UNIVERSITY OF LIVERPOOL

MSc

# Advanced Bioscience Techniques and Research Facility Management

| Study mode | Duration | |
|---|---|---|
| Full-time | 12 months | Apply by: **29 July 2025**<br>Starts on: **22 September 2025** |

## About this course

The programme offers extensive hands-on training in advanced bioscience research techniques and on-site induction to the operation and management of core research facilities. The programme prepares students for a broad range of professions that require experimental biological/biomedical research skills and particularly for the roles of specialist research staff (e.g. equipment specialists, data analysis specialists) and managers of core research facilities.

## Introduction

Researchers with highly specialised analytical and practical skills are at a premium within the research sector. Typically working in core facilities and research roles, these research technical professionals underpin a wide range of academic and industry research and can progress into significant leadership roles. The programme will provide graduates and staff interested in this career option access to focussed education and training.

Within the framework of the programme students will be embedded in world-class core research facilities and undertake hands-on training in advanced techniques under the expert guidance of equipment/methodology specialists. This training will be supplemented with lectures and workshops focused on the applications of research techniques and the practical aspects of managing research facilities. Students will be

able to access a bespoke experience closely aligned with their career aspirations in research or core facility roles. This is the first programme of its type in the UK.

## Who is this course for?

This programme is designed for graduates and current research/technical staff interested in:

- Mastering advanced bioscience techniques and gaining research experience as well as obtaining theoretical knowledge in the research areas aligned with the applications of the bioscience techniques.
- Gaining knowledge and experience in the operation and management of core research facilities.
- Pursuing a career of specialist research staff (e.g. equipment specialists, data analysis specialists) and/or manager of core research facilities.

## What you'll learn

- Advanced bioscience techniques necessary to become professional experimenters and pursue a career in academia or industry, or as a preparation for PhD training.
- State-of-the-art methodological/technical knowledge in the Bioscience research field.
- Data analysis, curation, interpretation and presentation.
- Recent scientific developments relevant to cutting edge techniques utilised in Core Research Facilities and applications of these techniques.
- The role, functioning and management of a core research facility.
- Ability to plan, conduct and present a major piece of original, independent research.

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# Course content

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

### Semester one

Compulsory modules:

BIOS771 Introduction to Core Facility Methods, Infrastructure and Practice

LIFE707 BIOLOGICAL DATA SKILLS

LIFE749 Cellular Biotechnology and Biological Imaging

Optional modules:

BIOS775 Techniques in Biological and Biomedical Sciences Research

LIFE733 Coding for Life Sciences

Please note the structure of this course is still awaiting approval and full details will be available soon.Please note the structure of this course is still awaiting approval and full details will be available soon.

## Modules

| Compulsory modules | Credits |
|---|---|
| BIOLOGICAL DATA SKILLS (LIFE707) | 15 |
| CELLULAR BIOTECHNOLOGY AND BIOLOGICAL IMAGING (LIFE749) | 15 |

| Optional modules | Credits |
|---|---|
| CODING FOR LIFE SCIENCES (LIFE733) | 15 |
| TECHNIQUES IN BIOLOGICAL AND BIOMEDICAL SCIENCES RESEARCH (BIOS775) | 15 |

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

### Semester two

Compulsory modules:

BIOS772 Core Facility Operation and Management

BIOS774 Attaining Competency in Core Facility Practice and Approaches

Optional modules:

LIFE750 Advanced Genomic Analysis

LIFE754 Proteomics Metabolomics and Data Analysis

Please note the structure of this course is still awaiting approval and full details will be available soon.

## Modules

| Optional modules | Credits |
|---|---|
| ADVANCED GENOMIC ANALYSIS (LIFE750) | 15 |
| PROTEOMICS METABOLOMICS AND DATA ANALYSIS (LIFE754) | 15 |

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

### Final Project

BIOS773 Advanced Techniques MSc Project

Please note the structure of this course is still awaiting approval and full details will be available soon.

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

### Teaching and assessment

## How you'll learn

Acquisition of subject-based learning outcomes is via hands-on technical training in Core Research Facilities, lectures, workshops, equipment/methodology demonstrations, small-group tutorials, coursework, problem-solving exercises and a summer research project, all supported by online materials, selected textbooks and specified source literature.

Technical training will be conducted in Liverpool Shared Research Facilities (LIV-SRF). LIV-SRF is composed of more than 20 core research facilities (including facilities/centres for genomic research, metabolomic research, proteome research, cell imaging, preclinical imaging, MRI imaging, high-field NMR imaging, GeneMill, histology, biomedical electron microscopy, computational biology and others).

Within the framework of the programme student will receive extensive technical training in one of the research facilities and will be introduced to research/technology in other facilities via workshops and visits/demonstrations/open days organised by the research facilities. As students progress through the course, they will increase their technical knowledge and skills from introductory (Semester 1), to competent (Semester 2) and finally to independent operation (project in Semester 3).

Supervisors will be in regular contact with the students providing practical training as well as facilitating development of analytical skills, supporting theoretical learning and development of critical approaches to technical and scientific literature. The supervisor or supervisory team (principal supervisor and co-supervisor) will provide supervision and facilitate a student's learning for the complete period of MSc training.

Practical and theoretical modules undertaken during Semesters 1 and 2 will provide a solid background to the research project in Semester 3. Within the framework of this programme students will be embedded in and provided with the opportunity to observe the daily operation of a research facility. This experience will be enhanced with the module "Core Facility Operation and Management".

The programme will include approximately 700 hours of supervised and independent practical work in a specialised research facility/laboratory. The practical work in specialised research facilities/laboratories will increase from approximately 100 hours in semester 1, to 200 hours in semester 2 and 400 hours in semester 3.

The programme overall will contain approximately 900 hours of self-directed learning; this time will be utilised for data analysis, attaining/enhancing theoretical knowledge, completion of course works, preparation for presentations and production of the final report. The programme will also contain approximately 60 lectures, 40 tutorials (one-to-one or small groups with 2-15 students) and 70 hours allocated to workshops. Most of the teaching will be delivered face-to-face on campus.

## How you're assessed

Assessment of knowledge and understanding, practical skills and transferable skills consists of a blended mix of coursework, including practical and project reports, essays, completion of workbooks, talks, data handling sessions, and posters. The project reports will be in the format of scientific research papers.

All modules will provide formative feedback to students on their learning progress and allow for adjustment of their learning.

Students will also evaluate their own progress, be guided to extra information, and to help via on-line resources and formative exercises.

Students will be informed that, in exceptional circumstances (e.g. global pandemics), plans for assessment may be subject to change. Contact will be made via the VLE and an e-mail will be sent to each of the students informing them of any changes that prove to be necessary. The Health and Life Sciences FAQSC will be informed in advance of any such changes, so that approval can be given.

## 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.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

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# Careers and employability

Researchers with highly specialised analytical and practical skills (e.g. equipment specialists, research methods specialists, data analysis specialists) collectively known as research technical professionals (RTPs) are at a premium within the research sector. Typically working in core facilities and research roles, they underpin a wide range of academic and industry scientific research and can progress into significant leadership/management roles. With in-depth vocational exposure to specialist techniques, equipment and infrastructure, graduates from this Master's programme will be recognised as the next generation of specialist research staff.

This programme will enhance students' opportunities for PhD entry, and for posts in academia or industry. The programme is therefore well suited to students committed to a career as a research scientist.

Skills from the programme are transferable to various other sectors, enhancing employability. Graduates at Master's level are in demand in research institutes, government departments, the Health Service and the Environment Agency.

With an MSc in Advanced Bioscience Techniques and Research Facility Management students will be well qualified to enter a wide range of modern scientific employment in academia or industry including:

- Specialist research staff (e.g. equipment specialists, research methods specialists, data analysis specialists) collectively known as research technical professionals (RTPs).
- Manager of a core research facility or a specialised laboratory.

This MSc degree will enhance a graduate's opportunity for PhD training and further career as a research scientist.

In the public sector graduates at Master's level are in demand in government departments, the NHS and Environmental Agency

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## Career support from day one to graduation and beyond

## Career planning

## From education to employment

## Networking events

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# 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

### International fees

Full-time place, per year - £28,300

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 paying for your studies.**.

## 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.

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# Entry requirements

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

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**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 Biology, Chemistry, Physics, Engineering, Computer Sciences or closely related disciplines (e.g. Biochemistry or Medical Engineering).

Considering the vocational nature of the programme, we also envisage an alternative pathway open for technical staff with substantial practical/analytical experience.

## Reference letters

Please provide the names and email addresses of two potential referees.

## Personal statement, specialist pathways and interview

Please provide a personal statement of no more than 700 words in support of your application. This should reflect your motivation for joining the programme and your previous experience.

The programme has two specialist pathways, **Omics** (including Genomics, Proteomics, Metabolomics and Synthetic Biology) and **Imaging** (including Electron and Light Microscopy, Histology, Magnetic Resonance Imaging, Positron Emission Tomography and other imaging methods). The programme will provide an opportunity for students to learn about different types of specialised research facilities and advanced bioscience techniques (the majority of research facilities and techniques available in LIV-SRF will be covered at an introductory level). Within the programme each student will preferentially focus on one specialist area and will be primarily allocated to one of the facilities for the duration of the MSc training.

**Please indicate your preference from the options below in your application form, as part of your personal statement:**

**1. Omics** (successful applicants will be allocated to one of the 'Omics' facilities)

or

**2. Imaging** (successful applicants will be allocated to one of the 'Imaging' facilities)

or

**3. No preference** (this is perfectly fine; in this case, the programme team will allocate a successful applicant based on their previous experience and the core facilities' availability).

After receiving the applications and preferences, the admissions team will select applicants for interview. Each interview will last for 15-20 minutes and will provide the opportunity for the applicant to discuss their interests and potential allocation to a research facility. We expect that within two weeks from the interview date, the candidate will be informed of the outcome of the interview and application.

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**International qualifications**

Select your country or region to view specific entry requirements.

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 programme, completing a Pre-Master's pathway can guarantee you a place on many other postgraduate courses at The University of Liverpool.

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## English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

**IELTS**

6.5 overall, with no component below 6.0

**TOEFL iBT**

88 overall, with minimum scores of listening 19, writing 19, reading 19 and speaking 20

**Duolingo English Test**

125 overall, with writing not less than 125, speaking and reading not less than 115, and listening not below 110

**INDIA Standard XII**

National Curriculum (CBSE/ISC) - 75% and above in English. Accepted State Boards - 80% and above in English.

# Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

## Pre-sessional English in detail

If you don't meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

| Your most recent IELTS score | Pre-sessional English course length | On campus or online |
|---|---|---|
| 6.0 overall, with no component below 6.0 | 6 weeks | On campus |
| 6.0 overall, with no component below 5.5 | 10 weeks | On campus and online options available |
| 6.0 overall, with no more than one component below 5.5, and no component below 5.0 | 12 weeks | On campus and online options available |
| 5.5 overall, with no more than one component below 5.5, and no component below 5.0 | 20 weeks | On campus |
| 5.0 overall, with no more than one component below 5.0, and no component below 4.5 | 30 weeks | On campus |
| 4.5 overall, with no more than one component below 4.5, and no component below 4.0 | 40 weeks | On campus |

If you've completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.5 overall, with no component below 6.0, for further details.

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Generated: 28 Mar 2025, 08:22