Programme Specification

1	**Awarding body**	University of London
2	**Teaching Institution**	Birkbeck College
3	**Programme Title(s)**	BSc Molecular Biology
4	**Programme Code(s)**	TBC (3-year, UCAS), TBC (4-year, FT, with Foundation Year), TBC (4-year), TBC (6-year, decelerated part-time)
5	**UCAS code (if applicable)**	C700
6	**Home Department**	Biological Sciences
7	**Exit Award(s)**	Diploma of Higher Education (DipHE) Molecular Biology; Certificate of Higher Education (CertHE) Molecular Biology (exit following BSc Year 1); Certificate of Higher Education (CertHE) Foundations of Bioscience (exit following Foundation Year, Year 1); Certificate of Continuing Education (CCE)
8	**Duration of Study (number of years)**	BSc – 3, 4, or 6 years; DipHE – 2, 3 or 4 years; CertHE - 1 or 2 years; CCE - 1 year
9	**Mode of Study**	Full-time (3 year route); Full-time (Foundation Year route); Part-time (other routes)
10	**Level of Award (FHEQ)**	6

11	**Other teaching depts or institutions**	None
12	**Professional, Statutory Regulatory Body (PSRB) details**	NA
13	**QAA Benchmark Group (if applicable)**	Biosciences

14	**Programme Rationale & Aims**
	Deep insight into the functioning of living systems depends upon a thorough knowledge of the chemical and physical principles that govern the structure and behaviour of biomolecules. Molecular biology relies on those areas of science devoted to a detailed understanding of the fundamental molecular and biochemical components of living systems and of how these components interact in the functional (healthy) and dysfunctional (diseased) organism. Such understanding finds application in numerous areas including basic biotechnology, diagnostics and forensics, and drug discovery. This programme will provide you with the knowledge and skills essential to embark on a career in these or other exciting areas of science. **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. • To provide students currently in science-related work with additional skills and academic knowledge for career enhancement and/or vocational realignment. • To provide a progression route into HE for students via an integrated foundation year, or from access science courses. **Distinctive Features** • Entry permitted to students without standard educational qualifications. • Available to mature students from diverse educational and cultural backgrounds. • Part-time, evening, face-to-face study.

	• Lectures and practical classes supported by on-line and other learning resources. • Flexible provision with a choice of 3-, 4- or 6-year pathways to the BSc. • Convenient stopping-off points providing named awards should circumstances prevent completion of the degree.

15	**Entry Criteria**
	Applicants are normally expected to have gained 112 UCAS tariff points (e.g. BBC 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. Applicants with only two full A-levels will be considered on an individual basis. In addition, we require GCSEs in English, Mathematics, and Double Science (or two single sciences), all at grade C or better. We also accept: BTEC Extended Diploma in Applied Science with Distinction or Merit; Access to Higher Education Diploma with a minimum of 15 credits achieved at Merit or Distinction in science units. Mature applicants with experience are expected to have a strong interest in molecular/biochemical sciences. Previous personal experience of the biological, biomedical, pharmaceutical or health-science fields is desirable. We are committed to making the biological sciences accessible to students from a wide range of backgrounds and with diverse career aspirations. • The Certificate of Higher Education in Life Sciences for Subjects Allied to Medicine provides a direct route into Year 1 of the BSc. • Completion of an integrated Foundation Year provides a progression route into Year 1 of the full-time BSc.

16	**Prospectus Entry**
	Deep insight into the functioning of living systems depends upon a thorough knowledge of the chemical and physical principles that govern the structure and behaviour of biomolecules. Molecular biology encompasses those areas of science devoted to a detailed understanding of the fundamental molecular and biochemical components of living systems and of how these components interact in the functional (healthy) and dysfunctional (diseased) organism. Such understanding finds application in numerous areas including basic biotechnology, diagnostics and forensics, and drug discovery. This programme will provide you with the knowledge and skills essential to embark on a career in these or other exciting areas of science.

17	**Learning Outcomes**
	On successful completion of this programme, you should be able to demonstrate: <u>A. Knowledge and Understanding</u> 1- a sound knowledge and understanding of scientific principles essential for the investigation and understanding of cells and organisms at the molecular and biochemical level, acquired through study across a range of disciplines, including: biochemistry, biophysics, cell biology, chemistry, genetics, molecular biology; 2- a knowledge of how these disciplines may be applied toward an understanding molecular mechanisms of cellular function and dysfunction, and in discovery and development of novel bioactive molecules; 3- subject-specific knowledge within the areas of: biochemistry (metabolism, enzymology, protein chemistry), biophysics (structural biology), cell biology (cell structure, cell division, differentiation), genetics (inheritance, differential gene expression), homeostasis and cell communication (feedback control and cell signalling), molecular biology (nucleic acid manipulation, genomics); 4- 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;

5- awareness and engagement with philosophical and ethical issues arising from some of the current developments in the bio-molecular and biomedical sciences.

B. Intellectual Skills

6- application of subject-specific knowledge and understanding in addressing and solving familiar and unfamiliar problems;

7- analysis, critical evaluation and synthesis of scientific evidence, concepts and principles;

8- an ability to formulate research questions and to test and evaluate hypotheses using principled experimental design;

9- development of strategies for updating, maintaining and enhancing your knowledge of the science underpinning new advances in the bio-molecular sciences.

C. Practical Skills

10- appreciation and application of safe working practices in a scientific laboratory;

11- an ability to apply relevant numerical skills, including statistics, in analysing 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 a research project.

D. 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.

18 **Learning, teaching and assessment methods**

All modules are taught by academic staff engaged with current topics in chemical biology or molecular biology. 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. We have designed the curriculum so that each module, although having a clear point of emphasis (embodied in its title), is fairly broad-based in terms of the scientific disciplines considered and the skills emphasised. Thus, most of the broad learning outcomes enumerated for the programme overall (see above) are represented to some extent in almost every module.

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 lectures, laboratory sessions, computer exercises, and seminars in proportions appropriate to the academic level and the demands of the topic.

For students entering via the Foundation Year route, teaching in the foundation year will be in small, interactive, tutorial style classes that support the development of knowledge, skills, confidence and self-awareness.

Within classroom sessions, 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 to the instructor's questioning, perhaps through an electronic voting ("clicker") system. 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). 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.

Summative assessment (used in determining module grades) in your modules may include in differing combinations: short-answer tests (in-class); computer-based tests (accessed remotely or in-class); practical reports; essays; problem-solving and data analysis assignments; oral communication and poster presentations; internet surveys; and unseen, or open-book, written examinations. 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) that provides details of the learning outcomes and assessment regime for that module.

A departmental Undergraduate Teaching Committee continually reviews all learning, teaching and assessment arrangements to ensure the programme and its modules maintain coherence, currency, and 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.

19 **Programme Structure**

Description

You may make an application to join one of four routes to the BSc Molecular Biology:

- 3-year route (full-time; by UCAS application the programme consists of 360 credits, with 120 credits at each Level (4, 5, and 6). The alternative part-time routes are comprised of the same modules, and so carry the same credit values at each level as seen in the 3-year route. The major difference between full-time and part-time routes is the reduced annual study intensity in the latter (either 90 credits or 60 credits per year instead of 120 credits, full-time).
- 4-year route (with Foundation Year) (full-time; by UCAS application): the programme consists of 480 credits, with 240 credits at Level 4, 120 credits at Level 5, and 120 credits at Level 6. The first 120 credits at Level 4 comprise the "foundation year", and are particular to this route; the remaining 360 credits are identical to the 3-year, full-time BSc.
- 4-year route (part-time; by direct application to Birkbeck): the programme consists of 360 credits. You will undertake 90 credits of study each year (*noting that a project module can be taken only in the final year of the programme*). *Please note that because of timetabling issues, the module Microbes and Antimicrobials (available on full-time and decelerated pathways) is not available on this route.*
- 6-year route (part-time, decelerated; by direct application to Birkbeck): the programme consists of 360 credits. You will undertake 60 credits of study each year (*noting that a project module can be taken only in the final year of the programme*).

Alternatively, having initially joined the 3-year route (by UCAS application), you can elect to undertake a part-time, 4-year route. After completing 120 credits at Level 4 in year 1, you will take: 90 credits of Level 5 study in year 2; a total of 90 credits in year 3, comprising 30 credits at Level 5 and 60 credits at Level 6; and 60 additional credits of Level 6 study in year 4.

The year-by-year module composition for each route is indicated in the tables following.

3 YEAR FULL-TIME PROGRAMME

Year 1 (120 credits)

Level	Module Code	Module Title	Credits	Status
4	SCBS042H4	Chemistry for the Biosciences I	15	Compulsory
4	SCBS043H4	Chemistry for the Biosciences II	15	Compulsory
4	SCBS050H4	Molecular Cell Biology I	15	Compulsory
4	SCBS051H4	Molecular Cell Biology II	15	Compulsory
4	SCBS052H4	Molecular Cell Biology III	15	Compulsory
4	SCBS044H4	Practical Skills for the Biosciences I	15	Compulsory
4	SCBS045H4	Practical Skills for the Biosciences II	15	Compulsory
4	SCBS046H4	Practical Skills for the Biosciences III	15	Compulsory

Year 2 (120 credits)

Level	Module Code	Module Title	Credits	Status
5	SCBS038S5	Biomolecular Chemistry	30	Compulsory
5	SCBS034D5	Molecular Biology and Human Genetics	60	Core
5	SCBS039S5	Research Methods and Data Analysis	30	Compulsory

Year 3 (120 credits)

Level	Module Code	Module Title	Credits	Status
6	BCBC006S6 or BCBC015S6	Advanced Cell Biology or Microbes and Antimicrobials	30	Option
6	BCBC010S6	Structural Molecular Biology	30	Compulsory
6	SCBS036D6	Specialist Laboratory Research Project	60	Compulsory

Regarding the Final-Year Research Project

All students must undertake a Level 6 research project module in the final year. The default project module is *Specialist Laboratory Research Project*. Subject to eligibility, and with the approval of the Programme Director, students may substitute the module *Independent Research Project* (SCBS040D6) as the compulsory Level 6 project module.

4 YEAR FULL-TIME PROGRAMME, WITH FOUNDATION YEAR

Year 1 (Foundation Year, 120 credits)

Level	Module Code	Module Title	Credits	Status
4	FFSC011H4	Biology: Part 1 of 3	15	Compulsory
4	FFSC021H4	Biology: Part 2 of 3	15	Compulsory
4	FFSC031H4	Biology: Part 3 of 3	15	Compulsory
4	FFSC012H4	Chemistry: Part 1 of 3	15	Compulsory
4	FFSC022H4	Chemistry: Part 2 of 3	15	Compulsory
4	FFSC032H4	Chemistry: Part 3 of 3	15	Compulsory
4	FFSC200H4	Study and Research Skills for Science and Maths (LS)	15	Compulsory
4	SCBS049H4	Mathematics for Science	15	Compulsory

Year 2 (120 credits)

Level	Module Code	Module Title	Credits	Status
4	SCBS042H4	Chemistry for the Biosciences I	15	Compulsory
4	SCBS043H4	Chemistry for the Biosciences II	15	Compulsory
4	SCBS050H4	Molecular Cell Biology I	15	Compulsory
4	SCBS051H4	Molecular Cell Biology II	15	Compulsory
4	SCBS052H4	Molecular Cell Biology III	15	Compulsory
4	SCBS044H4	Practical Skills for the Biosciences I	15	Compulsory
4	SCBS045H4	Practical Skills for the Biosciences II	15	Compulsory
4	SCBS046H4	Practical Skills for the Biosciences III	15	Compulsory

Year 3 (120 credits)

Level	Module Code	Module Title	Credits	Status
5	SCBS038S5	Biomolecular Chemistry	30	Compulsory
5	SCBS034D5	Molecular Biology and Human Genetics	60	Core
5	SCBS039S5	Research Methods and Data Analysis	30	Compulsory

Year 4 (120 credits)

Level	Module Code	Module Title	Credits	Status
6	BCBC006S6 or BCBC015S6	Advanced Cell Biology or Microbes and Antimicrobials	30	Option
6	BCBC010S6	Structural Molecular Biology	30	Compulsory
6	SCBS036D6	Specialist Laboratory Research Project	60	Compulsory

Regarding the Final-Year Research Project

All students must undertake a Level 6 research project module in the final year. The default project module is *Specialist Laboratory Research Project*. Subject to eligibility, and with the approval of the Programme Director, students may substitute the module *Independent Research Project* (SCBS040D6) as the compulsory Level 6 project module.

4 YEAR PART-TIME PROGRAMME				
Year 1 (90 credits)				
Level	**Module Code**	**Module Title**	**Credits**	**Status**
4	SCBS050H4	Molecular Cell Biology I	15	Compulsory
4	SCBS051H4	Molecular Cell Biology II	15	Compulsory
4	SCBS052H4	Molecular Cell Biology III	15	Compulsory
4	SCBS044H4	Practical Skills for the Biosciences I	15	Compulsory
4	SCBS045H4	Practical Skills for the Biosciences II	15	Compulsory
4	SCBS046H4	Practical Skills for the Biosciences III	15	Compulsory
Year 2 (90 credits)				
Level	**Module Code**	**Module Title**	**Credits**	**Status**
4	SCBS042H4	Chemistry for the Biosciences I	15	Compulsory
4	SCBS043H4	Chemistry for the Biosciences II	15	Compulsory
5	SCBS034D5	Molecular Biology and Human Genetics	60	Core
Year 3 (90 credits)				
Level	**Module Code**	**Module Title**	**Credits**	**Status**
5	SCBS038S5	Biomolecular Chemistry	30	Compulsory
5	SCBS039S5	Research Methods and Data Analysis	30	Compulsory
6	BCBC006S6	*Advanced Cell Biology	30	Compulsory*
Please note that because of timetabling issues, the module Microbes and Antimicrobials (available on full-time and decelerated pathways) is <u>not</u> available to students taking the 4-year part-time route.				
Year 4 (60 credits)				
Level	**Module Code**	**Module Title**	**Credits**	**Status**
6	BCBC010S6	Structural Molecular Biology	30	Compulsory
6	SCBS036D6	**Specialist Laboratory Research Project	60	Compulsory
See the note in the table for the 3-Year, fulltime programme.				

6 YEAR PART-TIME (DECELERATED) PROGRAMME

Year 1 (60 credits)

Level	Module Code	Module Title	Credits	Status
4	SCBS042H4	Chemistry for the Biosciences I	15	Compulsory
4	SCBS050H4	Molecular Cell Biology I	15	Compulsory
4	SCBS051H4	Molecular Cell Biology II	15	Compulsory
4	SCBS052H4	Molecular Cell Biology III	15	Compulsory

Year 2 (60 credits)

Level	Module Code	Module Title	Credits	Status
4	SCBS043H4	Chemistry for the Biosciences II	15	Compulsory
4	SCBS044H4	Practical Skills for the Biosciences I	15	Compulsory
4	SCBS045H4	Practical Skills for the Biosciences II	15	Compulsory
4	SCBS046H4	Practical Skills for the Biosciences III	15	Compulsory

Year 3 (60 credits)

Level	Module Code	Module Title	Credits	Status
5	SCBS038S5	Biomolecular Chemistry	30	Compulsory
5	SCBS039S5	Research Methods and Data Analysis	30	Compulsory

Year 4 (60 credits)

Level	Module Code	Module Title	Credits	Status
6	BCBC006S6 or BCBC015S6	Advanced Cell Biology or Microbes and Antimicrobials	30	Option
6	BCBC010S6	Structural Molecular Biology	30	Compulsory

Year 5 (60 credits)

Level	Module Code	Module Title	Credits	Status
5	SCBS034D5	Molecular Biology and Human Genetics	60	Core

Year 6 (60 credits)

Level	Module Code	Module Title	Credits	Status
6	SCBS036D6	**Specialist Laboratory Research Project	60	Compulsory

***See the note in the table for the 3-Year, fulltime programme.*

20	**Regulations**
	Admissions This programme adheres to the College Admissions Policy http://www.bbk.ac.uk/mybirkbeck/services/rules/Admissions%20Policy.pdf/view ***Credit Transfer*** Accredited Prior Learning will be considered in line with the College Policy on Accredited Prior Learning http://www.bbk.ac.uk/mybirkbeck/services/rules/AccreditedPriorLearning.pdf ***Programme Regulations*** This programme adheres to the College Common Awards Scheme http://www.bbk.ac.uk/registry/policies/regulations ***Programme Specific Regulations (if applicable)*** Progression beyond Year 1 of the BSc with Foundation Year requires passing all 120 credits comprising the foundation year.

21	**Student Attendance Framework – in brief**
	The full version of the 'Student Attendance Framework' is available http://www.bbk.ac.uk/mybirkbeck/services/rules/Attendance-Framework.pdf . **Principle** Consistent and regular student attendance in class (or equivalent) promotes and affords student success. Inconsistent and irregular attendance is less likely to result in student success and is consistent with lower marks and degree classifications being achieved and awarded. **Attendance expectation** Birkbeck, University of London expects you to consistently attend all timetabled sessions, including lectures, seminars, group and individual tutorials, learning support sessions, workshops, laboratories, field trips, inductions and demonstrations. **E-Registers** All Birkbeck students are issued with student cards. Students are expected to take them to classes and to assessment venues and to present them to a member of staff if requested. This is for the purpose of identifying Birkbeck students.

22	**Student Support and Guidance**
	All Birkbeck students have access to a range of student support services, details can be found on our website here: http://www.bbk.ac.uk/mybirkbeck/services/facilities

23	**Methods of Enhancing Quality and Standards**
	The College has rigorous procedures in place for the monitoring and enhancing its educational provision. This includes regular monitoring of programmes drawing on feedback from various sources including external examiner's reports, student feedback, student achievement and progression data. In addition, departments are reviewed every four to five years through the internal review process that includes external input. For more information please see the Academic Standards and Quality website http://www.bbk.ac.uk/registry/about-us/operations-and-quality

23	**Programme Director**	Dr Richard Rayne
24	**Start Date** ***(term/year)***	Autumn Term (Sept) 2015
25	**Date approved by TQEC**	Spring 2012
26	**Date approved by Academic Board**	Summer 2012
27	**Date(s) updated/amended**	**12 June 2017.** Title change to Molecular Biology. Removal of progression to Year 2 from FY or CertHE. Minor edits throughout.