

## PROGRAMME SPECIFICATION

Name, title and level of final qualification(s)	<b>MSc Bioinformatics</b> (Level 7)
Name and title of any exit qualification(s)	Postgraduate Diploma Bioinformatics Postgraduate Certificate Bioinformatics MSc Biological Sciences (180 credits at L7 from the Department that would not otherwise lead to a named MSc)
Awarding Body	University of London
Teaching Institution(s)	Birkbeck, University of London
Home Department/other teaching departments	School of Natural Sciences
Location of delivery	Online only
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, January (part-time only)
Professional, statutory or regulatory body	N/A
<a href="#">QAA subject benchmark group(s)</a> <a href="#">Higher Education Credit Framework for England</a>	N/A
Birkbeck Course Code	TMSBIOTC_C
HECoS Code	100869 bioinformatics
Start date of programme	Prior to 2008/2009
Date of programme approval	Prior to 2008/2009
Date of last programme amendment approval	November 2022
Valid for academic entry year	<b>2024-25</b>
Date of last revision to document	30/08/2022

## **Admissions requirements**

Applicants may have a second-class honours degree (2:2) or above in a wide range of subjects, including biology, computer science, mathematics, chemistry or physics.

Some practical knowledge of one programming language would be a distinct advantage.

Mathematics to A-level or equivalent desirable, but GCSE/O-level considered.

Applications are reviewed on their individual merits and your professional qualifications and/or relevant work experience will be taken into consideration positively. We actively support and encourage applications from mature learners.

On your application form, please list all your relevant qualifications and experience, including those you expect to achieve.

## **Course aims**

The course aims to offer high-quality postgraduate training in bioinformatics. It is suitable for students wishing to enhance their employment prospects or to progress to a PhD in computational biology.

The specific aims of the course are to provide graduate students with:

- An understanding of bioinformatics together with the analytical skills (both theoretical and practical) relevant to this field.
- A general training in bioinformatics that meets clear industrial and academic needs to support and advance biotechnology and bioinformatics research and development, including emerging areas with acknowledged skills shortages (such as the analysis of omics data or the use of machine learning in identifying patterns in large datasets).
- The ability to apply the tools and techniques of computer science, biology, chemistry and statistics to obtain information from the vast wealth of biological data that can be accessed via the internet. The key emphasis is on acquiring generic skills (e.g., programming and database design), rather than training in individual pieces of software.
- Personal and transferable skills (e.g., IT, communication, analytical and problem-solving, interpersonal, organizational, presentation, time-management, etc.).

## Course structure

Level	Module Code	Module Title	Credit	Status	Teaching term(s)
<b>Full-time - 1 year</b>					
7	SCBS095S7	The Molecular Basis of Life	30	Compulsory	T1
7	SCBS087S7	Statistics and Data Science	30	Compulsory	T1
7	SCBS086S7	Biocomputing	30	Compulsory	T2
7	SCBS088S7	Sequence Analysis and Omics	30	Compulsory	T2
7	SCBS097D7	Research Project	60	Core	T3
<b>Part-time- 2 years</b>					
<b>Year 1</b>					
7	SCBS095S7	The Molecular Basis of Life	30	Compulsory	T1
7	SCBS086S7	Biocomputing	30	Compulsory	T2
<b>Year 2</b>					
7	SCBS087S7	Statistics and Data Science	30	Compulsory	T1
7	SCBS088S7	Sequence Analysis and Omics	30	Compulsory	T2
7	SCBS097D7	Research Project	60	Core	T3
Although the Research Project module does not appear officially until Year 2, part-time 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.					

**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 MSc Bioinformatics is divided into 4 taught modules and the research project module. You will find information on the virtual learning site (Moodle, see Academic Support below) about each of your modules, what content to expect, the work you need to prepare, links to reading lists, information about how and when you will be assessed.

Your learning for this course will be organised around the activities outlined below:

- asynchronous sessions involving multiple online videos interspersed with other activities (e.g., quizzes, programming exercises);
- online, synchronous sessions, typically running twice per week for each module; these aim to provide a platform for lecturers to engage with students' questions, explain in more detail complex aspects of the subject being taught, and to allow students an opportunity to carry out practical work whilst being supervised and actively helped by

lecturers and demonstrators. These sessions are also an opportunity for students to communicate with and learn from their peers; this is an important aspect of our course, given the diverse academic backgrounds of the students.

The MSc project is an independent piece of research, supervised by members of staff (or external supervisors) with expertise in the project subject. Students are expected to work independently on their projects, following an initial detailed consultation on the aims and methods to be used. The MSc project typically involves weekly online meetings (for full-time students), where the student discusses their project and plans with the supervisor, thus receiving regular feedback on their work and progress.

### **How we will assess you**

The course uses a variety of assessment methods and information on how you are assessed in each module is available on Moodle. Assessment is used to enhance your learning rather than simply to test it and the methods we employ include: online quizzes; open-book examinations, including in programming, that are carried out at home within a time limit; essays; oral presentations; problem-based learning (e.g., open-ended questions as part of coursework that attempts to enhance your skills and help you explore current areas of research).

### **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 this course, you should be able to:***

1. Critically understand and apply computer techniques to a variety of biological information.
2. Use the tools and techniques of computer science, biology, chemistry and statistics to extract knowledge from the vast wealth of biological information that can be accessed via the Internet.
3. Understand the language and terminology of molecular biology, genetics and bioinformatics.
4. Be aware of current advances and challenges in bioinformatics.
5. Demonstrate key practical skills (e.g., IT, analytical and problem-solving skills, critical reading of the literature).
6. Plan, execute and communicate verbally and in writing a small-scale research project; demonstrate independent thinking and organizational skills in carrying out such a project.

### **Careers and further study**

The bioinformatics skills acquired on our course allow our graduates to:

- become part of research teams in academic, industry or government labs, primarily in the health sector (NHS, diagnostic, pharmaceutical and health technology companies) but also more generally in biology or biochemistry-focused labs;
- work as independent bioinformatics consultants, offering data analysis and programming services to the public or private sector;
- move on to further study (PhD) in Computational Biology or related fields, eventually leading their own research programmes in academia, institutes or industry.

The acquisition of computing and statistics skills, as well as more general skills such as the ability to carry out research independently, problem-solving, high-level oral or written English communication skills, allows our graduates to pursue:

- careers focused on data analysis, data modelling and programming roles outside the field of biology, e.g., in IT companies or the financial sector;
- teaching careers (following the necessary training);
- careers in Science Communication, e.g., in publishing or science dissemination roles.

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.

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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