

Programme Title: MSci Biochemistry with extramural year variant



## 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:	Master in Science (MSci) in Biochemistry, MSci (Hons) Biochemistry with year abroad
Name of interim award(s):	CertHE, DipHE, BSc
Duration of study / period of registration:	4 years (5 years with extramural year)
QMUL programme code / UCAS code(s):	C701, C71Y
QAA Benchmark Group:	
FHEQ Level of Award :	Level 7
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

The MSci in Biochemistry is suitable for those students who are seeking a professional career in Biochemistry, Biophysics, Synthetic Biology, or Molecular Medicine in either an academic or an industrial environment. There is a strong emphasis on the final-year research project, which will be supervised by internationally-recognized members of staff whose expertise is in Biochemistry. The School of Biological and Chemical Sciences has distinctive strengths in Biochemistry, Structural Biology, Photosynthesis and Bioenergy, and Molecular Medicine.

### Aims of the programme

This degree integrates biology and chemistry, providing a molecular-level description of the living world. The application of molecular concepts to complex biological systems is at the cutting edge of science in the twenty-first century. Students following this programme receive instruction in key biochemical concepts, the chemistry underpinning these concepts and the

applications of biochemistry in biotechnology and the treatment of disease. The programme also provides instruction in related subjects such as molecular biology, physiology, cell biology.

Furthermore to:

- Provide a rational, flexibly structured and coherent programme of study which is relevant to the needs of employers, facilitate the professional development of the student and lay the foundations for a successful career to the benefit of the economy and society;
- provide a sound knowledge base in the fields studied and develop key transferable skills in the areas of communication, numeracy, information technology, working with others, problem solving, time and task management;
- foster the development of an enquiring, open-minded and creative attitude, tempered with scientific discipline and social awareness, which encourages lifelong learning.

### What will you be expected to achieve?

You will be expected to achieve the following learning outcomes:

These are outlined below under this broad headings of Academic content, Skills and Attributes

### 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.

#### Academic Content:

A1	Essential facts, fundamental concepts, principles and theories fundamental to biochemistry.
A2	Facts, concepts, principles and theories across a range of topics in chemistry; including biological and organic chemistry.
A3	Facts, concepts, principles and theories across a wide range of topics in biology; including molecular biology, cell biology and genetics.

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A4	Emphasis on structure and function of proteins, in particular membrane proteins and enzymes
A5	Emphasis on modern biochemical techniques including a range of spectroscopies and X-ray crystallography.
A6	Aspects of molecular medicine and disease processes at the molecular level.

Disciplinary Skills - able to:

B1	Reason critically.
B2	Integrate theory and practice.
B3	Identify and formulate problems.
B4	Apply biochemical knowledge and problem solving skills in a wide range of theoretical and practical situations.
B5	Analyse and evaluate/interpret the results of controlled experiments.
B6	Devise strategies for the retrieval and selection of relevant information from a wide range of sources.

Attributes:

C1	Communicate effectively by written and/or verbal means.
C2	Manage time, prioritise workloads and work to deadlines.
C3	Undertake independent learning.
C4	Work independently.
C5	Participate constructively as a member of a group/team.
C6	Assess the relevance, importance and reliability of the ideas of others.
C7	Appreciate and discuss the role and impact of science in society.
C8	Use IT/computer based technology to locate information, to analyse, manipulate and present data

**How will you learn?**

Acquisition of knowledge is achieved mainly through lectures and directed independent learning. Understanding is reinforced through a combination of tutorial workshops, problem classes and laboratory classes (depending upon the module concerned), including regular feedback on submitted work. Additional learning support is provided through Queen Mary's online learning environment and the facilities of the QMUL Student PC Service.

## How will you be assessed?

Practical skills and report-writing skills are assessed through written laboratory reports, which include attention to quantitative accuracy. Other skills are assessed through a combination of coursework and formal written examination.

## 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:

- 5 x 15 credit compulsory modules,
  - BIO202 Biochemistry Communication (sem A and B)
  - BIO223 Genes and Bioinformatics (sem B)
  - BIO263 Membrane & Cellular Biochemistry (sem B)
  - BIO265 Metabolic pathways (Semester B)
  - BIO269 Techniques for biological & chemical sciences (sem A)

- 3 x 15 credit elective modules from the discipline elective group (totalling 45 credits, across Semesters A & B). One of these electives should be a CHE module from Semester A

To be eligible for the award of MSci (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:

- 5 x 15 credit compulsory modules,
  - BIO301 Biochemistry Communication (Sem A and B)
  - BIO361 Membrane Proteins (sem A)
  - BIO363 Molecular basis of disease (sem A)
  - BIO365 Enzyme Catalysis (sem B)
  - BIO367 Protein Structure, Folding & Assemblies (sem B)
- 1 x compulsory elective module from the Project group (totalling 30 credits, across Semesters A & B)
- 1 x elective module from the discipline elective group (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.

In the fourth year you will, you will study 120 credits comprising the following:

- BIO491 Advanced Biochemical Research Methods
- BIO790 Biochemical Research Project

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Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Practical Molecular & Cellular Biology	BIO190	10	4	Compulsory	1	Semester 1
Cells	BIO116	15	4	Compulsory	1	Semester 1
Fundamentals of Organic Chemistry	CHE102A	15	4	Compulsory	1	Semester 1
Molecular Genetics	BIO163	15	4	Compulsory	1	Semester 1
Essential Skills for Biochemists	BIO101	10	4	Compulsory	1	Semesters 1 & 2
Practical Biochemistry	BIO198	10	4	Compulsory	1	Semester 2
Physiology	BIO125	15	4	Compulsory	1	Semester 2
Fundamentals of Organic Chemistry	CHE102B	15	4	Compulsory	1	Semester 2
Basic Biochemistry	BIO161	15	4	Compulsory	1	Semester 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
Techniques for Biological and Chemical Sciences	BIO269	15	5	Compulsory	2	Semester 1
Biochemistry Communication	BIO202	15	5	Compulsory	2	Semesters 1 & 2
Metabolic pathways	BIO265	15	5	Compulsory	2	Semester 2

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Genes and Bioinformatics	BIO223	15	5	Compulsory	2	Semester 1
Structure & Reactivity in Organic Chemistry	CHE202A	15	5	Elective	2	Semester 1
Pharmaceutical Chemistry	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
Cellular & Molecular Neuroscience	BMD261	15	5	Elective	2	Semester 1
Pharmaceutical Chemistry	CHE206B	15	5	Elective	2	Semester 2
Microbial physiology & growth	BIO231	15	5	Elective	2	Semester 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	Compulsory		
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
Biochemistry Communication	BIO301	15	6	Compulsory	3	Semesters 1 & 2
Membrane Proteins	BIO361	15	6	Compulsory	3	Semester 1

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Molecular Basis of Disease	BIO363	15	6	Compulsory	3	Semester 1
Enzyme Catalysts	BIO365	15	6	Compulsory	3	Semester 2
Protein Structure, Folding and Assemblies	BIO367	15	6	Compulsory	3	Semester 2
Functional genomics and epigenetics	BIO327	15	6	Elective	3	Semester 2
Neuroscience: from molecules to behaviour	BIO333	15	6	Elective	3	Semester 2
Advanced Pharmaceutical Chemistry	CHE306U	15	6	Elective	3	Semester 2
Endocrine Physiology and Biochemistry	BMD311	15	6	Elective	3	Semester 1
Topics in Biological Chemistry	CHE309	15	6	Elective	3	Semester 2
Project skills in the life sciences (Project Elective)	BIO603	30	6	Elective	3	Semesters 1 & 2
Engaging the Public with Science (Project Elective)	BMD606	30	6	Elective	3	Semesters 1 & 2
Biological Science Research Project (Project Elective)	BIO600	30	6	Elective	3	Semesters 1 & 2

Academic Year of Study FT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Biochemical Research Project	BIO790	90	7	Compulsory	4	Semesters 1 & 2
Advanced Biochemical Research Methods	BIO491	30	7	Compulsory	4	Semesters 1 & 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

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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.

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

Quality of the programme will be managed and enhanced through institutional and School level reviews. These will take the form of the Annual Programme Review, Programme Teaching Groups, and Teaching and Learning Committee. Additionally, student feedback (via SSLC and Module Evaluations) will be considered when developing modules and programmes.

### **What academic support is available?**

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

The Teaching & Learning Committee advises the School's Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level, including monitoring the application of relevant QM policies and reviewing 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 consideration of student surveys and input from the SSLC.

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; the main document of reference for this process is the Taught Programmes Action Plan (TPAP) which is the summary of the school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the NSS and module evaluations.

### **Programme-specific rules and facts**

### **Specific support for disabled students**

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific



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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 MSci Biochemistry programme is aimed at producing world-class graduates who will get PhD positions at the world's best universities. Graduates with MSci Biochemistry are also expected to get jobs in global-companies as well as Biotech and Pharma startups. Some may be positioned to begin their own start-up companies.

## Programme Specification Approval

Person completing Programme Specification:

Dr John Viles

Person responsible for management of programme:

Dr John Viles

Date Programme Specification produced / amended by School / Institute Learning and Teaching Committee:

6 Jan 2022

Date Programme Specification approved by Taught Programmes Board: