Queen Mary University of London

Programme Specification (UG)

Awarding body / institution:	Queen Mary University of London
Teaching institution:	Queen Mary University of London
Name of final award and programme title:	BSc (Hons) Biochemistry, BSc (Hons) Biochemistry with Year in Industry/ Research, BSc (Hons) Biochemistry with Year Abroad.
Name of interim award(s):	CertHE, DipHE
Duration of study / period of registration:	3 years (4 years with an extramural year)
QMUL programme code / UCAS code(s):	C700, 3W45, C70Y
QAA Benchmark Group:	
FHEQ Level of Award :	Level 6
Programme accredited by:	
Date Programme Specification approved:	
Responsible School / Institute:	School of Biological & Behavioural Sciences

Schools / Institutes which will also be involved in teaching part of the programme:

Barts and The London School of Medicine and Dentistry

Collaborative institution(s) / organisation(s) involved in delivering the programme:

Programme outline

This innovative programme aims to provide students with a comprehensive foundation in biochemistry while developing the transferable skills needed to thrive in a wide range of careers. Through dynamic teaching, students gain a deep understanding of key biochemical concepts like protein structure and function, chemical sciences, cell biology, genetics, and microbiology. The emphasis on molecular mechanisms of complex biological systems equips graduates to tackle real-world challenges.

In addition to building strong scientific knowledge, the programme focuses on cultivating critical thinking, communication, and teamwork. Students have opportunities to apply their learning through lab work, and research projects. These experiences, along with dedicated employability modules, ensure graduates gain skills that make them highly employable across industries.

Whether pursuing further study or entering the workforce, graduates of this full-time three-year BSc programme are uniquely prepared for the complex and ever-evolving landscape of modern biochemistry. With 360 credits and a comprehensive skillset, they can confidently take on leadership roles and drive innovation in this exciting field.

In the first year, students receive a grounding in practical laboratory skills, essential research attributes, and the core cellular, molecular and chemical concepts required for future study. In the second year, in addition to learning advanced wet and dry techniques, students get to choose whether to specialise in pharpaceutical chemistry or neuroscience and molecular genetics. In the final year, students have a choice of various project formats, in addition to choice around advanced modules in energetics,

pharmaceutical chemistry, and endocrinology.

Aims of the programme

This programme aims to provide students with a comprehensive foundation in the core knowledge and skills needed to launch successful careers in this dynamic field.

The curriculum educates students in key biochemical concepts and helps them develop a molecular-level understanding of the living world. Through a combination of lectures, labs, and research projects, students build proficiency in performing both wet bench experiments and computational analysis. They learn to investigate scientific problems, analyze data, and effectively communicate findings using multiple formats.

By integrating biology, chemistry, and advanced concepts like proteomics and metabolomics, the programme equips students to tackle complex biological systems at the forefront of 21st century science. It provides instruction in foundational areas like molecular biology, physiology, and cell biology to establish strong interdisciplinary knowledge.

Throughout their studies, students hone transferable skills in communication, critical thinking, teamwork, and problem solving. The programme empowers them to identify their own strengths and interests, so they can pursue careers that leverage their unique capabilities.
With this blended scientific and professional education, graduates are prepared to respond to the evolving needs of employers, advance their chosen fields, and make meaningful contributions to the economy and society. The programme aims to nurture scientific curiosity in learners who approach challenges with an multifaceted, creative, and analytical mindset.

What will you be expected to achieve?

Throughout this programme, you will be expected to achieve expertise in biochemistry theory, research, and practice while honing professional skills needed for impactful careers. You will apply core biochemical principles, use advanced lab techniques, analyse literature, design robust experiments, and investigate issues critically. By undertaking independent and group projects, you will build abilities to lead research, collaborate effectively, communicate scientific ideas, and use bioinformatics tools and data analytics. The programme will equip you to discuss biochemical concepts accurately, think innovatively, reflect on your own skills and passions, and conduct yourself professionally. Upon completion, you will have gained the knowledge, capabilities, and adaptability to thrive as an ethical, evidence-driven biochemistry professional.

Please note that the following information is only applicable to students who commenced their Level 4 studies in 2017/18, or 2018/19

In each year of undergraduate study, students are required to study modules to the value of at least 10 credits, which align to one or more of the following themes:

- networking
- multi- and inter-disciplinarity
- international perspectives
- enterprising perspectives.

These modules will be identified through the Module Directory, and / or by your School or Institute as your studies progress.

Programme Title: BSc Biochemistry, with extramural year variants

Academic Content:	
A 1	Apply the theories and principles that underpin the discipline of biochemistry
A 2	Understand the core techniques and approaches used in the discipline of biochemistry
A 3	A breadth of knowledge that encompasses the core topics within biochemistry
A 4	Use the tools and ideas central to cellular biology to complete structured problems
A 5	Analyse and interpret the outputs from molecular biology findings
A 6	Analyse physiological function and dysfunction through the lens of biochemistry
A 7	A deep and extended knowledge is developed in one or more areas related to biochemistry
A 8	An appreciation of the wider context of biochemical science, including ethical implications

Disciplinary Skills - able to:	
B 1	Perform and report wet laboratory -based investigation
B 2	Perform wet laboratory experiments demonstrating good technique and laboratory practise
B 3	Perform and report dry laboratory -based investigation
B 4	Perform quantitative data analysis, including the use of inferential statistics
B 5	Successfully use a suite of bioinformatic tools
B 6	Use a variety of tools to explore and navigate a variety of scientific literature
B 7	Systematically collect and qualitatively analyse primary scientific literature
B 8	Undertake evidence-led approaches to investigating research questions
B 9	Critically assess the findings of various literature sources, including primary scientific literature
B 10	Relate how different types of flaws can weaken the outcomes of experiments in different ways
B 11	Understand the limitations of various scientific approaches in answering research questions
B 12	Relate real examples of imperfect understanding and of how scientific knowledge has developed over time
B 13	Design experiments that demonstrate and understanding of good experimental practise, hypotheses and strength of evidence
B 14	Design experiments that demonstrate management of risk

Programme Title: BSc Biochemistry, with extramural year variants

Attributes:	
C 1	Correctly use discipline-specific terminology, nomenclature and classification systems.
C 2	Curate and construct knowledge into an extended prose form to address a question
C 3	Communicate ideas, principles, and theories effectively by oral, written and visual means
C 4	Work effectively and independently on a given project or task
C 5	Lead the planning, implementation and production of an extended piece of independent research
C 6	Employ strategies to handle various learning tasks simultaneously
C 7	Demonstrate the ability to take on different roles within a team
C 8	Work within a team to produce a collective output
C 9	Successfully produce outputs using a suite of software, such as word processors, spreadsheets, and statistical packages
C 10	Demonstrate the use feedback in the improvement of future study
C 11	Articulate self-knowledge about areas of passion and motivational drivers for future employability
C 12	Articulate the behaviours, skills, and attributes of a graduate biochemist

How will you learn?

You will learn through an engaging combination of active lectures, collaborative workshops, hands-on lab sessions, independent research projects, and ongoing assessment. Lectures will introduce you to core theories, concepts, and methods in biochemistry. In workshops, you will apply your knowledge by solving problems, analysing data, and designing experiments in small groups. Lab sessions provide opportunities to develop your practical techniques and conduct experiments. You will also complete an independent research project under faculty supervision, through which you will gain first-hand experience investigating a biochemical issue. Throughout the programme, assignments, presentations, reports, and other assessments will allow you to demonstrate and receive feedback on your learning. By participating in this multifaceted curriculum, you will progressively build advanced scientific knowledge and professional capabilities essential for any career in biochemistry or related fields.

How will you be assessed?

This programme has a varied assessment diet that focuses on:
-Assessments that have formative value -you learn from the process of assessment
-Assessment of attributes that will be useful for your future
-Assessments that are a direct measure of programme learning outcomes

The following types of assessment are used frequently:
-Project-based coursework
-Open book assessments
-Live in-class assessments
-Written examinations

Programme Title: BSc Biochemistry, with extramural year variants

How is the programme structured?

Please specify the structure of the programme diets for all variants of the programme (e.g. full-time, part-time - if applicable). The description should be sufficiently detailed to fully define the structure of the diet.

Students are required to register for modules to a value of 120 credits in each academic year. These modules are chosen from those offered in the C700 programme diet, as detailed below.

In the first year, you will study 120 credits, comprising the following:
- 6 x 15 credit compulsory modules (totalling 90 credits, across Semesters A & B)
- 3 x 10 credit compulsory modules (totalling 30 credits, across Semesters A & B)

In the second year, you will study 120 credits, comprising the following:
- 6 x 15 credit compulsory modules,
  BCH201 Developing Qualitative Research Skills (Semester A and B)
  BCH202 Advanced Experimental and Analytical Techniques (Semester A and B)
  BCH203 Research Methodology and ethics and Biochemistry (Semester A and B)
  BIO223 Genes and Bioinformatics (Semester A)
  BIO265 Enzymes and metabolism (Semester B)
  BIO263 Membrane & Cellular Biochemistry (Semester B)
- 2 x 15 credit elective modules from the discipline elective group (totalling 30 credits, across Semesters A & B).

To be eligible for the award of BSc (Hons) Biochemistry with year in industry/research, students must take SBC200 after the 2nd year and then return to QMUL the following year to complete the Year 3 diet in their 4th Year of study.

To be eligible for the award of BSc (Hons) Biochemistry with year abroad, students must take SBC201 after the 2nd year and then return to QMUL the following year to complete the Year 3 diet in their 4th Year of study.

In third year, you will study 120 credits comprising the following:
- 4 x 15 credit compulsory modules,
  BCH301 Critical analysis and communication in Biochemistry (Sem A and B)
  BCH303 Biochemistry in action: Solving real world challenges (Sem A and B)
  BIO363 Molecular basis of disease (sem A)
  BIO367 Protein Structure, Folding & Assemblies (sem B)

- 1 x compulsory elective module from the Project group (totalling 30 credits, across Semesters A & B)

- 2 x elective modules from the discipline elective group (2 x 15 credits, across Semesters A & B).

Choice between electives is generally unrestricted, but with the exceptions that:
- you must not register for more than 75 credits in total in any given semester
- you must check that you satisfy the prerequisites before registering for any elective module
- you must register for one of BIO600, BIO603 or BMD606 in the final year.

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Cells	BIO116	15	4	Compulsory	1	Semester 1

Programme Title: BSc Biochemistry, with extramural year variants

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Molecular Genetics	BIO163	15	4	Compulsory	1	Semester 1
Physiology	BIO125	15	4	Compulsory	1	Semester 2
Basic Biochemistry	BIO161	15	4	Compulsory	1	Semester 2
Essential Skills for Biochemistry	BCH101	10	4	Compulsory	1	Semesters 1 & 2
Practical Molecular and Cellular Biology	BIO190	10	4	Compulsory	1	Semester 1
Practical Biochemistry	BCH198	10	4	Compulsory	1	Semester 2
Physical Chemistry for Biochemists	BCH103	15	4	Compulsory	1	Semesters 1 & 2
Organic Chemistry for Biochemists	BCH104	15	4	Compulsory	1	Semesters 1 & 2

Academic Year of Study FT - Year 2

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Membrane and Cellular Biochemistry	BIO263	15	5	Compulsory	2	Semester 2
Enzymes and Metabolism	BIO265	15	5	Compulsory	2	Semester 2
Genes and Bioinformatics	BIO223	15	5	Compulsory	2	Semester 1
Structure & Reactivity in Organic Chemistry	CHE202A	15	5	Elective	2	Semester 1
Pharmaceutical Chemistry (Sem A)	CHE206A	15	5	Elective	2	Semester 1
Comparative & Integrative Physiology	BIO215	15	5	Elective	2	Semester 1
Cell biology and developmental genetics	BIO213	15	5	Elective	2	Semester 2

Programme Title: BSc Biochemistry, with extramural year variants

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Cellular & Molecular Neuroscience	BMD261	15	5	Elective	2	Semester 1
Pharmaceutical Chemistry (Sem B)	CHE206B	15	5	Elective	2	Semester 2
Microbial physiology & growth	BIO231	15	5	Elective	2	Semester 2
Developing Qualitative Research Skills	BCH201	15	5	Compulsory	2	Semesters 1 & 2
Advanced Experimental and Analytical Techniques	BCH202	15	5	Compulsory	2	Semesters 1 & 2
Research methodology and ethics in Biochemistry	BCH203	15	5	Compulsory	2	Semesters 1 & 2

Academic Year of Study FT - Year 3

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
One of the following modules must be taken to qualify for one of the extramural year degrees:			5	Core		
SBCS External Placement Module	SBC5001	120	5	Core	3	Semesters 1-3
SBCS Study Abroad Year	SBC5000	120	5	Core	3	Semesters 1 & 2

Academic Year of Study FT - Year 3

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Membrane Protiens	BIO361	15	6	Elective	3	Semester 1
Functional genomics and epigenetics	BIO327	15	6	Elective	3	Semester 2
Neuroscience: from molecules to behaviour	BIO333	15	6	Elective	3	Semester 2

Programme Title: BSc Biochemistry, with extramural year variants

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Advanced Pharmaceutical Chemistry	CHE306U	15	6	Elective	3	Semester 1
Endocrine Physiology and Biochemistry	BMD311	15	6	Elective	3	Semester 1
Topics in Biological Chemistry	CHE309	15	6	Elective	3	Semester 2
Biological Science Research Project (Project Elective)	BIO600	30	6	Elective	3	Semesters 1 & 2
Structured Research Project (Project Elective)		30	6	Elective	3	Semesters 1 & 2
Engaging the Public with Science (Project Elective)	BMD606	30	6	Elective	3	Semesters 1 & 2
Critical analysis and communication in Biochemistry	BCH301	15	6	Compulsory	3	Semesters 1 & 2
Biochemistry in action: Solving real world challenges	BCH303	15	6	Compulsory	3	Semesters 1 & 2
Molecular Basis of Disease	BIO363	15	6	Compulsory	3	Semester 1
Protein Structure, Folding and Assemblies	BIO367	15	6	Compulsory	3	Semester 2

What are the entry requirements?

Candidates must be able to satisfy the general admissions requirements of the University and meet the requirements for this specific programme of study. This is usually achieved in one of the following ways (note - the entry-points tariff is subject to annual review):

For direct entry to the degree programme, candidates must usually possess a minimum total of ABB at A2 level, including a minimum of a grade B in 'A2' Biology and grade C in 'A2' Chemistry, or equivalent qualifications.

or via

Admission to the QMUL Science and Engineering Foundation Programme (SEFP), and successful completion of the foundation year (defined by achievement of the minimum requirements for progression defined in the SEFP programme regulations, and the criteria specified in the SEFP Student Handbook for progression to this particular degree programme).

International students should be offering IELTS 6.5 (with a minimum of 6.0 in writing), or equivalent.

Programme Title: BSc Biochemistry, with extramural year variants

How will the quality of the programme be managed and enhanced? How do we listen to and act on your feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between schools/institutes and its students. The committee consists of student representatives from each year in the school/institute together with appropriate representation from staff within the school/institute. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Staff-Student Liaison Committees meet regularly throughout the year.

Each school/institute operates a School Education Committee, or equivalent, which advises the School/ Director of Education on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in the committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools/institutes operate an Annual Programme Review of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery. Students' views are considered in this process through analysis of the NSS and module evaluations.

What academic support is available?

We are committed to providing comprehensive academic support to ensure the success and well-being of our students. This programme offers a range of resources and services designed to assist you in achieving your academic goals.

Dedicated Academic Advisors: Each student is assigned a dedicated academic advisor who serves as a guide throughout their academic journey. Advisors assist with course selection, academic planning, and offer guidance on career pathways.
Small-group tutorials: We provide tuition to help students grasp challenging concepts and enhance their understanding of course material

Library Writing Support: Our Library is a valuable resource for improving writing skills. Experienced writing tutors are available to review and provide feedback on essays, research papers, and other written assignments.
Library Resources: The university library offers an extensive collection of academic resources, including books, journals, and online databases. Librarians are available to assist with research and help students navigate these resources effectively.

Study Groups and Peer Mentoring: Collaborative learning is encouraged through organized study groups and peer mentoring programs. These initiatives foster a sense of community among students and provide additional avenues for academic support.
Technology Support: Our IT support team is available to assist with any technical issues related to online learning platforms, ensuring a smooth and uninterrupted learning experience.

Accessibility Services: We are committed to providing equal opportunities for all students. Our accessibility services team works with students who have specific learning needs, providing accommodations and support to ensure a level playing field for everyone.

Programme-specific rules and facts

NA

Specific support for disabled students

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate,

postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:
• Finding out if you have a specific learning difficulty like dyslexia
• Applying for funding through the Disabled Students' Allowance (DSA)
• Arranging DSA assessments of need
• Special arrangements in examinations
• Accessing loaned equipment (e.g. digital recorders)
• Specialist one-to-one "study skills" tuition
• Ensuring access to course materials in alternative formats (e.g. Braille)
• Providing educational support workers (e.g. note-takers, readers, library assistants)
• Mentoring support for students with mental health issues and conditions on the autistic spectrum.

Links with employers, placement opportunities and transferable skills

The BSc degree in Biochemistry will allow graduates to apply for postgraduate study in a related field, to pursue a career in research and development, to teach, or to gain employment in the pharmaceutical and biotechnology industries. There is a named academic who oversees the suite of careers-related activities in the programme. This academic works in collaboration with SBBS's dedicated Careers Consultant in Careers and Enterprise, an Employer Engagement and Internships Coordinator and also a Placements Coordinator. Together, this team promotes career opportunities and arranges a dynamic schedule of events which includes networking opportunities between students and employers.

Programme Specification Approval

Person completing Programme Specification:	Dr Robert Hatch
Person responsible for management of programme:	Dr Robert Hatch
Date Programme Specification produced / amended by School / Institute Learning and Teaching Committee:	22 Nov 2023
Date Programme Specification approved by Taught Programmes Board:	