

## PROGRAMME SPECIFICATION

Name, title, and level of final qualification(s)	<b>MSci Biomedicine with Advanced Pathways [Level 7]</b> <ul style="list-style-type: none"> <li>• <b>Biochemical Analysis</b></li> <li>• <b>Microbiology</b></li> <li>• <b>Structural Molecular Biology</b></li> </ul>
Name and title of any exit qualification(s)	BSc (Hons) Biomedicine Diploma of Higher Education (DipHE) Biomedicine Certificate of Higher Education (CertHE) Biomedicine (exit following BSc Year 1) Certificate of Continuing Education (CCE)
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London
Home school/other teaching departments	School of Natural Sciences
Location of delivery	Central London
Language of delivery and assessment	English
Mode of study, length of study and normal start month	Full-time (4 years) September start
Professional, statutory or regulatory body	Not applicable
<a href="#">QAA subject benchmark group(s)</a> <a href="#">Higher Education Credit Framework for England</a>	Not applicable
UCAS code	C702
Birkbeck Course Code	UUBMMOBI_C (4-year, FT)
HECoS Code	100345, 100265
Start date of programme	Sept 2018
Date of programme approval	26 Sept 2017
Date of last programme amendment approval	November 2022
Valid for academic year and cohorts	2023-4 (2022-2023 cohort)
Date of last revision to document	05/08/22

## Admissions requirements

We welcome applicants without traditional entry qualifications as we base decisions on our own assessment of qualifications, knowledge, and previous work experience.

Applicants are normally expected to have gained 120 UCAS tariff points (e.g. BBB at A-Level), with a majority of science-related subjects (biology, chemistry and/or mathematics or physics). A-levels in general studies and critical thinking are not accepted. In addition, we require GCSEs in English, Mathematics, and Double Science (or two single sciences), all at grade C or better.

We are committed to making the biological sciences accessible to students from a wide range of backgrounds and with diverse career aspirations.

### UCAS tariff: 120

The UCAS tariff score is applicable to you if you have recently studied a qualification that has a UCAS tariff equivalence. UCAS provides a [tariff calculator](#) for you to work out what your qualification is worth within the UCAS tariff.

## Course aims

A rational approach to the development of treatments for current and emerging threats to human well-being depends upon a sound knowledge of human health and disease. Biomedicine is at the interface between molecular, cell and integrative biology and evolving disease therapies, whilst biomedical research plays a pivotal role in the transfer of advances in basic science into effective practices that promote human health as well as into treatments for human diseases. Years 1 through 3 of this programme will provide you with a sound understanding of the science that underpins modern medical practice, and of how this may be applied to the investigation, diagnosis and treatment of human disease.

Advanced pathways, offered by this programme as Year 4, afford students the opportunity to follow their interests in one of two main directions: 1) toward a more thorough knowledge of the chemical and physical principles that govern the structure and behaviour of biomolecules (Biochemical Analysis pathway or Structural Molecular Biology pathway); or 2) toward advanced training in specific scientific techniques appropriate to the research microbiologist.

Overall, this integrated master's programme will provide you with the knowledge, skills, and hands-on research experience that will help you to launch your career in exciting areas of research science, including basic biotechnology, diagnostics and forensics, drug discovery, or in other related disciplines.

## Main Aims

- To develop students' understanding of the molecular and biochemical underpinnings of cellular and organismal functioning.
- To produce graduates having the knowledge, analytical skills and practical skills essential for further study in relevant scientific disciplines and/or for employment in health-related fields.
- To provide students currently in science-related work with additional skills and academic knowledge for career enhancement and/or vocational realignment.

## Distinctive Features

- Teaching is through a combination of face-to-face sessions, with a choice of afternoon

or evening attendance in years 1 to 3, and online learning sessions, delivered synchronously or asynchronously.

- Following the compulsory modules for Levels 4, 5, and 6, a choice of named Advanced Pathway based on the composition of the Masters (Level 7/Year 4) year of study.
- Opportunity to start from our BSc Biomedicine and transfer into the MSci from the end of BSc Year 2.

### Course structure

Level	Module Code	Module Title	Credit	Status	Teaching term(s)
<b>Full-time – 3 years</b>					
<b>Year 1 [120 credits]</b>					
4	SCBS064H4	Introduction to Molecular Cell Biology	15	Comp	T1
4	SCBS065H4	Practical Skills for the Biosciences	15	Comp	T1
4	SCBS066H4	General Chemistry	15	Comp	T2
4	SCBS067H4	Cell Membranes and Bioenergetics	15	Comp	T2
4	SCBS068H4	Quantitative Skills and Experimental Design	15	Comp	T2
4	SCBS069H4	Organic and Biological Chemistry	15	Comp	T3
4	SCBS070H4	Introduction to Nutrition and Metabolism	15	Comp	T3
4	SCBS071H4	Laboratory Skills in Biochemistry	15	Comp	T3
<b>Year 2 [120 credits]</b>					
5	SCBS072H5	Research Methods in the Biosciences	15	Comp	T1
5	SCBS073H5	Evolution and Genetics	15	Comp	T1
5	SCBS074H5	Metabolic Challenges in Health and Disease	15	Comp	T1
5	SCBS076H5	Aspects of Human Physiology	15	Comp	T2
5	SCBS077H5	Molecular Biology	15	Comp	T2
5	SCBS075H5	Medical Microbiology and Immunology	15	Comp	T3
5	SCBS078H5	Protein Structure and Function	15	Comp	T3
5	SCBS079H5	Drugs and Drug Discovery	15	Comp	T3

<b>Year 3 [120 credits]</b>					
6	SCBS036D6	Specialist Laboratory Research Project	60	Core	T1+T2+T3
6	BCBC006S6	Advanced Cell Biology	30	Comp	T1+T2
6	SCBS080H6	Infectious Bacteria and Antibiotics	15	Comp	T1
6	SCBS081H6	Advanced Topics in Human Disease	15	Comp	T2
<p>Regarding the Specialist Laboratory Research Project (SLRP; SCBS036D6)</p> <p>As well as evening attendance throughout the academic year, SLRP includes required attendance for 5 consecutive weekdays, during the daytime, at a pre-term “boot camp”, normally in September.</p>					
<b>Year 4 [120 credits]</b>					
7	SCBS053D7	Research Project MSci Biomedicine	60	Core	T1+T2+T3
<p>In addition to the Research Project, in consultation with the Programme Director and Project Supervisor at the end of Year 3, students will elect to undertake one of 3 optional routes. Each comprises 60 credits at Level 7, as listed below. The Advanced Pathway chosen will be based on which module(s) best supports the demands of the student’s research project.</p> <p>The Advanced Pathway selected will determine the award title, as seen in the headings below.</p>					
<b>Advanced Pathway 1</b>					
Leading to the award of <b>MSci Biomedicine with Biochemical Analysis</b>					
7	SCBS089S7	Research Skills and Statistics	30	Comp	T1
7	SCBS090S7	Biochemical Analysis	30	Comp	T2
<b>Advanced Pathway 2</b>					
Leading to the award of <b>MSci Biomedicine with Microbiology</b>					
7	SCBS089S7	Research Skills and Statistics	30	Comp	T1
7	SCBS091S7	Cellular Microbiology	30	Comp	T2
<b>Advanced Pathway 3</b>					
Leading to the award of <b>MSci Biomedicine with Structural Molecular Biology</b>					
7	SCBS089S7	Research Skills and Statistics	30	Comp	T1
7	SCBS092S7	Molecular and Cellular Structure	30	Comp	T2
<p>To complete the <b>Research Project MSci Biomedicine</b> will require that students begin academic work during the summer vacation before entering Year 4. Beyond that, the project will require daytime availability, for up to 5 days per week at times, throughout the academic year.</p>					

- Core: Module must be taken and passed by student*
- Compulsory: Module must be taken but can be considered for compensated credit (see CAS regulations paragraph 24)*
- Option: Student can choose to take this module*

## **How you will learn**

Your learning and teaching is organised to help you meet the learning outcomes (below) of the course. As a student, we expect you to be an active learner and to take responsibility for your learning, engaging with all of the material and sessions arranged for you.

The course is divided into modules. You will find information on the virtual learning site (Moodle; see Academic Support, below) about each of your modules, what to expect, the work you need to prepare, links to reading lists, information about how and when you will be assessed.

All modules are taught by academic staff engaged with current topics in biomedicine. We provide a range of teaching approaches and learning experiences that will enable you to become a confident and autonomous learner. You will develop the skills to work either independently or within a group, as required by the task at hand.

Our strategy across the programme is to progressively immerse and engage learners in topics and activities of increasing complexity, building subject-matter and skills foundations at each level so to provide an opportunity for success at the next level.

You will receive skills training (e.g. laboratory skills, IT skills, numeracy, communications skills, etc.) throughout the programme and in-context with relevant subject matter. Core technical laboratory skills will be assessed through appropriate mixes of formative and summative tasks, providing certifications of basic competence that must be met to pass lab-based modules.

The forms of assessment and the specific tasks these require give due consideration to developing and testing the relevant practical/scientific and transferable skills, and to developing your abilities and academic potential, whilst acknowledging the diverse educational backgrounds and life experiences brought by all of our students. We incorporate research-oriented activity throughout the programme, again with careful consideration of its appropriateness to subject matter and academic level.

Classroom teaching is through combinations of live and pre-recorded lectures, live-online interactive sessions, laboratory sessions, computer exercises, and seminars in proportions appropriate to the academic level and the demands of the topic. Each year of the programme includes significant hands-on laboratory training, culminating in the conduct of novel research in the final year. Thus the MSci research project provides the opportunity to gain in-depth training in specialist and advanced methods in world-class research laboratories, under the tutelage of leading experts.

## **How we will assess you**

Teaching and learning will be enhanced by regular formative assessment that will challenge your knowledge and understanding of topics under study. Such informal assessment may include engaging in discussions and/or solving problems in class; designing and executing your own laboratory investigations; engaging in peer assessment; and/or responding in some manner to the instructor's questioning. Your learning will be supplemented and reinforced through guided independent study, undertaken outside of class; this study will be facilitated through a range of online materials delivered via our virtual learning environment (Moodle).

Summative assessment (used in determining module grades) in your modules may include, in differing combinations: short-answer tests (during in-person sessions); computer-based tests (accessed remotely or during in-person sessions); practical reports; essays; problem-solving and data analysis assignments; oral communication and poster presentations; internet surveys; and unseen, or open-book, written examinations (conducted either online or in-person). The mix of assessment types, and the specific tasks required, are matched to the academic level and to the learning outcomes of the module. Each module has a syllabus (supplied to enrolled students, via Moodle) that provides details of the learning outcomes and assessment regime for that module.

A departmental Teaching Committee continually reviews all learning, teaching, and assessment arrangements to ensure that the programme and its modules maintain coherence and currency, and that everything operates at an appropriate standard. Such review is informed by feedback from students and from an External Examiner who visits annually to review our courses and conduct exit interviews with students.

### **Learning outcomes (what you can expect to achieve)**

“Learning outcomes” indicate what you should be able to know or do at the end of your course. Considering them will help you to understand what your teachers will expect and also the learning requirements upon which you will be assessed.

### ***On successful completion of this programme, you should be able to demonstrate:***

#### **A. Knowledge and Understanding**

- 1- A sound knowledge and understanding of scientific principles essential for the investigation and understanding of human disease, acquired through study across a range of disciplines, including: biochemistry, cell biology, chemistry, genetics, immunology, microbiology, molecular biology, physiology, and pharmacology;
- 2- a knowledge of how these disciplines may be applied toward an understanding of the molecular basis and diagnosis of human diseases, and in development of new therapeutic strategies;
- 3- subject-specific knowledge within the areas of: biochemistry and molecular biology (enzymes, metabolic systems; nucleic acid manipulation, genomics); cell biology (cell structure, cell division, differentiation; microbiology); genetics (principles of evolution; inheritance, differential gene expression); homeostasis and cell communication (feedback control and cell signalling); human systems physiology (major organ systems; immunity; aspects of disease processes); basic principles of pharmacology and drug actions;
- 4- for a range of human diseases, a critical understanding of their molecular and cellular basis, and of their diagnosis and treatment;
- 5- awareness and engagement with philosophical and ethical issues arising from some of the current developments in the biomedical sciences;
- 6- a critical understanding of how the chemistry and structure of the major biological macromolecules determines their biological functioning and their interactions with other chemical entities;
- 7- a critical understanding of recent advances in fields of study relating to their chosen advanced pathway/research area.

## B. Intellectual Skills

- 8- Application of subject-specific knowledge and understanding in addressing and solving familiar and unfamiliar problems;
- 9- analysis, critical evaluation and synthesis of scientific evidence, concepts and principles;
- 10- an ability to formulate research questions and to test and evaluate hypotheses using principled experimental design;
- 11- development of strategies for updating, maintaining and enhancing your knowledge of the science underpinning new advances in the bio-molecular sciences;
- 12- independent reasoning and defence of ideas.

## C. Practical Skills

- 13- Appreciation and application of safe working practices in a scientific laboratory;
- 14- an ability to apply relevant numerical skills, including statistical analysis, in analysing molecular/biochemical data;
- 15- skill in executing a range of analytical/experimental laboratory methodologies, and an understanding of the principles upon which these methodologies are based;
- 16- a critical approach in scientific enquiry through the execution and reporting of research projects.

## D. Transferable Skills

- 17- Personal responsibility for your learning, and habits of reflection on that learning;
- 18- an ability to identify, retrieve (e.g. through online computer searches and other means), sort and exchange information;
- 19- skill in abstracting and synthesising information, and developing a reasoned argument;
- 20- effective written communication and oral presentation to specialist and non-specialist audiences;
- 21- use of information technology (including spreadsheets, databases, word processing, email and web-based resources);
- 22- effective interpersonal skills, including working in groups/teams and recognising and respecting the viewpoints of others;
- 23- the ability to undertake further training and develop new skills within a structured and managed environment;
- 24- the ability to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.

## Careers and further study

You will find MSci Biomedicine graduates in the following kinds of roles:

- Pharmaceutical and biotechnology companies
- NHS laboratory analysts
- Civil service
- Biosciences academic research

Birkbeck's MSci Biomedicine graduates will complete with a set of valuable attributes and skills, for example:

- Analysis, critical evaluation and synthesis of evidence, concepts and principles
- Data analysis and problem solving
- Practical laboratory skills
- High-level oral and written communication skills in English
- Research skills
- Working in a research lab environment

Birkbeck offers a range of careers support to its students. You can find out more on [the careers pages of our website](#).

### **Academic regulations and course management**

Birkbeck's academic regulations are contained in its [Common Award Scheme Regulations](#) and Policies published by year of application on the Birkbeck website.

You will have access to a course handbook on Moodle and this will outline how your course is managed, including who to contact if you have any questions about your module or course.

Please note that your laboratory-based modules include a "practical competence" mark (pass or fail). These modules cannot be passed unless that practical competence is demonstrated in-person, which means we have a strict, 100% lab attendance policy in such modules.

**Progression requirements:** Progression from the Level 6 year to the Level 7 year requires that candidates will have accumulated 360 credits from the BSc Biomedicine and that their weighted average mark from the BSc modules minimally places them in the 2.1 Honours class. Should a candidate fail to meet this threshold, they will be required to exit with the earned BSc award.

**Transfer to MSci from BSc:** Having completed BSc Year 2 (Level 5; 240 credits accumulated), students in good standing on the BSc Biomedicine may apply to transfer to Year 3 of the MSci. Only students who have achieved a weighted average in Level 5 modules of at least 65% will be considered for transfer. We would apply the same threshold in considering transfer applicants from relevant programmes at other universities. Applications for transfer to Year 4 of the MSci will not be considered.

### **Support for your study**

Your learning at Birkbeck is supported by your teaching team and other resources and people in the College there to help you with your study. Birkbeck uses a virtual learning environment called Moodle and each course has a dedicated Moodle page and there are further Moodle sites for each of your modules. This will include your course handbook.

Birkbeck will introduce you to the Library and IT support, how to access materials online, including using Moodle, and provide you with an orientation which includes an online Moodle module to guide you through all of the support available. You will also be allocated a personal tutor and provided with information about learning support offered within your School and by the College.



[Please check our website for more information about student support services.](#) This covers the whole of your time as a student with us including learning support and support for your wellbeing.

### **Quality and standards at Birkbeck**

Birkbeck's courses are subject to our quality assurance procedures. This means that new courses must follow our design principles and meet the requirements of our academic regulations. Each new course or module is subject to a course approval process where the proposal is scrutinised by subject specialists, quality professionals and external representatives to ensure that it will offer an excellent student experience and meet the expectation of regulatory and other professional bodies.

You will be invited to participate in an online survey for each module you take. We take these surveys seriously and they are considered by the course team to develop both modules and the overall courses. Please take the time to complete any surveys you are sent as a student.

We conduct an annual process of reviewing our portfolio of courses which analyses student achievement, equality data and includes an action plan for each department to identify ongoing enhancements to our education, including changes made as a result of student feedback.

Our periodic review process is a regular check (usually every four years) on the courses by department with a specialist team including students.

Each course will have an external examiner associated with it who produces an annual report and any recommendations. Students can read the most recent external examiner reports on the course Moodle pages. Our courses are all subject to Birkbeck Baseline Standards for our Moodle module information. This supports the accessibility of our education including expectations of what information is provided online for students.

The information in this programme specification has been approved by the College's Academic Board and every effort has been made to ensure the accuracy of the information it contains.

Programme specifications are reviewed periodically. If any changes are made to courses, including core and/or compulsory modules, the relevant department is required to provide a revised programme specification. Students will be notified of any changes via Moodle.

Further information about specifications and an archive of programme specifications for the College's courses is [available online](#).

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