702 Introduction to Research

Level: M
Credit Level: 30
Semester: Whole session

This module will prepare students for their MSc research project. Students will work under the guidance of their research project supervisor to acquire the knowledge and skills they will need for their MSc research project. Students will work in collaboration with their supervisor to identify skills and knowledge essential for their MSc research project and to devise a plan of work to address these. Students are expected to work independently through their plan of work, with guidance provided by their supervisor at regular meetings. Students will create a reflective portfolio of work which will highlight how and where the skills have been developed. Students will perform a literature search and write a literature review based on their project area, as well as write a grant proposal. Upon completion of this module, students will progress on to their MSc research project module.

COMPULSORY MODULES

BIOLOGICAL DATA SKILLS (LIFE707)

Credits: 15 / Semester: semester 1

Data skills are essential for a career in modern biology. Biological studies increasingly involve the generation of large or complex sets of data, and the ability to analyse data is a core component of a successful biologist's skill set. Digital fluency is also required more widely outside biological research and a grounding in data analysis is in demand by a broad range of employers. Here you will learn the ability to visualise data, critically test hypotheses, and to interpret and present results.

The learning and teaching materials are delivered as an online set of resources (available through Canvas) coupled with computer-based practical workshops. The module will also introduce students to the powerful open access statistical software package, R.

The module will be assessed by a written data analysis report and an open-book exam

For any students studying off-campus – due to a placement in industry or studying at an overseas University – on-line drop-in sessions will be provided instead of the practical workshops.

INFORMATICS FOR LIFE SCIENCES (LIFE721)

Credits: 15 / Semester: semester 1

Bioinformatics is a key skill needed in many research settings. This module gives students a theoretical and technical grounding in a range of application areas including bioinformatics-related topics such as sequence analysis, phylogenetics, and the modelling of proteins, and others. While lectures are provided on core topics, there is a strong emphasis on practical exercises to demonstrate the application of common tools and data sources in these contexts. Teaching is delivered in the form of a weekly lecture and workshops. Students will be given guided reading and online activities to support their learning. The module will be assessed by two coursework assessments. The assessments will allow students to demonstrate their understanding of the tools used in workshops and interpretation of results.

CELLULAR BIOTECHNOLOGY AND BIOLOGICAL IMAGING (LIFE749)

Credits: 15 / Semester: semester 1

Modern biotechnology and bioimaging applies novel tools and approaches to address today's global challenges.
You will learn a variety of methods in mammalian cell biotechnology as well as imaging technologies that range from the microscopic scale to cellular and organ imaging in vivo. You will develop knowledge of a diversity of cell analysis techniques. Furthermore, the use of reporter genes for various types of imaging will be explained, including imaging technologies for cell analysis on the microscopic level as well as for cell imaging and functional analysis in animal models of disease.

The lectures will convey basic knowledge and include examples of applications from actual research publications, or the lecturer's own research work, in equal measure. The students will have learning tutorials on critical appraisal of literature. There will also be a practical workshop on contemporary microscopy.
The module will be taught through a combination of lectures, workshops and practical exercises. There are two written assessments in this module.

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.

SEMESTER TWO

In semester two, you will undertake **two** compulsory modules. You will also undertake **one** optional module; choose from LIFE752 or BIOS776.

COMPULSORY MODULES

PROTEOMICS METABOLOMICS AND DATA ANALYSIS (LIFE754)

Credits: 15 / Semester: semester 2

Proteomics and
metabolomics represent powerful tools towards unbiased, quantitative and high-throughput analysis of biological systems. Rapid "omic" technological developments in the post-genomic era have provided insights into protein structures, biosynthesis and interactions, as well as the complex metabolic processes that are of significant importance in biological and medical research. The aims of this course are to provide a comprehensive understanding of proteomic and metabolomic techniques and related data analysis, and to illustrate how they can be applied in fundamental biological research and industrial applications. The module will be taught by lectures and workshops. The module will be assessed via two a scientific reports.

SYNTHETIC BIOLOGY AND BIOTECHNOLOGY (LIFE756)

Credits: 15 / Semester: semester 2

Synthetic Biology and Biotechnology will provide an in-depth understanding of the grand challenges in biotechnological applications and the principles underlying synthetic biology and modern biotechnological techniques that are designed to sustainably address specific problems. The module also aims to teach tools and strategies being developed and applied in the rapidly expanding field of synthetic biology and train students with practical experience in green biotechnology.

The module will be taught through a combination of lectures and workshops. The lectures will convey basic knowledge or the lecturer's own research work. The workshops will provide students with the opportunity to analyse relevant data relevant to the biotechnology field. The module will be assessed via a scientific report and a scientific review.

OPTIONAL MODULES

COMPUTATIONAL BIOLOGY (LIFE752)

Credits: 15 / Semester: semester 2

With the advent of genomics and functional genomics, biology has become a quantitative data-rich discipline. This has created unprecedented opportunities in virtually every area of life sciences. With the right tools, it is now possible to address fundamentally important biological questions simply analysing already available datasets. This module is designed to prepare students for this very challenge. The module covers the most important aspects of computational biology. These range from the analysis of large datasets to infer biological mechanisms to the use of mathematical modelling to conceptualize and simulate complex biological phenomena. In addition to providing an intuitive overview of the basic theoretical principles, the module will focus on real life applications through multiple cases studies. Among these, students will learn how to identify drug targets and mechanisms of drug resistance and how to understand mathematical models of biological systems. They will then learn aspects of quantitative system pharmacology and physiologically based pharmacokinetic modelling pharmacokinetic/pharmacodynamic modelling.

The module will be taught through a combination of lectures, workshops and seminars. The module will be assessed via two written reports.

GLOBAL PERSPECTIVES (BIOS776)

Credits: 15 / Semester: semester 2

This module aims to equip students with the critical knowledge and interdisciplinary skills needed to tackle today's most pressing global challenges in the biosciences with a holistic and ethical perspective by exploring key topics, such as:
Global health challenges, including drug design and development, tissue engineering, and cancer research.
Sustainable development challenges, focusing on sustainability in biosciences research, the use of artificial intelligence, the impacts of climate change, and
Public engagement in science.

Through these topics, learners gain a comprehensive understanding of the intersections between science, sustainability, and ethics.

Students will be taught through seminars, in which experts will discuss a particular area of challenge in the biosciences. There will also be interactive workshops dedicated to the development of skills, in support of the module assignments, and online asynchronous material to support learning.

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.

FINAL PROJECT

During the summer you will undertake your MSc project, for submission in September.

COMPULSORY MODULES

MSC RESEARCH PROJECT (LIFE703)

Credits: 60 / Semester: summer

In this module students will work on a research project in their chosen area of study under the supervision of a project supervisor. Students are expected to work independently, with guidance provided by their supervisor. Students will create a plan of work at the start of the project, and will present their work orally, as well as write a final project report. Students will also be assessed on their approach and technique during the project. Students will defend their work in a viva at the end of the module. This module will give students experience in conducting their own independent research project, and the presentation of this work through oral and written formats.

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.

HOW YOU'LL LEARN

You will experience a range of teaching and learning methods, including lectures, seminars, workshops, group discussion and e-learning.

Programme modules encourage individual and group work where you will tackle problems by developing ideas and hypotheses, design learning strategies to solve problems, and then analyse and interpret your findings.

Course material is available 24-hours a day on Canvas, our online learning platform. One-to-one meetings with your research supervisor will allow you to discuss science, develop your critical thinking and creativity through an ongoing feedback model.

Your master research project provides a full academic research experience, including the planning, execution and communication of scientific research.

HOW YOU'RE ASSESSED

Assessment of knowledge and understanding, practical skills and transferrable skills is through a blended mix of coursework that may include practical and project reports, essays, completion of workbooks, talks, data handling sessions and posters.

All modules will provide you with feedback on your learning progress and allow for adjustment of your learning. Electronic resources available on the University virtual learning environment support learning and teaching.

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

Graduates with an MSc in Biotechnology are well equipped to enter a wide range of employment options.

The programme provides you with the necessary knowledge and skills to become a professional scientist in your chosen area of biotechnology. It has been specifically designed to enhance students' careers in different biotechnology sectors in a variety of research, product and technology development, and leadership roles.

Furthermore, upon successful completion of the MSc you may wish to continue with your education by studying for a PhD.

In the public sector, graduates from this programme are in demand in research institutes, government departments, the Health Service, forensic science and the Environment Agency. There is also demand currently for graduates with specialisations in science or computing to enter the teaching profession.

Career support from day one to graduation and beyond

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Career planning

Our Careers Studio and career coaches can provide tailored support for your future plans.

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From education to employment

Employability in your curriculum for a successful transition

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Networking events

Make meaningful connections with like-minded professionals

YOUR FUTURE

The MSc Biotechnology prepares you for a diversity of job opportunities in the public and private sector. Potential career pathways include, but are not limited to, the roles of:

- Research Scientist
- Biomedical Engineer
- Consultant
- Biological/Clinical Technician
- Biomanufacturing Specialist.

Fees and funding

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

TUITION FEES

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)	
Full-time place, per year	£13,300
Part-time place, per year	£6,650

International fees	
Full-time place, per year	£28,300
Part-time place, per year	£14,150

Fees stated are for the 2025-26 academic year.
Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **Learn more about fees and funding**.

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 could include buying a laptop, books, or stationery.

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 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

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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – ACHIEVEMENT

- International students

If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your prior academic achievement, choice of course, and you not having studied with us before.

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POSTGRADUATE GLOBAL ADVANCEMENT SCHOLARSHIP – COUNTRY

- International students
- Antigua and Barbuda
- Australia
- Bangladesh
- Barbados
- Belize
- Brunei
- Canada
- China
- Cyprus
- Dominica
- Egypt
- Ghana
- Grenada
- Guyana
- India
- Jamaica
- Japan
- Kenya
- Malaysia
- Mauritius
- Mexico
- New Zealand
- Nigeria
- Pakistan
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and The Grenadines

- Singapore
- South Africa
- South Korea
- Sri Lanka
- Tanzania
- Thailand
- Trinidad and Tobago
- Turkey
- Uganda
- Vietnam

If you're an international student joining a master's course with us, you could be eligible to receive a tuition fee discount of £2,500, based on your nationality, choice of course, and you not having studied with us before.

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GRADUATE LOYALTY ADVANCEMENT SCHOLARSHIP

- Home and international students

If you're a University of Liverpool graduate starting this master's degree with us, you could be eligible to receive a loyalty discount of up to £2,500 off your master's tuition fees.

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CHILEAN NATIONAL AGENCY FOR RESEARCH AND DEVELOPMENT (ANID) SCHOLARSHIP

- International students
- Chile

If you're a Chilean student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Chilean National Agency for Research and Development (ANID) Scholarship. Scholarship.

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CHEVENING SCHOLARSHIPS

- International students
- Albania
- Algeria
- Anguilla
- Antigua and Barbuda
- Argentina
- Australia
- Azerbaijan
- Bangladesh
- Barbados
- Belize
- Bolivia
- Brazil
- British Virgin Islands
- Brunei
- Canada

- Cayman Islands
- Chile
- China
- Columbia
- Costa Rica
- Cuba
- Dominica
- Ecuador
- Egypt
- El Salvador
- Ghana
- Guatemala
- Guyana
- Honduras
- Hong Kong
- Iceland
- India
- Indonesia
- Iraq
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Libya
- Malaysia
- Mauritius
- Mexico
- Moldova
- Mongolia
- Montserrat
- Morocco
- Nepal
- New Zealand
- Nicaragua
- Nigeria
- Pakistan
- Panama
- Paraguay
- Peru
- Philippines
- Russia
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and The Grenadines
- Serbia
- Singapore
- South Africa

- South Korea
- South Sudan
- Sri Lanka
- Sudan
- Taiwan
- Tanzania
- Thailand
- Trinidad and Tobago
- Turkey
- Turks and Caicos Islands
- Uganda
- Ukraine
- Uruguay
- Venezuela
- Vietnam
- Zimbabwe

If you're an international student from an eligible country, joining a one-year master's course, you could be eligible to apply for a Chevening Scholarship. If your application is successful, you could expect to have your master's fees paid, up to a maximum of £18,000, and receive additional help with living costs.

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CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA (CONACYT) AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree, you could be eligible to apply for a 30% discount on your tuition fees with a CONACyT Award.

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FUND FOR THE DEVELOPMENT OF HUMAN RESOURCES (FIDERH) AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree and you're in receipt of a FIDERH graduate loan, you could be eligible to benefit from a 20% discount on your tuition fees with a FIDERH Award.

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FUNED AWARD

- International students
- Mexico

If you're a Mexican student joining a master's degree and you're in receipt of a FUNED loan, you can apply to be considered for a 20% tuition fee discount. A total of up to 50 awards will be available to master's and PhD students per academic year.

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FUNED SCHOLARSHIP FOR WOMEN IN STEM SUBJECTS

- International students
- Mexico

If you're a female Mexican student joining an eligible master's course in a science, technology, engineering or maths (STEM) subject and you're in receipt of a FUNED loan, you can apply to be considered for a 25% tuition fee discount. Up to five awards are available in each academic year.

- ## HONG KONG GRADUATE ASSOCIATION & TUNG FOUNDATION POSTGRADUATE SCHOLARSHIPS

  - International students
  - China
  - Hong Kong

  If you're a master's student from Hong Kong or the People's Republic of China who can demonstrate academic excellence, you may be eligible to apply for a scholarship worth up to £10,000 in partnership with the Tung Foundation.

- ## HRH PRINCESS SIRINDHORN UNIVERSITY OF LIVERPOOL SCHOLARSHIP (THAILAND)

  - International students
  - Thailand

  If you're a student from Thailand joining a one-year master's degree, you might be eligible to apply to have your tuition fees paid in full and receive help with living costs. One award is available and only students who are new to the University will be considered.

- ## HUMANITARIAN SCHOLARSHIPS FOR MASTER'S PROGRAMMES

  - International students

  Do you have recognised status as a refugee or person with humanitarian protection outside the UK? Or are you a Ukrainian who's sought temporary protection in the EU? You could be eligible to apply for the full payment of your master's fees and additional financial support.

- ## JOHN LENNON MEMORIAL SCHOLARSHIP

  - Home students

  If you're a UK student, either born in or with strong family connections to Merseyside, you could be eligible to apply for a fee discount of up to £4,500. You'll need to demonstrate an active interest in global, community and environmental issues to be considered.

- ## JUVENTUDESGTO SCHOLARSHIP

  - International students
  - Mexico

  If you're a resident of the state of Guanajuato in Mexico joining a master's degree, you could be eligible for a 10% discount on your tuition fees with a JuventudEsGto Scholarship.

- ## KAPLAN DIGITAL PATHWAYS EXCELLENCE SCHOLARSHIP

- International students

Completed a Kaplan Digital Pathways Pre-Master's? We're offering a £5,000 fee discount off the first year of master's study for a maximum of two high achieving students joining one of our non-clinical master's courses from an online Kaplan Pre-Master's programme.

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MARSHALL SCHOLARSHIP

- International students
- United States

If you're a USA student joining an eligible master's with us, you could be eligible to apply for a Marshall Scholarship. If your application is successful, your master's tuition fees will be paid in full. One Marshall Scholarship for master's study is available in each academic year.

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POSTGRADUATE OPPORTUNITY BURSARY

- Home students

If you're a UK University of Liverpool graduate joining a master's degree with us, you could be eligible to receive £3,000 off your tuition fees. You must have graduated in the last two years and received a widening access scholarship during your undergraduate studies.

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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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TURKISH MINISTRY OF EDUCATION SCHOLARSHIP

- International students
- Turkey

If you're a Turkish student joining a master's degree, you could be eligible to apply for a 20% discount on your tuition fees with a Turkish Ministry of Education Scholarship.

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UNIVERSITY OF LIVERPOOL INTERNATIONAL COLLEGE EXCELLENCE SCHOLARSHIP

- International students

Completed a Pre-Master's at University of Liverpool International College (UoLIC)? We're offering a £5,000 fee discount off the first year of master's study to some of the highest achieving students joining one of our non-clinical master's courses from UoLIC.

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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 fee discount worth £3,000 off the first year of your master's course.

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VICE-CHANCELLOR'S INTERNATIONAL ATTAINMENT SCHOLARSHIP FOR MAINLAND CHINA

- International students
- China

Are you a high-achieving graduate from the People's Republic of China with a degree from a Chinese university? You could be eligible to apply for a £5,000 fee discount if you're joining an eligible master's course. Up to 15 eligible students will receive this scholarship.

Entry requirements

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

Your qualification	**Requirements** About our typical entry requirements
GCSE	4/C in English and 4/C in Mathematics
Postgraduate entry requirements	We accept a 2:2 honours degree from a UK university, or an equivalent academic qualification from a similar non-UK institution. This degree should be in a Biological Sciences subject or equivalent. Candidates must have a scientific background acceptable to the Programme Director.
International qualifications	If you hold a bachelor's degree or equivalent, but don't meet our entry requirements, a Pre-Master's can help you gain a place. This specialist preparation course for postgraduate study is offered on campus at the **University of Liverpool International College**, in partnership with Kaplan International Pathways. Although there's no direct Pre-Master's route to this MSc, completing a Pre-Master's pathway can guarantee you a place on many other postgraduate courses at The University of Liverpool.

THE ORIGINAL REDBRICK