

PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	MRes Biological Sciences Pathways <i>Direct entry programme pathways:</i> <ul style="list-style-type: none"> – MRes Bioinformatics – MRes Chemical Research – MRes Global Infectious Diseases – MRes Structural Biology (Level 7)
Name and title of any exit qualification(s)	PG Cert Bioinformatics PG Cert Chemical Research PG Cert Global Infectious Diseases PG Cert Structural Biology
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London
Home Department/other teaching departments	School of Natural Sciences
Location of delivery	Central London/ Online (MRes Bioinformatics)
Language of delivery and assessment	English
Mode of study, length of study and normal start month	Full-time (1 year) / Part-time (2 years) September
Professional, statutory or regulatory body	Not applicable
QAA subject benchmark group(s) Higher Education Credit Framework for England	Not applicable
Birkbeck Course Code	TMRBIOSC_C (MRes Biological Sciences Pathways) TMRBIINF_C (MRes Bioinformatics) TMRCHRES_C (MRes Chemical Research) TMRGLOBD_C (Global Infectious Diseases) TMRSTRBI_C – (Structural Biology MRes)
HECoS Code	100345
Start date of programme	September 2023
Date of programme approval	November 2022
Date of last programme amendment approval	N/A
Valid for academic entry year	2025-26
Date of last revision to document	05/09/2022

Admissions requirements

The MRes Biological Sciences pathways is a challenging course based on a sound academic background and considerable independent work. Although applicants typically have a 2(i) or equivalent at BSc level (merit at MSc), those with a 2(ii) or with professional qualifications/relevant work experience will also be considered based on their individual merits. Applicants are, however, required to have a degree (or the equivalent) in the disciplines of biology (and related subjects such as biochemistry or biomedicine), chemistry, physics, computer science or mathematics depending on the research stream chosen. An applicant considered to be a good fit to their desired stream will be interviewed prior to any offer being made. Given that admission will be stream specific, any change of stream will require approval from the relevant stream programme director.

Course aims

The MRes Biological Sciences Pathways will provide you with opportunities for advanced study and independent research in one of four main discipline areas: Bioinformatics, Chemical Research, Global Infectious Diseases, and Structural Biology. In undertaking the programme, you will gain experience of key methodologies within these and related sub-areas. Your experience will include learning derived from relevant taught modules and, more importantly, from your completion of an extended, discipline-specific project. You will conduct your project in the group of a specialist Principal Investigator within the Department of Biological Sciences/Institute of Structural Molecular Biology. The project is designed to emulate what would be experienced in the first year of a typical PhD programme, offering you the opportunity to embark on novel research over an extended period of 9 months.

The programme therefore provides excellent preparation for further postgraduate study at PhD level, or alternatively, for careers within the biotechnology industry (drug discovery/pharmacology; genetics; software development, etc.) or in the NHS.

Main Aims

- To provide students with both theoretical background and practical experience underpinning key disciplines and subject areas within the biological sciences.
- To produce graduates having the knowledge, analytical skills, and practical skills essential for further study in relevant scientific disciplines and/or for employment in biomedically-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

- The taught component of the MRes Biological Sciences Pathways programmes includes both online and face-to-face learning. Taught sessions are delivered in the evening, 6 to 9 pm. Delivery may vary, depending on the module, in the extent of online vs. in-person provision, and in the breakdown between synchronous and asynchronous modes.
- The 9-month project will be conducted during the day and on average will constitute a total of ~35 hours per week.

Course structure

Students select ONE of the four streams associated with the MRes Biological Sciences pathways to apply for:

1. Bioinformatics
2. Chemical Research
3. Global Infectious Diseases
4. Structural Biology

The possible compositions of each stream are included in the tables below. In short, all students undertake: (i) the 120-credit, Research Project (MRes), plus (ii) TWO taught modules, valued at 30 credits each.

Your project topic must fall within the purview of the selected stream. You may conduct your project within the laboratory of an academic member of the Department of Biological Sciences, or within the Institute of Structural and Molecular Biology (some members of which have laboratories at UCL).

For part-time (PT) students, taught modules are taken in Year 1, while the project is undertaken in Year 2. Where you have optional taught modules to select from, your choice should be guided primarily by your choice of project. Your Project Supervisor will advise.

Level	Module Code	Module Title	Credit	Comp Core/ Option	Teaching Term(s) and Year
Stream 1: MRes Bioinformatics					
All students undertake the Research Project (MRes) and any TWO taught modules from the OPTIONS listed with at least one module being taken in Term1.					
7	SCBS095S7	Molecular Basis of Life	30	Option	T1 (Y1 FT/PT)
7	SCBS087S7	Statistics and Data Science	30	Option	T1 (Y1 FT/PT)
7	SCBS086S7 or SCBS088S7	Biocomputing or Sequence Analysis and Omics	30	Option	T2 (Y1 FT/PT)
7	SCBS099Q7	Research Project (MRes)	120	Core	T1+T2+T3 (Y1 FT, Y2 PT)
Although, for part-time Students, the Research Project (MRes) module does not appear officially until Year 2, students are expected to select their project and undertake some activities toward it in Year 1. The majority of that activity is likely to be confined to Term 3.					

Stream 2: MRes Chemical Research

All students undertake the Research Project (MRes) and one taught module per Term from the OPTIONS listed.

7	SCBS095S7 SCBS089S7	Molecular Basis of Life or Research Skills and Statistics	30	Option	T1 (Y1 FT/PT)
7	SCBS094S7 SCBS090S7	Advanced and Applied Analytical Techniques or Biochemical Analysis	30	Option	T2 (Yr1 FT/PT)
7	SCBS099Q7	Research Project (MRes)	120	Core	T1+T2+T3 (Y1 FT, Y2 PT)

Although, for part-time Students, the Research Project (MRes) module does not appear officially until Year 2, students are expected to select their project and undertake some activities toward it in Year 1. The majority of that activity is likely to be confined to Term 3.

Stream 3: MRes Global Infectious Diseases

All students undertake the Research Project (MRes) and one taught module per Term from the OPTIONS listed.

7	SCBS095S7 SCBS089S7	Molecular Basis of Life or Research Skills and Statistics	30	Option	T1 (Y1 FT/PT)
7	SCBS091S7 SCBS096S7	Cellular Microbiology or Molecular Biology for Discovery Life Sciences	30	Option	T2 (Yr1 FT/PT)
7	SCBS099Q7	Research Project (MRes)	120	Core	T1+T2+T3 (Y1 FT, Y2 PT)

Although, for part-time Students, the Research Project (MRes) module does not appear officially until Year 2, students are expected to select their project and undertake some activities toward it in Year 1. The majority of that activity is likely to be confined to Term 3.

Stream 4: MRes in Structural Biology					
All students undertake the Research Project (MRes) and both compulsory, taught modules.					
7	SCBS095S7	Molecular Basis of Life	30	Comp	T1 (Y1 FT/PT)
7	SCBS092S7	Molecular and Cellular Structure Determination	30	Comp	T2 (Y1 FT/PT)
7	SCBS099Q7	Research Project (MRes)	120	Core	T1+T2+T3 (Y1 FT, Y2 PT)
Although, for part-time Students, the Research Project (MRes) module does not appear officially until Year 2, students are expected to select their project and undertake some activities toward it in Year 1. The majority of that activity is likely to be confined to Term 3.					

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.

Each 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 the biological sciences. A range of teaching approaches will be utilised to provide you with the theoretical background underpinning the various techniques and methodologies central to each of the five streams in preparation for the extended research project. Where relevant, this will include modules oriented towards lab skills and the analysis of data in recognition of the fact that students will come from a variety of diverse backgrounds. To aid your learning, coursework assessments will therefore be both formative and summative. Transferable skills training will also be provided in important areas such as how to give effective oral and poster presentations and how to construct a CV. Whilst providing an opportunity to conduct novel research in an authentic setting, the MRes project will also provide 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).

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. Providing them helps you to understand what your teachers will expect and also the learning requirements upon which you will be assessed.

At the end of the course students should have:

Knowledge and Understanding

1. Subject specific knowledge of the theoretical background associated with the disciplines of bioinformatics, analytical chemistry, global infectious diseases, microbiology and structural biology.
2. Awareness and engagement with philosophical and ethical issues arising from some of the current developments in the biomedical sciences;
3. A critical understanding of recent advances in fields of study relating to their chosen stream.
4. Based upon sound theoretical knowledge, be able to "trouble shoot" and critically analyse relevant data (both their own and cited in the literature).

Intellectual Skills

5. Application of subject-specific knowledge and understanding in addressing and solving familiar and unfamiliar problems;
6. Analysis, critical evaluation and synthesis of scientific evidence, concepts and principles;
7. An ability to formulate research questions and to test and evaluate hypotheses using principled experimental design;
8. Development of strategies for updating, maintaining and enhancing your knowledge of the science underpinning new advances in the bio-molecular sciences;
9. Independent reasoning and defence of ideas.

Practical Skills

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

Transferable Skills

14. Personal responsibility for your learning, and habits of reflection on that learning;
15. An ability to identify, retrieve (e.g. through online computer searches and other means), sort and exchange information;
16. Skill in abstracting and synthesising information, and developing a reasoned argument;

17. Effective written communication and oral presentation to specialist and non-specialist audiences;
18. Use of information technology (including spreadsheets, databases, word processing, email and web-based resources);
19. Effective interpersonal skills, including working in groups/teams and recognising and respecting the viewpoints of others;
20. The ability to undertake further training and develop new skills within a structured and managed environment;
21. 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 MRes Biological sciences graduates in the following roles:

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

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
- Computational skills
- High-level oral and written communication skills
- Research skills
- Experience of working in research environments

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.

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.

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 associated external examiner who produces an annual report and makes 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](#).

Copyright, Birkbeck, University of London 2022 ©