



Programme Specification (UG)

Awarding body / institution:	Queen Mary University of London
Teaching institution:	Queen Mary University of London
Name of award and field of study:	BSc. Pharmacology and Drug Discovery
Name of interim award(s):	
Duration of study / period of registration:	3 years
QMUL programme code / UCAS code(s):	
QAA Benchmark Group:	Biomedical Science
FHEQ Level of Award :	Level 6
Programme accredited by:	
Date Programme Specification approved:	
Responsible School / Institute:	William Harvey Research Institute

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

School of Biological and Behavioural Sciences

Barts Cancer Institute

Blizard Institute

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

Programme outline

In this full time 3-year distance learning Pharmacology and Drug Discovery BSc degree, we offer a curriculum which will give you a broad understanding of drug action through to the processes involved in the eventual translation of basic science into new medicines. You will explore how drugs and medicines work at the cellular and sub-cellular level to produce their useful (and sometimes adverse) effects in man, and study the process by which new drugs are discovered, developed, tested and approved for the treatment or prevention of disease. Practical learning will predominantly be through market-leading lab simulations, with interactive scenarios and demonstrations.

In the first year of the degree, you will gain a solid foundation in all key areas of biomedical sciences to help understand how drugs work at the molecular and functional levels. You will study modules such as Cells, Genetics, Tissue Biology, Biomolecules of Life and Biomedical Physiology. The three programme-specific modules, Introduction to Pharmacology, Research Skills for

Programme Title: BSc. Pharmacology and Drug Discovery

Pharmacologists, and Communication Skills for Pharmacologists, are designed to introduce you to the principles and concepts of pharmacology and provide you with a set of key generic skills, including scientific writing, computer literacy and data handling skills, to undertake further study into Pharmacology.

In the second year, you will study topics such as immunology, biochemistry and physiology. You will develop an in-depth knowledge of pharmacology and therapeutics through specific modules that include Drug Target Identification, Clinical Pharmacology and Assessment of Drug Safety and the Business of Pharmacology.

The final year consists of a number of specialist topics in pharmacology such as drug design, translational pharmacology & innovative therapeutics, classic papers and current topics in pharmacology, and clinical trials and the role of the regulator in therapeutic innovation. You will have the opportunity to choose an independent research project, which might take the form of a literature review, analysis of existing datasets, or engaging the public with science.

The Pharmacology and Drug Discovery degree programme furthers the existing collaboration between Queen Mary's Faculty of Medicine & Dentistry (FMD) and School of Biological & Behavioural Science (SBBS). The distance learning degree offers a premium digital learning experience for students who wish to undertake their studies remotely and go on to pursue careers in science communication, medical sales, the pharmaceutical industry, a wide range of medically-related fields, within academia, and in both the public and private sectors. It employs digital learning pedagogies and innovative teaching practices to meet the unique needs of online learners, take advantage of the affordances of digital learning technologies and build a vibrant online learning community in which students are connected to their peers, teachers and industry. It will not be possible to switch between this programme and our on-campus BSc. Pharmacology and Innovative Therapeutics degree once study has commenced, due to the differences in practical training on the two programmes.

Aims of the programme

The overall vision and aim of the distance learning BSc. degree course in Pharmacology and Drug Discovery is to extend our current on-campus degree offering in this area into the distance-learning domain, harnessing digital learning pedagogies, innovative teaching practices and a variety of digital technologies, to make the discipline of Pharmacology truly accessible to all, regardless of location.

The degree will give you a multidimensional understanding of drug discovery right the way through from scientific advances in basic research to the processes involved in the development of new medicines, encompassing preclinical development tests as well as clinical trials, regulatory approval by the Medicines and Healthcare products Regulatory Agency (MHRA) and post-licensing surveillance. This will be delivered through collaborative participation of academia, biotech companies and the pharmaceutical industry, (guest lecturers) via a suite of online learning materials and activities specifically developed for the online learning environment.

You will gain a solid foundation in all key areas of biomedical sciences and an in-depth knowledge and understanding of the many processes involved in drug development for therapeutic use, including drug design, target identification and validation and clinical trials.

Our commercial collaborations will expose you to the novel breakthrough therapies in areas including vaccines, oncology, cardiovascular, metabolic diseases, pain and neuroscience, inflammation and immunology as well as rare disorders. You will also gain an awareness into issues faced by the pharmaceutical industry such as drug shortages, targeted/personalised drugs, use of biomarkers, clinical trial design, drug safety, risk/benefit assessments, collaboration between patient, academia, industry and the regulatory community, international collaborations, policy and bioethics, novel tools for scientific/clinical communication and sustainability of innovation/financial models for product development/pricing, marketing and licensing.

This degree will offer you the opportunity to further your studies at Masters/PhD level or pursue a career in science communication, medical sales, the pharmaceutical industry, within a regulatory agency or in a wider biomedical area.

What will you be expected to achieve?

Students who successfully complete the programme will have knowledge and understanding of biochemistry, genetics, cell biology and human molecular biology to help facilitate understanding of how drugs work at molecular and functional levels and how new drugs are discovered, developed and tested.

In addition to the academic content, you also will be expected to develop and be able to articulate any number of workplace

disciplinary skills, encapsulated in our Queen Mary Graduate Attributes, such as working as part of a team, communicating with a range of different people, flexibility and resilience, social responsibility and digital fluency.

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:

A 1	Demonstrate knowledge of a broad range of topics relevant to the discipline of Pharmacology.
A 2	Develop a conceptual understanding of pharmacological facts, terms, methods, concepts, principles and relationships and appreciate their importance.
A 3	Evaluate innovative breakthrough therapies and processes involved in translation of scientific discoveries through basic research into new medicines including preclinical development tests, clinical trial design and governance and regulatory approval.
A 4	Appraise issues faced by the pharmaceutical industry in the innovative drug development process.
A 5	Apply cutting edge knowledge and acquired scientific skills as a precursor to research in pharmacology, a career in the pharmaceutical industry, work within a clinical healthcare environment or at a government regulatory body.

Disciplinary Skills - able to:

B 1	Apply pharmacology knowledge and principles together with problem solving skills in a wide range of theoretical situations
B 2	Critically evaluate scientific data including the methodology by which they were obtained, statistical analysis used and evaluate and interpret the results of controlled experiments.
B 3	Retrieve, filter and collate pharmacological data from a variety of information sources
B 4	Prepare scientific/technical reports
B 5	Develop effective interpersonal communication, navigating workplace conflict, multi-tasking abilities and self-motivation or working as part of a team

Attributes:	
C 1	Communicate effectively in a range of formats for different purposes with a diverse range of people
C 2	Respect, listen to, and value others and their opinions
C 3	Recognise and value your individual worth and identify the contributions you can make
C 4	Identify clear personal, study and career goals, taking responsibility for your own growth and development
C 5	Apply a flexible and resilient approach to your life
C 6	Engage critically and reflectively with knowledge
C 7	Demonstrate an innovative and creative approach to problem solving
C 8	Apply your disciplinary expertise to broader contexts and society
C 9	Be digitally fluent
C 10	Participate effectively and inclusively in different roles as part of a team, including as a leader
C 11	Collaborate with a diverse range of colleagues
C 12	Act honestly, fairly and ethically, including in academic conduct
C 13	Promote socially responsible behaviour for a global sustainable future

How will you learn?

Knowledge and skills are developed in a progressive way throughout the programme.

Academic Content

Students are offered a comprehensive programme of online educational activities, based on critical digital pedagogy and supported by the Digital Education Studio and Dean for Digital Education (FMD).

Support for learning is provided through the Library and Queen Mary's online learning environment (QMPlus). The programme includes learning materials that are adapted to the online learning environment and a range of active, interactive and social learning activities. Students will engage with video and audio materials, written content, simulations and asynchronous interactive and collaborative activities, and this study will be supported by academic members of staff who will provide written feedback via QMPlus and pose further questions for consideration using discussion forums. Optional online synchronous seminars will be provided to complement the asynchronous learning materials, and these sessions will be recorded and made available via QReview. Students are expected to use independent and self-directed learning to extend their learning and complete coursework.

Practical and Problem-oriented Disciplinary Skills

Practical skills will be taught through laboratory simulations and/or video demonstration of practicals, using the latest in cutting-edge laboratory simulation software. The simulations will be supplemented by worksheets including formative quizzes to test theoretical knowledge and data-handling skills. Active, interactive and social learning activities throughout the programme will provide opportunities for students to apply their learning to the solution of real problems.

Graduate Attributes

Queen Mary's graduate attributes are developed in a progressive fashion. The project module provides further opportunities for the development of transferable skills and other aspects of graduate attribute development.

How will you be assessed?

Assessment of knowledge will be carried out at programme level, through assessed coursework and weekly individual or collaborative activities. The exact nature of the coursework varies from module to module and may include mini-tests, essays and problem sheets. The coursework mark may also include a contribution from online and computer-based assessments. Specific modules may include oral presentations, delivered online, and extended reports/dissertations. Assessment tasks will be linked across modules so that by the end of the programme, students will have a portfolio of work that demonstrates their achievements and reflects their professional identity. Prompt feedback is provided on elements of coursework to provide an iterative learning experience, in which both knowledge and skills can be gradually developed and strengthened.

Standard QMUL processes ([www.qmul.ac.uk/governance-and-legal-services/media/arcs/policyzone/academic/Academic-Misconduct-Policy-\(2023-24\).pdf](http://www.qmul.ac.uk/governance-and-legal-services/media/arcs/policyzone/academic/Academic-Misconduct-Policy-(2023-24).pdf)) will apply for the prevention, detection and consequences of Academic Misconduct.

Transferable skills are developed in a contextual manner throughout the teaching and learning programme and are indirectly assessed as part of the normal assessment processes for the programme. For example, the assessment of the projects includes consideration of data-retrieval skills (a component of digital literacy), and written and oral communication skills.

Knowledge of practical techniques is assessed through written laboratory reports, using data provided by the University. The assessment of the final year research project addresses the majority of the professional disciplinary skills that students of this programme are expected to acquire.

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.

The distance learning Pharmacology and Drug Discovery programme is studied full-time over three years.

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 distance learning Pharmacology and Drug Discovery programme diet, as detailed below.

In the first year, you will study 120 credits, comprising 8 x 15-credit compulsory modules (across Semesters A & B): Genetics, Cells, Research Skills for Pharmacologists, Communication Skills for Pharmacologists, Tissue Biology, Biomolecules of Life I, Biomedical Physiology I, Introduction to Pharmacology.

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

- 7 x 15-credit compulsory modules (totalling 90 credits, across Semesters A & B): Biomolecules of Life II, Biomedical Physiology II, Drug Target Identification, Human Genetic Disorders, Basic Immunology, The Business of Pharmacology, Clinical Pharmacology & Assessment of Drug Safety
- 1 x 15 credit elective module from the discipline elective group: Membrane and Cellular Biochemistry and Research Design and Analysis

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

- 1 x distance learning Research Project totalling 30 credits, across Semesters A & B
- 4 x 15-credit compulsory modules (totalling 60 credits across Semesters A & B): Classic Papers & Current Topics in Pharmacology, Translational Pharmacology and Innovative Therapeutics, Drug Design, Clinical Trials & Regulatory Affairs
- 2 x 15 credit elective modules from the discipline elective group (totalling 30 credits, across Semester A & B): Cancer Biology, Stem Cells and Regenerative Medicine, Molecular Basis of Personalised Medicine, and Biomarkers in Neuroscience

Choice between electives is generally unrestricted, but with the exceptions that:

- you can not register for more than 60 credits in total in any given semester
- you must check that you satisfy the prerequisites before registering for any elective module

Programme Title: BSc. Pharmacology and Drug Discovery

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Genetics	BMD191	15	4	Compulsory	1	Semester 1
Cells	ICM4901	15	4	Compulsory	1	Semester 1
Research Skills for Pharmacologists	WHR4901	15	4	Compulsory	1	Semester 1
Communication Skills for Pharmacologists	WHR4902	15	4	Compulsory	1	Semester 1
Tissue Biology	CAN4901	15	4	Compulsory	1	Semester 2
Biomolecules of Life	ICM4902	15	4	Compulsory	1	Semester 2
Biomedical Physiology I - Exchange, Movement and Integration	BMD192	15	4	Compulsory	1	Semester 2
Introduction to Pharmacology	WHR4903	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
Biomolecules of Life II	CAN5901	15	5	Compulsory	2	Semester 1
Biomedical Physiology II	BMD291	15	5	Compulsory	2	Semester 1
Drug Target Identification	WHR5901	15	5	Compulsory	2	Semester 1
Human Genetic Disorders	BMD691	15	5	Compulsory	2	Semester 1
Basic Immunology	WHR5902	15	5	Compulsory	2	Semester 2
Business of Pharmacology	WHR5903	15	5	Compulsory	2	Semester 2

Programme Title: BSc. Pharmacology and Drug Discovery

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Clinical Pharmacology & Assessment of Drug Safety	WHR5904	15	5	Compulsory	2	Semester 2
Membrane and Cellular Biochemistry	BMD293	15	5	Elective	2	Semester 2
Research Design and Analysis	BMD292	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
Pharmacology and Drug Discovery Research Project	WHR6900	30	6	Compulsory	3	Semesters 1 & 2
Classic Papers and Current Topics in Pharmacology	WHR6903	15	6	Compulsory	3	Semester 1
Translational Pharmacology and Innovative Therapeutics	WHR6901	15	6	Compulsory	3	Semester 1
Cancer Biology	CAN6901	15	6	Elective	3	Semester 1
Stem Cells and Regenerative Medicine	ICM6901	15	6	Elective	3	Semester 1
Drug Design	WHR6902	15	6	Compulsory	3	Semester 2
Clinical Trials and Regulatory Affairs	WHR6904	15	6	Compulsory	3	Semester 2
Molecular Basis of Personalised Medicine	CAN6902	15	6	Elective	3	Semester 2
Biomarkers in Neuroscience	ICM6902	15	6	Elective	3	Semester 2

What are the entry requirements?

For direct entry to the degree programme, candidates must usually possess a minimum total of 320 points at A2 level on the UCAS points tariff system, including Biology or Chemistry and a second science subject (biology, chemistry, maths or physics).

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

An alternative route onto the programme is through the QMUL Science & Engineering Foundation Programme.

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, and there will be representation on this committee from within the cohort of distance learning Pharmacology & Drug Discovery students. 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 Learning and Teaching Committee, or equivalent, which advises the School/Institute 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 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?

University-level Support:

Students have access to online QMUL resources on academic skill development and online (during UK working hours) one to one guidance, offered through the Library service, as well as other services such as Studiosity and Royal Literary Fund Fellows. Discipline-specific one to one online research skills sessions are also available with liaison librarians linked to the Faculty of Medicine and Dentistry. A 1-2 week onboarding programme of activities before commencing study will familiarise students with university processes and systems, outline the mechanisms for seeking support, develop academic and digital capabilities, and facilitate the transition to Higher Education and advanced ways of working independently, collaboratively, and in the online environment.

Programme-level Support:

Programme-level queries can be directed to the year leads or Programme Director. There will be regular contact with the Programme Director or nominated representative, including an ongoing online discussion forum established as part of the students' onboarding programme, which will foster a sense of community and introduction to Queen Mary and the programme in general.

Module-level Support:

Module-specific academic support, facilitation and feedback is available through the module organisers and associated teaching team. Academic support will take the form of module-specific interaction on the Virtual Learning Environment, QMPlus, by suitably-qualified academics, in order to give written feedback on asynchronous tasks set, pose further questions for discussion, respond to student queries and provide assessment information. Module staff interaction with students via QMPlus and optional synchronous sessions will comprise approximately 3h per module per week and will be particularly concentrated at pinch points of activity and student support needs, such as the early stages of the module, following completion of asynchronous online activities and during assessment preparation.

Academic Advisor Support:

Each student is provided with a personal academic guidance tutor (or "advisor") who is a member of WHRI academic staff. This person is their main point of contact for advice regarding academic matters and for assistance with pastoral concerns, throughout their whole programme, and there will be six formal meetings per year to discuss progress and concerns. Additional ad-hoc meetings can be requested at any time. Students can see their advisors online in their office hours or arrange an appointment via email. Moreover, if and when advisors are unavailable or cannot help with a specific problem, FMD and SBBS have several Senior Advisors to assist with student concerns.

Peer and 'near peer' Support:

The School operates a PASS programme (<https://www.qmul.ac.uk/library/academic-skills/pass/>) for peer guidance from QMUL

Pharmacology students at a higher level of study, and also a buddying/mentoring system to support the transition to University (<https://www.qmul.ac.uk/newstudents/becoming-a-queen-mary-student/buddy-scheme-/>). Both schemes will operate via Teams/Zoom with distance learners paired with on-campus students initially, but are expected to transition to peer-peer interaction between DL students in different stages of study as the DL programme becomes established.

Programme Administration Support:

A team of administrators supports the delivery of the programme. It delivers important messages to the student cohort, such as any changes to university policies, and can offer students guidance around activities such as module registration, viewing their student record, assessment submission and use of QMPlus.

How inclusive is the programme for all students, including those with disabilities?

Distance learning inherently incorporates a high level of accessibility and inclusivity. Free from the constraints of inflexible timetabling, escalating cost of living concerns and physical infrastructure challenges, students are able to engage with academic content at a time and place of their choosing. This frees students to fulfill caring and/or working responsibilities around their studies.

All learning materials will be specifically developed for the online learning environment and take into account the needs of online learners (e.g. for flexibility and self-paced learning, including self-testing to monitor progress, and ability to re-watch/pause/rewind video content), which will additionally benefit SpLD students. Learning outcomes and assessment requirements for each module will be explicitly stated on the Queen Mary Virtual Learning Environment, QMPlus, and all learning materials will be available to students via QMPlus. Captions and transcripts will be available for all video and audio content, and text-based alternatives will be provided in the event that any other learning materials are not fully accessible. Alternative arrangements will be made for students with poor or limited internet connection who are required to deliver an oral presentation (or other such assessment) online, such as pre-recorded submissions, slides with script etc.

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 regardless of location or mode of study.

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), subject to eligibility e.g. must be ordinarily resident in the UK
- 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.

Programme-specific rules and facts

None

Links with employers, placement opportunities and transferable skills

Transferable skill and QM graduate attribute development will be encouraged and monitored through the advising system, using a modified version of the 'APPLE' (Academic, Personal and Professional Learning Evaluation) form developed by the University of Exeter.

Programme Title: BSc. Pharmacology and Drug Discovery

A degree in Pharmacology and Drug Discovery allows graduates to apply to study medicine, to undertake and manage research or to teach, or to gain employment in the pharmaceutical and biotechnology industries, or other fields allied to medicine.

- Employers may include:
- Science communication agencies
 - Regulatory bodies
 - Pharmaceutical, biotechnology and CRO industries
 - University research groups
 - NHS Scientist Training Programme

Programme Specification Approval

Person completing Programme Specification:	Dr Emma Taylor
Person responsible for management of programme:	Dr Emma Taylor and Dr Sadani Cooray
Date Programme Specification produced / amended by School / Institute Education Committee:	
Date Programme Specification approved by Taught Programmes Board:	